

PATENTS FOR INVENTIONS

ABRIDGMENTS OF SPECIFICATIONS

CLASS 22

CEMENTS AND LIKE COMPOSITIONS

PERIOD—A.D. 1909-15



LONDON:
PRINTED BY HIS MAJESTY'S STATIONERY OFFICE
PUBLISHED AT THE PATENT OFFICE, 25, SOUTHAMPTON BUILDINGS,
CHANCERY LANE, LONDON, W.C.2.

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EXPLANATORY NOTE

The contents of this Abridgment Class may be seen from its Subject-matter Index, which includes all index headings, subheadings, and subdivisions allotted to this Class, as well as cross-references under them, although there may be no cases affected within the period covered by the volume. For further information as to the classification of the subject-matter of inventions, reference should be made to the *Abridgment-Class and Index Key*, published at the Patent Office, 25, Southampton Buildings, Chancery Lane, W.C.2.

It should be borne in mind that the abridgments are merely intended to serve as guides to the Specifications, which must themselves be consulted for the details of any particular invention. Printed Specifications, price 1s., may be purchased at the Patent Office, or ordered by post, no additional charge being made for postage.

SUBJECT-MATTER INDEX

Abridgments are printed in the chronological order of the Specifications to which they refer, and this index quotes only the year and number of each Specification.

Adhesives. *See Class 121.*

Asphalts naturally occurring, Preparation and treatment of. '10. 9955. 22,309. '12. 26,426. '13. 2187. '15. 15,979.

Excepting Coking &c., [Class 55 (i)]; Emulsions, Making, [Class 81 (i)]; Grinding, crushing, &c., [Class 59]; Metals and other fusible materials, Granulating or pulverizing &c., [Class 82 (ii)]; Mixing &c., [Class 86]; Moulding plastic &c substances, [Class 87 (ii)]. cauldrons, tanks, and heaters. *See Class 107.*

Bituminous, resinous, fatty, oily, and wax-like plastic compositions, (including Phenol-aldehyde and other organic-derivative plastic compositions).

This heading comprises mouldable compositions which usually set and which have bitumens, resins, fats and oils, waxes, and organic derivatives as important constituents; liquid compositions intended for coating surfaces in thin films, (e.g. in the manufacture of American cloth and tarpaulins), and solid compositions intended to be applied by friction or by liquefying either by means of vehicles or by heat, are indexed only under Coating-compositions applied melted, [Class 95]; Paints &c., [Class 95]; Proofing permeable materials &c., [Class 140]. Compositions which contain albuminous, gelatinous, saccharine, and starchy materials, alkaline silicates, bone, cellulose esters, fibres, horn, ivory, metals, mica or talc, oxychlorides, rubber gums, and sulphite-cellulose lye in important proportions are indexed under the provisions for those ingredients under the headings India-rubber &c. compositions, [Class 70]; Plastic compositions, [Class 70].

Bituminous, resinous, fatty, oily, and wax-like plastic compositions—cont.

The subdivisions should not be regarded as furnishing in every case a complete list of Specifications mentioning particular ingredients; compositions containing bitumens as well as resins, fats and oils, and waxes are indexed under bituminous compositions only, unless the proportion of bitumens is insignificant; compositions containing resins as well as fats, oils, and waxes under resins &c. only; and compositions containing fats or oils and waxes under oils &c. only. If, in addition to bitumens, compositions contain other ingredients of interest, e.g. fillers or ballasts, these are separately indexed.

Excepting Bearings &c., (self-lubricating compositions), [Class 12 (i)]; Fuel, (composition fuel and fire-lighters), [Class 50]; Galvanic batteries, (compositions for electrodes), [Class 53]; Ores &c., Treating, (briquetting-compositions), [Class 82 (i)]; Sealing-wax, [Class 146 (ii)].

agglomerating ballast by producing tar from coal in situ. *See bituminous compositions (concretes not containing Portland cement &c.) below.*

aldehyde-phenol condensation products. *See Class 2 (iii).*

asphalt oil or condensates from asphalt distillation, containing. *See subdivisions which comprise mineral oils below.*

asphalt oil or soft natural bitumens, containing. *See subdivisions which comprise naturally-occurring bitumens below.*

auto-oxidation and polymerization, preventing, by addition of organic nitrogen or heterocyclic compounds. *See hydrocarbons &c. below.*

Bituminous, resinous, fatty, oily, and wax-like plastic compositions—cont.

- bituminous compositions—
 concretes containing Portland cement—
 bituminous emulsions, containing. '10. 16,264. 30,091. '11. 2703.
 fats, fatty oils, resins, and their derivatives, containing. '14. 1428.
 not containing bituminous emulsions, fats, fatty oils, resins, and their derivatives. '09. 1650. 15,912. '10. 23,064. 28,836. 30,091. '11. 18,340. 20,630. 25,553. 26,374. '12. 8452. '13. 5976. 17,396. '14. 1428.
 concretes *not* containing Portland cement, and calcareous, aluminous, and siliceous bituminous-mastics—
 containing artificially-prepared tar or pitch
 without naturally-occurring bitumens or asphalts—
 added mineral oils and condensates from tar distillation, containing. '09. 2461. 9929. 26,292. '12. 9004. '13. 8069. 25,593. '14. 1428.
 fats and fatty oils and their derivatives, resin oils, and waxes, containing. '11. 28,536. '13. 14,664.
 not containing fats, mineral and fatty oils, resins, soaps, and waxes. '09. 1171. 2461. 4953. 10,591. '10. 9933. 28,836. '11. 29,390. '13. 8069.
 resins and resinsates, containing. '09. 2461. '14. 1428.
 containing naturally-occurring bitumens or asphalts in addition to artificially-prepared tar or pitch—
 added mineral oils and condensates from tar distillation, containing. '11. 19,590. '13. 1079. 1458. 1459.
 fats and fatty oils, and their derivatives, resin oils, and waxes, containing. [*No cases*]
 not containing fats, mineral and fatty oils, resins, soaps, and waxes. '13. 1079. 22,738. '15. 4414.
 resins and resinsates, containing. '11. 19,590.
 containing naturally-occurring bitumens or asphalts without artificially-prepared tar or pitch—
 added mineral oils and condensates from tar distillation, containing. '09. 9929. '11. 10,606. 16,505. '12. 9004. '13. 22,738. '14. 1428.
 fats and fatty oils, and their derivatives, resin oils, and waxes, containing. '10. 2405. '11. 9023. '13. 20,116.
 not containing fats, mineral and fatty oils, resins, soaps, and waxes. '09. 4953. '10. 1979. 23,064. '13. 6969. 20,116. '15. 7384 [*Appx.*].
 resins and resinsates, containing. '10. 2405. '13. 20,116. '14. 1428.
 not containing special bituminous materials, but containing—
 acids. [*No cases.*]
 alkaline-earth solids, clay, marl, ground schist, shale, or slate, in addition to stony materials. '09. 1650. 2461. '10. 24,172. 28,660. '11. 7628. 16,505. '12. 8452. 9004. '13. 364. '14. 1428. 5989.

Bituminous, resinous, fatty, oily, and wax-like plastic compositions—cont.

- bituminous compositions—cont.
 concretes *not* containing Portland cement &c.
 —cont.
 not containing special bituminous materials, but containing—cont.
 alkaline-earth solids without stony materials. '09. 26,292. '13. 20,116. '14. 1428.
 ashes, coke breeze, coal, carbon, and graphite. '13. 1079. '14. 5989. 12,073.
 clay without stony materials. '11. 16,125. '15. 9838.
 fines for filling interstices. '09. 13,282. '11. 16,505. 16,506. '12. 4148. '14. 5989. '15. 13,753.
 glass. '15. 7384 [*Appx.*].
 grit from china clay. '11. 25,553.
 house-bin refuse. [*No cases.*]
 lead ore. [*No cases.*]
 metallic salt solutions. '11. 2984 13. 8069.
 oxidizing-agents. '12. 26,426.
 pyrites or iron oxides. [*No cases.*]
 slag or destructor clinker. '13. 1459. 25,593. '14. 5989. 12,073. '15. 4414.
 slate, schist, and shale without other stony materials. '15. 4820.
 special grits or stony materials *not* covered by other Key subdivisions. [*No cases.*]
 sulphur. '09. 9929. '11. 4803. 10,606.
 titanium compounds. [*No cases.*]
 processes for making *not* dependent on particular materials. '09. 2461. 9929. 22,682. 23,213. '10. 6748. '11. 16,505. 16,506. '13. 1827. 25,593. '14. 8820. 11,154. '15. 6823. 9838. 11,331.
 other than bituminous concretes and calcareous, aluminous, and siliceous bituminous-mastics—
 containing artificially-prepared tar or pitch without naturally-occurring bitumens or asphalts—
 added mineral oils and condensates from tar distillation, containing. '13. 8069. '14. 1428.
 fats and fatty oils, and their derivatives, resin oils, and waxes, containing. '09. 30,565 [*Appx.*]. '10. 636. 1021. '11. 25,286. '12. 4796 [*Appx.*]. '13. 14,664.
 not containing fats, mineral and fatty oils, resins, soaps, and waxes. '13. 8069.
 resins and resinsates, containing. '12. 6019. '14. 3625.
 containing naturally-occurring bitumens or asphalts in addition to artificially-prepared tar or pitch—
 added mineral oils and condensates from tar distillation, containing. '11. 23,210.
 fats and fatty oils, and their derivatives, resin oils, and waxes, containing. '11. 23,210.
 not containing fats, mineral and fatty oils, resins, soaps, and waxes. [*No cases.*]
 resins and resinsates, containing. '11. 23,210.

Bituminous, resinous, fatty, oily, and wax-like plastic compositions—cont.
bituminous compositions—*cont.*

other than bituminous concretes &c.—*cont.*

containing naturally-occurring bitumens or asphalts without artificially-prepared tar or pitch—

added mineral oils and condensates from tar distillation, containing. '10. 476. '14. 1428. '15. 15,979.

fats and fatty oils and their derivatives, resin oils, and waxes, containing. '10. 636. '13. 6024. '14. 21,524. '15. 15,979.

not containing fats, mineral and fatty oils, resins, soaps, and waxes. '10. 476. '15. 15,979.

resins and resinates, containing. '12. 6019.

not containing special bituminous materials but containing—

barium sulphate. '09. 10,591.

calcined bones. [No cases.]

carbon, coal, and coke. [No cases.]

flue dust. [No cases.]

grain-mill dust. '12. 4148.

iron oxides. *See* concretes &c. *above.*

litharge, powdered white lead, and zinc oxide. [No cases.]

oxidizing agents. [No cases.]

soluble metallic compounds. '13. 8069.

sulphur. [No cases.]

cellulose esters, compositions consisting essentially of. *See* Class 70.

creosote oil, green oil, vaseline, and other condensates from the distillation of tar or petroleum, containing. *See subdivisions which comprise mineral oils above and below.*

fats, oils, and waxes, oxidizing, sulphuretted, and otherwise chemically treating. *See* Class 91.

granulating or pulverizing. *See* Class 82 (ii).

hydrocarbon substitution products, compositions containing, (*other than* those in which the important ingredients are bituminous or resinous materials, fats, oils, waxes, and condensates from tar distillation)—

esters or condensation products of alcohols and acids, containing, (*other than* esters of cellulose and starch). '12. 22,449 [Appx]. 23,776 [Appx]. 24,059 [Appx]. 24,060 [Appx]. 24,254 [Appx]. 24,255 [Appx]. '13. 3271 [Appx]. 3566 [Appx]. 8417 [Appx]. 9985 [Appx]. 22,421 [Appx]. 22,544. '14. 15,271.

halogen derivatives, containing. '11. 9023.

heterocyclic compounds, containing. '10. 10,361.

nitrogen derivatives, containing. '09. 23,668. '10. 636. 10,361.

phenols and aldehydes or ketones, condensation products of, containing. '10. 13,946 [Appx]. 21,401 [Appx]. 23,573 [Appx]. 26,928. 28,155 [Appx]. 28,491 [Appx]. '11. 3496 [Appx]. 3497 [Appx]. 3498 [Appx]. 5165 [Appx]. 5167 [Appx]. 9559 [Appx]. 24,124 [Appx]. 26,029 [Appx]. '12. 1269 [Appx]. 1598 [Appx]. 6405 [Appx]. 8402 [Appx]. 10,353 [Appx]. 18,822 [Appx]. 20,986 [Appx]. '13. 607 [Appx]. 2098

Bituminous, resinous, fatty, oily, and wax-like plastic compositions—cont.
hydrocarbon substitution products, compositions

containing—*cont.*

phenols and aldehydes or ketones, condensation products of, containing—*cont.*

[Appx]. 5448 [Appx]. 13,657 [Appx]. 14,481 [Appx]. '14. 528. 6716. 7560. 9291. 9292 [Appx]. 15,875. 17,728 [Appx]. 21,264. '15. 10,055.

sulphur derivatives, containing, (*other than* viscose). '10. 26,928. '12. 636 [Appx].

sulphonated fatty acids, containing. *See* oils &c. *below.*

mixing bituminous and oily substances with the gauging-water used with Portland cement and concretes. *See* Cements, Portland &c.; Concretes &c.

oils, fats, higher fatty acids, soaps, and condensates from tar distillation, compositions containing—

containing unspecified oils. '09. 15,912. '12. 18,804.

fats and fatty oils unmodified, fatty acids, resin oils, and soaps, containing. '10. 636. 26,928. '11. 8613. '12. 636 [Appx]. '13. 11,752. 29,265. '14. 14,812. 17,686. 19,211. '15. 10,029. 11,331. 15,248.

mineral oils and condensates from tar distillation, containing '13. 22,297. '14. 17,686. '15. 11,331.

halogen, nitrogen, and sulphur derivatives containing. *See* hydrocarbon substitution products, compositions containing *above.*

phenol-aldehyde condensation products, compositions containing. *See* hydrocarbon substitution products, compositions containing *above.*

oils modified by other means than oxidation or vulcanization, containing. '09. 11,166. 23,668. oxidized oils or heated wood oils, containing. '10. 16,758. 26,928. 27,807. '11. 8613. 9023. 25,286. '12. 4796 [Appx]. 14,665. '14. 14,812. 21,524. 24,419.

sulphurized oils and sulphonated fatty acids, containing. '09. 11,166. 23,668. 29,083. '10. 636. '11. 8613. 9023. 12,823. 25,286. '12. 4796 [Appx]. '14. 5461. 21,524. '15. 11,331.

oily residues from sewage sludge, wool and silk washing, and other waste waters, containing. *See subdivisions which comprise fatty oils above and below.*

petroleum residues, containing. *See subdivisions which comprise artificially-prepared tar above.*

pitch and tar, obtaining, (*including* petroleum residues and stearin pitch). *See* Class 55 (ii). pitch and tar, oxidizing and otherwise chemically treating. *See* Class 55 (ii).

refractory and other compositions containing tar which is subsequently burnt out or carbonized. *See* Refractory substances &c.

resins, chemical treatment of. *See* Class 95.

resins, resinates, balsams, and gums, compositions containing—

fats, fatty oils, and their derivatives, containing. '09. 5930. 19,016. '10. 636. 1021. 12,711. 27,240. '11. 25,286. '12. 4796 [Appx]. '13. 5825. 21,943. '14. 5461. 13,440. 21,524. '15. 10,029. 11,331.

Bituminous, resinous, fatty, oily, and wax-like plastic compositions—cont.

resins, resinates, balsams, and gums, compositions containing—*cont.*

not containing fats, oils, and waxes. '09. 4953. '10. 12,035. 27,240. '12. 24,652. '13. 3654. 11,285. '14. 8820. 9186. '15. 9473. 10,811. 11,331.

oils other than fatty oils, hydrocarbons, and their substitution products, containing. '10. 1021. 26,928. 27,240. '11. 9023. '12. 4796 [Appr]. '13. 5825. 21,943. '15. 10,029.

waxes, containing. [No cases.]

wax, paraffin wax, and ozokerit, compositions containing. '10. 26,928. '12. 4949. 18,804. '15. 2708. 10,811.

white and red leads and like oxide-oil cements. *See Class 70.*

Calcium-sulphate cements, Plant for making. [No cases.]

Castings other than metal, (including Treatment of castings). *See Class 87 (ii).*

Casting substances other than metals. *See Class 87 (ii).*

Cements, Portland and Roman.

calcium sulphate, manufacture of. *See Class 1 (iii).*

casting. *See Class 87 (ii).*

colouring. *See Class 70.*

conveyers and elevators for. *See Class 78 (i).*

cooling. *See Class 29.*

cutting and working. *See Class 124.*

drying. *See Class 34 (ii).*

filtering. *See Class 46.*

furnaces and kilns for. *See Class 51 (ii).*

grinding, crushing, pulverizing, and the like. *See Class 59.*

making by treating slag. '09. 8675. 11,184. 13,183. 15,164. '10. 2628. 3016. 3119. '12. 6462. '13. 11,876. '14. 10,190. 24,761.

granulating by scattering, spraying, or running molten slag into water and other liquids. *See Class 82 (ii).*

making otherwise than by treating slag. '09. 13,073. 17,381. 19,459. '10. 3119. 4358. • 14,431. '12. 9833. 13,803. 27,762. '13. 144. 8129. 15,612. '14. 1438. 14,865.

processes depending upon the use of special materials and compositions. *See materials &c. below.*

materials and compositions for making. '09. 8193. 18,887. '10. 3119. 18,338. '11. 21,697. '12. 12,027. 28,970. '13. 4842. 11,876. 15,612. 17,873. 23,538. '14. 1438. 10,190. 12,136. 13,448. 14,013. 14,865. 16,530 [Appr]. 17,756. 22,644. '15. 2466. 8128. 8551.

mixing. *See Class 86.*

moulding. *See Class 87 (ii).*

pug-mills. *See Class 86.*

retorts. *See Class 55 (i).*

separating or sorting. *See Class 117.*

sifting or screening. *See Class 117.*

storing. *See treating after manufacture below.*

testing. *See Chemical processes &c., [Class 1 (i)]; Testing physical qualities &c., [Class 106 (ii)].*

Cements, Portland and Roman—cont.

treating after manufacture. '09. 9381. '10. 3119. 21,315. 30,091. '11. 5402. 10,839. 20,076. 24,775. '12. 17,070. 24,035. '13. 5908. 16,636. '14. 2661. 13,448. 13,542. 18,520.

treating with various materials after burning. *See treating after manufacture above.*

wash-mills. *See Class 86.*

weighing. *See Class 143.*

Concretes and mortars, Lime, magnesia, magnesium-carbonate, and cement.

bituminous concretes. *See Bituminous &c. compositions.*

casting. *See Class 87 (ii).*

compositions. '09. 118. 1650. 2127. 4699. 4975. 6299. 14,439. 15,912. 16,466. 20,479. 23,857. 25,769. 30,082. '10. 2440. 3960. 6428. 9625. 11,185. 11,242. 16,028. 16,127. 17,093. 17,412. 19,346. 20,782. 21,563. 22,519. 24,172. 25,142. 27,494. 28,284. '11. 2703. 5183. 5402. 8085. 8086. 8087. 9272. 10,839. 11,509. 13,899. 17,230. 17,704. 19,183. 20,076. 20,219. 20,535. 25,553. 26,544. 26,704. '12. 5082. 6597. 8399. 11,799. 13,248. 13,564. 17,070. 18,883. 19,911. 21,161. 23,541. 23,923. 26,505. 28,642. '13. 761. 2239. 2485. 3654. 4679. 6044. 6697. 10,288. 12,640. 15,159. 17,285. 20,926. 21,579. 23,538. 29,301. '14. 1438. 5242. 5859. 13,448. 17,756. 20,258. 24,761. '15. 3030. 4142. 4246. 13,081. 14,600.

bituminous concretes. *See Bituminous &c. compositions.*

bituminous, resinous, fatty, oily, and wax-like compositions. *See Bituminous &c. compositions.*

calcium sulphate, binders consisting largely of. *See Plaster &c. compositions.*

fibrous materials, compositions consisting largely of. *See Class 70.*

mixtures of Portland cement and very finely ground siliceous materials, such as puzzuolana, (other than sand). *See Cements, Portland &c.*

oxychlorides, consisting of. *See Class 70.*

conveyers and elevators for. *See Class 78 (i).*

grinding, crushing, pulverizing, and the like. *See Class 59.*

hardening and preserving subsequent to moulding.

See Stone, Natural and artificial, Hardening &c.

hardening by addition of oxidizable metals. *See Class 70.*

lime and like oxides, and mixtures containing such oxides, apparatus for slaking. *See Class 1 (iii).*

mixing. *See Class 86.*

moulding. *See Class 87 (ii).*

other than compositions. '13. 6044.

oxychlorides, consisting of. *See Class 70.*

rendering porous. *See Class 70.*

testing physical qualities of. *See Class 106 (ii).*

Fireproof coverings. *See Class 64 (ii).*

Metals and other fusible materials, Granulating or pulverizing. *See Class 82 (ii).*

Plaster, lime, and chalk plastic compositions.

Compositions which consist largely of albuminous and gelatinous matters with plaster, lime, and chalk as fillers, with or without the addition of bituminous, resinous, and oily matters, are indexed only under Plastic compositions, (albumen &c.), [Class 70]; and compositions which contain bituminous, resinous, and oily matters in important proportions, without albuminous and gelatinous matters, are indexed under Bituminous &c. compositions.

acids and salts, containing, (e.g. Keene's and Parian cements). '09. 23,857. '12. 10,424. 11,799. '13. 761. 7907. '14. 7954. 9186. 16,560. 24,266. '15. 4246.

albuminous and gelatinous matter, containing. '09. 70. 4975. 15,646. 17,178. 23,857. '10. 5793. 6384. 7070. 19,853. 25,142. '12. 10,424. '13. 7907. '14. 24,266.

concretes. *See* Concretes &c.

fibres, containing. '09. 15,646. '10. 19,853. '12. 9740. '13. 7907. '14. 7954.

fibrous materials, compositions consisting largely of. *See* Class 70.

india-rubber and like gums, containing. *See* Class 70.

lime, slaking. *See* Class 1 (iii).

materials not met by other Key subheadings, containing. '09. 1650. 4462 [Appx]. 15,649. '10. 5793. 6384. '11. 20,873. 25,553. '12. 5346. 10,424. 13,564. 17,064. 21,161. '13. 761. '14. 5242. 7954. 21,987. '15. 4246. 10,029.

plaster and lime obtained from special sources, making from. *See* processes &c. below.

processes of manufacture and treatment not dependent upon use of particular new ingredients. '13. 3505. 25,572. '14. 10,130. '15. 3030. 4289.

refractory limestone and like blocks. *See* Refractory substances &c.

rendering porous. *See* Class 70.

Refractory substances for furnace linings and crucibles, and for other high-temperature purposes.

alloys. *See* Class 82 (i).

conductors for use in electric lamps. *See* Classes 39 (i-ii).

electric resistances. *See* Class 37.

fettling-materials for puddling. *See* Class 72.

fusing. *See* Class 56.

making by heating moulded bodies embedded in carbon. *See* processes &c. below.

making by impregnating and coating moulded articles. *See* processes &c. below.

materials and compositions containing—

The subdivisions below should not be regarded as furnishing in every case complete lists of Specifications mentioning particular ingredients, as cases are not indexed which include usual ingredients in unimportant proportions. aluminium silicate produced on or in article.

'10. 13,934.
barium and strontium compounds. [No cases.]
basalt. [No cases.]

Refractory substances for furnace linings and crucibles &c.—cont.

materials and compositions containing—cont.

bauxite, natural and artificial corundum, and emery, (including pure or fused alumina and alumina fused with other metallic oxides). '09. 113. 282. 16,224 [Appx]. '10. 14,981. 24,018. '11. 2626. 11,846. 17,544. '12. 11,771. 21,345. '13. 3118. 3575. 8123. 8124. '14. 11,824. '15. 13,856.

beryllium compounds. '11. 11,846. '15. 2438.
binding-agents of general interest and not covered by other Key subdivisions. '09. 113. 1650. '10. 1925.

carbides, nitrides, silicides, and siloxicon. '10. 4364. 5161. 12,601. 19,866. 23,550. '11. 2626. 17,544. 25,890. '12. 1961. 16,044. 20,348. 25,370. 29,389. '13. 13,838. 16,299. '14. 18,439. 21,378. '15. 4080. 17,447.

carbon, (including carbonizable binding-agents). '09. 1339 [Appx]. 1650. 6299. 9445. 26,266 [Appx]. '11. 419. 10,666 [Appx]. '12. 3309. 9745. 15,460. '13. 15,379. '14. 18,439. '15. 2578. 13,856.

chrome iron ore and chromium oxide. '09. 113. '11. 18,820. '12. 23,725. '14. 17,161. '15. 15,163.

clay shale or schist. *See* fireclay below.

compositions consisting largely of both silica and gypsum. *See* Plaster &c. compositions.
compositions consisting largely of both silica and lime or cement. *See* Concretes &c.

fibrous compositions, (other than those containing non-fibrous refractory materials). *See* Class 70.

fireclay—

mixed with asbestos. '09. 22,118.

not mixed with asbestos. '09. 1339 [Appx]. 1650. 9445. 25,808. '10. 4364. 24,018. '11. 18,820. '12. 3309. 9745. 21,345. 26,913. '13. 8958. 9176. 13,838.

fluorides. [No cases.]

ganister and silica. '09. 113. 1650. 1844. 6299. 7197. 9394. '10. 1925. '11. 11,846. 17,230. 18,820. '12. 1066. 11,771. 26,913. '13. 6949. 10,853. '14. 12,987. 18,439. '15. 2578. 4142.

gelatinous silica. *See* soluble silicates &c. below.

iron ores and oxides, (other than titanite iron ores). '13. 8959. '14. 17,161.

lime-tone, magnesite, magnesite, and dolomite, (including lime blocks and compositions consisting almost wholly of lime). '09. 113. 13,697. '10. 14,981. 16,096. '11. 419. 10,666 [Appx]. 25,890. '12. 11,771. 15,460. 23,725. 26,913. '13. 3118. 8959. 29,082. '15. 15,163.
magnesium-oxychloride binding-agents. *See* subdivisions above and below.

manganese compounds. '11. 18,820. '14. 17,161.
materials other than binding-agents and refractory materials. '15. 4142.

metals. '11. 25,890. '12. 20,348. '13. 8959.

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old crucible, fire-brick, and like scrap from refractory articles. [No cases.]

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ERRATA

The following abridgments should be *deleted* :—

A.D. **1909.** Nos. 1990. 5493. 11,637. 21,670.

A.D. **1910.** Nos. 9636. 12,224. 14,241. 16,079. 16,811.

A.D. **1911.** Nos. 9646. 17,226.

A.D. **1912.** Nos. 4887. 7009.

A.D. **1913.** No. 14,063.

Page 24. Abridgment No. **8087.** *For* Specifications 8056/11 and 8057/11 *read* 8085/11 and 8086/11.

Page 24. Abridgment No. **9023.** Add *Reference has been directed by the Comptroller to Specification 18,818/11.*

CLASS 22.

CEMENTS AND LIKE COMPOSITIONS.

Patents have been granted in all cases, unless otherwise stated. Drawings accompany the Specification where the abridgment is illustrated and also where the words *Drawings to Specification* follow the date.

A.D. 1909.

- 70. Enzesfelder Munitions und Metallwerke Anton Keller Akt.-Ges., and Swoboda, A.** Jan. 1.

Compositions containing plaster and glue.—A moisture-resisting bed intended for application to a match-box, candle box, &c., for the reception of a striking-surface, is made up of a solution of glue, powdered Portland cement, gypsum, pipe clay, cork meal, and Venetian red. The substance is ground in a wet mill, and applied in the cold state.

- 113. Fludder, G. C., Fludder, A. W., and Fludder, G. E.** Jan. 2.

Refractory substances.—In making refractory bricks, furnace linings, cements, &c., aluminium sulphate is used as a binder for various forms of siliceous materials, bauxite, magnesite, chrome ore, &c. In forming bricks, the silica or the like is ground and mixed in a heated mixer with a hot solution of aluminium sulphate until in a proper state for moulding. For making a harder material, ground magnesium silicate may be added to the silica before the aluminium sulphate. One per cent of aluminium sulphate is sufficient for an unburnt article, while two to three per cent is added if the material is to be burnt to a high temperature. Cements and furnace linings are also formed from ground aggregates and magnesium silicate moistened with a one-per-cent solution of aluminium sulphate in water.

- 118. Stein, H.** Feb. 27, 1908, [*Convention date*].

Concretes.—Hot refuse from a dust-destructor

is charged into a blast furnace with a small addition of fuel to fuse the slag, which is then granulated in water. The slag sand then produced is mixed with cement for the manufacture of artificial stone.

Reference has been directed by the Comptroller to Specifications 21,954/98 and 7521/05.

- 282. Coolidge, W. D.** Sept. 23, 1908, [*Convention date*]. *Drawings to Specification.*

Refractory substances.—An alumina tube for an electric furnace may be made electrically or by heating a paste of alumina and tar or paraffin to 1400–1500° C. in a vacuum electric furnace such as that described in Specification 20,809/04, [*Class 39, Electric lamps &c.*].

- 364. Bousfield, E. G. P., Schulte, L., and Metal Finishers, Ltd.** July 7. *No Patent granted (Sealing fee not paid).*

Statuary.—Statuettes &c. of porcelain, china, earthenware, &c. are strengthened or ornamented by the electro-deposition of tough metal, such as copper in the form of a complete covering or in rings or bands. A decorative metal such as silver, gold, or nickel may be deposited upon the copper. The metal may be polished.

- 1171. Sterne, L.** Jan. 16.

Compositions containing bituminous and siliceous and like materials.—Roads are made from the material forming the upper layer of the land or existing roads. Any material that does not admit of ploughing and harrowing is first

removed. The surface materials, which may be of earth, gravel, sand, clay, loam, broken stone, &c., are then ploughed to a depth of about six inches and harrowed, and the road is shaped to the required camber. To bind the materials, asphaltic oil, obtained by removing the volatile constituents of crude asphaltic petroleum, is heated in a portable tank to 150-350° F., and discharged by the air pressure over the road surface. The ploughing and harrowing are repeated. These operations may be continued with smaller quantities of the binding-oil several times. After the final harrowing the surface is tamped or rolled.

1650. Delporte, H. Jan. 23.

Mortars; refractory substances; compositions containing bituminous and siliceous and like materials.—Ground coal schist or a mixture of coal dust and clay is employed for hardening hydraulic and refractory mortars and plasters, cements, and refractory pastes. In an example of a refractory cement for use in blast furnaces &c., about 9 per cent of powdered schist or 6 per cent of refractory earth and 3 per cent of coal dust are mixed with heavy sand or mortar prepared with refractory waste moistened with water or dehydrated tar. Powdered retort carbon or powdered coke may be agglomerated in the same manner.

1844. Poulson, A. Jan. 8.

Refractory substances containing silica.—In the manufacture of refractory articles from sand or the like, and in the treatment of moulding-sand, gelatinous silica free from carbonates is employed. The silica may be prepared by mixing a solution of silicate of soda of a density of about 25° Tw. with hydrochloric acid of density about 15° Tw., and allowing the gelatinous mass to form and settle gradually. Specification 491/09, [Class 1(ii), Inorganic compounds &c.], is referred to.

1990. Genthe, A. Feb. 26, 1908, [Convention date].

Compositions containing oxidized oils.—Linnoxyn and like products obtained by the rapid oxidation of linseed and other oils are mixed with untreated oil in order to obtain products of the same character as the linnoxyn obtained by the Walton or slow process. The product is particularly suitable for the manufacture of linoleum.

The Specification as open to inspection under Section 91(3)(a) comprises also the use of varnish in place of the untreated oil, and states that the product may be allowed to absorb a further quantity of oxygen; this subject-matter does not appear in the Specification as accepted.

2127. British Thomson-Houston Co., [General Electric Co.]. Jan. 28.

Compositions containing lime and silica.—An electric insulating-material, of the type described in Specification 19,035/05, [Class 36, Electricity Conducting &c.], is composed of silica and a hydrate of an alkaline-earth metal, such as calcium, the latter being in excess. Fibrous material, for example asbestos, is sometimes added. The mixture is pressed into shape and treated with dry steam under pressure in order to produce hydrous silicate, so that a proportion of soft calcium hydrate, but no flint or other gritty material, will be left in the product. The material may be impregnated with resin or linseed oil, or with stearic, oleic, or palmitic acid, which unites with the calcium hydrate so that it cannot be melted out even when heated to the temperature of impregnation.

2461. Lassailly, J. Feb. 11, 1908, [Convention date].

Compositions containing bituminous and siliceous and like materials.—In making roads, dry powdered pitch mixed with sand is spread upon the road metal, sprinkled with coal-tar oil &c., and rolled. The preferred proportions are 1 cubic metre of stone, 205 kilos. of sand, 53 kilos. of pitch, and 7 kilos. of oil. If the sand is too dry, a little carbonate of lime, limestone, marl, &c. may be added. The pitch from coal, petroleum, shale, resin, &c. may be used. The coal-tar oil may be replaced by petroleum oil, shale oil, a mixture of tar and oil, or pure tar. In wet weather, the oil is caused to form a soluble liquid soap by dissolving in it a small quantity of resin, turpentine, pitch, arcanson, colophony, &c. and treating the solution with soda, potash, or ammonia. The soluble oil is added to the water used in making the road.

4699. Blome, R. S., and Sinek, W. J. Feb. 25. Drawings to Specification.

Concretes.—A concrete pavement is constructed of two layers, the lower one having voids of the proper number and size to afford a key for the upper layer, and the sand particles in the upper layer are protected from wearing by the addition of sufficient broken stone, gravel, or the like. The lower layer preferably consists of 1 part of Portland cement and 8 parts of an aggregate consisting of 50 per cent of from 1-½ inch stone or gravel, 15 per cent of ¼ inch stone or gravel, and 35 per cent of torpedo sand. The upper layer is composed of 1 part of Portland cement, 1 part of coarse torpedo sand, and 1 part of broken stone, gravel, conglomerate, slag, and the like with all particles under ¼ inch removed.

4953. Trenckmann, E., and Trenckmann, B. Feb. 28, 1908, [Convention date].

Compositions containing bituminous or resinous materials.—Gramophone records consist of

two thin sheets of celluloid and a cheap filling-material of colophony, shellac, asphalt, pitch, pitch residue, or the like, with earth chalk or paper pulp. This mixture while plastic is preferably applied to an inner sheet of pasteboard or paper, and then united with the two sheets of celluloid by heat and pressure between suitable matrices to record simultaneously the sound impression. Additional layers of paper between the celluloid sheets and plastic filling-mixture may be employed. The celluloid need not be pure but may contain metal oxides to increase the tensile strength.

4975. Hermann, H. P. March 1.

Mortars; compositions containing plaster, glue, &c.—A lincrusta substitute for covering plaster surfaces and capable of being impressed with relief designs in situ, is composed of 100 parts of cement, 70 parts of plaster of paris, 30 parts of colouring matter and a liquid comprising 100 parts of swelled glue, 50 parts of boiled oil, 11 parts of soft soap, and 20 to 25 parts of copal varnish, with water if necessary. For covering other surfaces a mixture of 154 parts of cement, 30 parts of plaster of paris, 96 parts of sand, 15 parts of dextrine, and 1 part of resin is stirred with boiling water immediately before use.

5493. British Cork Asphalt, Ltd., Clifford, H. M., and Duce, C. E. March 6.

Compositions containing oxidized oils.—A composition consisting of 40 parts of resin, 22 of gypsum, 8 of boiled oil, 19 of granulated cork, and 11 of sawdust, is used for making plates, tiles, or sheets for covering floors &c.

5930. Walton, F. March 11. *Drawings to Specification.*

Compositions containing bituminous or resinous materials and oils.—A silent composition for coating fabric sheets in the manufacture of disk wheels comprises in proportion, 6 lb. of oxidized oil, such as linseed, 3 lb. of fossil meal, 5 lb. of kauri gum, and 6 oz. of burnt umber. Wood flour and cork may be used as well as meal. The coated sheets are pressed together and heated. In another form, sheets of oxidized oil containing cork or cork dust, and with or without gums, are pressed together upon sheet-metal layers.

6299. Berglund, S. W. March 16.

Refractory substances containing silica; concretes.—Fire-proof stone is made by heating pure quartz to about 1,500° C., pulverising, and mixing with 2-6 per cent of lime and 2-20 per cent of graphite. The mass is formed into stone by any of the usual methods, such as by pressing it, or by puddling and moulding.

7197. Brearley, H., and Moorwood, F. C. March 25. [*Addition to 14,619/08.*]

Refractory substances containing silica.—In the method of making silica bricks and ganister described in the parent Specification, the solution of a calcium salt which is added to the material to deposit the lime to act as a binding-material or flux during the subsequent burning, is replaced by a solution of a magnesium salt such as magnesium chloride or of a mixture of calcium and magnesium salts. In a modification, a mixture of insoluble calcium and magnesium salts may be added to the materials together with such reagents as are necessary to convert them into a soluble form, or the salts may be prepared in situ by adding magnesite or dolomite to the materials and treating them with a suitable acid. The amount of magnesia in the finished brick should not exceed three per cent.

8193. Soc. J. et A. Pavin de Lafarge. May 15, 1908, [*Convention date*].

Cements, Portland, materials for.—In the manufacture of a hydraulic cement, a mixture of bauxite, or of aluminous and ferruginous materials, containing relatively little lime, with lime is melted in a water-jacketed or other furnace. The product is rapidly cooled, granulated, and ground. The proportion of lime is approximately defined by the formula $\text{SiO}_2, 2\text{CaO} + \text{Al}_2\text{O}_3, \text{CaO}$.

8675. Jackson, W. J. Mellersh-, [*Soc. J. et A. Pavin de Lafarge*]. April 10.

Slag cements are made during the ordinary operation of a blast furnace by adding to the usual charge sufficient lime and alumina to furnish a slag having cementitious properties when ground, for example a slag having a formula $\text{SiO}_2, \text{Al}_2\text{O}_3, 3\text{CaO}$.

9381. Haddan, H. J., [*Meramec Portland Cement and Material Co.*]. April 20.

Cements, Portland, treating after manufacture.—Portland cement is rendered waterproof by the addition in a dry plate of small quantities of substances which, on the addition of water, produce a colloidal precipitate adapted to permeate the mass. The substances which produce the colloidal precipitate are preferably aluminium or ferrous sulphate, and calcium hydroxide. A filler, such as clay, or a mineral silicate, such as talc or soapstone, together with small quantities of a salt of a fatty acid, may also be added. In an example, to 39 parts by weight of cement, is added 1 part of a mixture consisting of 14 parts of aluminium sulphate, 5 parts of calcium hydroxide, 11 parts of dry clay, and 2 parts of zinc stearate. The composition tends to retard the initial set of the cement.

9394. Schlossberg, I. April 20.

Refractory substances containing silica.—Pure silicic anhydride for the manufacture of acid- and fire-proof bodies is made by binding silica with soluble glass, moulding, saturating with fluosilicic acid, and roasting so as to remove the sodium silicofluoride or the mixture of sodium and silicon fluorides. In some cases, the silicon fluoride is first removed at a temperature of 300–400° C., and the sodium fluoride subsequently at 900° C.

9445. Soc. Anon. d'Ougrée-Marihay, and Eloy, L. April 21. *Drawings to Specification.*

Refractory substances containing clay.—Bricks for coke oven walls are made of aluminous clay, and the bricks for the partitions separating the individual flues are made of aluminous clay mixed with a quantity of plumbago, so that these bricks are of greater conductivity than those separating the flues from the oven chamber. The flame surfaces are protected by a thin covering of aluminous paste.

9929. Amies, J. H. April 27.

Compositions containing bituminous or resinous materials.—Relates to the manufacture of a composition for paving and like purposes, and to a method of laying the same. Metallic, mineral, earthy, or fibrous materials are coated with a light oil or alcohol and mixed with asphaltic, bituminous, resinous, or similar carbonaceous matter, which is preferably in the hot state and may contain a fluxing-element such as asphalt, oil, tar, or maltha; calcium oxide or hydrate or sulphur or other alkaline or hardening substance is added, and sometimes also sand or the like, preferably damp. The mixture is agitated until cool in order to secure a granular condition. The composition may be laid upon a base composed of common soil, calcium oxide or hydrate, and Portland cement, or it may be laid in alternate layers between local material.

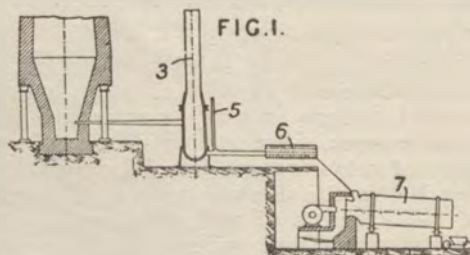
10,591. Aktiebolaget Swedish Nitric Syndicate. May 6, 1908, [Convention date]. *Drawings to Specification.*

Compositions containing bituminous and siliceous and like materials.—A cement composed, for example, of silica sand or barium sulphate together with pitch is used for packing the space between a cast-iron shell and its lining of refractory material in a tower for treating acids.

11,166. Diesser, G. Aug. 8, 1908. *Samples furnished.*

Compositions containing fatty acids, oils, &c.—Insulating-materials &c. are produced by heating, with or without pressure, fatty acids

or their compounds, such as oils, or substances containing fatty acids or their compounds, with carbohydrates, or mixtures of carbohydrates and amino-acids, or substances containing amino acids, particularly albuminous and albuminoid substances, to a temperature sufficient to cause chemical reaction to take place. In an example, cellulose oxycellulose or hydrocellulose is heated to 280–300° C. with linseed oil, wood oil, or castor oil, or with the fatty acids of these oils.

11,184. Soc. J. & A. Pavin de Lafarge. June 13, 1908, [Convention date].

Slag cements.—In a process for the manufacture of cement from fluid blast-furnace slag, bauxite as well as lime is added to the slag in a furnace 3, the product being granulated by a powerful jet of water introduced through the pipe 5. The water is separated by a rotary drum 6; and the granulated material is then dried in a rotary drier 7, heated by waste heat from the furnace, and reduced by trituration to a fine powder. The granulation may be effected by running the fluid slag between cooled rollers.

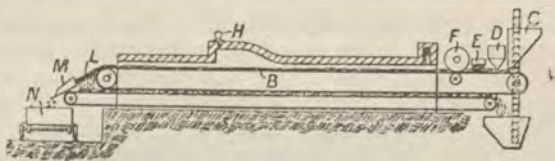
11,637. Tabourin, P. J. May 17.

Concretes.—The iron fibre material known in France under the name of "paille de fer" is used to increase the cohesion, elasticity, and strength of articles and agglomerate objects made from cement, paper pulp or paste, or similar binding-material, by placing a bundle or cushion of the fibre material in the mould in which the object is to be cast or moulded before pouring in the cement &c. The cement used is sufficiently thin to penetrate into the interstices of the bundle. Other binding-materials such as cement-mortar, plaster, lime, lime-mortar, puzzuolana, Roman or Parker's cement, slag, clinker, clay, bitumen, asphalt, &c. may be used, and the invention is particularly applicable to the manufacture or construction of tiles, flagstones, pavements, pipes, vats, tubs, conduits, walls, and wagon wheels. "Paille de fer" consists of coiled and interlaced iron fibres stripped from wire so treated in manufacture as to give it the necessary toughness.

13,073. Dellwik, C. June 3.

Cements, Portland, processes and apparatus for making.—In a process for agglomerating

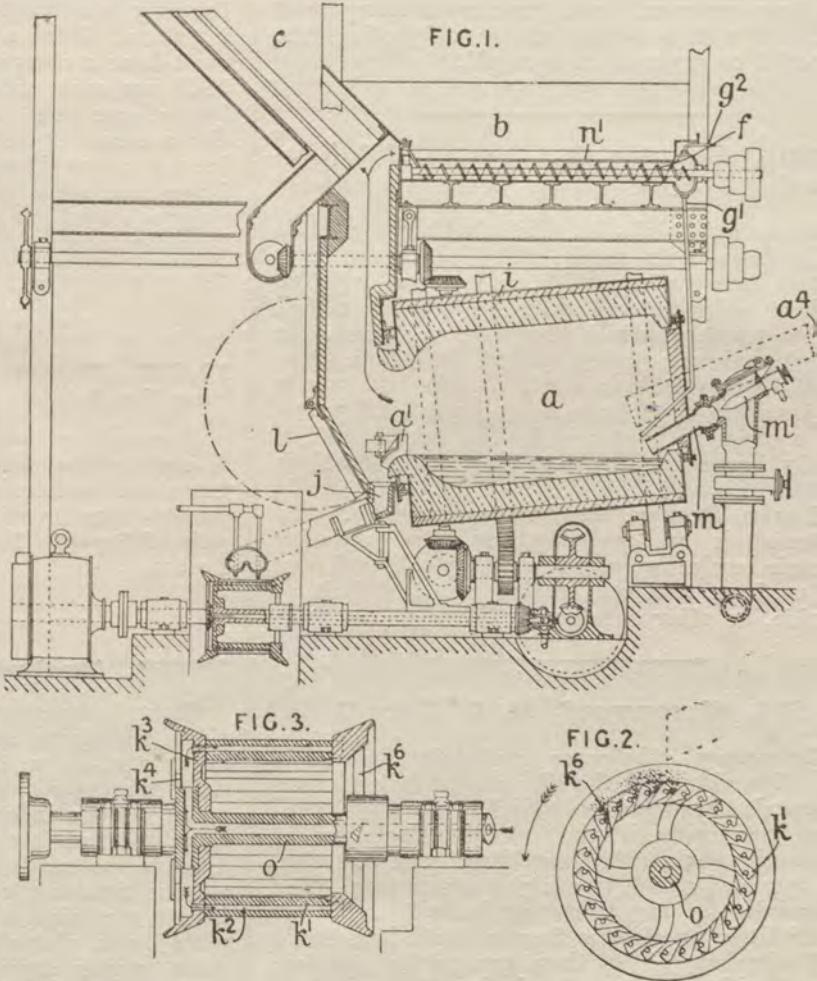
or sintering cement, &c., the finely - divided material, mixed or not with binding-material as may be necessary, is treated in a layer so that only the upper portion of the layer is sintered into a crust, which is then removed from the unsintered lower part of the layer. In one method of carrying out the process, the fine material is fed from a hopper C on to the upper band of a conveyer B, on which it is carried through a furnace chamber past a burner H. At the other end of the chamber, the material passes over a grating L, the sintered crust being thereby broken up and falling into a wagon N, and the fine unsintered material passing through the grating. The fine material may fall on to second conveyer, on which it is carried back to the furnace entrance, and transferred by an elevator to the upper conveyer, which carries it again through the



furnace. The material may be packed on the upper conveyer by a roller F, which may be shaped so as to indent the surface, to facilitate subsequent breaking. A hopper D may be arranged to supply binding-material, if necessary, the binding-material being mixed to the requisite depth by a rake E. In place of a conveyer, a series of slowly or intermittently moving flat carriages or trucks may be employed. Specification 17,343/07, [Class 82, Metals and alloys], is referred to.

13,183. Lodge, T. H. June 5.

Slag cements. — Cement is made from molten slag in a rotary mixer or furnace by blowing into it an "altering - compound" dust, consisting of a specially - prepared calcareous silicate of alumina in which the percentage of silica is as low as possible, the molten slag being subsequently granulated in a special form of granulator, with or without previous oxidation. The molten slag is heated in a rotary furnace *a*, preferably lined with chrome bricks between which and the metallic shell are slabs *i* of cellular burnt fire-clay, by means of two burners *m* and air jets *m'*, one of which plays longitudinally and the other diagonally so as to blow the "altering - compound" dust from the pipe *g*¹ into the slag flowing from the shoot *a*⁴. The "altering-compound" is fed through the pipe *g*¹ by means of a conveyer *f* and air jet *g*². At the rear end of the furnace is a hinged dam plate *a*¹, from the edge of which the converted slag flows to a hinged shoot *j*, and thence, after being treated, when necessary, with an oxidizing-solution, such as potassium nitrate, to the granulator. The granulator, Figs. 2 and 3, is preferably constructed of triangular bars *k*¹



arranged cylindrically, one end of the cylinder being provided with similar bars *k*⁶, so that, on rotation, an air blast enters between the bars *k*⁶ and leaves through the bars *k*¹. Water is supplied to holes in the bars through the hollow shaft *o*, and recess between disks *k*³, *k*⁴ or

hollow arms to spray-pipes k^2 . The granulated slag cement is elevated to a hopper c heated by the hot gases from the mixer. The hot gases are also passed through pipes n^1 in the "altering-compound" hopper b , which may be partitioned off to contain flux for addition to the slag. The "altering-compound" is prepared by grinding lime or chalk with calcium fluoride, clay or shale, and water, and afterwards moulding, drying, burning and grinding; basic slag may also be added to this mixture.

13,282. Clayton, A. E. June 7. *Drawings to Specification.*

Compositions containing bituminous and siliceous materials.—Paving-blocks are made of slag, granite &c., mixed with asphalt or cement and consolidated by compression. The preferred material is prepared by coating broken granite of $\frac{1}{2}$ inch to 1 inch gauge with hot tar, and filling the interstices by adding a matrix similarly prepared from granite chippings and tar. Blocks are formed by subjecting the material to pressure in a mould.

13,601. Schutze, V. Sept. 23, 1908, [*Convention date*].

Stone, artificial.—A solid plastic material is made from milk curds. The curds are converted into a paste with cold water, with or without colours, and then brought to a full boiling-point, at which they are maintained for 5 to 10 minutes, being stirred the whole time, until a pulpy state is reached. The hot pulp is subjected to a pressure of at least 5 kilograms per square centimetre in heated moulds, and is finally immersed in formalin. Specifications 14,240/84 and 17,953/07, [both in *Class 2, Acids and salts, Organic, &c.*], are referred to. The material is acid-resisting, may be used for electric insulation, and if suitably coloured may be used as artificial agate, coral, malachite, marble, or other substance.

13,697. Greenwood, H. C. June 11.

Refractory substances containing magnesia &c.—Crucibles and the like are made by fusing magnesia or magnesite, grinding the fused product, rendering it plastic with a solution of magnesium chloride, moulding, and heating the moulded article to a high temperature. The magnesia or magnesite is heated to about 2000° C. in an electric furnace until it is fused and shrunk. It is then ground to powder, mixed with a saturated solution of magnesium chloride, and moulded in carbon moulds. The article in the mould is heated for some hours to a temperature of about 300° C. to drive off moisture, and then the temperature is gradually raised to 2000 – 2500° C., for a half to one hour to fuse the magnesia resulting from the decomposition of the magnesium chloride.

14,439. Williams, T. June 21. *Drawings to Specification.*

Concretes.—Sediment deposited in tanks in which sewage is treated electrolytically is used in the manufacture of concrete blocks. The Provisional Specification also states that the solid matter previously strained from the sewage is burnt with town refuse in a destructor and that the clinker, ashes, and fine dust thus obtained are mixed with the sediment from the electrolytic tanks and with hydraulic lime, and made into concrete blocks for street paving &c.

15,164. Metzger, G. F. June 29.

Slag cements.—A slag cement is made by producing a slag containing the ingredients necessary for a cement, and by adding to this, as it leaves the furnace, sufficient water to cause the reaction to take place and to granulate the slag. The desired chemical composition of the slag is obtained by adding a suitable fluxing-stone. For a general cement the flux must have a composition of lime approximately 98.32 per cent, silica .6 per cent, alumina and iron .7 per cent, and magnesia .38 per cent. For a seawater-resisting cement, the flux must have a composition of lime 53 per cent, silica 5 per cent, alumina and iron 2.6 per cent, and magnesia 39.4 per cent. If necessary, separate ingredients are added in the furnace to make up deficiencies.

15,646. Jørgensen, H. July 4, 1908, [*Convention date*].

Compositions containing chalk, glue, &c.—A composition for filling the indentations of imitation leather having an embossed metallic surface consists of chalk, preferably 10 parts, pulp, 1.6 parts, linseed oil, 5 parts, and glue, 1 part.

15,649. Backus, W. V. July 5.

Stone, colouring; stone, artificial; compositions containing calcium sulphate and calcium carbonate.—A process of manufacturing artificial marble consists in depositing blotches of water colours in a moist state upon a supporting slab or surface, laying thereon a semi-liquid mixture of marble dust, gypsum, and water colours forming a stratum not exceeding in height one-third of the total height of the complete block, violently agitating and jarring the same, partly drying the first stratum, laying on its upper face a thin waterproof diaphragm of fibrous material, forming on top of this diaphragm a second stratum, laying upon the upper surface a diaphragm of permeable fibrous material, and upon this a third stratum of the same material constituting the others. Further strata may be built up to form a block of any desired thickness. Instead of marble dust,

calcite, arragonite, or powdered limestone may be used, and anhydrite of calcium may take the place of the gypsum. In one example the mixture consists of 10 per cent of powdered marble and 90 per cent of double-burnt gypsum.

15,912. Zeiller, R. July 7.

Concretes; compositions containing bituminous and fatty materials.—A substance suitable for casting or moulding is made by adding about 50 grms. sulphate of iron, 100 grms. potassium silicate, 200 grms. kieserite, and 1000 grms. slaked lime to 200 litres of water, and mixing 8 volumes of this liquid with 14 volumes of quartz and 1 of cement, so that a thin paste is obtained. To this is added 5 per cent silicious marl, and if desired, coal slack or other hard materials. If it is required to make the substance waterproof, about 8 per cent of grease, tar, or the like is added before moulding.

16,466. Soufflet, H. M. J. July 15, 1908, [Convention date]. Void. [Published under Section 91 of the Act.]

Concretes; stone, artificial.—An artificial-stone composition consists of fused alumina, as artificial or natural corundum or emery, or bauxite, granite or porphyry or both, and cement. These ingredients are agglomerated with water under high pressure, say 600 kilos per sq. cm. In some cases sand may be added. The alumina may be uniformly distributed or may be confined to the top layer. The composition may be spread in moist and dry layers alternately and pressed. The artificial stone is adapted for making flagging or paving stones, casings, facings, or linings, especially where the traffic is heavy as at railway stations, quays, steps, footpaths, &c.

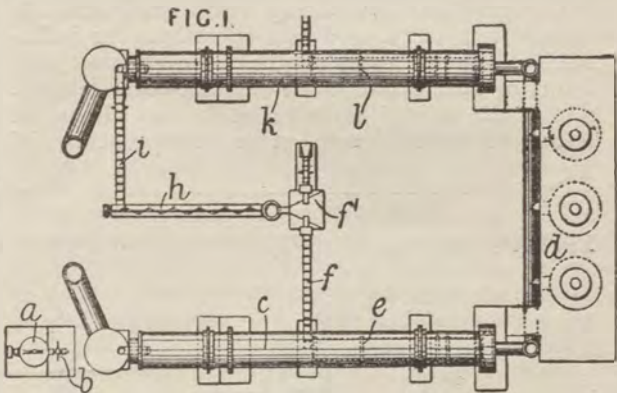
17,018. Faller, C. J. July 25, 1908, [Convention date].

Stone, colouring.—The Specification as open to inspection under Section 91 (3) (a) comprises the colouring of stone by impregnating it with a solution of organic colouring-matter, such as brown aniline, in a liquid hydrocarbon, such as a middle benzene from petroleum. This subject-matter does not appear in the Specification as accepted.

17,178. Greenslade, C. July 23.

Compositions containing plaster and aluminous matter.—A backing for glass tiles and the like consists of 1 peck of Keene's cement, $\frac{1}{2}$ peck of Bath stone dust, 1 lb. of size, and $\frac{1}{4}$ lb. of ochre.

17,381. Lake, W. E., [Pine Street Patents Co.]. July 26.



Cements, Portland, processes and apparatus for making.—In a continuous process for the manufacture of cement, the crushed materials are passed in a continuous travelling stream through calcining, grinding, and clinkering apparatus, the grinding being always effected between the operations of calcining and clinkering. The apparatus used for the continuous process comprises a rock-crusher *a*, an elevator *b* to deliver the crushed material into the rotary calcining-kiln *c*, in which the calcining-flame travelling in an opposite direction to the material expels the carbon dioxide &c. and renders the material porous and friable, a rotary cooler *e* in which the air draught for combustion is heated, grinding-means *f* fed by a conveyer *g*, the discharge being carried by conveyers *h*, *i* to the clinkering-kiln *k* in which the clinkering-temperature is maintained by a flame moving in an opposite direction to the material, and a cooler *l* for the calcined material. The rotary calcining and clinkering kilns are heated by a gas-generating plant *d* or by other means.

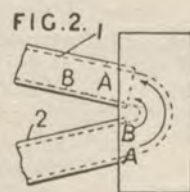
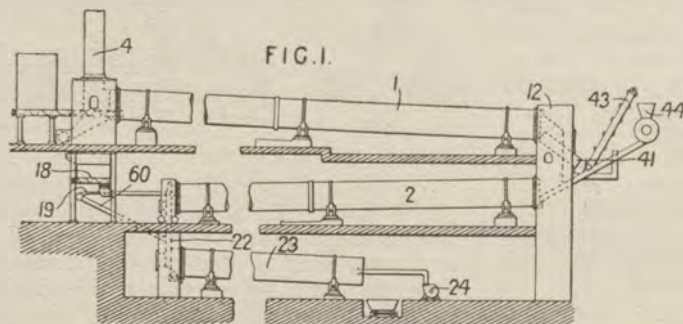
18,887. Forrester, H. J. C., [Blanc Stainless Cement Co.]. Aug. 17.

Cements, Portland, materials for.—A white Portland cement is produced at a relatively low temperature by using a zinc compound with lime and siliceous materials, no iron or sulphur being present. The materials are preferably used in the following proportions:—73 parts of carbonate of lime, 22 parts of clay or shale, and 5 parts of carbonate of zinc. When pure silica is used the proportions are 77 parts of carbonate of lime, 18 parts of silica and 5 parts of carbonate of zinc. Silicate of zinc, aluminate of zinc, or oxide of zinc may be used in place of the carbonate, the proportions being suitably altered. In order that the cement may set more slowly, a retarder, such as sulphate of lime, may be used.

19,016. Smith, A. Aug. 18.

Compositions containing resins and oils.—A composition to be used as a substitute for india-rubber is made from a gum resin such as gum kauri or gum copal, colza oil, and carbolic acid. About 10 oz. of carbolic acid, and 2 oz. of colza oil are mixed at a temperature of

90–100° F., and are allowed to cool. To 6 or 8 oz. of this mixture is added 1 lb. of the gum resin finely ground, and the whole is masticated at a gentle heat if necessary. The proportions may be varied. The composition may be mixed with india-rubber and sulphur and vulcanized.

19,459. Lake, H. W., [Pine Street Patents Co.]. Aug. 24.

Cements, Portland, processes and apparatus for making.—In the manufacture of cement, coarsely crushed raw materials are calcined, withdrawn from the kiln and finely re-ground, and then returned to the kiln to be clinkered. The upper section 1 of a rotary kiln is used to calcine the raw materials, which are expelled through the shoot 41 to a conveyer 43 which feeds the grinding-machine 44. The finely crushed material then passes down to the clinkering-section 2 of the kiln, from which it passes through a duct 22 to the rotary cooler 23. The air to the cooler is supplied by a fan 24, and

ascends when hot through the tube 60 to the kiln section 2. The two kiln-sections 1, 2 are independently rotated, are of different cross-section, and are unequally inclined, to suit their particular functions. The lower section is fed with powdered coal from a screw conveyer 18 and with air under pressure through the pipe 19. The flame passing to the housing section 12 undergoes a change of strata, as illustrated at A, B, in Fig. 2, and passes through the kiln to the stack 4.

Reference has been directed by the Comptroller to Specification 27,008/98.

20,479. Villartay, G. J. de. Sept. 7.

Concretes.—A mixture of preferably 3 parts of waste slate and 1 part of cement is manufactured into bricks, tiles, slabs, &c. by very thoroughly mixing the ground slate waste and cement together in a dry state, slowly adding water while stirring, and moulding by means of sudden and somewhat high pressures, for example by the fall of a monkey weighing from 150 to 200 kilos. The product is then dried, and immersed in water for about 24 hours, and finally exposed to the air.

1 oz. of sal soda, $\frac{1}{2}$ oz. of hyposulphite of soda, and $\frac{1}{2}$ oz. of table salt.

21,670. Sinclair, H. M. Sept. 22, 1908, [Convention date].

Compositions containing bituminous materials.—A cement for making joints in metal work, such as roofs, tanks, pipes, for setting skylight glasses, &c., is made by mixing together about 6 gals. of coal tar, 1 quart of asphaltum varnish, 12 lb. of asbestos fibre, 3 lb. of graphite, 3 lb. of ground mica, 8 oz. of lamp-black, 4 oz. of venetian red, 4 oz. of yellow ochre, 8 oz. of alum, 1 oz. of red rosin, 1 oz. of bicarbonate of soda,

22,111. Ketcheson, J. H. Sept. 28. *Drawings to Specification.*

Stone, hardening &c.—Cellular and like materials are impregnated with liquids by subjecting them to vacuum before, during, and after immersion in the liquid, and then exposing them to air &c. pressure to force the liquid into the pores. The materials may be treated before or after being moulded &c., and, in case the impregnating-liquid is rubber solution, they are vulcanized by placing them in a chamber charged with vapour of sulphur chloride. They may also be burnished.

22,118. Coles, S. O. Cowper-. Sept. 28.

Refractory substances containing fire-clay and asbestos.—A mixture of 2 parts by volume of fire-clay to one of asbestos is used for making bricks, tiles, slabs, coverings, &c. for use in

smoke-consuming furnaces, for instance, of the kind described in Specification 4906/09, [Class 51 (i), Furnaces &c., Combustion apparatus of]. Carbonaceous matter, which is subsequently burnt out, may be added and also 2-10 per cent of lime. Before burning, the bricks may be coated with fibrous asbestos, with or without lime, the bricks being subsequently stabbed to increase the adhesion of the asbestos.

22,682. Boltshauser, C. Oct. 5, 1908, [Convention date].

Compositions containing bituminous and siliceous materials.—A composition for road making is prepared by heating gravel, coating it with tar, and while still hot, placing in heaps and covering with a heat-retaining covering such as dung or straw. The tar is thus transformed into an asphalt-like body.

23,213. Popkess, M. A. Oct. 11. *Drawings to Specification.*

Compositions containing bituminous and siliceous materials.—In a process for the preparation of asphalt for surfacing roadways, earthy material is subdivided by violent agitation and simultaneously mixed with a liquid binder such as tar.

23,351. British Thomson-Houston Co., [General Electric Co.]. Oct. 12.

Refractory substances containing titanium compounds.—A refractory and insulating material is made by mixing titanium compounds with certain silicates, such as hydrated silicates, for example, talc or clay, with the addition of a binder, such as soluble silicate, and firing at from 900-1,500° C.

23,668. Turcat, L. C. T., and Nuth, G. Oct. 16, 1908, [Convention date]. *Samples furnished.*

Compositions containing fats, oils, &c.—Compounds are produced by the action of ammonia, or an amine, or by the successive action of different amines, upon the reaction products of disulphur dichloride, dibromide, or diiodide with fatty oils, sulphurized or oxidized fatty oils, or greases, containing glycerides of unsaturated fatty acids, either in the presence or absence of an agent such as sodium acetate which facilitates the reaction. The products are polymerized by heat or oxidizing-agents or both, and either before or after slight vulcanization. The polymerized products may then be further vulcanized. The fatty oils &c. mentioned as suitable are linseed, china wood, poppy, maize, cotton-seed, sesame, colza, almond, arachis, olive, castor, and cod-liver oils, palm butter,

fatty oils oxidized, polymerized, sulphurized and oxidized, nitrated, &c. Suitable amino compounds are aniline, *m*- and *p*-toluidine, *m*- and *p*-xylydine, α -naphthylamine, *p*-chloraniline, *p*-nitraniline, 1:2:5 dinitraniline, dehydrothiotoluidine, phenylhydrazine, *p*-aminophenol, 1:5-aminonaphthol, *p*-aminobenzoic acid, sulphanilic acid, naphthionic acid, aminonaphthol sulphonic acid G, *p*-aminoazobenzene sulphonic acid, the salts of the above acids, *m*-aminobenzoic acid, monomethylaniline, diphenylamine, *p*-tolyl- α -naphthylamine, acetanilide, *p*-phenetidine, benzamide, *p*-phenylenediamine, benzidine, monomethyl-*p*-phenylenediamine, *m*-toluylenediamine, *p*-aminodiphenylamine, monoacetylbenzidine, diaminodiphenylurea, amidoazobenzene, *p*-aminobenzeneazo- α -naphthylamine, triaminoazobenzene, rosaniline, indulines, safranines, pyrrol, monomethylamine, dimethylamine, benzylamine, ethylenediamine, aminoacetic, phenylaminoacetic, and aminosuccinic acids or their salts, acetamide, aminoacetic ethyl ester, carbamide, thiocarbamide, guanidine, sodamide, potassium anilide, cyanamide, &c. The products may be mixed either before or after vulcanization with oils, sulphurized oils, glycerine, paraffin, vaseline, waxes, anthracene, &c.

23,824. Tussaud, J. T., and Tussaud, R. H. Oct. 18.

Casts, hardening.—A gelatine composition is hardened by soaking in formaldehyde, chrome alum, and the like, with or without previous treatment with formaldehyde.

23,857. Küller, M. Oct. 19, 1908, [Convention date].

Concretes; compositions containing plaster, albuminous matter, and metallic salts.—Anatomical parts, such as dental parts, and dies for producing them are cast in refractory metals in a mould produced directly from the part in question. A substance such as glue or gelatine may be added to the mould material, which, when the mould is set, acts to expand the same to compensate for the shrinkage of the metal on cooling. Salts may be added to cause the mould material to set quickly, to render it antiseptic, and to give it a pleasant taste or odour. The mould material may be sand, infusorial earth, chamotte, pumice-stone, quartz sand, clay, chalk, asbestos, &c. mixed with a binding-medium such as plaster of paris or cement. Materials such as magnesia &c., used for artificial stone may be employed. Wood-meal, coal-dust, resin, &c. may be added to increase the porosity. Salts employed to hasten the setting may be potassium or sodium salts, alum, siegnette salt, ammonium chloride, or water-glass or the like. Such salts may be afterwards wholly or in part dissolved out in water to increase the porosity.

24,919. Baker, A. Oct. 29.

Stone, artificial.—Ceramic marble is manufactured from a natural clay, impregnated with iron oxide. The clay is first made plastic, grit is removed very carefully, so as not to destroy the figure of the clay, and then several pieces are gradually pressed into a block, again without disturbing the figure or veining. Slices or slabs are cut from the block, and are moulded by hand or otherwise. The articles are gradually dried, any cracks that occur being filled up, and are finally fired at 800-1000° F. The product is capable of receiving a high polish.

25,769. Kelly, T. D. Nov. 8.

Concretes.—A road, path, or floor is formed with a top layer composed of 2 parts of small stones, one third part of sand, and 1 part of cement. The surface may be rolled smooth or indented, and may be finished off with a layer of finer stone, coated with tar, pitch, or asphalt.

25,808. Bone, W. A., Wilson, J. W., and McCourt, C. D. Nov. 9. *Drawings to Specification.*

Refractory substances containing fire-clay and felspar.—A mixture of granulated burnt fire-clay and finely ground felspar is consolidated and moulded into slab-like diaphragms and the like, which are burnt and utilized in building gas fires, grillers, toasters, &c., and, according to the Provisional Specification, also muffles, annealing - furnaces, welding - appliances, and steam-generator furnaces.

26,292. Gillespie, R., Fraser, J., and Gillespie, D. S. Nov. 13.

Compositions containing bituminous and calcareous materials and oils.—A composition consisting chiefly of pitch and chrome or alkali waste together with limestone and creosote oil is used as a paving and roofing material.

29,083. Dahl, B., and Bell, P. C. Dec. 13.

Compositions containing vulcanized oils.—An elastic core moulded in segments adapted to be fitted within a tyre-cover consists of vegetable oil, such as rape, mustard, corn, maize or cotton-seed oil, mineral matter such as magnesia, lime, or chalk, organic matter such as starch, diluted in naphtha, gasolene, &c., and sulphur chloride. A typical composition consists of 100 parts of rape oil, 5 to 10 parts of magnesia, 10 parts of starch, 20 to 30 parts of sulphur chloride, and 10 parts of naphtha diluent.

29,691. Claes, P. Dec. 18.

Stone, hardening.—Substances in small fragments or dust, such as minerals, combustibles, and metals, are agglomerated by admixture with lime and water. The briquettes formed are placed in a vacuum chamber, which is very rapidly evacuated, and carbon dioxide is at once admitted. The briquettes are finally heated to decompose the bicarbonates.

30,082. Kirilloff, M. K. Dec. 23. *Drawings to Specification.*

Concretes.—A metal mooring-anchor is faced with armoured concrete to which there is added $\frac{1}{16}$ part by weight of barium chloride. In the sea-water, insoluble barium sulphate is thus formed.

30,167. Pauly, A. A. Dec. 24. *Drawings to Specification.*

Stone, hardening.—The cores and mould body of apparatus for moulding sewer pipes, building-blocks, &c. from cementitious material are made hollow to receive a heating-fluid such as steam, water, or both. In a sewer-pipe moulding machine, the steam and overflow pipes are so arranged that while the parts of the mould adjacent to the thick socket portions of the pipes are heated by steam the parts adjacent to the thinner portions are heated by the condensation water so that the whole of the pipe hardens or sets uniformly.

A.D. 1910.

476. Mijnsen, C. Jan. 9, 1909, [*Convention date*].

Compositions containing bituminous materials.—Compound films are composed of one or more independent layers of hard acetylcellulose or hard acetylcellulose mixtures united with one or more layers of asphalt mixed with a softening-agent. The Specification as open to inspection under Section 91 (3) (a) comprises also the use as softening-agents of phenols, chlorhydrins, guaiacol, acetin, aniline, acetophenone, &c., this subject-matter does not appear in the Specification as accepted. Specification 26,503/06 is referred to.

636. Lilienfeld, L. Jan. 10. *Samples furnished.*

Compositions containing bituminous resinous, oily, and wax-like materials and organic condensation products.—Condensation products resembling either oils, caoutchouc, or resins are obtained by treating drying oils, particularly chinese wood oil, or the fatty acids of such oils, or derivatives of such oils or fatty acids, with amido-derivatives of aromatic hydrocarbons or with derivatives thereof, in the presence of condensing-agents, such as zinc chloride or aluminium chloride. The derivatives of drying oils &c. include alkali or other metal soaps, esters of fatty acids, compounds of fatty acids with organic bases, such as salts or anilides, the amides of fatty acids, and sulphonated fatty acids and their salts. The amido-derivatives include primary, secondary, and tertiary amines and diamines, such as aniline and *o*-toluidine; their derivatives include salts, substitution products, carboxylic acids, inorganic acid derivatives, condensation products, nitroso, azo, and diazo compounds, and hydrazine derivatives. The condensation may be effected in the presence of water. When the products resemble oils, they may be used in the manufacture of varnishes and lacquers in conjunction with resins, waxes, or drying oils and volatile solvents, and may also be used for waterproofing fabrics and for making linoleum, lincrusta, American cloth, &c. When the products resemble caoutchouc, they may be used as india-rubber substitutes, for electric insulation, or in admixture with cork fibres, ground leather, &c. to form linoleum, lincrusta, American cloth, leather substances, driving-belts, and washers. Their solutions can be used for waterproofing paper or fabric. Admixed with asphalt, pitch,

resin, wax, oil, or artificial rubber, they may be used as india-rubber substitutes. The products may be vulcanized by sulphur, sulphur chloride, &c. In combination with cellulose, alone or dissolved in ammoniacal cupric oxide, cellulose derivatives, such as acetyl-cellulose, nitro-cellulose, or viscose, or with glue or albumen, these products may be used for making artificial silk or other threads, or photographic films. When the products are of a hard plastic nature, they may be used as substitutes for celluloid, horn, or resins, or in admixture therewith. For any of these purposes these products may also be mixed with casein, gums, or starches, such as gum tragacanth, tragasol, algin, norgin, dextrin, or agar-agar. When used in solution, these bodies may be dissolved in benzene, toluene, turpentine, fats, oils, acetone, ether, carbon bisulphide, carbon tetrachloride, light petroleum, chlorhydrin, or amyl acetate. The Provisional Specification states also that similar products may be obtained from fats, drying oils, and fatty acids generally.

930. Sabbioni, E. Feb. 13, 1909, [*Convention date*]. *Void.* [*Published under Section 91 of the Act.*]

Cement surfaces, hardening.—A marble-like coating for walls and other surfaces consisting of marble, glass, metal powder, or the like, and sodium silicate mixed with water is rendered insoluble by treatment with magnesium-chloride solution.

1021. Ingle, H. Jan. 14.

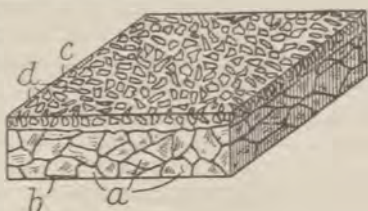
Compositions containing oxidized oils.—A non-drying or semi-drying oil, such as castor or heavy mineral oil, is used to correct the brittleness of a mixture of oxidized linseed oil and oxidized resin or resinous pitch in products intended for the manufacture of linoleum, cement, or insulating-materials. The non-drying or semi-drying oil may be added before or after oxidation.

1925. Siemens & Co., Geb. March 5, 1909, [*Convention date*].

Refractory substances containing boron phosphate.—Fire-proof and acid-proof moulds,

crucibles, &c. are made by binding a material with phosphoboric acid. Anhydrous boric acid and anhydrous phosphoric acid are mixed in a finely powdered condition with the material, the mixture is rendered plastic by the addition of a binder, and is moulded and burnt. In a modification, the required quantity of phosphoboric acid is taken initially instead of depending upon formation during the process. A mixture of crystallized boric acid and syrup-like phosphoric acid may be evaporated while being stirred until the mass becomes plastic, after which it is shaped and dried. Sand may be used as a material for admixture. Bodies manufactured according to such a process are specially suitable for diaphragms or filters.

1979. Heintz, K. Jan. 26.



Compositions containing bituminous and siliceous materials.—Paving-blocks for the surfaces of roads, causeways, footpaths, &c. consist of a base of coarse stone chippings *a* bound together by asphalt *b* and an asphalt surface layer *c* in which fine gravel *d* is embedded. The blocks are formed by melting a mixture of natural bitumen and pulverized rock asphalt in a heated drum, heating coarse stone chippings in a second drum, thoroughly mixing the melted asphalt and heated stone chippings in a third heated drum, and then casting in moulds. The materials, after partly cooling, are pressed, rammed, and hammered in the mould to decrease the space between the stone chippings. Gravel is then scattered over the top of the block, and may be hammered or pressed in.

Reference has been directed by the Comptroller to Specifications 7490/92, and 5439/97, [both in Class 87, Moulding &c.], and 16,827/99.

2405. Westrum, L. S. van. April 13, 1909, [Convention date].

Compositions containing bituminous and siliceous and like materials, resins, and oils.—Roads &c. are paved with a mixture, made in a cold state, of broken stones &c. with an emulsion of preferably from 60 to 80 parts of hard natural bitumen, with from 4 to 8 parts of resin, from 3 to 6 parts of resin or ricinus oil, from 2 to 4 parts of elaine, from 2 to 4 parts of a volatile fluid such as ammonia, and from 20 to 40 parts of water. A flux, such as residuum of mineral or cotton-seed oil, may be added, preferably 20 to 40 parts.

2440. Bessler, Waechter, & Co., and Rouse, T. Jan. 31.

Concretes.—Alkali silicates containing ferric oxide, suitable for forming binding-solutions for concrete, and for other purposes, are prepared by adding ferric oxide to the materials from which the silicates are to be prepared, or to the melted mass; or the ferric oxide may be added to a solution of the silicate, and the mixture boiled until the mass solidifies on cooling. In any case, the product yields a solution from which the ferric oxide does not settle. The proportion of ferric oxide may be one per cent.

2628. Rhodin, J. G. A. Feb. 2.

Slag cements.—Slag cement is manufactured by combining with solid finely-divided slag considerable quantities of finely-divided lime without fusion or sintering at a temperature of about 900° C. A contact substance, such as calcium or alkaline chloride, is used to bring about this result, and finely-divided magnesium or ferrous sulphate or similar salt may be added to improve the hydraulic properties of the cement. To make the cement keep, calcium aluminate, or a substance yielding it, such as aluminium sulphate, is added. The operation is carried out in an atmosphere of air and steam to remove the sulphur.

3016. Lessing, W. Feb. 7.

Slag cements.—Molten blast-furnace slag is atomized, for example in the manner described in Specification 19,070/08, with or without admixtures. The product is then ground and mixed with lime, or is ground with the lime, and the mixture is burnt. The clinker from the last operation is ground with preferably nine times the quantity of the product from the first operation.

3119. Kühl, H. Feb. 8.

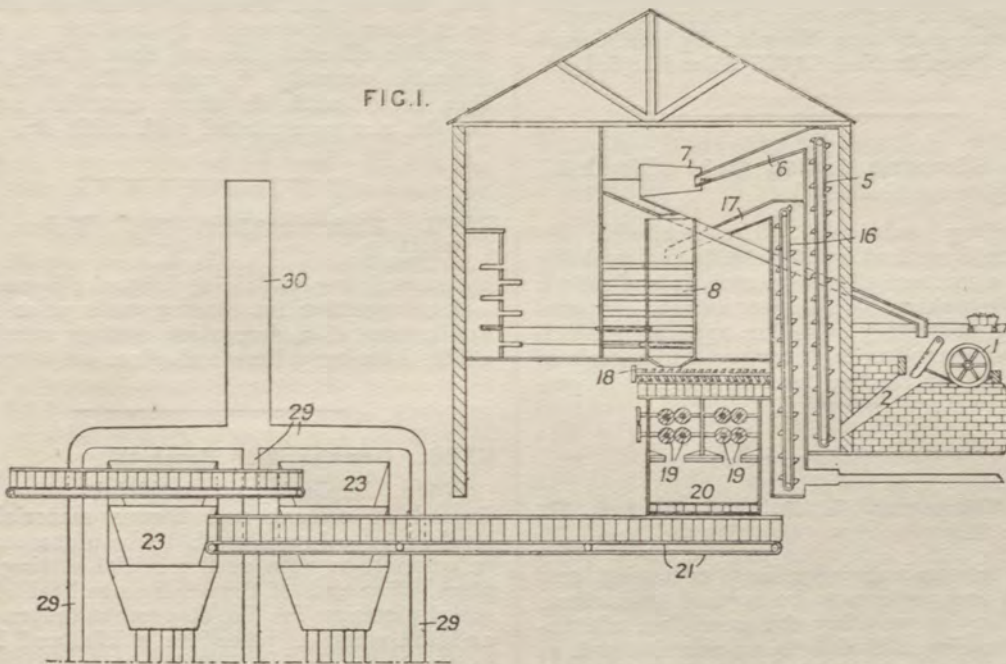
Slag cements; cements, Portland.—In cements made from blast-furnace slag, or equivalent fused material of like composition, the proportion of calcium sulphate is raised above 2 per cent. In the case of slags containing much lime or alumina, 3 or 4 per cent of calcium sulphate is sufficient; in the case of cements containing little of these constituents but much silica, from 10 to 15 per cent of calcium sulphate may be required. The calcium sulphate may be introduced into the cement in any manner, such as (1) blowing milk of gypsum into molten slag, (2) granulating slag in milk of gypsum, (3) grinding gypsum with the slag at the final stage of manufacture, (4) grinding gypsum and slag separately and mixing, (5) adding powdered gypsum to granulated slag prior to grinding, (6) wetting the finished slag cement with milk of gypsum, (7) adding substances to the finished

slag cement which interact to produce calcium sulphate, for example adding hydrate of lime and wetting with sulphuric acid, (8) oxidizing the sulphur or sulphides already in the slag by roasting or the addition of an oxidizing-agent such as potassium chromate or barium peroxide. Plaster of paris, dead burnt gypsum, or anhydrous gypsum may be used instead of gypsum. Lime-cement may be prepared by adding lime to cement prepared as above described from hydrated calcium sulphate, and a Portland cement may be made by mixing cement prepared as above described with Portland cement poor in alumina, such as iron-ore cement.

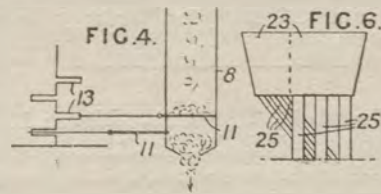
3960. Berner, R. Feb. 17.

Concretes.—Relates to the process of manufacture of artificial stone in which 3 to 6 parts of washed screened sand, 3 to 6 parts of rubble, 5 to 6 parts of pit coal cinders, and 1 to 1½ parts of Portland cement are formed into a paste by adding 20 per cent of milk of lime and 10 per cent of calcium-chloride solution, the material being then moulded and dried, and consists in replacing the coal cinders wholly or in part by blast-furnace or like slag. Part of the Portland cement may be replaced by Roman cement, puzzuolana, or slag cement.

4358. Holden, T. Feb. 22.



Cements, Portland, processes and apparatus for making.—Relates to improvements in a complete mechanical-handling plant for the manufacture of Portland and like cements, and consists in the provision of (1) measuring-apparatus for regulating the amounts of limestone and shale or clay; (2) apparatus for regulating the supply of fuel to the kiln; and (3) the whole combination of plant. Limestone &c. is ground at 1, transferred by the shoot 2, elevator 5, and shoot 6 to a rotating sieve 7, and thence to a measuring-device 8 and mixer 18, which is also charged with shale or clay by means of an elevator 16, shoot 17, and a measuring-apparatus similar to 8. The mixture passes to a roll-mill 19 and slurry mill 20, and thence by means of a belt &c. 21 to hoppers 23, which are divided into two compartments, one for fuel and the other for the cement material. The bottom of the hopper is fitted with interchangeable tubes 25, Fig. 6, which converge at their lower ends and discharge into kilns, so that, by altering the size and number of the tubes, the



relative quantities of fuel and cement charged into the kiln may be varied. Flues 29 from the kiln pass round the hoppers and lead to a chimney 30. From the kiln, the clinker passes by a conveyer to a crusher, and thence by a conveyer and hopper to a grinding-mill, and a sieve reel, and thence to the bins. The measuring-apparatus, Fig. 4, consists of alternately reciprocating slides 11 and a shaft 8. By connecting the upper slide to one or other of the cranks 13, the amount of limestone &c. discharged in relation to the amount of shale &c., which passes through a similar measuring-device, may be varied.

- 4364. Bone, W. A., Wilson, J. W., and McCourt, C. D.** Feb. 22. *Drawings to Specification.*

Refractory substances containing fire-clay and carborundum.—The cover of a furnace is formed of one part Stourbridge fire-clay to two parts of carborundum fire-sand.

- 5155. Zehrlaut, E., and Zehrlaut, H.** March 1.

Figured artificial stone.—Artificial marble is made by rolling about lumps of moist hydraulic mortar in dry coloured mortar, so that they become coated. Different coloured masses are placed together and moulded under pressure.

Reference has been directed by the Comptroller to Specifications 13,595/85 and 18,681/08.

- 5161. Siemens & Co., Geb.** March 17, 1909, [Convention date].

Refractory substances.—The material described in Specification 26,384/05, and made by heating a mixture of silicon carbide and silicon in an atmosphere of nitrogen, is used for constructing protecting-walls for apparatus which may be subjected to high temperatures, such as pyrometers, or electric heating-bodies. A gas-tight glaze may be applied.

- 5793. Diamant, L. A., and Ewart, R.** March 8.

Compositions containing lime, whitening, and glue.—A composition to be applied to surfaces preparatory to printing &c. comprises whitening, China-clay, slaked lime, an adhesive such as glue in water, a varnish, a small amount of carbolic acid, and water. Plaster of paris, glycerine, and colouring-matter may be added.

- 6384. Sundell, F. R. A.** March 15, 1909, [Convention date].

Compositions containing plaster, albuminous materials, and marble; stone, hardening.—Artificial stone is made by mixing together about 75 parts of plaster, 50 parts of pulverized marble, and a binding-agent consisting of about 1 part of glue, gum, or the like, to 70 parts of water, a thick solution of alum or a doughy mass of pulverized alum being rubbed into the surface of the stone for the purpose of hardening.

- 6428. Baker, J. H.** Sept. 28.

Concretes.—The concrete is composed of sand, cement, gravel, and oxide colour. The sand is

washed, and then dried by heating. Oxide colour is added to cement to give the required tint, and the mixture is well ground. The sand is then added and the whole ground together. The gravel is washed, and added to the above mixture, with water, to make the concrete. The concrete can be cast in moulds or may be laid as a paving. The preferred proportions are 40 parts of gravel, 10 parts of cement, 5 parts of sand, and 1 part of colour.

- 6748. Zimmer, K. L. V.** March 17.

Emulsified bituminous compositions.—Roads or pavements are made from a mixture of tar, pitch, tar oil, or asphalt, and gravel, pebbles, &c. The tar &c. is converted into an emulsion or solution for example by treating it with a vegetable oil and soda and then adding a considerable quantity of water. The emulsion is then mixed with the stone materials and the tar &c. are precipitated with acids &c.

- 7070. Fairweather, W.,** [Weber Geb.] March 21.

Compositions containing lime, chalk, and glue.—A composition for coating walls prior to the application of a decorative coating consists of chalk, Lüneburg lime and glue.

- 7155. Cecchi, L.** March 22.

Stone, hardening.—Artificial - stone slabs formed of cement and fibrous materials are stacked in columns with their plane surfaces in contact, as soon as the initial setting takes place. The ends of the column are held between metal plates or the like to prevent deformation, and the whole is placed in a kiln and heated to accelerate drying and hardening.

- 7620. Donecker, A.** April 19, 1909, [Convention date].

Gravel, artificial.—Artificial coloured gravel is made by mixing together while wet, sand, cement or lime, and colouring-matter, and allowing the mixture to harden in the form of grains, larger pieces being crushed to smaller size. Gravel so made may be used for garden paths, walks, &c. Specification 10,317/97 is referred to.

The Specification as open to inspection under Section 91 (3) (a) comprises also the application of the product to show windows and cases; this subject-matter does not appear in the Specification as accepted.

- 9625. Wright, J. H.** April 20.

Mortars.—In the manufacture of lamplblack by burning the solid matter of sewage with a

supply of air or oxygen insufficient for complete combustion, the temperature is kept so low that clinker is not formed, the resultant porous mineral being pulverized and used to replace sand in making mortar. When the sewage is so low in organic matter that it will not readily burn, cheap oily matters &c. may be added.

9636. Scammell, J. B. April 20.

Compositions containing oxidized or vulcanized oils.—Relates to compositions of the kind described in Specification 21,229/01, [Class 91, Oils &c.], made by adding cellulose to an oil, and stirring in a solution of sulphur chloride, which causes the cellulose to dissolve, and then the whole to solidify. The present invention consists in soaking the cellulose in a fatty acid before adding it to the oil, and also in dissolving in the oil a gum resin soluble at a low temperature. In an example, cotton or the like is soaked in butyric acid, dried, and added in the proportion of 1 to 5 per cent to cotton-seed oil in which 1 to 5 per cent gum elemi has been dissolved. Chloride of sulphur, amounting to about 20 per cent of the oil, is dissolved in a solvent, as paraffin. A third of this solution is added to the oil and dissolves the cotton. Any acid formed is preferably neutralized. The remainder of the chloride is added, and the whole solidifies. Articles may be formed, or tyres filled before solidification takes place, or the solid mass may be ground and mixed with rubber.

9933. Sharp, R. C. April 23.

Compositions containing bituminous and siliceous and like materials.—A composition for filling troughs or conduits in the laying of electric cables or the like is made by melting pitch or asphalt and stirring in preferably an equal quantity of ground whinstone or granite.

9955. Zimmer, K. L. V. April 23.

Asphalts.—Natural bitumen and asphalts are rendered less fusible and almost incombustible by melting with an absorbent for chlorine, and then chlorinating the product with perchloroethane. The milky juice from the plant Guayule, or a fatty-acid ester such as linseed or rape oil, are used as the chlorine absorbents.

10,361. Ostwald, W., and Ostwald, W. April 27.

Compositions containing resins.—The autoxidation and polymerisation of organic substances, such as rubber and other gums, drying oils, resins, varnishes, and plastic masses, &c. made from them, is regulated by adding to them

neutral and basic aromatic nitrogen compounds, or neutral and basic heterocyclic substances, or alkaloids, or mixtures of such bodies. Aniline, dimethylaniline, quinoline, pyridine, and nicotine are examples of the agents used.

11,185. Langlois, G., Sauvage, A., and Lenne, L. de. May 5, 1909, [Convention date].

Concretes.—A concrete for use in paving and road-making consists of quartzite or granite crushed to a size of 4 to 10 mm., and Portland cement; for roads .0548 cubic metre of quartzite and 52 kilos. of cement are allowed per square metre of surface covered; and for paths the corresponding quantities are .033 cubic metre of quartzite and 31 kilos. of cement. Soda may be added to prevent cracking by frost.

11,242. Barrett, W. E., and Renwick, W. G. May 6. [Cognate Application, 28,264/10.] No Patent granted (Sealing fee not paid).

Concretes; stone, hardening.—Artificial stone is obtained by taking stone waste, blast-furnace slag, or slate residue in a granulated condition and mixing with slaked lime to which hot water has been added. Ten parts by weight of granulated materials to one part of dry lime is the preferred proportion. While warm, the mixture is pressed into blocks under a pressure of from 500 to 2,000 lb. per square inch. Drying and carbonation are effected in a steam-heated cylinder, the drying being effected at a temperature of about 120° F. When steam is shut off, warm moist carbon dioxide is admitted to the cylinder under a pressure of about 27 lb. per square inch, the time required being from 36 to 48 hours.

12,035. James, R. W., [Compagnie Générale de Phonographes, Cinématographes, et Appareils de Précision]. May 14.

Compositions containing resins.—A plastic composition for the manufacture of phonograph and like records consists of 8 parts of barium sulphate, 6 parts of lamp black, 9 parts of gum lac, 2 parts of white resin, and 2½ parts of dyed cotton in lengths of from 1 to 5 mm. The composition is ground and rolled hot, reheated and moulded to form the record.

12,224. Heilpern, J. May 18.

Compositions containing bituminous and siliceous and like materials.—Pipes or tubes are made from a composition consisting of a pitch containing sulphur compounds such as coal-tar or petroleum pitch, mineral substances such as sand or gypsum, and fibrous material such as jute or asbestos, the pitch forming an integrant

constituent. These substances are mixed, with gradual heating, to a temperature of 100–300° C. In an example, 20 kilos. of fine moulding-sand are mixed with 15 kilos. of asbestos, and the mixture added to 65 kilos. of coal-tar, pitch at 120° C. The mixture is slowly brought to 160° C. during which time 10 kilos. of pitch are stirred in. The plastic mass is moulded under pressure.

12,263. Melzer, B. May 18.

Figured artificial stone.—A laminated coloured material is made by spraying layers of different colours upon a suitable support *a*, or by allowing the separate layers to settle in turn out of a liquid containing the respective coloured materials, and finally cutting through the layers so as to expose them. Each layer is allowed to dry before the next is applied, and the support has preferably an uneven surface made, for example, by applying grains; or it may consist of cylindrical bodies, such as tubes and wires. Imitations of stone and wood may be made in this manner.



12,601. Serpek, O. May 24. *Drawings to Specification.*

Refractory substances.—Aluminium nitride is used for lining furnaces.

12,711. Neilson, D. L., and Kupperberg, B. A. May 25. *Drawings to Specification.*

Compositions containing resins.—For securing glass to metallic structures, a cement consisting of wood pulp saturated with a mixture of twenty parts by weight of linseed oil to one hundred parts by weight of resin is used, or a mixture comprised of sixty parts of China-clay, fifty parts of resin, and fourteen parts of linseed oil.

13,934. Poldihütte Tiegelgussstahlfabrik. June 11, 1909, [Convention date].

Refractory substances.—A jointless coating of aluminium silicate, or a mixture of aluminium silicate with alumina, or pure alumina, on a furnace lining is obtained by adding suitable quantities of aluminium or its alloys to an oxidized charge of steel contained in the furnace. The use of aluminium-silicon and aluminium-silicon-manganese alloys, and aluminium alloys containing no appreciable quantities of silicon is referred to. In furnaces with a basic lining, the coating may contain considerable quantities of magnesium compounds.

14,241. Cowen, H., and Laing, J. June 13. *No Patent granted (Sealing fee not paid).*

Compositions containing resins.—A known composition, composed of shellac, barium salt such as the sulphate, flock, and other ingredients, is strengthened by a fabric insertion, and is used for knife handles, insulation, and other purposes.

14,431. Yost, F. W. Sept. 4, 1909, [Convention date]. [Addition to 14,276/10, Class 51 (ii), Furnaces &c. for applying &c.]

Cements, Portland, processes for making.—Relates to a process in which material is placed on a perforated hearth, an initial reaction is propagated through the mass in one direction and a second reaction is propagated through the mass in another direction. The Specification as open to inspection under Section 91 (3) (a) states that cement materials may be clinkered by the process. This subject-matter does not appear in the Specification as accepted.

14,981. Mankau, K. A. June 22.

Refractory substances containing spinels.—Refractory articles are made from a mixture of the materials usually employed, such as dolomite, magnesite, and bauxite, and a small proportion (3 to 6 per cent) of spinel which, when the article is burnt, serves as a cementing-agent. The articles may be re-ground, mixed with tar, moulded, and re-calcined.

16,028. Harms, H. J., and Small, G. E. July 5.

Concretes.—A liquid concrete is manufactured by adding water to finely ground clay and then pouring the clay, which remains floating, into a mixture of cement, sand, and fine stones. The proportions preferred are: $\frac{1}{2}$ part of clay, $1\frac{1}{2}$ parts of water, 1 part of cement, 2 parts of sand, and 3 parts of stones. The materials should have the following order of coarseness: clay, cement, sand, stones.

16,079. Adey, R. July 6.

Compositions containing bituminous and siliceous and like materials and resins.—A composition for repairing punctures in pneumatic tyres or like rubber articles consists of glucose, tar, cement (preferably Portland), and asafœtida. Suitable proportions are 45 parts glucose, 25 parts tar, 20 parts cement, and 10 parts asafœtida, by weight. Small quantities of one or more of the following substances may be added: rubber solution, glycerine, goose-down or vegetable down, and cork pulp. The composition may be spread on the tyre, or forced through the valve into the interior.

16,096. Mason, H. E. July 6.

Refractory substances.—A refractory substance, for use in the manufacture of bricks, blocks, tiles, and tuyeres for furnaces for smelting metals, consists of magnesite prepared in the usual way, to which is added 2-10 per cent of basic slag to act as a flux. Specification 908/78 is referred to.

16,127. Mackie, E. P. July 6. *Drawings to Specification.*

Concretes.—Clothes-line and like posts are made of artificial stone composed preferably of 2 parts by volume of Portland cement, $\frac{1}{2}$ part of washed sand, $\frac{1}{2}$ part of limestone dust, and 1 part of granite chippings.

16,264. Kelly, T. D. July 7.

Compositions containing bituminous and siliceous and like materials.—A composition consisting of preferably 100 parts of tar or pitch, from 5 to 25 parts of sodium silicate, and from 5 to 200 parts of Portland or like cement is used for making or surfacing roads and paths, or for making paving-slabs, door and window sills, statuary, &c. The composition, instead of being used alone, may be applied to the loose stone &c. for making the road.

16,758. Burg, A. R. van der. July 13.

Compositions containing modified oils.—A rubber and like substitute is made by the interaction of wood oil and resin oil when mixed and subjected to a high temperature, for example, 260° C., for a sufficient time to convert the mixture into a plastic mass. The proportions preferred are 4 to 15 parts of wood oil and 1 part of resin oil. The product is particularly suitable for the cores of motor tyres.

16,811. Burg, A. R. van der. July 14. *Drawings to Specification.*

Compositions containing oxidized oils.—A composition for impregnating and cementing together the layers of an elastic wheel tyre consists of 45 parts of asphalt, 10 parts of lead oxide, 20 parts of boiled linseed oil, and 15 parts of resin oil.

17,093. Owen, O. J. Oct. 25.

Concretes and mortars.—In the utilization of slate waste by the addition to the ground slate of a cement, at least one-third of the slate is ground to an impalpable powder, a relatively small quantity of cement is used, and the material is subjected to heavy pressure. The

slate is crushed, one-third of it being finely ground, and is mixed with Portland or Sorrel cement, in the proportions of about six parts of slate to one part of cement. The mixture is moistened when Portland cement is employed, a solution of sodium silicate being used. The mixture is coloured, pugged, and moulded under high pressure—about 10 cwt. per square inch. The moulded articles are placed successively in solutions of sodium silicate and calcium or magnesium chloride. Magnesia may take the place of sodium silicate.

17,109. Grau, B. July 18.

Slags, treatment of; bricks, hardening.—Blast-furnace slag is granulated as it leaves the furnace, without the aid of cooling-water, and is allowed to fall in a heap and cool gradually so that the mass fits together to some extent. This mass is coarsely ground, moistened, and moulded into bricks under pressure. The bricks may be hardened by steam.

17,412. Masters, W. T. B. July 22. *Drawings to Specification.*

Concretes.—A plastic composition for imitating rough stonework consists of 6 parts of Portland cement, 10 to 30 parts of sand, 14 parts of spa gravel, 1 part of alum, 1 part of zinc sulphate, and water, with or without colouring-matter such as soot, lamp-black, yellow ochre, or brown umber.

18,338. Rhodin, J. G. A. Aug. 3.

Cements, Portland, compositions for.—A white hydraulic cement is made by mixing lime and a material having a large content of aluminium silicate, such as a felspar, both in a finely-divided condition, with common salt and an aluminium compound, such as potash alum or aluminium sulphate, also in a finely-divided condition, with or without magnesium sulphate or the like, and heating the mixture, for example in a muffle furnace, to a temperature above 900° C., but below such a temperature as would render re-grinding of the product necessary. Specifications 16,780/99, [Class 87, Moulding &c.], and 2628/10 are referred to.

19,346. Accettola, D. Aug. 17.

Figured stone; concretes.—Artificial marble &c. is manufactured from a base composition consisting of white Portland cement mixed with powdered Derbyshire spar, marble dust, or sand, to which ground glass may be added. Plain marble is produced in flat slabs by casting the composition formed into a paste with water in wooden or other moulds upon a smooth sur-

face such as glass, removing the moulds, and polishing before hardening. Variegated marble is formed in slabs by colouring portions of the mixture and mixing the coloured materials in a mould. Variegated marble may be produced in bulk by pouring the coloured composition into a deep box and giving a wavy movement from end to end and side to side, and repeating until the box is full. The mixture is allowed to set under pressure until firm, after which it may be cut into slabs, which are set aside to harden, and polished. Variegated marbles are made *in situ* by mixing the base composition in batches with colouring-matter, each being mixed with water into a stiff paste. Lumps of each coloured composition are kneaded together by hand, and the variegated mass is sprinkled with coloured powder. Further kneaded and sprinkled lumps are added and worked together and applied while still damp to the walls &c., left till nearly dry, hand scraped, and cleaned. For making mosaics, tessellated work, or granites, the various coloured base compositions, broken into small irregular pieces, are mixed together in a box and hammered down. The prepared mass is cut into slabs. A mould may be packed with a facing of the mixed materials and then filled with ordinary concrete.

Reference has been directed by the Comptroller to Specifications 3573/83, 669/85, 13,595/85, 3803/94, 17,281/96, and 7733/00.

19,715. Burckhardt, F. W. Aug. 23.

Stone, artificial.—Artificial stones having reflecting properties similar to natural stones such as moonstones, cats-eyes, and tiger-eyes are produced from crystalline or amorphous quartz. The quartz is fused in an electric furnace so as to produce a cylindrical bloom containing numerous small hollow cavities, and, as it cools, this bloom is gradually drawn by mechanical means in the direction of its length, the material and the cavities setting in undulating lines around the cylindrical wall of the bloom. Stones having reflecting properties dependent upon the direction in which they are cut from the solidified bloom are produced by the usual method of grinding and polishing. Thus, if the bloom is cut in a plane transverse to the longitudinal lines, stones having properties similar to moonstones, cats-eyes, and tiger-eyes can be produced; if it is cut in a plane at right-angles to the above-mentioned plane, the stones have a pearly lustre. For the production of the necessary colour in the stones, finely-ground metallic oxides may be incorporated with the finely-ground quartz, as by means of a pug-mill, before melting in the furnace.

19,808. Ribbe, F. Aug. 24.

Stone, artificial.—Volcanic or other fusible rock is insufflated with air or gas when in a melted condition, so that the cast object is porous. Before the temperature has fallen to 500° C., the material is re-heated and annealed at 800° C.; it is then slowly cooled. Air may be

introduced through tuyeres in the melting-pot or through quartz or other non-fusible pipes, or substances that produce gas at the temperature employed may be introduced into the molten mass, suitable materials being carbonate of lime, bicarbonate of soda, gypsum, sawdust, carbon, graphite and some kinds of basalt. Crucibles made of or lined with plumbago, coke, or carbon, may be used to give the gas; or the cavities may be created by using cores; or hollow objects could be blown like glass. Sand, silicious gravels, and carborundum can be mixed with the basalt when used for the manufacture of paving-stones. The porous material can be used as a covering for other substances, more particularly for iron. Colouring-matters are added, or the gas is suitably selected for producing the colour. The material may be made into building-stones, guttering, flagstones, tables, tiles, grindstones, pulleys, basins, bricks, cornices, pipes, insulators, columns, vases, knobs, door handles, art objects, kerbstones, and railway sleepers.

19,853. Kelly, T. D. Aug. 25.

Compositions containing lime or chalk and glutinous matter.—A flexible composition for use as a waterproof and fireproof cement, or for making slabs, paving-stones, &c., is formed by mixing together a creamy product, obtained by boiling gummy peat, or certain seeds or plants, for example linseed and cotton seed, or marsh mallow, respectively, in a solution of lime or other alkali, and chalk, casein, or cement made from chalk, for example Portland cement, with or without petroleum. When chalk is used, astringent liquor found near peat beds or the like is added also. In preparing the creamy product the peat or other vegetable fibre may or may not be strained off. For making articles such as slabs, paving-stones, &c., the mixture is poured into moulds and left to dry and set; stones, colouring-matter, or other materials may be added to the composition.

19,866. Siemens & Co., Geb. Oct. 4 1909, [Convention date].

Refractory substances.—A material applicable for crucibles, grindstones, electric resistances, and other articles is made by forming a chemical compound of silicon, carbon, and oxygen, acting as a binder within a mass of a base material such as clay or carborundum, for instance by mixing powdered silicon with the base material, shaping the mixture into bodies with the aid of resin, paraffin, clay, or other agglutinant, and heating to whiteness in the presence of carbon monoxide or dioxide. If silicon is used alone or with only small additions, the product may consist wholly or mainly of the desired compound, and if the silicon is in granules the compound may be formed only on the surface. The compound has the formula SiCO , and other similar compounds may be formed by the process, and also nitrogen compounds if nitrogen is present during the heating.

20,782. Goddard, J. F. Sept. 6.

Concretes and mortars; concrete surfaces, hardening.—Mortar, concrete, or the like containing lime is mixed with a solution of tannin or tannic acid in water containing preferably 15–60 grains of tannic acid to the gallon. Set concrete may be hardened by saturating it with the solution.

21,315. Soc. Thorrand, Durandy, et Cie. Oct. 15, 1909, [Convention date].

Cements, Portland, treating after manufacture.—Sulphate of iron in the proportion of from one to three per cent is added to prepared cement, and the mixture is ground to form a quick-setting composite cement.

21,563. Bessler, Waechter, & Co., and Rouse, T. Sept. 16. [Addition to 2440/10.]

Concretes.—In preparing soluble silicates for briquetting concrete &c., as described in the parent Specification, a small quantity of calcined borax is added to the ingredients or to the silicate with the ferric oxide.

22,308. Hohrath, W. Oct. 28, 1909, [Convention date].

Slags, treatment of.—Artificial granite is made from molten slag by adding finely-divided metallic aluminium and fluxes, and casting.

23,817. Herdman, G. A. Oct. 14.

Slagwool, preparation of.—For the removal of shot from slagwool, the slag is blown in the usual way by a steam jet b^1 into a rotary perforated tube c formed of perforated sheet metal, wire gauze, &c., which acts both as a sieve through which the shot passes and a conveyer for the wool. The sieve, which may be cylindrical, hexagonal, conical, or stepped, is mounted in a house provided with ventilators a^2 , and is supported in bearings or slung by chains. In the form shown, the sieve is rotated by means of the supporting-chains d , which pass

22,309. Walker, H. V. Sept. 26.

Asphalts.—Olefine oxides are employed as solvents for asphalt. Their solvent properties are not annulled by admixture with benzine, petroleum, &c.

22,519. Schofer, F. May 23, [Convention date].

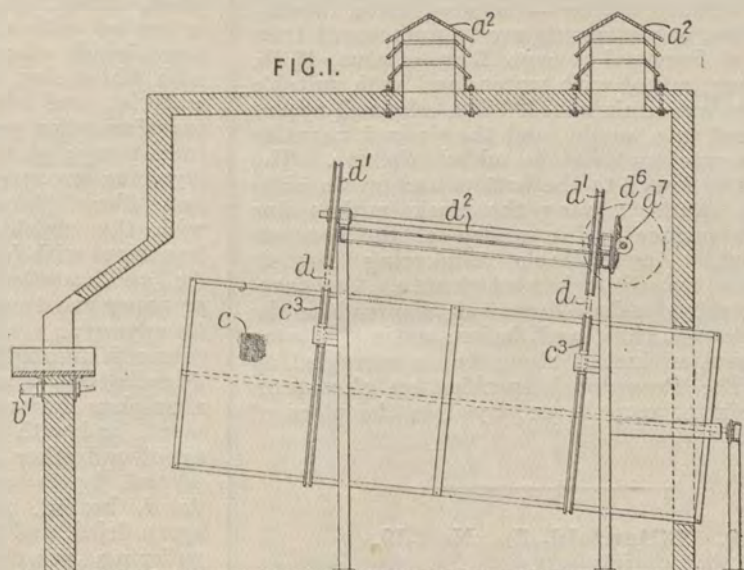
Concretes.—In the manufacture of tubular concrete sections for building chimneys, particles of hard-burned bricks and chamotte, about 3 or 4 mm. in diameter, are added to the cement or concrete.

23,064. Nathan, C. Oct. 5.

Compositions containing bituminous and siliceous, calcareous, and like materials.—A plastic composition for re-surfacing roads &c. consists approximately of 7 parts of about $\frac{1}{4}$ or $\frac{3}{8}$ inch grade basalt, quartz, ironstone, granite, or the like, 3 parts sharp sand, 4 parts powdered asphaltic limestone containing about 9 per cent of bitumen, 1 part of Portland cement, gypsum, or other very fine material, and 4 parts of Cuban natural asphalt, all mixed and heated together.

23,550. Aarts, J. G. Oct. 11.

Refractory substances containing silicon carbide.—Sections or bricks for retorts or ovens may be made by moulding a mixture of silicon carbide and an agglutinant, preferably clay, and calcining; or by moulding carbon with an agglutinant and heating to above 2200° C. in the presence of silicon vapour.



around pulleys c^3 on the sieve and pulleys d^1 on the shaft d^2 , which is driven through bevel-gear d^6 , d^7 . The tube may be provided with baffles to arrest the passage of the shot.

24,018. Westphal, C. Oct. 17. *Drawings to Specification.*

Refractory substances.—In a vertical retort furnace, the retort, retaining-plates, and lining are formed of a mixture of corubin and fire-clay.

24,172. Hambloch, A., and Henning, J. July 25, [Convention date]. *Drawings to Specification.*

Concretes; compositions containing bituminous and calcareous materials.—Binding-compositions to be mixed with tarred or other road-metal comprise mixtures with slaked lime and quicklime of materials such as puzzuolana stones, for example, trass or tufa ashes. The preferred proportions by weight in the mixture (A) used in the body of the road are 7 parts of damp tufa ashes, 2 parts of quicklime, and 1 part of slaked lime, and in the mixture (B) used in the surfacing operation 12 parts of trass, 3 parts of quicklime, and 5 parts of slaked lime. The dry pulverized mixture (A) is mixed with the prepared road-metal before the tarring operation, the quantity of mixture being about 6 per cent of the quantity of tar used. The road is surfaced by the application of a dry thin layer comprising a mixture of equal parts of mixture (B) with fine sand.

25,142. Lowry, J. H. Oct. 29.

Concretes; compositions containing plaster and glutinous matter.—Coloured slabs, blocks, concretes, or pavements are manufactured from 14 lb. of Portland cement, 2 oz. of glue, $1\frac{1}{2}$ lb. of colour, mixed with water, and with suitable concrete materials added. The coloured cement is placed in a mould, and the desired quantity of concrete material is added thereto. The cement is forced to the bottom and up the sides of the mould, leaving the blocks with a fine cement surface and a centre of the concrete material. Any suitable reinforcing bars or structure may be embedded therein. For pavements, mixed coloured cement is spread on the concrete materials, and, before setting, a layer of gravel or broken stone &c. is sprinkled on top. The Provisional Specification also states that plaster may be employed in the place of cement.

26,928. Lilienfeld, L. Nov. 19.

Compositions containing resinous, fatty, oily, and wax-like materials and organic sulphur

derivatives.—Sulphur derivatives of alcohols and hydrocarbons are used for the manufacture of cements, plastic masses, &c. The sulphur derivatives used are mercaptans, sulphides, and polysulphides of hydrocarbons and alcohols, as well as their anhydrides, and of their polymerides, also the mercaptides, ethers, esters, mercaptols, mercaptals, sulphinic acids, sulphonic acids, sulfoxides, and sulphones derived from these sulphur compounds. Particularly suitable are the sulphur derivatives of propane, propylene, cyclopropane, and glycerine, such as the thioglycerine produced by the reaction of mono- and di-chlorhydrins with inorganic sulphides, the mono-, di-, and tri-thiopyroglycides produced therefrom by polymerization, the compounds produced by the action of metal sulphides upon dichlorhydrins, the polymerization products of these compounds, and the compounds produced by the action of thiocarbonates, including viscose, upon alkyl halides, halogenhydrins, or other esters, such as glycerine-trithiocarbonic acid. The sulphur derivatives may be produced in the particular product, or in the mass from which this product is to be made, either by adding to the mass those bodies from which the sulphur derivative is to be made by chemical reaction, or by adding any one of such bodies and treating the product with the other. The sulphur derivatives may be mixed with other bodies in order to obtain useful products, for example with cellulose, &c., crude or purified viscose, nitro-cellulose, acetylcellulose, albumenoids, proteids, glue, amyloid starch, and substances resembling starch such as inulin, levulin, lichenin, dextrin, gums, cerasin, tragacanth, beetroot gum, vegetable gums such as agar-agar, galactin, pectin, pectinous substances, tragasol, resins, the resinous products of condensation of phenols with aldehydes or aromatic amines, shellac, oxidized and non-oxidized drying oils, caoutchouc, gutta-percha, balata, caoutchouc surrogates, reclaimed rubber, metal resins, fatty acid salts, waxes, paraffin, soap, fats, &c. In examples, woollen, linen, cotton, or silk fabric or fibre or paper is treated with a thioglycerine or oxytrimethylenesulphide alone, or with a solvent or mixed with China-clay, zinc white, or other loading-material, and left to itself or heated until the transformation product has attained the desired consistency; glue, starch, syrup, and a thioglycerine or oxytrimethylenesulphide are mixed, and fibres, fabrics, or paper are treated with this finishing-material with or without treatment with formaldehyde, bichromate, alum, &c., and heated or not as desired; fibres, fabrics, or paper are treated with a mixture of viscose, thioglycerine, or oxytrimethylenesulphide; fabric is treated with a sulphur derivative as described above and heated; viscose mixed with a sulphur derivative and a lake or other pigment, and with or without another softening-agent and other substances, is coated in one or several layers upon fabric, paper, &c. and dried, heated, passed through suitable baths, again dried, and further treated by calendering, goffering, pressing, &c.; glue mixed with a sulphur derivative and with or without colouring-matter is applied to fabrics &c. with or

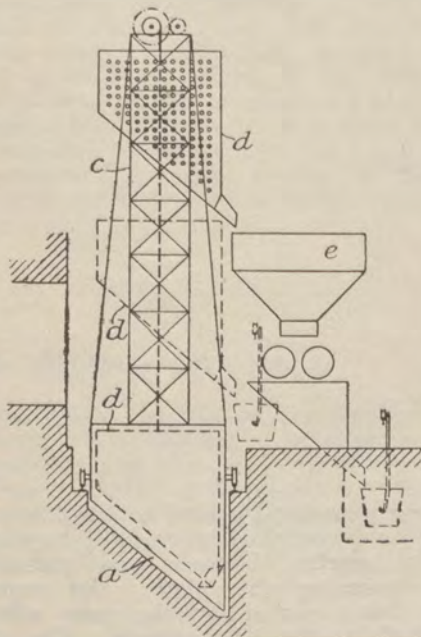
without treatment to render the glue insoluble; a thioglycerine or oxytrimethylenesulphide is mixed with caoutchouc, gutta-percha, or balata, or a rubber substitute, or a fatty acid salt, and either heated or not; viscosed is mixed with a sulphur derivative as described above, with or without other softening-agents, and pressed into moulds; a mass suitable for printing-rollers and hektographs is made by mixing a solution of glue with a sulphur derivative and if desired a softening-agent such as sugar or glycerine, and evaporating off the water. There may also be manufactured linoleum and lincrusta, with the aid of known binding-agents, and with the addition of cork or asbestos and wood-meal respectively.

27,240. Bacci, R. Nov. 23. *Drawings to Specification. No Patent granted (Sealing fee not paid).*

Compositions containing resinous materials.—A composition, fusible in boiling water, for cementing the bulb of an electric lamp in place, may consist of (1) colophony, soda, potassium silicate, and water; (2) colophony, caustic soda, gypsum, and water; (3) alcohol, sandarac, turpentine, and glue; or (4) sandarac, white lead, chalk, turpentine, drying oil, and fish glue, in stated proportions.

Reference has been directed by the Comptroller to Specifications 4393/80, 69/82, 12,015/87, and 27,903/96, [all in Class 39, Electric lamps &c.].

27,478. Bleichert, M. A., and Bleichert, P. M. Nov. 25. [*Addition to 19,287/07, Class 51, Furnaces &c.*]



Slags, treatment of.—A modified form of the

coke-quenching apparatus described in the parent Specification, may be used for cooling blast-furnace slag. The modification consists in fitting a hoist *c* on the quenching-tank *a* for manipulating the perforated receptacle *d* for the hot materials.

27,494. Howells, D. Nov. 25.

Concretes.—The 'rubbish' obtained in the working of coal mines is utilized in the manufacture of concrete and like articles required in mines. When used for the 'timbering' of mines, the composition of the concrete is: granulated coal-mine rubbish one part; breeze from coke-ovens, or ashes from steam-generator furnaces, one part; granulated refuse from coal washeries, one part; cinder refuse from steel separators, one part; ground unslaked lime, one part. When used for props, arms, or posts, Portland cement in the proportion of one-eighth of the aggregate is added; for large sizes this may be increased to one-sixth part, or one-fourth part. For making 'cogs,' baulks, &c., a quantity of sawdust may be added.

27,807. Pennington, R. Nov. 30.

Compositions containing oxidized oils.—A cement consisting of 31 per cent of fine powdered glass, $2\frac{1}{2}$ per cent of powdered emery, and $46\frac{1}{2}$ per cent of fine powdered silver sand, (all residues from glass grinding), is mixed with 20 per cent of boiled linseed oil. This cement is used for restoring brick, stone, concrete, or other buildings, tiled, slated, or shingle roofs floor-partitions, and plaster surfaces, and for rendering the same waterproof. It may also be used for preserving timber, stone, and the like.

28,284. Hemingway, H. W. Dec. 5.

Stone, hardening; concretes.—Natural or artificial stone is hardened by treatment with arsenic acid and a soluble silicate, the proportions of the treating-liquids being such that insoluble arsenates are formed, and silica is deposited in the pores of the stone. The stone is treated with the two solutions successively, the order being immaterial. Chalk cliffs or railway cuttings may be treated in this manner. A composition for filling holes, cracks, or the like is also described consisting of an acid mixture of, say, 9 parts of finely-divided silica and 12 parts of arsenic acid of specific gravity 1.4, and a basic mixture of 10 parts of alkaline silicate, and 6 parts of caustic lime, magnesia or baryta. These mixtures are made into a paste or are applied in successive layers.

28,660. Boltshauser, C. Dec. 9, 1909, [Convention date]. [Addition to 22,682/09.]

Compositions containing bituminous and siliceous, calcareous, and like materials.— In the process for making roads described in the parent Specification, in which gravel or the like and tar are heated together, thrown into heaps, and covered with a layer of heat-retaining material before being laid, an addition of at least 10 per cent of a granular calcareous product is made to the gravel-tar mixture during manufacture.

28,836. Wiedemann, H. Dec. 12.

Compositions containing bituminous and siliceous and like materials.— A composition for covering roads, paving &c. which may be applied cold consists of about equal parts of cement, filling-material as sand, stones, and wood tar. The materials are mixed and spread on the surface to be covered, or slabs may be made. In cases where the mixture of cement and wood tar sets too rapidly, the mixture of cement and filling-material may be moistened with water, and allowed to stand before adding the tar.

30,035. Hippe, E. E. Dec. 24.

Stone, hardening; figured artificial stone.— Artificial stone, such as malachite is made by producing in a mould or upon a backing a film of a solution of a salt of a heavy metal, such as zinc sulphate, with or without colouring-agents, or having a coloured effect upon the cement afterwards added, and in some cases

adding a retarding-agent, and afterwards pouring upon this film one or more coloured or uncoloured cements or moulding-material which react with the film of metal salt forming insoluble compounds, thus rendering the surface hard and in some cases producing shades of colour. Size water containing blood albumen may be added to the cement or salt, and sparkling granular material may be sprinkled upon the salt film. In order to form a pattern, the mass is kept in motion, for example by inclining the foundation or mould. The surface may be impregnated with alkaline silicate solution, with or without soluble chlorides.

30,091. Deutsche Rekord Cement Werke J. Krümpelmann & Co., and Krümpelmann, J. Dec. 28.

Cements, Portland, treating after manufacture; compositions containing bituminous materials.— A substance for adding to cement to render it waterproof consists of ground bituminous shale treated with hydrochloric acid, and after the carbonic acid has escaped, heated for about three hours with steam at about five atmospheres. The mass, while still hot, is mixed with gas tar, mineral oil, or the like, and dried at 100° C. The substance has the property of forming an emulsion with wet cement, and of emulsifying a further quantity of tarry or oily substances. In one example, 75 kg. of hydrochloric acid are added to 250 kg. of ground shale, and to the plastic mass 15 per cent of tar and 15 per cent of oil are added. The dried product is added to Portland cement in the proportion of one part of product to eight parts of cement.

A.D. 1911.

400. Gornitzka, G. C., and Gornitzka, A. T. Jan. 11, 1910, [Convention date]. Drawings to Specification. Void. [Published under Section 91 of the Act.]

Ornamented artificial stone.— Consists in a process for ornamenting plates of glass, or for

casting by pressing a plastic mass such as paint, gypsum, clay, celluloid, wood pulp, majolica or artificial marble, between two plates and then separating the plates, the ornamentation being caused by the mass adhering irregularly to the two surfaces. The plastic mass may be in one or more colours and con-

sistencies, and the plates when pressed together may be given various movements, and may be separated uniformly or from one edge or corner. By varying the conditions many fantastic effects are produced. Apparatus is described for pressing the plates together and giving them suitable movements and separating them in a suitable manner. In a modification, the surface of a solid plate is rendered plastic by chemicals or by heat.

419. Helberger, H. Jan. 6. *Drawings to Specification.*

Refractory substances.—A crucible, which fits inside a heater of an electric furnace, may be composed of clay or graphitic clay for temperatures up to 1800° C., or, for higher temperatures, of refractory oxides such as magnesia or zirconia, optionally with a binder such as boric acid or tar.

Reference has been directed by the Comptroller to Specifications 14,516/93, 5721/05, and 13,690/05, [all in Class 39, Electric lamps &c.].

2626. Schwerin, Graf B. Feb. 1.

Refractory substances.—Porous articles of crystallized carborundum or corundum are made by moulding the finely ground material without a binder or with a temporary binder, and firing in a neutral or reducing atmosphere; such articles are hard, refractory, and inert to chemicals. The porosity increases with the fineness of the particles used. Preferably the finely-ground material is purified by boiling in succession with strong hydrochloric, nitric and hydrofluoric acids, and soda, with filtering and washing between each boiling. Graphite is removed by prolonged heating in air. The powdered material may be moulded as a paste with a liquid such as water, to which is added preferably ammonia for carborundum and acetic acid for corundum, a rough, smooth, or polished surface or one with patterns being imparted to the articles by the mould.

2703. Casteleyn, C. Feb. 2.

Compositions containing bituminous and siliceous and like materials.—A waterproofing-composition, which forms an emulsion with water and may be mixed with cement and sand to make a damp-resisting mortar, consists of wood &c. pitch, creosote, coal or coke, tar, and caustic soda.

2984. Paterson, E. A. Feb. 6.

Compositions containing bituminous and calcareous and like materials.—Consists in forming a matrix for binding together materials used in road-making by treating lime-rock, with or without phosphate of alumina rock, with a solution composed of a mixture of sucrate of lime and an alkaline silicate. Gravel, crushed rock, or the like is rolled into the matrix forming the bed, and calcium silicate is formed at the surface by the action of carbonic acid in the atmosphere. Bitumen may in some cases be added to the matrix. The sucrate of lime is prepared by treating quicklime with a hot sugar solution, and the sucrate solution is then added to a solution of the alkaline silicate. The matrix may be moulded into paving-blocks.

4803. Soc. Cuel Pinguet et Cie. March 10, 1910, [Convention date].

Compositions containing vulcanized bitumens.—Mineral pitch or similar bituminous material is melted at about 50° C., powdered aluminium silicate such as clay is added, and the temperature is raised to about 160° C.; powdered sulphur is next added, and the ingredients are mixed and cast into blocks. Suitable proportions are 40 per cent of bitumen, 58 per cent of clay, and 2 per cent of sulphur. For use, the blocks are melted and mixed with filling-material such as flint, porphyry, sandstone, &c. heated to 250–300° C. and stirred for about 20 minutes. Suitable proportions are 34–25 per cent of block material to 66–75 per cent of filling-material. The composition may be used in paving for forming gutters, conduits, &c., and for replacing ordinary building-materials.

The Specification as open to inspection under Section 91 (3) (a) states also that other inert material than clay such as shale or flint may be used for the blocks; this subject-matter does not appear in the Specification as accepted.

5183. Dominguez, S. March 1.

Concretes.—Paving and like slabs are formed of a coarse lower layer of Portland cement, preferably 40 per cent, and fine sand 60 per cent, and of an upper layer of Portland cement, preferably 60 per cent, and fine glass 40 per cent.

5402. Abraham, H., and Haines, H. W. March 9, 1910, [Convention date].

Cements, concretes, and mortars; compositions containing bituminous and siliceous and like materials.—Hydraulic cement, mortar, or concrete is made waterproof by adding to the gauging-water a paste obtained by triturating together (1) a more or less insoluble inorganic substance, capable of forming with water a viscous plastic mixture, such as slaked lime,

iron, or aluminium hydroxide, plastic clay, &c., (2) a viscous unsaponifiable bituminous liquid, such as liquid asphaltum or asphaltum oil, coal tar, pitch, or the like, and (3) water to form a paste. About 10 per cent of this paste is added to the concrete when gauging, but the crushed stone or gravel used in making concrete is not taken into account in making this calculation, although the amount of sand used is considered. Colours may be added, and in some cases these act also as the insoluble inorganic substance.

7628. Corrick, B. March 27.

Compositions containing bituminous and siliceous materials.—A road-making material is made of bitumen, preferably natural bitumen, or tar or pitch, together with powdered clay or marl, and either granite or slag or a mixture of a hard siliceous substance, such as quartz, flint, or sandstone, and granite, the granite, slag, and siliceous substance being in a flour-like powder. The bitumen may be powdered and incorporated by stirring with the other powders or it may be melted before incorporation. In an example, equal parts of bitumen, clay or marl, granite, and quartz are employed. Glucose or sugary matter, vegetable pulp, salt, or compositions such as are described in Specification 26,172/08, [Class 91, Oils &c.], some of which contain fats, or two or more of these substances may be added.

8085. Owen, H. S. April 1, 1910, [Convention date]. Drawings to Specification.

Concretes for casting blocks &c. A concrete is prepared by agitating the cement with warm water in a rotary drum for half an hour or more, decanting the excess of water and adding the predetermined quantities of sand and gravel.

8086. Owen, H. S. April 1, 1910, [Convention date]. Drawings to Specification.

Concretes for casting blocks &c. are prepared as described in Specification 8085/11.

8087. Owen, H. S. April 1, 1910, [Convention date]. Drawings to Specification.

Concretes for casting blocks &c. are prepared as described in Specifications 8056/11 and 8057/11.

8613. Kelly, T. D. April 6.

Compositions containing oils.—Relates to the manufacture of an india-rubber substitute, glue,

or flexible cement. A seed, peat, husk, or plant 'substance' is first made by boiling oil-bearing seeds, peat of a gummy nature, seed-husks, or plants containing cellulose in an alkali solution, such as lime, until a semi-plastic material is obtained. The fibre may, if desired, be strained off. The product obtained is then heated to a temperature of 450-600° F. with crude or oxidized vegetable oils, or in the case of 'plant substance,' with 'seed substance,' preferably in the proportions of 30 parts of the former to 70 of the latter, or in place of heating alone, the mixture may be heated at 100-200° F. with 30 parts of nitric acid or with a mixture of 3 parts of nitric acid and 1 part of sulphuric acid. The product may be further treated with a 3-5 per cent alkaline solution. When tung seed oil is used it is heated to 410-600° F. and, while hot or after cooling, mixed with the peat, husk, or plant 'substance.' The products obtained are mixed with 1-5 per cent of sulphur or substances containing sulphur, such as potassium sulphate and are then heated. A water-proof and fireproof cement is obtained by adding 10-30 per cent of chalk or cement.

9023. Lake, W. E., [Blakeman, W. N.]. April 11.

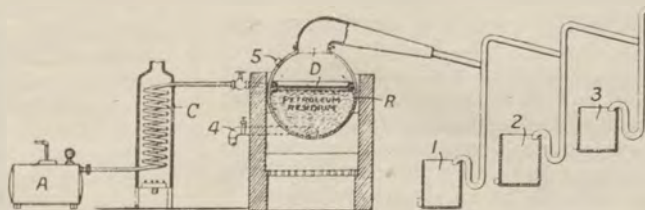
Compositions containing modified fats and oils.—Fatty oils and fats, such as linseed, tung, cotton, sunflower, corn, and menhaden oils, or derivatives thereof, such as oleic acid, olein, stearic acid, and stearin, are combined with chlorinated hydrocarbons, or chlorinated derivatives of hydrocarbons, containing more than one atom of carbon, such as chlorinated ethylene, benzene, naphthalene, anthracene, crude petroleum and its distillates, ozokerit, asphalt, paraffin, coal tar, and retort residues, and the mixture is used as a vehicle for comminuted vegetable, metallic, and mineral matter, in the manufacture of linoleum, roofing, paving, artificial lumber, fatty cements, and putty, &c. The oils and fats may be hydrated, rancidified, oxidized, or chlorinated. Examples of the comminuted matters that may be mixed with the oil &c. and the chlorinated hydrocarbon &c. are silica, zinc silicate, calcium silicate, obsidian, lead sulphite, clay, cellulose, minerals, and resin.

9272. Julians, C. W., and British Stone and Marble Co. April 13.

Concretes.—In the manufacture of artificial stone, a portion of the finely crushed stone or slag, &c., for example equal parts, is mixed with burnt lime, and slaked, and the remainder of the stone &c. is then added, for example up to 12 parts of stone to 1 of lime. The product is rapidly mixed to a cream-like consistency, pressed, and finally carbonated.

9646. Forward, C. B. April 20.

Asphalts.—Artificial asphalt is prepared by heating petroleum residuum, that is, crude petroleum from which the lighter oils have been removed, at a temperature of approximately 625° F. in a vessel until volatile substances are removed, and subsequently boiling the product at a lower temperature for a period dependent on the quality of the asphalt required. To assist in the removal of the volatile matter, the residue may be distilled in the presence of superheated steam or air which is introduced into the still at higher level than that of the material in it. In the form shown in the Figure, the petroleum residues are distilled in the still R and the distillate collected in a series of vessels 1, 2, 3. Air supplied under



pressure from the reservoir A is heated in the coil C and introduced into the still through the ring D. The pitch is removed by the pipe 4 and a test opening 5 is provided through which the material in the still may be taken from time to time. When crude petroleum is used, the oil is first heated at a low temperature to remove gasoline, and then the temperature is gradually raised.

10,606. Kruse, J. S. May 2. *Drawings to Specification.*

Compositions containing vulcanized bitumens.—Blocks for road making and the like are made from a bituminous material, a body containing sulphur, and a suitable filling-material, incorporated at a fairly high temperature (about 270° F.) and subjected to a pressure of about 4 tons per square inch. The invention also comprises the following composition, viz., clinker 78½ per cent, asphalt 19½ per cent, sulphur 1½ per cent, and mineral oil ½ per cent, suitably incorporated, and preferably subjected to a high pressure. Specifications 24,812/99 and 17,720/07 are referred to.

10,610. Sachs, M., Pohlmann, H., and Frank, P. May 2.

Ornamented artificial stone.—The surface of plaster or of artificial-stone blocks made from coloured granular material and cement or mortar is coated while comparatively fresh with a paste containing an ingredient, say, acid, which will attack the surface layer of binding-material. A suitable paste consists of clay, soft soap, and hydrochloric acid, and is spread on the surface preferably soon after the plaster has set. When the surface cement layer is decomposed, it is washed off with the paste, leaving the granular material on the surface.

10,839. Lenne, L. de, Langlois, M., Sauvage, A., and Langlois, G. May 4, 1910, [Convention date].

Concretes.—Finely-powdered granite is added

to the concrete described in Specification 11,185/10. The concrete, applicable for paving, facing sea works &c., consists primarily of broken hard stone, powdered granite, cement, and water; sodium carbonate may be added. The proportions are, a stock mixture of 70 to 75 kg. of broken quartzites, 40 kg. of cement, and 15 kg. of powdered granite. Half this mixture is moistened with 7 kg. of a 1:2 solution of sodium carbonate and water and is then laid and rammed; the other half is mixed with 8 kg. of the soda solution, laid *in situ*, smoothed, and sanded. For re-making roads, the whole of the stock mixture is laid and rammed in one operation. Carborundum may be added to the surface, and a steam jet may be applied after two days to quicken the setting.

11,509. Brand, R. E. May 14, 1910, [Convention date].

Concretes.—An artificial stone consists of a mixture of 2 parts of Portland cement, 2 parts of crushed hornblende, and 1 part of a granular carbon such as coal cinders.

11,647. Julians, C. W., and Hogg, S. J. May 13.

Stone, artificial.—In the manufacture of artificial stone from a slaked mixture of lime and sand, slag, or stone dust, the pressed mixture is broken down to the form of meal, again pressed or tamped, and afterwards carbonated. Specifications 13,467/00, 12,861/02, 20,070/05, and 9633/07 are referred to.

- 11,846. Werlein, I.** Aug. 26, 1910, [Convention date].

Stone, artificial; refractory substances containing silica, alumina, &c.—A mixture of preferably 5 to 20 parts of silica with a small quantity of titanio acid and 80-95 parts of alumina with a small quantity of glucina, zircona, or the like obtained from natural or artificial sources, is made to combine at a temperature of 2800-3000° C., for example, in an electric furnace, for the manufacture of a refractory and abrasive product. Carbon may be added for the purpose of reducing foreign oxides such as those of iron. The product may be used for making crucibles, bricks, and muffles and for articles which are to be exposed to the action of acids.

- 12,119. Lessing, R.** May 19.

Refractory substances.—The walls of gas retorts, coke ovens, &c., and any other porous refractory material, are rendered gas-tight by forcing hydrocarbon gas or vapour from one side of the material into the pores and other openings which may exist in the material, and by heating the mass from the opposite side. This results in dissociation of the gas and the deposition of carbon in the pores. In the case of a retort, the gas may be generated under pressure during the first charge of the retort, the uptake being closed, and, if desired, the heating-gases may contain an excess of air.

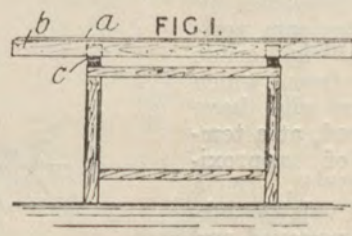
- 12,823. Goodfellow, W. H., and McClain, W. A.** May 29.

Compositions containing vulcanized oils.—Relates to a process for filling hollow vehicle tyres with resilient material. Corn or other vegetable oil is heated to about 320° F. for several minutes and then allowed to fall to about 312° F.; about 25 per cent by weight of sulphur is added, and the temperature is kept up until the mixture begins to thicken. Powdered cork may be added. The vulcanizing of the oil is completed inside the tyre.

- 12,836. Back, C., and Wacik, [called Metterhausen], R.** May 29.

Figured stone.—Imitation marble slabs and the like are made by spraying or painting veins on a plate of glass *a* in a frame *b* mounted loosely on spiral springs *c*, applying a backing of body material, and shaking the frame to distribute the veins. To produce letters or ornamentations in the slabs, solid letters or the like are pressed into the partly-set mass until they rest on the glass plate. The letters are removed and the recesses thus formed are cleaned,

sprayed with colour, and filled with body material of a contrasting colour; the slab is then



brought to the required thickness, and the shaking-frame is again actuated.

- 13,899. Sprenger, E.** June 10. *Drawings to Specification.*

Mortars are made by coating sand grains, first with Portland cement, then with slag cement, and then with hydraulic lime, in a special apparatus.

- 16,125. Marriott, T.** July 12.

Compositions containing bituminous materials.—33 per cent of a clay of the kaolinite class is added to 66 per cent of a refined natural bitumen not containing any clay, to produce a compound similar to Lake Trinidad bitumen. By the addition of from 3 to 9 per cent of a suitable flux, synthetic trench and joint-box insulating-compounds can be obtained.

- 16,505. Upham, G. B.** July 18.

Compositions containing bituminous and siliceous and like materials.—Bituminous paving-blocks are made by treating about 850 lb. of crushed and graded hard rock, heated to 370° F. and mixed with 175 lb. of 'fines' obtained from soft rock, with a lubricating-substance, such as blown oil flux or petroleum residuum so as to coat the body material and permeate the 'fines,' and mixing the product with the usual cement, for example, dried and refined asphalt mixed with the usual flux, such as blown oil flux. A part is separated and pressed while hot under a high pressure, removed from the mould, and cooled in water. The body and 'fines' may be separately treated with the lubricator, and may be separately mixed with the cement.

16,506. Upham, G. B. July 18.

Compositions containing bituminous and siliceous and like materials.—Compressed bituminous paving-blocks are made from bituminous cement mixed with hot graded pulverized hard rock, the coarsest being of quarter-inch size, the second grade material filling the interstices in the first grade and so on down to the smallest, the interstices in which are filled with 'fines' obtained from soft rock. The stony material is heated to 370°F . and is mixed with 8-19 per cent of the cement so as to coat the surface of the particles. The mixture is heated to the usual high temperature, and a part is separated and subjected to a series of compressions, which may be progressively greater, or the pressure may be somewhat relieved between the compressions.

17,226. Ehlers, F., and Rommel, A. July 27.

Compositions containing bituminous and siliceous materials and oils.—An artificial stone is composed of the following ingredients: fossil tar 550 parts, magnesia 250 parts, leather meal 75 parts, oil of resin 75 parts, water-glass 50 parts, alum solution 20 parts, and washed and baked sand 2500 parts. The magnesia and alum solution are separately mixed, and also the leather and water-glass. These two mixtures are mixed with the hot sand, and the whole is kneaded with the resin oil and tar. The mass may be pressed into blocks or the like when hot.

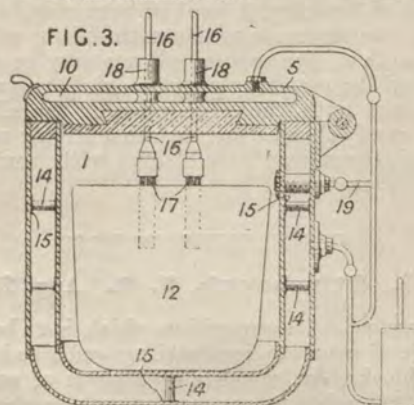
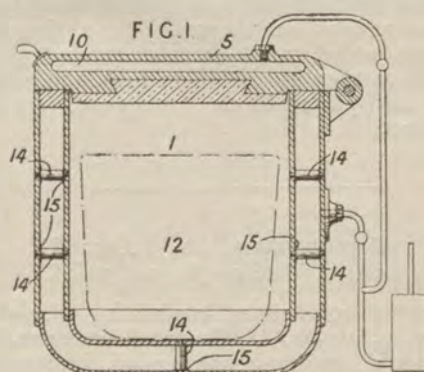
17,230. Brownfield, D. H., and Beech, F., [trading as Brownfield & Co., D. H.] July 28.

Refractory substances containing silica.—A composition for making articles for resisting intense heat, consists of about 88 per cent of 'Washer wall' or similar silica stone, about 7 per cent of Buxton lime, and 5 per cent of silica stone finely ground. The ingredients are water-ground to the consistency of clay, and formed into articles in the usual way.

17,544. Pettigrew, G., and Strover, E. Gerbel-. Aug. 1

Refractory substances.—Refractory substances such as alumina, or materials rich in alumina such as bauxite, and mixtures of carbon and silica, are highly heated in an electric furnace and then cooled very slowly by enclosing it in a vacuum-jacketed vessel and, if desired, creating a vacuum within the jacketed vessel. The

material may be thus cooled in a vacuum-jacketed electric furnace, or may be transferred from the furnace to the cooling-receptacle. Figs. 1 and 3 show a crucible 12 containing the



highly heated material within a vacuum-jacketed vessel 1. The strengthening-stays 14 may be packed as at 15 with heat-retaining material such as asbestos, and the hinged lid 5 may also be provided with a vacuum space 10. When it is desired to heat the material in the crucible 12 to make up for the loss of heat in passing from the furnace to the crucible, electrodes 17, Fig. 3, carried on adjustable rods 16 passing through stuffing-boxes 18, are provided. A connexion 19 is shown for exhausting the air from the chamber 1.

17,704. Börner, E. Aug. 3.

Concretes; stone, artificial.—Slabs of cement and fusible or slagging substances, consisting of 20 parts of cement, 30 parts of sand, 20 parts of coarse porphyry pieces, 15 parts of porphyry powder, and 15 parts of ground glass, are painted with coloured glass-fluxes and fired at 1050°C . The cement may be replaced by water-glass and lime or magnesia, in which case the proportions are 10 parts of lime, 8 parts of water-glass, 30 parts of sand, 35 parts of porphyry, and 17 parts of glass, and the firing takes place at 1100°C . Specification 6848/03, [Class 87, Moulding &c.], is referred to.

18,340. Snow, E. C. Aug. 14.

Compositions containing bituminous and siliceous and like materials.—Consists in forming a road-making compound by mixing 64 parts of Bedford grit, 32 parts of granite chippings, 9 parts of cement, and 5 parts of tar, the mixture being added to 16 parts of melted pitch. The whole is then subjected to heat and either moulded into paving-blocks, or spread over the road surface.

18,820. Gutensohn, A. Aug. 21. *No Patent granted (Sealing fee not paid).*

Refractory substances containing fire-clay, sodium silicate, &c.—A fireproof compound is made from a powdered mixture of, preferably, 3 parts of fire-clay, 1 part of pipe-clay, and $\frac{1}{15}$ part of manganese peroxide with sodium silicate. One-fourth of the sodium silicate may be mixed first, and the resulting paste is dried, re-ground, and mixed with the remainder of the silicate. Silica, sand, chrome ore, or other highly refractory substance may be added to withstand very high temperatures.

19,183. Stinebaugh, C. O. Aug. 26.

Concretes.—A composition which is to be used in place of concrete for building and like blocks, brake blocks, &c. consists of 8 parts of cement, 3 parts of carbonaceous matter such as charcoal, $1\frac{1}{2}$ parts of blood, and 1 part of water.

19,590. Ehrlich, W. March 1, 1912.

Compositions containing bituminous, resinous, and siliceous materials.—Slabs for paving or road-covering are formed of a composition containing 40 parts of pitch, $13\frac{1}{2}$ parts of coal tar, 30 parts of natural asphalte, $8\frac{1}{2}$ parts of resin, 4 parts of Trinidad-Goudron, which is stated to be a mixture of asphalte tar and oil, 4 parts of chalk powder, and 900 to 950 parts of broken stone. The stones are heated to about 80 to 100° C., and the other ingredients, heated to 150° C., are poured over them.

20,076. Schallenberg, J. H. Sept. 9.

Concretes.—A composition for hastening the setting of, and for waterproofing, cement or mortar consists of preferably 90 parts of sodium bicarbonate, 10 parts of potassium bicarbonate, 2 parts of barium chloride, with or without any or all of gypsum or plaster of paris, soda, water-glass, and potash. About 3 to 10 per cent of this mixture is used, or sometimes as much as 15 per cent.

20,086. Donecker, A. Sept. 30, 1910, [Convention date].

Gravel, artificial.—In the manufacture of artificial gravel, small stones, particles of baked clay, or the like are coated with a mortar consisting of fine sand or stone, cement, or lime, and colouring-matter, and allowed to set in grains before laying. Potassium silicate may also be added to the product. Specification 7620/10 is referred to.

20,219. Pyke, T. H. Sept. 12.

Concretes.—In a composite artificial stone consisting of a core and a facing, the core is made of a mixture of about 5 to 20 parts of powdered blast-furnace clinker, 65 to 50 parts of sharp grit, and 30 parts of Portland cement, while the facing is made of about 65 parts of a mixture of crushed stone and sharp grit, 25 parts of finely ground Portland cement, 2 parts of shellac, 3 parts of alum, and 5 parts of powdered silica. The stone is preferably hardened by standing in water for 10 to 20 days and is applicable for making blocks, columns, piles, slabs, tiles, or for making walls, flooring, stanchions, &c. *in situ*.

20,535. Weiffenbach, A., and Farrell, M. J. Sept. 16.

Compositions containing cement, carbon, &c.—A composition for making plaster or stucco is composed of: 20 parts of a cement, preferably Portland cement, 20 parts of charcoal, preferably vegetable charcoal, and 1 part of siliceous earth, preferably infusorial earth. When required for use, the dry powder is mixed with water.

20,630. Skilbeck, F. Sept. 18.

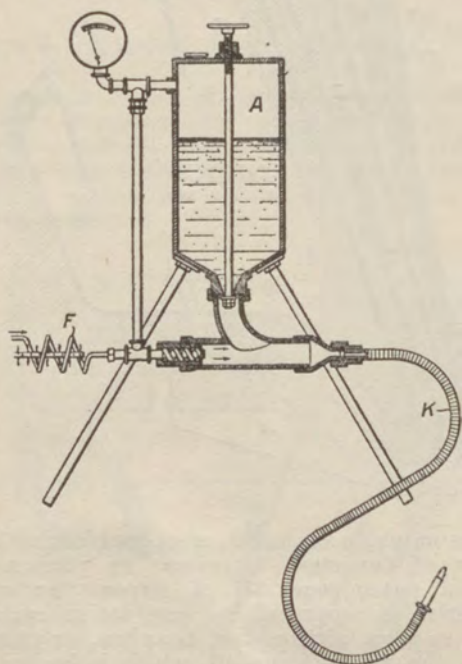
Compositions containing bituminous and siliceous, and like materials.—The composition consists of Portland cement, pitch, coal tar, river sand, furnace grey slag, ground granite, and coke breeze heated together in substantially equal proportions.

20,873. Bacigalupi, A. E. Sept. 21.

Compositions containing plaster, calcium carbonate, &c.—Dies for making celluloid or similar printing-plates are formed of a plastic composition which sets hard. It comprises hydrated silicate of magnesia, carbonate of lime, baryta, powdered slate, and manganese

earth, in suitable proportions, and also a small amount of calcareous or other substances such as plaster or talc. These materials are ground, mixed and made into a paste with water.

21,066. Schopp, M. U. Oct. 7, 1910, [Convention date].



Cement and concrete surfaces, hardening.—Glass, wood, or other surfaces are coated with metal by spraying against the surface, and under very high pressure, powdered metal which may be oxidized or combined during the process, the surface not being heated to the melting-point of the powder. The powder is contained in a vessel A and is carried by a stream of compressed air or other gas through a flexible pipe K fitted with a nozzle. The air &c. may be heated by a burner placed within a coil F, or if a stream of combustible gas is used it may be ignited at the nozzle. A flux or reducing agent may be mixed with the powdered metal, or an oxidizing-gas may be used to produce coatings of metallic oxide. Alloy coatings may be obtained by the use of a mixture of powdered metals, or by the simultaneous use of two or more spraying-nozzles; or an intermediate coating may be formed on the surface to alloy with the powdered metal.

In the Specification as open to inspection under Section 91 (3) (a), the application to the coating of cement and concrete is mentioned; this subject-matter does not appear in the Specification as accepted.

21,697. Rhodin, J. G. A. Oct. 2.

Cements, Portland, materials for.—Hydraulic cement is prepared from felspar (orthoclase) by heating a mixture of 100 parts of the spar with 56 parts of slaked lime and 40 parts common salt at about 900–1000° C., lixiviating with hot water until the contents of chlorine in the mass, calculated on the dry weight of the residue, corresponds to about 0.25 per cent of common salt. Potash may be recovered from the solution by crystallization. The wet residue in the proportion of about 100 parts (calculated as a dry product) is then added gradually to form 40 to 70 parts of quicklime and mixed. The slurry so obtained is heated in a muffle to about 1000° C. for about an hour. Instead of incomplete lixiviation, a salt solution may be added to the completely washed slurry. Specifications 16,780/99, [Class 1, Acids, alkalies, &c.], 2628/10, and 18,338/10 are referred to.

23,210. Butler, J. W. Oct. 20.

Compositions containing vulcanized oils.—An india-rubber substitute is made from a mixture of preferably 8 parts of tar, 9 parts of bitumen, 8 parts of soya oil, 3 parts of vaseline, paraffin wax, &c., 10 parts of talc or the like, 7 parts of asbestos, 2 parts of magnesia, 2 parts of kauri gum, and 6 parts of sulphur. The Provisional Specification also describes the addition of 9 parts of Chinese wood oil and 2 parts of resin.

24,775. Poulsen, A. A. V. Nov. 21, 1910, [Convention date].

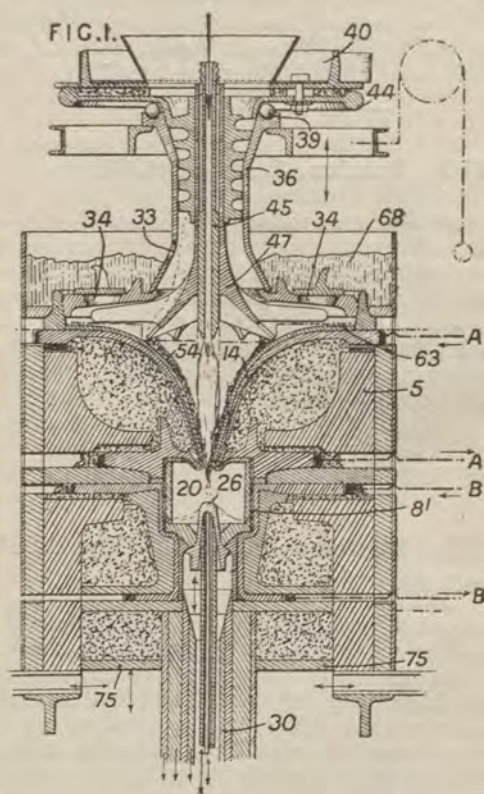
Cements, Portland, materials for.—Coarse unground burnt Portland cement is mixed with raw but dried diatomaceous earth, such as tripoli, kieselguhr, infusorial, and similar earths, in proportions calculated according to the chemical constitution of both materials, and the mixture is finely ground in order to assist the combination of surplus lime with the chemically active silica of the kieselguhr &c..

25,286. Pybus, R. H., and Pybus, E. M. Nov. 14.

Compositions containing bituminous materials and vulcanized oils.—A porous elastic composition for filling tyres comprises a mixture of an oxidizable vegetable oil, a suitable carbonate, for instance sodium carbonate, and sulphur chloride, together with a hydrocarbon which is neutral towards sulphur chloride, such as mineral waxes, paraffin, ceresin, petroleum jelly, or residue, or mineral oils, such as benzene, paraffin, or lubricating-oils. Specification 6206/10, [Class 93, Ornamenting], is referred to.

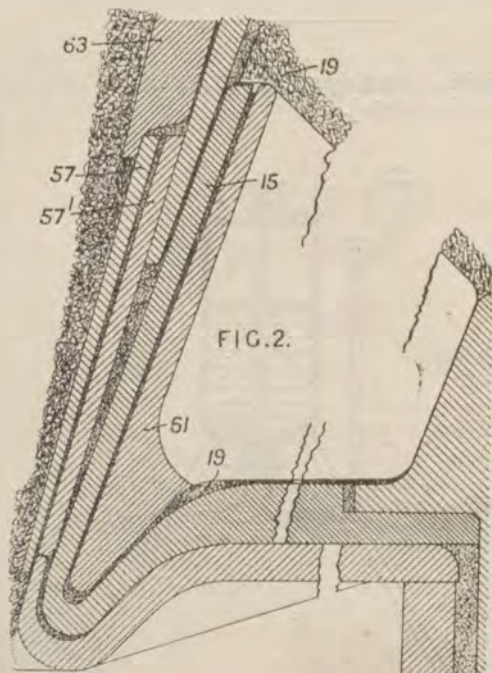
25,553. Punchard, J. H. Nov. 16.

Concretes; compositions containing bituminous and siliceous materials, and plaster and siliceous materials.—The waste siliceous sand washed out of China-clay is mixed with Portland cement, tar, bitumen, plaster, or other suitable binding-material. In some cases a little resin may be added. The composition is used as a concrete for making bricks, tiles, pavement, and partition slabs, posts or poles, sleepers, and electric-insulating tubes.

25,890. Mettler, G. Nov. 20.

Refractory substances.—In an electric furnace for temperatures up to 2400° C., a funnel-shaped carbon resistance 14, Fig. 1, is lined with material 54 conductive when hot, such as, at the cooler part, melted magnesia 63, and at the central part thorium, or preferably zirconia, fritted with boric oxide or also with tungsten or tungsten oxide; the lining 54 may be attached to the carbon by a conductive cement consisting of 1 to 2 parts boric oxide, 96 to 98 parts of zirconia, and $\frac{1}{4}$ to $\frac{3}{4}$ part each of potassium silicate and ammonium sulphide. The zirconia lining may be extended to form the roof of a refining-chamber 20, which may have walls of burnt zirconia when pure silicates are to be kept liquid, separated from an external carbon resistance 8' by an expansion space containing carbides such as of tungsten or titanium. Interspaces in the furnace are kept filled with fused

magnesia. In a modification, Fig. 2, the lining of the smelting-zone is composed of a cone 57 of zirconia backed by a layer of reguline tungsten, optionally cemented with boric oxide or



titanium oxide or metal, or of carbides such as those of tungsten, titanium, or yttrium; a second outer cone 57' of zirconia or other material is separated by conductive carbides such as those of tungsten, titanium, or yttrium from the carbon cone 15, which is backed by an insulating cone 61 of zirconia, made in several parts, and having ribs projecting outwardly into the magnesia filling 19. The zirconia cones are made non-porous by fritting with boric oxide and protect the tungsten from carbonaceous vapours.

25,992. Picha, E. Nov. 21.

Cement surfaces, hardening.—Cement or like tiles are placed with the under surfaces in contact with a solution of sodium or potassium silicate, and are allowed to remain until the liquid is visible on about one-fifth of the areas of the upper surfaces, when the tiles are dipped into water.

26,374. Fraser, J. J. Nov. 25.

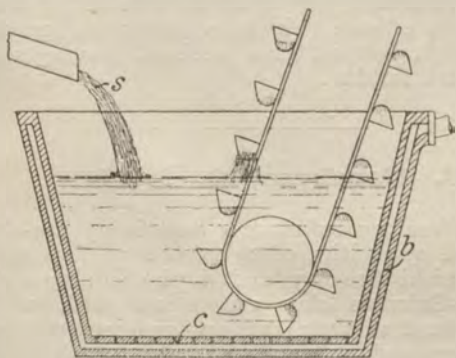
Compositions containing bituminous and siliceous materials and oils.—In the covering of walls, floors, or the like with panels or the like of artificial stone, the surface to be covered is cleaned, and a composition consisting of about 75 per cent of pitch, 15 per cent of Portland cement, 7 per cent of pulverized slag, stone,

or gravel, and 3 per cent of creosote oil is applied in a heated state. Panels are moulded on a glass or like plate from a composition such as that described in Specification 5079/11, [Class 70, India - rubber &c.], but preferably having 40 per cent of slag and 36 per cent of magnesite, and when partially hardened are placed with the glass plate against the wall, the plate being removed when the stone hardens.

26,544. Harris, A. G. Nov. 27.

Concretes consist of hydrous magnesium silicate in the form of non-fibrous serpentine, Portland cement, and a filler such as cinders. In an example, two parts of serpentine and one part of cinders are mixed with two parts of Portland cement.

26,704. Schol, C. H. Nov. 29.



Slags, treatment of; compositions containing lime and slag. — Artificial stone is made from blast-furnace slag by utilizing bulky porous lumps, obtained when granulating the slag, as the filling-material, and finely ground slag, with or without lime, as the binder. To obtain a large proportion of lumps, the slag *s* is run into a tank *b* of water through which air under pressure is forced through holes *c*. The lumps

are removed by a chain of buckets as shown. To obtain a stronger product, the lumps may be individually coated with mortar which is allowed to harden before making-up into blocks or the like. This end is also attained by rolling the lumps, as they leave the granulating-tank, in dry mortar. To render the stone frost-resisting, calcium chloride or the like is either added to the water, or mixed dry with the binding-agent.

28,361. Engel, H. W. Dec. 16.

Stone, preserving; stone, colouring.—Marble and like natural stone is rendered more transparent by saturating it with a solution of a resin or a preparation of cellulose, such as celluloid or gun-cotton, in a volatile solvent. The stone and solution may be warmed, and the solution may be coloured. The surface of the stone may be cleared of the impregnating-medium by rubbing it with magnesia, or a rag soaked in alcohol, amylacetate or the like.

28,536. Ceulaers, G. A. A. Dec. 19.

Compositions containing oxidized oils and calcareous and like materials.—A composition of 2.5 parts of chalk and one part of a mixture consisting of 4 parts of boiled linseed oil, 3.5 parts of gas tar, 1.5 parts of rosin oil, 1 part of a rubber solution, and 0.001 part of manganese borate is used as an elastic cement, more particularly for fixing glass in metal frames or pavement lights and for pipe joints.

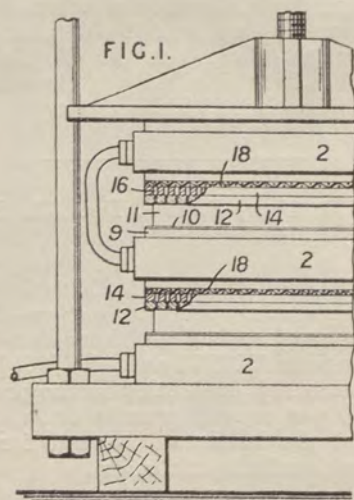
29,390. Butler, J. W. Dec. 30. *Drawings to Specification.*

Compositions containing bituminous and siliceous materials. — A composition of granite or siliceous sand and of the hard tar described in Specifications 2102/04 and 4427/06, [Class 55, Gas manufacture], preferably in the proportions of 60 to 80 per cent of granite &c. to 40 to 20 per cent of the hard tar, is used for making drain-pipes, conduits, slabs, &c.

A.D. 1912.

1066. Campbell, J. Jan. 13.

Refractory substances containing silica.—Silica bricks &c. are formed by mixing together silica, soda or its equivalent, for example sodium carbonate, sulphate, or chloride, quicklime, and water, and moulding, drying, and burning at a temperature up to 3000° F. so as to bring about the formation of a glass or like vitreous binding-material. The proportions preferred are 96 per cent of silica, and 2 per cent each of soda and lime.

1390. Wheeler, J. A. Jan. 17.

Cement and like surfaces, hardening.—Artificial wood slabs &c. 11 formed from asbestos mixed with a filling-material, which may consist of burnt clay and a binder, preferably consisting of or containing silicate of soda, are placed, after moulding, in a suitable press having heated chambers 2 with a number of metal plates 9, 10 intervening between each slab 11 and the heated chamber, the plate 10 immediately next to the slab being thin and pliable so that it can be readily stripped therefrom. Between the top of each slab and the bottom of the next pressing-chamber 2 is inserted a series of plates comprising a fine-perforated plate 12 next to the slab, a plate 14 having larger perforations, a sheet of wire netting 16, and an impermeate

plate 18. Pressure is then applied to the slabs, preferably in successive stages of increasing intensity, to dry and harden them.

1961. Soc. Générale des Nitrures.
Jan. 26, 1911, [Convention date].

Refractory substances.—Bricks applicable for lining electric furnaces consist of agglomerated aluminium nitride, which is inert and non-conductive at 2000° C. The nitride may be agglomerated, for instance, with 10 per cent of sodium silicate, which is eliminated gradually at high temperatures without leaving a conductive residue.

3309. Hanabusa, M. Feb. 9.

Refractory substances containing fire-clay.—Equal quantities of a refractory clay such as Mitsubishi fire-clay and a plastic clay such as Gifu-Gairume clay are mixed with a little powdered sulphur, and one or more friable substances such as powdered coke, powdered coal, sawdust or the like are added. The subsequent burning removes the combustible material, leaving a light porous fire-brick. To increase the durability, graphite may be added to the mixture.

4148. Radcliffe, J. Feb. 19.

Compositions containing bituminous materials, oils, and siliceous and like materials.—The impalpable organic dust, obtained as a residue in grain milling, and known as 'mill dust,' is mixed with pitches, asphalts, or bitumens, with or without oil such as green oil, and mineral matter such as crushed flint for making and repairing roads, and for other purposes. Specifications 11,859/05 and 4589/11, [both in *Class 70, India-rubber &c.*], are referred to.

4887. British Thomson-Houston Co.,
[General Electric Co.]. Feb. 27. Drawings to Specification.

Stone, artificial.—Wear-resisting bodies are made from substantially pure aluminium oxide,

which is highly sintered but not fused. Finely divided oxide is mixed with about 10 per cent of a binder such as gum tragacanth, and baked at 1300-1400° C. The substance has then the consistency of chalk, and can be machined. The article is burnt at 1800-2000° C., and finished with diamond dust.

4949. Owen, A. G., and Bennett, J. F.
Feb. 28.

Compositions containing waxes and french chalk.—A composition for modelling and similar purposes consists of 100 parts of paraffin wax having a 'setting-point' of 104-112° F. and from 25 to 125 parts of french chalk. Colour and perfumes may be added.

5082. Jones, W. N., Thomas, J. R. R., Lloyd, P., and Burns, J. F. Feb. 29.

Concretes.—The invention relates to the process of making bricks by mixing ground colliery shale, slag, or slate refuse with lime, moistening the mixture, moulding, and subjecting to steam pressure, and consists in using blue lias lime or Aberthaw lime. The preferred proportions are 10 parts of shale &c. to 1 part of lime.

5346. Loewenthal, F. K. March 2.

Compositions containing chalk and clay.—Chalk, creta preparata, or other prepared chalk or chalk preparation, clay, pipe-clay, or any other fine clay, or other clayey or chalky earth, or a combination of any two or more of the same, is introduced into the inner tubes of tyres to seal punctures. Water or a similar vehicle may be previously mixed with the material or may be charged into the tyre.

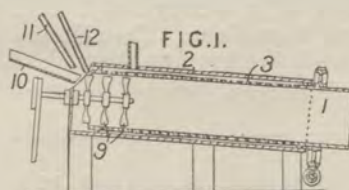
6019. Göpper, J., and Geiger, O.
Sept. 6, 1911, [Convention date].

Compositions containing bituminous and resinous materials.—To obtain a viscous, adhesive, stringy substance for use in the asphalt industry, and as an addition to tar varnishes, and to bitumen for wood-block paving, colophony is treated at 200° C. with concentrated sulphuric acid. Excess of acid is subsequently neutralized with soda lye.

6462. Walter, C. March 15.

Slag cements.—In making cement from blast-

furnace slag, the molten slag is supplied to one end of an inclined perforated drum 1, and is thrown against the walls by propeller-like blades or beaters 9. The drum may be mounted to



rotate within a stationary drum 2, or both drums may be rotated together, and water or other cooling-fluid is supplied to the annular space 3 between the drums. Pipes 11, 12 supply lime or other material to improve the quality of the cement produced.

6597. Binetter, M., and Komlos, D.
July 25, 1911, [Convention date].

Compositions containing cement, silica, &c.; stone, hardening and preserving.—Relates to the manufacture of artificial stone for tiles &c. Ground burnt clay, such as brick dust, is mixed with 6 to 8 per cent of pulverized vegetable fibre rich in silica, such as equisetum ('horsetail'). One-quarter to one-fifth part of hydraulic binding-material, such as cement, is added, and the mixture is moistened with dilute hydrofluoric acid of such a strength that the silicates are not decomposed. The product is moulded and dried, and then hardened by treating again with dilute hydrofluoric acid.

7009. Schlör, J. March 21. *Drawings to Specification.*

Compositions containing bituminous matter.—The space between an aluminium barrel and a wooden casing with which it is provided is filled with an insulating-material consisting of a mixture of paraffin and soft pitch or of either of these with carbolineum or the like.

8399. Doggett, E., and Durling, S.
April 9. *No Patent granted (Sealing fee not paid).*

Concretes.—An artificial stone is made by grinding and mixing together 80 per cent of Perrie Le Vaudoné stone, 2 per cent of iron silicate, 2 per cent of a solution of white shellac, 1 per cent of soda and alum, and 15 per cent of Portland cement with the requisite quantity of water and moulding.

8452. Barrett, T. J. April 9.

Compositions containing bituminous and siliceous materials and oils.—A road composition

is made from preferably 6 parts of a gravel or stone base mixed with 1 part of oyster or clam shells, $\frac{1}{4}$ part of sand, $\frac{1}{4}$ part of cement, 1 part of bitumen, and $\frac{1}{4}$ part of flux, the last-named consisting of a mixture of 1 part of bitumen and 3 parts gasolene. The siliceous matters are mixed cold, the hot flux then added, and finally hot or cold bitumen.

8674. Parks, S. April 12. No Patent granted (Sealing fee not paid).

Stone, colouring.—A colouring-composition for sprinkling on the surfaces of tiles made from 1 part of cement and 2 parts of sand, consists of 1 part of sand, 1 part of brown oxide of iron, and 1 part of black oxide of manganese, or other manganese compound insoluble in water and unacted on by dilute acids.

9004. Butterfield, J. C. April 16.

Compositions containing bituminous and siliceous materials and oils.—Consists in forming a matrix for road construction of finely divided stone mixed with a solution of asphalt, pitch, tar, or the like in crude mineral oil and combined with calcined magnesia. Mineral aggregate is afterwards rolled into the matrix while the road is 'watered' with a solution of magnesium chloride which acts on the magnesia in the matrix to bind the whole.

9740. Verstappen, M. April 24.

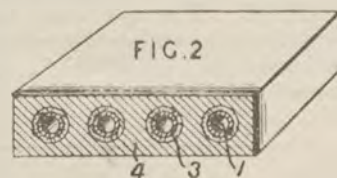


Compositions containing plaster, fibres, &c.—Slabs, blocks, mouldings, &c. for building and decorative purposes consists of a mixture of two parts sulphate of lime plaster and one part of sand reinforced with a skeleton of the fibre known in this country as carded sisal and in Belgium as 'fibre de Mexique' from plants belonging to the genus 'Agave,' of which the *Agave Zapupe*, *Agave Lespinassei*, *Agave Endlichiana*, *Agave Aboriginum*, *Agave Derweyana* are known species.

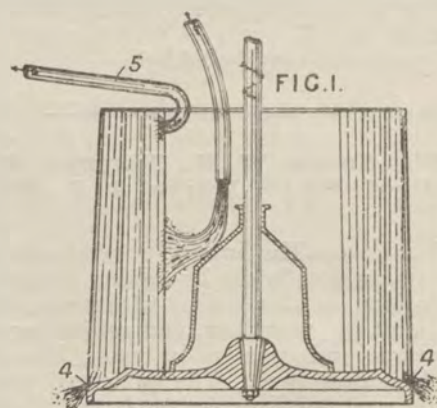
9745. Imray, O., [Luckenbach Inventions Development Co.]. April 24.

Refractory substances containing clay and graphite.—A non-fusible refractory substance for filling the space 3 between a chamber or tube 1 containing fluid to be heated, and a cast-metal body 4 for absorbing and transmitting heat, is composed of 2 parts of blast-

furnace clay and 1 part of graphite worked up with cotton-seed oil.



9833. Verschaffel, H. April 25. No Patent granted (Sealing fee not paid).



Cements, Portland, processes and apparatus for making.—Water is eliminated from slurry containing, for example, 40 to 65 or 70 to 90 per cent of water by a process termed 'decanation' in a centrifugal machine, or the machine may be regulated so as to reduce the percentage of water remaining in the slurry to 40. In the machine shown, the water is withdrawn through a pipe 5 and the cement through an opening 4.

10,424. Keen, C., and South, J. T. May 2.

Compositions containing plaster, lime, gums, glycerine, acids, salts, &c.—A plaster for internal use on walls &c. is made from 34 parts of gypsum, 21 of chalk, 5 of river mud or clay, and 40 of sand or ground flint, there being added to every ton of the mixture $\frac{1}{4}$ lb. sodium silicate or potassium alum, 2 oz. of sulphur, $1\frac{1}{2}$ lb. of molasses, $\frac{1}{2}$ pint of glycerine, $\frac{1}{2}$ gill of acetic acid, concentrated essence of lemon, or cream of tartar, $\frac{1}{2}$ lb. of zinc or copper sulphate and 1 lb. of gum arabic or similar vegetable gum. The burnt and crushed gypsum is first mixed with the molasses and alum; the chalk is burnt after being mixed with the sulphur and zinc sulphate; the river mud or clay is burnt sufficiently to remove impurities, and is then mixed with the acetic acid and a solution of the gum until it is of a creamy consistency. To this is added sufficient of the chalk mixture to absorb the moisture. The various ingredients are then

ground together. For external work, the gypsum is omitted and 1 gill of paraffin or 3 oz. of naphthalene are added to every ton of the mixture.

11,771. Podszus, E. May 17, 1911, [Convention date].

Refractory substances.—Ceramic or fireproof bodies not containing clay are manufactured from the rare earths, aluminium oxide, quartz, magnesia, thorium oxide, zirconium oxide, and other difficultly soluble oxides and mixtures thereof by working the base material, reduced to a degree of fineness of 0.005 to 0.0001 mm. or less, to a liquid or paste with a colloid solution of the base material or of one of the other substances specified. The product may be subsequently fired. The colloidal solution is preferably produced in the presence of the finely ground powder, for example, thorium oxide may be mixed with a solution of thorium or zirconium nitrate, the acid being subsequently eliminated by dialysis or by evaporation, the acid and water being replaced. After some time, only water is added, so that the acid is gradually driven off. The powder is finally allowed to settle and is then washed. As binding-agents, colloidal forms of magnesium hydroxide, thorium hydroxide, aluminium hydroxide from aluminium acetate, and silicic acid from sodium silicate and hydrochloric acid, are among the substances referred to. In some cases gelatine, gum, &c. may be used as subsidiary binding-agents, in quantity more than 0.5 per cent. Not less than 0.3 per cent of alkali or acid should be used in making the colloidal solution. The process may be applied for improving the plastic qualities of materials of low plasticity or for reconvertng already burnt material to a plastic state.

The Specification as open to inspection under Section 91 (3) (a) comprises also the following. When colloidal solutions are used as binding-agents, for example thorium hydroxide, in place of evaporating the acid by means of heat, it may be done in the cold and the process may be hastened 'by allowing alkaline reactions to act upon the mass from time to time.' This subject-matter does not appear in the Specification as accepted, but part of it forms the subject of the divided Application 23,577/12, [Class 87 (ii), Moulding plastic &c. substances].

11,799. Billwiller, J. May 17.

Mortars, lime and magnesia; stone, hardening.—Dolomite calcined at a temperature at which the carbon dioxide is driven off only from the magnesium carbonate, that is, about 850° C., is mixed with a solution of water-glass to make a mortar for the manufacture of artificial stone. Should the calcined dolomite contain more than 5 per cent of caustic lime, this lime is hydrated by the addition of water. Small quantities of gypsum and clay may be

added to the dolomite, and also fibrous materials such as sawdust, asbestos, or cork meal. The artificial stone is hardened by impregnating the surface with a solution of an alkaline phosphate.

12,027. Basset, L. P. May 21.

Cement, Portland, materials and compositions for.—Natural sulphate of lime (gypsum or anhydrite) or plaster of paris is mixed with clay, and coal or charcoal, and treated with steam at a temperature of about 900° C. in an oxidizing atmosphere to produce cement and sulphur dioxide. The sulphate of lime and clay are mixed with about 10 per cent of coal or charcoal, and, if necessary, about 2 per cent of oxide of iron, and the mixture is passed into a furnace, preferably rotary, and heated. Steam is introduced or may be produced by the combustion of a substance rich in hydrogen. In a modification, the sulphate of lime is mixed with an excess of clay and burnt as before, limestone being then added to restore the basicity, and the mixture again burnt.

13,248. Sokal, S., [Armstrong Cork Co.]. June 5.

Mortars.—A cellular heat-insulating composition is composed of:—75 per cent of diatomite, 12½ per cent of ground lime, 12½ per cent of asbestos, and water. The mixture is moulded, allowed to set, preferably under heat, and finally dried. The use of asbestos is optional, or it may be replaced by other fibrous or pulverulent materials, while the lime may be replaced by other alkaline earths or their oxides or salts.

13,564. Hartung, M. June 10.

Concretes.—In a process for making an artificial stone resembling marble, the binding-medium, such as plaster or hydraulic cement, is mixed with a granular filling-material such as sand, crushed stone, fire-brick, or the like, and excess of water is added. The more soluble impurities are thus separated; the water is then decanted, and the mass placed in a bag and subjected to pressure or centrifugal action to remove surplus liquid. Veins or spots of colour are produced by known means. If several colours are desired, semi-wet masses of various colours are made as before and spread with suitable powdered colours, and the lumps are then compressed in a mould.

13,803. Záhony, K. Ritter von. June 12.

Cements, Portland, processes for making.—In

the manufacture of cement in rotary kilns, the materials are ground in a wet state, and are then freed from water by mechanical means, such as presses or centrifugal apparatus. The resulting product, containing about 15 per cent of water, is fed into the kilns in the form of a loose powder.

14,235. Schwerin, Graf B. June 18.
[Addition to 2626/11.]

Refractory substances.—Articles of ceramic refractory material are made from material not naturally plastic, other than corundum or carborundum, by working it in the colloidal condition, in the following manner. The material must be in very fine powder, made by grinding if necessary. It is suspended in water or other liquid, and if necessary an acid or base is added, according as the suspended material is electro-positive or electro-negative. Coarse particles or impurities are precipitated. The suspended material is next separated from the liquid either by deposition, which may be aided mechanically, or by electro-osmotic methods, as described in Specifications 10,024/07 and 3364/11. [both in Class 41, Electrolysis]. The suspended material, mixed with water, is cast or moulded, and then dried and fired. The articles produced are porous or dense, in accordance with the temperature at which they are fired.

14,665. Almeida, G. d', [trading as Almeida & Co.]. June 22.

Compositions containing oils.—'Tam Ti' powder and 'Tang Iu' oil are mixed together for various purposes, or the latter may be boiled alone or with waste or bamboo paper for the manufacture of a rubber substitute. 'Tam Ti' powder is obtained from a quartz, containing gold or silver or both, by grinding, burning, and, after removal of the metal, crushing the resulting hard mass. 'Tang Iu' oil is extracted from the nut of *aleurites Fordi*. The preferred method of mixing is as follows. One pound of oil is boiled over a slow fire for from 3 to 4 hours and from 5 to 6 drams of powder are added, and the mixture is stirred until cool and thick. This product may be used for waterproofing, preserving, &c. By boiling slowly for a long period or by boiling quickly, lumps of a rubber substitute are obtained. The mixture is adapted for the following uses. It may be mixed with paper and moulded into articles usually made of rubber, such as tyres, balls, and toys, enamels or paints may be improved and waterproofed by adding a portion of the mixture; silk, linen, cloth, canvas, leather, and paper may be coated with the mixture for making wearing-apparel, tents, tyres, boats, water-carrying bags, flags, linoleum, curtains, roofing-material, and more particularly articles which it is desired to waterproof; electric wires and cables may be waterproofed and insulated; cinematograph

films may be made by coating paper, silk, &c. bearing pictures; and silk &c. may be rendered transparent.

15,460. Queneau, A. L. J. July 19, 1911,
[Convention date]. Drawings to Specification.

Refractory substances containing graphite &c.—Magnesite or clay mixed with graphite is used in making bricks for lining electric furnaces. The bricks are laid in mortar composed of tar or oleaginous matter, graphite, and magnesia.

16,044. Siemens & Co., Geb. July 20, 1911, [Convention date].

Refractory substances containing carborundum.—Refractory articles conducting electricity, and composed mainly of carborundum, are made by moulding a mixture containing free silicon and carbon and, if necessary, a binder such as paraffin or resin, and heating in carbon monoxide or dioxide to 1400–1500° C. to form a mixture of silicon carboxide (SiCO) and carbon, which is then further heated to 1600–1700° C. in a non-oxidizing gas such as carbon monoxide, when it forms carborundum and carbon monoxide. Some silicon carboxide or carbon may remain in the articles, and other materials such as clay or carborundum may be added to the starting mixture. The final heating preferably takes place in an electric furnace. The articles obtained are stable up to 1400° C., and are hard, somewhat porous, and capable of being filed, milled, cut, ground, or otherwise worked.

16,157. Nederlandsche Betonyzerbouw Akt.-Ges., and Mijs, J. July 10.

Concrete surfaces, preserving.—Concrete is rendered impervious to liquids such as oils by treating its surface with gluten, gelatine, or the like, mixed with a little glycerine. When dry the layer is treated with tanning-agents, such as formaldehyde.

17,064. McDonald, E. D. July 22.
Drawings to Specification.

Compositions containing plaster and cement.—A burial casket is built up from a composition of three-fourths gypsum plaster and one-fourth Portland cement, mixed with water. The composition may be used as a jointing-material for use in securing together the parts of the casket, molasses being added to retard setting.

17,070. Plumb, R. A. July 22.

Concretes and mortars; cements, Portland.—Cement, mortar, and concrete are rendered waterproof by adding to the gauging water an insoluble soap mixed with from 1 to 5 per cent of ammonia to render the soap readily miscible with water. The ammonia is subsequently evaporated.

18,804. Löwy, B. Aug. 16. *Drawings to Specification.* [Addition to 18,139/12, Class 87(ii), Moulding plastic &c. substances.] No Patent granted (Sealing fee not paid).

Compositions containing waxes.—A composition for modelling purpose consists of 400–500 grammes bees-wax, 400–500 grammes ceresin, and 50–150 grammes turpentine oil.

18,883. Laufer, W. Nov. 24, 1911, [Convention date].

Stone, artificial; compositions containing lime, silica, &c.—Granite or graywacke, basalt, porphyry, or the like in coarse and in fine granulations are mixed with aluminium phosphate and sodium carbonate in about the following proportions: 40 parts of coarse porphyry, 50 parts of fine porphyry, such as porphyry tuff, 6 parts of aluminium phosphate, and 4 parts of sodium carbonate. The mixture is moistened, pressed into blocks, and heated to about 1100–1200° C. Silica and lime may be added in quantities of from 5 to 10 per cent to regulate the clinkering. To increase the cementing power of the mass, colloidal alumina may be added in the proportion of from 2 to 8 per cent aluminium hydroxide in the whole mass.

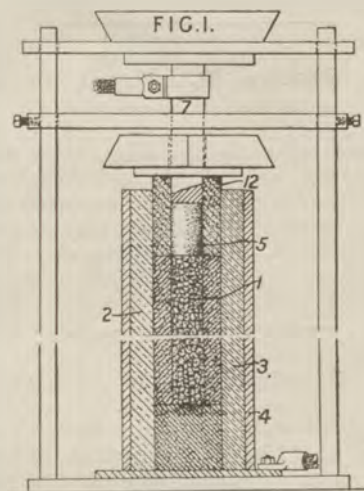
19,911. Staszewski, G. von. Sept. 2, 1911, [Convention date]. *Drawings to Specification.*

Mortars.—Limestone containing a low percentage of carbonate of lime is calcined in a rotary kiln of the kind through which the materials and the heating-gases pass in the same direction. The product is slaked if necessary, ground with 2 per cent of gypsum, and then made up into mortar in the usual way.

20,348. Weintraub, G., and Rush, H. May 28, [Convention date].

Refractory substances.—Refractory materials are consolidated into a coherent homogeneous mass by subjecting them simultaneously to pressure and to heat, for example by passing an electric current through the mass. Fig. 1 is a vertical section of one form of sintering-furnace. The material 1 to be consolidated, such as boron, boron carbide, silico-carbon, refractory carbides,

conducting nitrides, metals such as tungsten, molybdenum, chromium, or refractory alloys, in powder, granules, or lumps, is confined in a tube 2 consisting of boron nitride or other



refractory material which is an insulator of heat and electricity. Between the metal tube 4 and the tube 2 is a tube 3 of fused quartz or alundum. Pressure may be exerted upon the upper electrode 5 by means of a weighted rod 7 and upon the boron nitride liner by means of a weighted ring 12 or other automatic means may be employed for this purpose. In a modification, the tube 3 is made of silica and is surrounded by a heated wire embedded in concrete, the internal electric heating being conducted as in the previously-described modification.

21,161. Palmer, W. Sept. 17.

Compositions containing cement and shells.—A composition for making artificial stone, and for use for walls, floors, columns, and in building construction generally, consists of cement such as Portland, Roman, Keene's, Parian, or the like and crushed sea or river shells, excluding shells of pearl-forming molluscs, such as oyster shells. The proportions employed vary from equal parts of the two ingredients, to two parts of shell to one of cement.

21,345. McCourt, C. D., Radiant-Heating, Ltd., and Schnabel, R. Sept. 19.

Refractory substances containing fire-clay.—A refractory body required to withstand high temperature, such as a muffle, retort, crucible, tube, &c., comprises a metallic skeleton or reinforcement of wire, wire gauze or netting, expanded metal, or the like of approximately the outline of the finished article, coated or otherwise completely covered with refractory materials consisting of a plastic mixture of either

finely-ground fused bauxite and unburnt fire-clay, or burnt and unburnt fire-clay. Iron or nickel may be used for the reinforcement.

23,541. Starke, P. May 3, [Convention date].

Concretes.—The flying ashes that are deposited in the boiler tubes of locomotives are mixed with cement to form a concrete from which may be moulded supportssuch as rail-road ties, blocks, floors, arches, girders, &c. Suitable proportions are 5 parts of the ashes and 1 part of cement.

23,559. Oberleithner, G. Oct. 15.

Stone, hardening.—In order to prevent the formation of 'bloom' in cement or cement-asbestos plates or tiles, the cement paste is mixed with acids or acid anhydrides and the pressed plates, previous to setting, are subjected to the action of gaseous acids or acid anhydrides. Both silicic and carbonic acids may be used. The plates are said to be strengthened by the treatment.

23,725. Mankau, K. A. Oct. 17. [Addition to 14,981/10.]

Refractory substances are made by forming within them polyacid and polybasic spinels, that is to say spinels containing a number of bases (oxides of the type RO), and a number of acids (oxides of the type R_2O_3), by burning the primary refractory material, such as dolomite, or magnesite containing calcium carbonate, with a small proportion, up to about 6 per cent, of an oxide, such as bauxite, which contains a certain amount of ferric oxide. In a second example, chrome iron ore, containing chromium and aluminium oxides, is used as the primary material, which is burnt with a small proportion, say 12 per cent, of raw dolomite.

23,923. Egger, I., and Gartenmann, C. Oct. 19. Drawings to Specification.

Concretes.—Waterproof and expansible roofing and flooring consists of 1 cubic metre of pure sand, 7 cwt. of cement, 16 kilos of coal tar, 1 kilo of 88 to 90 per cent anhydrous barium peroxide, and 1 kilo of carbonate of soda crystals dissolved in hot water.

24,035. Bloxam, A. G., [Boersma, H. F.]. Oct. 21.

Cements, Portland, treating after manufacture.—A cement suitable for withstanding sea-

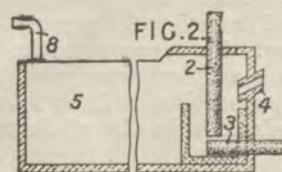
water, and for ferro-concrete constructions is made by adding pozzuolana in the form of trass or tufa in certain proportions to Portland cement clinker before grinding. The proportions are 33 parts of tufa to 67 parts of cement, but if the cement contains less than 65 per cent of lime, 30 parts of tufa to 70 parts of cement are sufficient. Gypsum may be added to control the time of setting, and also salts such as soda, alum, or the like. Instead of pozzuolana, a suitable clay which has been opened up by heating may be used.

Reference has been directed by the Comptroller to Specifications 12,353/06 and 24,775/11.

24,652. Kristensen, S. A. C. Oct. 28.

Compositions containing resinous and siliceous material.—A composition for making printing-surfaces, matrices, mounting-blocks, &c. consists of resin with the addition of 5 per cent of sulphur and sufficient infusorial earth to give the desired consistency. The composition may be used for taking impressions from formes, for mounting printing-plates, for bringing printing-blocks up to type-height, or for moulding printing-surfaces.

25,370. British Thomson-Houston Co., [General Electric Co.]. Nov. 5.



Refractory substances.—A mixture consisting preferably of 15 parts of silica, 12 parts of carbon, and 20 parts of rutile is heated in an electric furnace, preferably of the 'smothered arc' type, until chemical reduction takes place, and the sublimed product is condensed for use as a heat-insulating and refractory material. The claims cover the manufacture of a refractory sublimation product having an apparent density of 0.06 to 0.16, a real density of about 2.56, with a flaky laminated structure, and containing silicon, carbon, oxygen, and titanium. In the furnace shown, the charge is fed by a hopper 4 on to the electrodes 2, 3, and the sublimed product collects in a condensing chamber 5 having a sheet iron cover and an outlet pipe 8.

26,426. Mansan, M. G. C. R. D'Olivier. Nov. 17, 1911, [Convention date].

Asphalts; compositions containing bituminous or resinous and siliceous and like materials.—In

forming a binder suitable for use in conjunction with gravel, sand, wood blocks, and the like for making dustless roads, tar, pitch, bitumen, or other bituminous substances or mixtures of such substances are transformed into hydrocarbons of a wax-like and resinous nature by successive heatings and additions of oxidizing-agents. The tar, pitch, &c. are heated to a temperature below boiling-point, and an oxidizing-agent such as potassium chlorate is added, the oxygen from which combines with hydrogen from the substance being treated. The temperature is then raised, and a second quantity of the oxidizing-agent is added, and so on, a small quantity of manganese dioxide being added to the last addition of potassium chlorate. The resulting binder may be mixed with silicates, sulphates, or carbonates to form impervious cements. It may be used also as a protective covering for wood, iron, steel, &c. The gravel, coal-dust, silicates, &c. may be added before the oxidation treatment, but in such cases it is preferable to use from the beginning a mixture of potassium chlorate and manganese dioxide.

26,505. Schmitt, M. Nov. 18, 1911, [Convention date]. Void. [Published under Section 91 of the Act.]

Concretes.—Flower-pots &c. are moulded from a concrete consisting of cement or lime and sand, gravel, or the like. The concrete may be coloured and the articles may be reinforced with iron or brass wire. Preferred proportions are 1 part of cement to 3 parts of sand, or 1 part of cement, 1 part of lime, and 1 part of sand.

26,913. Jones, H. Sefton-, [Szönyi, S.]. Nov. 22.

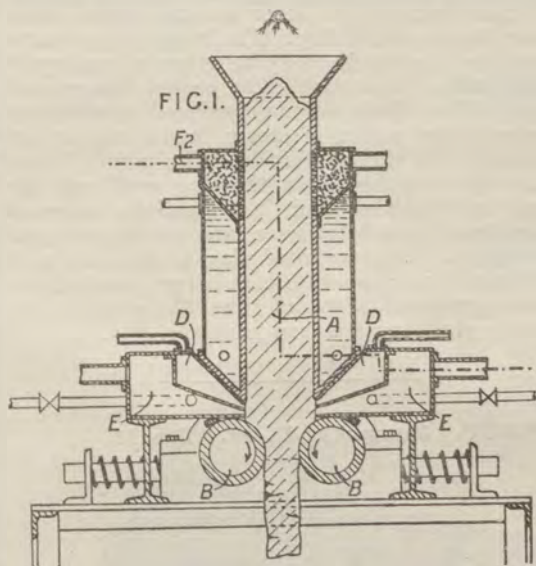
Refractory substances containing fire-clay, quartz, &c.—Fire-bars are made of fire-clay and quartz with or without the addition of magnesite or kieselguhr. The clay is first reduced to powder and moulded into rods and burned for two or three days at a moderate temperature. The clay is then ground and mixed with small pieces of quartz having a maximum size of peppercorns, and also if desired with crude clay, and kneaded with water. The mixture is moulded into grate bars and burned at a slowly increasing temperature until the bars assume a tile-red colour, usually for from six to ten days. To increase the temperature which the bars will stand, magnesite is added before the first burning, kieselguhr being also added to restore elasticity lost by the introduction of the magnesite.

27,632. Bas, W. J. de. Nov. 30.

Figured artificial stone.—Relates to artificial stone particularly adapted for use as flooring. A paste consisting of moist coloured cement is

first placed in the mould, and covered with a layer of dry cement and sand. A further moistened mixture of cement and sand is added, and the whole subjected to a pressure of from 250 to 400 kg. per sq. cm. The pressure being released, the stone is moistened from the top, and again compressed. This ensures a uniform solidification. The stone may then be allowed to harden. In order to act as a preliminary binder before compression, isinglass is added, and the mould may be lined with mica or sheet aluminium so that the finished product may be readily detached.

27,762. Kroll, V. A. M. Dec. 9, 1911, [Convention date].



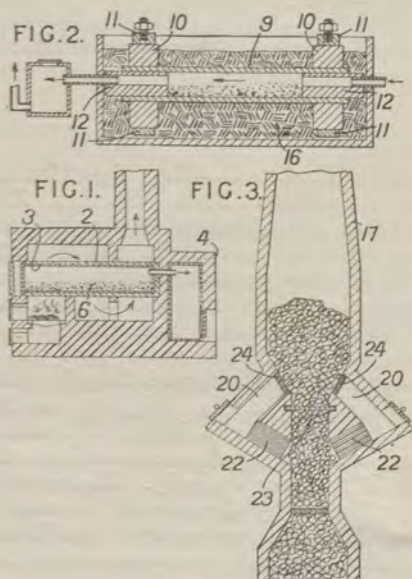
Cements, Portland.—The Specification as open to inspection under Section 91 (3) (a) refers to the manufacture of cement, but this reference does not appear in the Specification as accepted. The process consists in sintering finely-divided oxides, or flue-dust, by introducing air and combustible material in gaseous, finely-powdered, or liquid state, into the heated mass to produce an internal flameless combustion. The dust &c. is fed into a furnace chamber A containing a layer of incandescent coke, and air and gas are supplied through chambers E, D respectively. The combustion may be initiated by the use of burners in the chambers E. The necessary conditions for effecting the internal flameless combustion are ascertained by examining the combustion products which escape, and by observing the degree of incandescence attained by an iron bar which has been inserted into the mass undergoing treatment. Preferably, the mass is moistened, or agglomerants such as molasses, slags, fusible ores, or clay, may be added to the material. The sintered mass is discharged by means of the rolls B at the base of the chamber. In a modifi-

cation, the mass to be agglomerated may be deposited on an endless belt. Specifications 18,338/03, [Class 51, Furnaces &c.], 29,430/09, 4362/10, 625/11, [all in Class 51(i), Furnaces &c., Combustion apparatus of], 14,276/10, 27,524/10, [both in Class 51(ii), Furnaces &c. for applying &c.], 4364/10, and 14,431/10 are referred to.

28,642. Schol, C. H. Dec. 12. *Drawings to Specification.*

Concretes.—Light blocks, slabs, and other bodies are formed of porous bulky lumps of slag, more particularly such lumps as are produced by the processes described in Specifications 26,704/11 and 839/14, agglomerated by means of lime, cement, or other binding-agent other than finely-ground slag. The lumps, previous to forming into blocks, may be given a coating of cementitious material. The coated lumps and the finished blocks may be hardened by exposing them to the action of steam, water vapour, or gases rich in carbon dioxide. The porous lumps may be separated from the slag sand and the slag sand graded and iron particles removed therefrom by subjecting a more or less vertical stream of the granulated slag to the action of a blast of air; separate bins being provided for each grade of material, the bin nearest the nozzle receiving the iron particles.

28,970. Jungner, E. W. Dec. 16.



Cements, Portland.—Alkali oxides and hy-

draulic cement are obtained by heating a mixture of lime, or a body such as limestone which on heating yields lime, with alkaliferous minerals or rocks, weathered or otherwise, containing the alkali oxides together with either argillaceous earth and oxide of iron or argillaceous earth and silicic acid, until the alkali oxide volatilizes, the residues containing calcium, aluminium, and silicon oxides being suitable after grinding for use as a cement. A formula is given for calculating the proportion of lime necessary. The material may be heated in a muffle 2, Fig. 1, lined with graphite 3, connected with a condensating-chamber 4; or in an electric furnace consisting of a carbon tube 9, Fig. 2, with electrodes 12, set, if desired, in heat-retaining material 16, or in a shaft furnace 17, Fig. 3, in which the material in briquets, mixed with fuel, is periodically allowed to descend by operating a shutter 23 between side grates 24, which keep the charge from passing to lateral chambers 20, in which are arranged cooling-bodies of large surface, such as bundles 22 of iron tubes welded together, in which the alkali condenses as carbonate, which is subsequently washed out. In any case, the reaction may be facilitated by being effected in the presence of a stream of a gas such as steam or carbonic acid which combines with the alkali, forming hydrate or carbonate &c. Specification 26,497/12, [Class 1 (iii), Oxides &c., Metallic], is referred to.

29,389. British Thomson-Houston Co., [General Electric Co.]. Dec. 20.

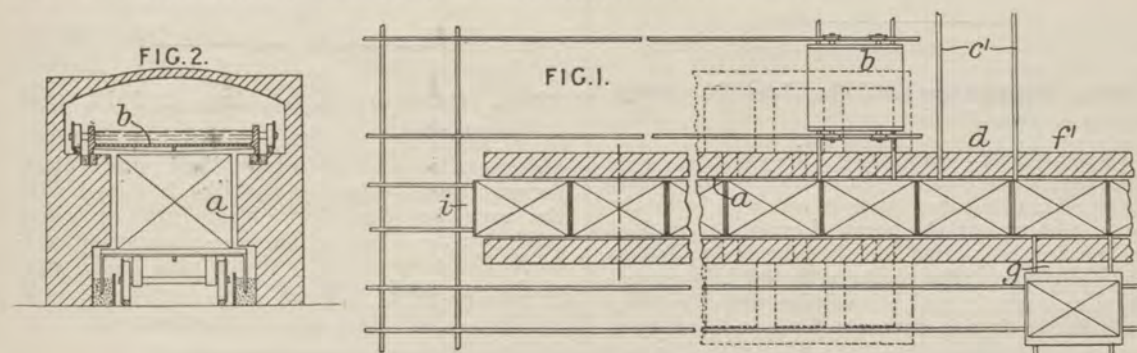
Refractory substances.—A refractory material is made by volatilizing by heat a mixture of silica, carbon, and an aluminium silicate as fire-clay with or without small quantities of manganese oxide and condensing the product. Four parts of silica, 2 parts of carbon, and 4 parts of fire-clay, with or without 1 part of a manganese oxide, are volatilized in an electric furnace, and the material is condensed. A soft felty refractory material of low conductivity is produced, which may be employed for insulating electric furnaces, ovens, refrigerators, &c.

29,857. Golightly, R. E. Dec. 28.

Tiles and the like, hardening.—The hardening of Portland cement and asbestos slabs, tiles, &c. is accelerated by exposing them, say for 24 hours, to a preferably damp atmosphere, and then subjecting them to steam under pressure, say of 80 lbs. for 48 hours.

A.D. 1913.

144. Hewitt Patent Kiln Co., and Hewitt, W. W. Jan. 2.



Cement, Portland, processes and apparatus for making.—Bricks, cement, &c. are made by drying slurry on travelling trays which form the top of a furnace, moulding the slurry while hot, heating the articles formed in a tunnel, passing them through the furnace, and cooling them in a tunnel below or beside the first tunnel.

Slurry on trays *b* is dried by being moved over the top of a furnace *a* to the point *d* where it is removed on rails *c'*. It is then moulded and enters a heating-tunnel above or beside the tunnel *f'*. The blocks leave the tunnel at *g* and enter the furnace at *i*, passing thence to the cooling-tunnel *f'*.

364. Furse, A. D. Jan. 6. No Patent granted (Sealing fee not paid).

Compositions containing bituminous and siliceous, calcareous, and like materials.—A composition for use in making roads, pavements, walls, &c., and which may be moulded into bricks, slabs, and the like, consists of about 80 per cent of a disintegrated material which breaks with a conchoidal fracture, such as flint, gravel, shingle, or quartz, mixed while hot with about 10 per cent of lime, chalk, or clay, and 10 per cent of liquefied bitumen, asphalt, pitch, or the like.

1079. Shark Grip Tiling Co., and White, T. Jan. 14.

Compositions containing bituminous and siliceous materials.—A suitable cement for coating the backs of glass or other tiles consists of 25 per cent of bitumen, 25 per cent of pitch, and 50 per cent of a stiffening-material, such as coke breeze or ashes. Heated marble or other chips are sprinkled on the cement while it is still in a soft condition.

761. Midland Plastering Co., and Hotching, J. H. Jan. 10.

Mortars; compositions containing plaster &c.—A coloured plaster covering for walls, partitions, ceilings, &c. comprises (1) a ground coat consisting of about 1 part by volume of Portland cement, 3 parts of sand, and 3 per cent of a powder, which is prepared in accordance with Specification 17,119/08; and (2) a finishing-coat consisting of Parian or Keene's cement mixed with about 3 per cent by volume of the powder previously referred to and a vegetable colouring-matter.

1458. Ingham, J. J. March 18.

Compositions containing bituminous and siliceous materials and oils.—A composition for making roads &c. is prepared by boiling together 4 parts of tar pitch, 1 part of creosote oil, 14 parts of sand, 7 parts of Trinidad bitumen, and 7 parts of petrol pitch, the last-named being a product of pitch with petrol added. To form a road, a layer of the composition is put down, and on this is placed a layer of canvas or the like impregnated with bitumen and then a finishing layer of the composition.

1459. Ingham, J. J. March 18.

Compositions containing bituminous and siliceous or calcareous materials.—Consists in forming a mixture for application to steel slag or limestone in road-making by boiling together tar, Trinidad bitumen, and petrol pitch, the preferred proportions being 12 parts of stone, 3 parts of tar, 1 part of Trinidad bitumen, and 1 part of petrol pitch.

1827. Crompton, N. G. Jan. 22. *Drawings to Specification.*

Compositions containing bituminous and siliceous &c. materials.—In bituminous concretes for road-making &c., dust is removed from the stony material at the point of crushing, so that the heated tar, pitch, or the like is applied to clean surfaces. The material is fed into centrifugal crushers in which revolving arms beat the material up into a current of air induced by a fan, which removes the dust and carries it away in a direction contrary to the ultimate direction of travel of the crushed material.

2187. Roth, C. Feb. 8, 1912, [*Convention date*].

Asphalts.—In making coating and impregnating compositions &c. resistant to the action of acids, alkalies, &c., the materials which form the bases of the compositions such as asphalt, are treated in a powdered condition with acid or alkali solutions for some time. Solutions of hydrochloric, nitric, sulphuric, acetic, oxalic, or lactic acids, acid sulphates, carbon dioxide, sodium hydrate, ammonia, or lime may be used. Water containing acid marshy-soil and ferrous sulphate may also be used. The materials may be treated with several acids in succession or first with acid and then with alkali. The treated material is washed with water and dissolved in a solvent such as light tar oils, mono-chlorobenzene, dichlorobenzene, turpentine, &c. The solution is filtered to separate the insoluble products formed by the acid or alkali treatment.

2197. Fenaroli, P., and Soc. Anon. "Saces." Jan. 27.

Stone, hardening and preserving.—Stone or the like is sprayed with a glaze consisting of a solution of silicate of soda and powdered marble, and is then varnished with a solution of 1 part of silicate of soda at 23° Bé., to which may be added 1 part of casein dissolved in ammonia,

the stone being heated to about 150° C. between the coatings. The surface is freed from alkalis by successive treatments with water and slightly acid baths containing free acids or easily hydrolysed salts. For example, the stone is immersed for 24 hours in each of the following baths successively, namely (a) ordinary water, (b) water containing 0.3 per cent of fluor silicic acid, (c) water containing 0.6 per cent of fluor silicic acid, and (d) a 5 per cent solution of sulphate of alumina to which is added .001 per cent of sulphuric acid at 66° Bé.

2239. Carlson, C. L. Aug. 19, 1912, [*Convention date*].

Compositions containing lime and blast-furnace dust.—Lime or the like is mixed with the very fine dust from blast furnaces which settles in the filters of the gas-cleaning apparatus. The proportions preferred are 10-30 parts of dust to 90-70 parts of lime.

2485. Marks, E. C. R., [*Electric Smelting and Aluminium Co.*] Jan. 30.

Compositions containing lime and silicates.—Di-calcium silicate, obtained in the manufacture of manure by heating together material containing tri-calcium phosphate and natural alkaline aluminosilicate, may be utilized in making hydraulic cement, either by adding calcium oxide or calcium carbonate, heating to sintering point and grinding, or by heating to drive off water of hydration and then grinding with well-burnt lime, the product when set corresponding to the formula of tri-calcium silicate.

3118. Podszus, E. May 17, 1911, [*Convention date*].

Refractory substances.—Ceramic and fire-proof materials are manufactured from non-clayey constituents, such as, the rare earths, aluminium oxide, quartz, magnesia, thorium oxide, zirconium oxide, and other difficultly soluble oxides, or mixtures of them. A thin liquid slip is first prepared by reducing the base to a powder of an order of fineness varying from 0.005 to 0.0001 mm. and mixing it with at least 0.5 per cent of a binding-agent, which may be (1) of an organic nature, such as gum, gelatine, tragacanth, albumen, lac, varnish, collo-dion, and the like, in solution, or (2) a solution of a slowly decomposing salt of the basic substance, such as thorium nitrate. The slip may be applied to the mould in thin layers, which, on burning, become homogeneous. The base material may be burnt or fused preparatory to grinding. Specification 23,577/12, [*Class 87 (ii), Moulding plastic &c. substances*], is referred to.

3505. Anderson, F. A. Feb. 11. *Drawings to Specification.*

Compositions containing plaster.—Sludge, obtained by neutralizing waste acid or acid effluent from tin-plate works &c., with milk of lime and consisting mainly of hydrated ferrous oxide and calcium sulphate, is concentrated in filter-presses and may be burnt to form a plaster after oxidation in the air.

3575. Elektrizitätswerk Lonza Akt.-Ges. Feb. 15, 1912, [Convention date]. *Drawings to Specification.*

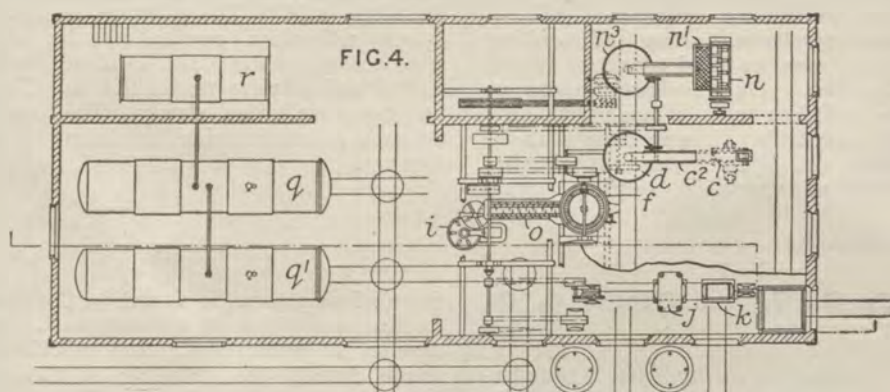
Refractory substances.—A partition in an electrolytic furnace may be made of zirconium

earth, zinc-retort lining, coke-oven lining, corundum, or other non-acid material; it may be artificially cooled.

3654. Zamboni, F. von, Boumgaten, W., and Krill, F. A. Feb. 13, 1912, [Convention date]. *Void.* [Published under Section 91 of the Act.]

Concretes; compositions containing resinous, siliceous, and calcareous materials.—A composition for slabs consists of 30 parts of white English cement, 40 parts of marble sand, 10 parts of mineral colour, and 20 parts of a mixture of white and black mica, alum solution, and colophony.

4679. Zerenner, C. W. Feb. 24. [Cognate Application, 19,163/13.]



Concretes and mortars; stone, hardening.—A fire-proof composition consists of (1) 40 parts of pumice sand, clinker, coke ashes, infusorial earth, mica, or the like; 40 parts of Portland cement, 10 parts of fibre, $2\frac{1}{2}$ parts each of casein and glycerine; and 5 parts of gypsum; or (2) 70 parts of pumice sand &c., and 10 parts each of hydrated lime, fibre, and gypsum. In the latter composition, 40 parts of cement may be substituted for the lime, the proportion of sand &c.

being reduced to 40 parts. After moulding, the blocks are transferred to hardening-chambers q, q' . Steam is supplied from a boiler r to the chamber q , and after some eight hours it is exhausted from q to q' . The products obtained may be used for slabs, tiles, &c., and imitation marble; for encasing iron, wood and like structures, it may be applied in the plastic state. It may also be used on war or other vessels.

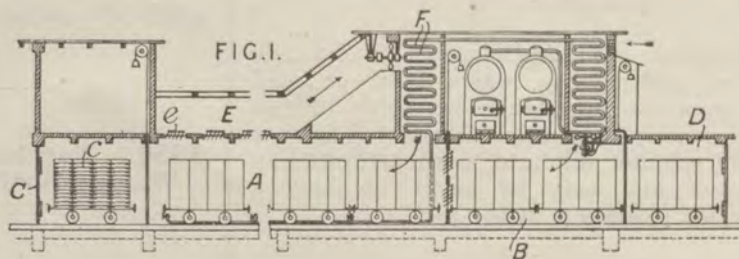
4842. Hambloch, A., and Gelleri, S. Feb. 25.

Cements, Portland.—Silicates containing alkalies such as feldspars, are burnt alone or with an alkaline earth or its carbonate such as lime-stone, with or without the addition of a sulphate

such as alunite, and the product is heated under high pressure with ammonium carbonate. The residue, after extraction of the alkali salts with water, may be burnt to produce a Portland cement. If crude alkali salts are required, the burnt silicate mixture is heated with carbonic acid instead of ammonium carbonate.

5516. Bock, A. P. March 18, 1912, [Convention date].*Stone, hardening.*—

Relates to the manufacture of artificial stone and other slabs, preferably those made from cement, sand, and impregnated sawdust. A truck *c*, Fig. 1, laden with the moulded slabs passes from the air-chamber *C* to the setting-chamber *A*. Hot moist air is circulated through the channel *E*, heating-coil *F*, and chamber *A*. Dampers *e* are provided for regulating the flow of air, which is thus made to flow in the opposite direction to the movement of the slabs. The slabs are



then passed into the drying-chamber *B*, through which hot air only is circulated, this air being afterwards utilized in the setting-chamber as required. The trucks are finally transferred through the air-chamber *D* to the open air.

5825. Frétard, G. March 9, 1912, [Convention date]. *Void.* [Published under Section 91 of the Act.]*Compositions containing vulcanized oils.*—

Relates to the manufacture of an india-rubber substitute which may be used alone or mixed with india-rubber. One to two grams of incombustible cellulose are mixed with 100 grams of any vegetable oil, and then 6 to 10 grams gum-resin and 60 to 80 per cent of equal parts of petrol and rectified sulphur proto-

chloride are added. The incombustible cellulose may be obtained by means of 'actonitric' cellulose freed from excess of acid, dried, dissolved in a cellulose solvent, and 'denitrated in nitric acid.' The mixture is left for 12-15 hours and then neutralized by 150 to 200 grams magnesium oxide and a fresh dose of petrol and sulphur protochloride. The colloidal substance solidifies slowly. The material may be used as an electrical insulator, or in place of springs.

5908. Hill, G. T., and Stone, C. G. March 10.

Cements, Portland, treating after manufacture.—Magnesium silicate, for example in the

form of soapstone, is added to Portland cement in the proportion of about 1 to 10 per cent to render it waterproof. The addition may be made during the grinding of the cement, or they may be separately ground and mixed.

5976. Forder, W. G., and Scott, D. O. March 11.

Compositions containing bituminous and siliceous materials.—Destructor residue is crushed, washed, screened to remove iron or steel, and graded, and mixed with best Portland cement, and pure bitumen without flux, to pro-

duce a composition for making paving-blocks, damp-courses, &c. The composition is subjected to heavy pressure while being moulded. In an example, 87.5 per cent of crushed clinker has added to it 5 per cent of best Portland cement, and 7.5 per cent of pure bitumen, such as Ebano. The composition may be laid on roads like tar macadam.

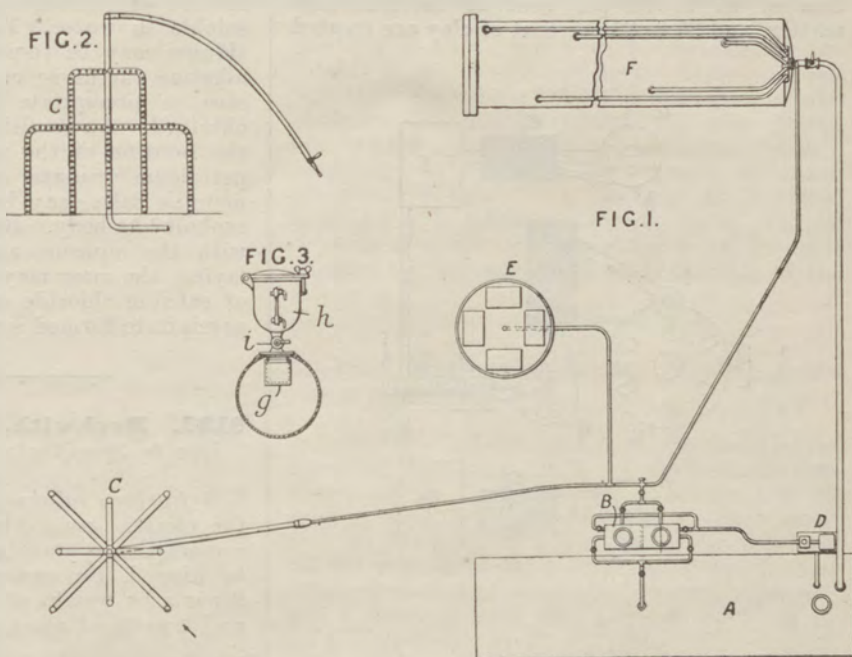
6024. Oliver, E. March 11. *Drawings to Specification.*

Compositions containing vulcanized oils.—Tyres are filled with a composition which is normally solid and resilient, but which becomes viscous when subjected to mechanical friction and heat, in which state it is forced into the tyre and afterwards allowed to solidify. The composition is formed by heating and stirring

gilsonite with blown cotton-seed oil, or corn or other vegetable oil, and adding flowers of sulphur, copper oxide, zinc oxide, and whiting. The materials may be in the proportions of:—77 parts of cotton-seed or equivalent oil, 11 parts of gilsonite, 4½ parts of flowers of sulphur, 1½ parts of copper oxide, 3 parts of zinc oxide, and 3¼ parts of whiting. After being mixed, the material is heated until of the proper consistency and then allowed to solidify by cooling.

6044. Burn, J. F., Burn, A. C., and Carter, G. C. March 11.

Mortars; stone, hardening.—In the manufacture of bricks &c. from a mixture of lime and shale, slag, slate refuse, clinkers, gravel, sand, or the like, the lime is slaked with a mixture of steam and carbon dioxide, previous to being mixed with the shale &c. During the mixing-operation, carbon dioxide is also passed in, and the water used for mixing may also be charged with dioxide. The moulded bricks are dried and carbonated. The apparatus preferred consists of a duplex carbon-dioxide generator B, through which steam from a generator A may be forced by means of a pump D to the lime-slaker C. The pug-mill E is also connected to the generator B. The moulded bricks &c. are treated in the converter F, first with steam at a pressure of about 80 lb. per square inch, and then with carbon dioxide, the steam being forced out by carbon dioxide. The lime-slaker C, Figs. 1 and 2, comprises an arrange-



ment of perforated pipes over which the lime is heaped. The dioxide generators are provided with leaden brackets *g*, Fig. 3, charged with sodium bicarbonate or whitening, a sulphuric acid container *h* preferably lined with lead, and a regulating-cock *i*.

6697. Ettling, R., and Chappell, W. March 18.

Concretes; stone, hardening.—Artificial-stone composition consisting of 2 parts of Portland stone, flint, or the like, and 1 part of cement, or concrete consisting of 4 to 5 parts gravel or the like and 1 part of cement, is mixed with a solution containing 1 to 4 oz. of chrome alum, and $\frac{1}{2}$ to 1 oz. of soda or sulphate of iron to 1 gallon of water; or the moulded product is soaked in the solution.

6949. Schlossberg, I. March 20.

Refractory substances.—Acid-proof and fire-proof bodies composed of pure silica, for lining steel furnaces, retorts, crucibles, &c., are obtained by working quartzite with colloidal silicic acid and lime into a mouldable mass, forming the mass into blocks &c., and hardening by steam, and eliminating the lime by treatment with silicofluoric or hydrochloric acid and lixiviation. About 93 per cent of quartzite is intimately mixed with about 2 per cent of colloidal silicic acid and about $4\frac{1}{2}$ per cent of lime or calcium hydroxide in preparing the mass.

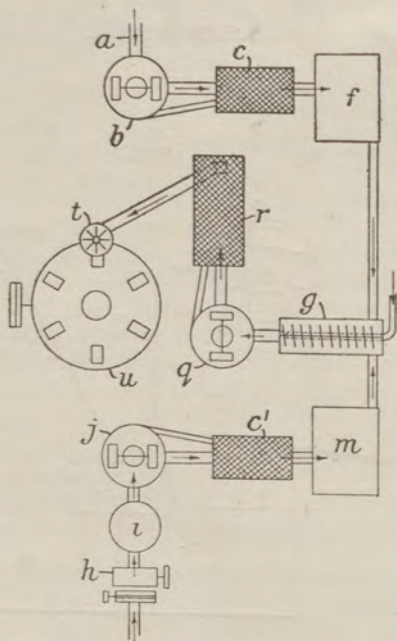
6969. Harrison, R. March 22.

Compositions containing bituminous and siliceous materials.—A composition of bitumen and crushed stone is applied in one or more layers, for repairing worn stone steps, floors, &c. The first layer consists of three parts of bitumen together with the earthy and vegetable matter which it usually contains, and two parts of granite, limestone, marble, &c. crushed to $\frac{1}{2}$ inch or $\frac{5}{8}$ inch. The second layer consists of two parts of the bituminous composition and one part of stone crushed to pass through a $\frac{3}{8}$ inch mesh.

7002. Hidoux, G., and Bernheim, J. March 22.

Stone, artificial.—Artificial stones or bricks are made from the incombustible matter obtained from house refuse, or slag from incineration ovens, or both, and green calcareous or other clay. The incombustible matter is discharged by a conveyer *a* into a millstone grinder *b*, from which it passes through a sieve *c*, and hopper *f* to the spiral mixer *g*, where it is mixed with the clay. The clay is treated successively in a disintegrator *h*, drying-chamber *i*, grinder *j*,

sieve c^1 , and distributor m , thus reaching the mixer g . The mixed materials in the proportion of 65 to 75 per cent of incombustible matter, and 35 to 25 per cent of clay are treated



in the mixer with steam or atomized water, and then passed through the grinder q , sieve r , and distributor t of the moulding-press u . The moulded blocks are baked at $950-1000^{\circ}\text{C}$., or the baking may be carried up to the fusing point.

7907. Denny, Sir A., and Anderson, D. G. April 4.

Compositions containing plaster, glues, fibres, &c.—A mixture for flooring and like purposes consists of calcined gypsum, sawdust, wood pulp, seed husk, or the like, glue solution, chrome alum, and formaldehyde, or the like for rendering the glue waterproof, and with or without a glue preservative, such as creosote, precipitated silica, and linseed oil, and containing 2 to 3 per cent of sulphur. Drying oils or varnishes may be used in place of the linseed oil and sulphur. As an example 400 lb. of stucco are mixed with 140 lb. of sawdust, 220 lb. of a 10 per cent glue solution, and 20 lb. of a 10 per cent basic chrome alum solution, with or without 50 lb. of precipitated silica. The linseed oil and sulphur mixture may be added in proportions up to 20 or 30 per cent by weight of the sawdust.

8069. Landsberg, L. April 5.

Compositions containing bituminous materials.—The acid resins which remain as residues in the purification of petroleum with acid are treated with benzine to dissolve out the oils

present and obtain a resin residuum or asphalt-like mass which on treatment with water to remove the remaining sulphuric acid is itself soluble in water. From this solution the residuum may be re-precipitated by salts of the alkaline earths or of metals such as copper or zinc, a precipitate insoluble in water being obtained. An emulsion may be made by mixing the solution of the asphalt-like mass with tar, petroleum residues, creosote, and the like, and metallic salts may be added to precipitate an asphalt-like body. Road material may be mixed with the aqueous asphalt solution and, after laying, the mass may be treated with a solution of calcium chloride or other metallic salts, the precipitate formed serving to bind the material.

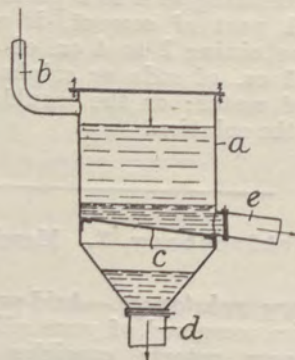
8123. Beckwith, E. P. April 7. *Drawings to Specification.*

Refractory substances.—Wire or like supports for electric lamp filaments are coated with a composition containing glass; the supports may be dipped, for example in a watery paste of 2 parts by weight of bauxite, 1.5 parts of clay, and 2 parts of glass, and then fired.

8124. Beckwith, E. P. April 7.

Refractory substances.—A composition for coating copper or other supports for electric-lamp filaments contains glass as one ingredient and may consist of 2 parts by weight of glass, 1.5 parts of clay, and 2 parts of bauxite, the supports being dipped into a watery paste of the composition and fired to fix the coating. The glass serves as a binding-agent.

8129. Kohn, M. April 7.



Cements, Portland, processes and apparatus for making.—Slime, mud, or the like, especially thick cement mud, is separated from rough particles by passing the mud from a closed reservoir a through a sieve c by compressed air supplied through a pipe b . The separated mud passes out through the pipe d and the residuum through the pipe e .

8828. Percival, A. P., and Matthews, F. E. April 15.

Stone, colouring.—The colour of slates is modified by roasting them, preferably in an oxidizing-atmosphere, the temperature being gradually raised to about 500-700° C. The roasted slates may be stained with an iron salt solution, or with solutions which react and form precipitates within the pores, the solutions being forced in if necessary. If desired, the slates may be again roasted.

8958. Marks, E. C. R., [Theumer, R.] April 16.

Refractory substances containing fire-clay.—Radiators or the like for use in steam or hot-water heating-systems are made from a mass which is capable of being cast, on the addition of soda. The mass consists of highly refractory clay poor in silica and fluxing-agents, together with a refractory porous material or one that becomes porous on burning, the mass being finely ground so that, after burning, it will take a good layer of glaze. In an example, 50 parts by weight of refractory clay, 30 parts of burnt refractory clay, and 20 parts of kaolin are finely ground, soda is added, and the article is cast. The article is twice burnt, the maximum temperature being 1280-1320° C.

8959. Marks, E. C. R., [Veitscher Magnesitwerke Akt.-Ges.] April 16. *Drawings to Specification.*

Refractory substances.—A mortar for use with magnesite bricks in building furnace walls and roofs consists of sintered magnesite or other material poor in silicon, which is mixed with a large proportion of iron turnings, or mill or forge scale, and the like, and with a binding-material such as tar or lime-milk. In an example, a mixture of 77 parts of magnesite, 3 parts of lime dust, and 20 parts of water is mixed in the proportion of 25 per cent with iron for the joints or in the proportion of 85 per cent for linings.

9176. Elborne, S. L., and Godsall, H. April 18.

Refractory substances.—Gas retorts are made of a mixture of fire-clay with a less refractory clay, such as China stone.

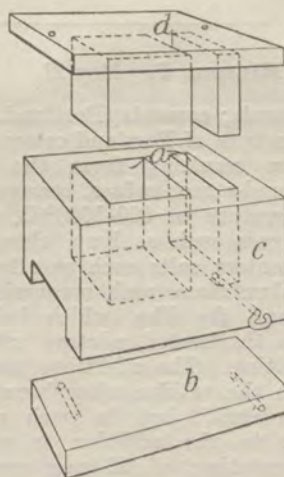
10,288. Kaye, M. L., [representative of Kaye, L. F. (formerly named Kwiatkowski)], and British Silicate Engineering Co. May 1.

Concretes.—Relates to improvements in the

method of making artificial stone described in Specification 24,712/04. Crushed quicklime in the presence of water or slaked lime is mixed with a part of the siliceous material, and the mixture is stored prior to pulverization, preferably in the presence of heat. After pulverizing, the remainder of the siliceous material and sufficient moisture to render the mass plastic are added. The mixture is again stored, moulded, and indurated, for example, by means of pressure steam. A portion of Portland cement may be added if desired. In an example 5 parts of quicklime are mixed with 95 parts of sand by first mixing it with 32 parts of the latter.

10,853. Rogerson, T. B. May 8. *Drawings to Specification.*

Refractory substances.—A plastic material for repairing the port blocks of open-hearth furnaces consists, by measure, of 50 per cent of broken silica brick, 20 per cent of silver sand, and 30 per cent of silica clay. For finishing off the rebuilt block, a mixture of equal parts of silver sand and silica clay may be employed, and a glazed surface may be given by throwing on a little brown sand.

11,285. Yonge, G. W. May 14.

Compositions containing resinous and siliceous materials &c.—Mounts for typographic plates are made by mixing fine sand, such as silver sand, while cold, with shellac or other readily melted binding-material and, if desired, other resins and a small quantity of lamp-black, and subjecting the mixture to heat and pressure to form blocks, a number of which of comparatively small size are preferably used to make a mount for a printing-plate. In attaching the plate to the mount, the top surface of the blocks or the under surface of the plate is covered with shellac varnish, and the whole, surrounded with steel furniture, is subjected to heat and pressure to cause the blocks to unite with each other and

also with the whole under surface of the plate. Poster types may be moulded from the composition by pressing the blocks into a hot mould, suitably lubricated if necessary, and cooling. The blocks are preferably formed in a mould comprising a body portion *c*, a base-piece *b*, and a counterpart *d* having projections to fit the holes *a* into which the composition is filled.

11,498. Rigby, J. S. May 17. *Drawings to Specification.*

Stone, hardening.—In the indurating of concrete blocks and the like by means of wet steam, the steam is led into the indurating-chamber through boxes in the floor, the boxes being supplied with water. The boxes may be filled with pumice, or water may be sprayed into them.

11,752. Irving, S. C. May 20. *Drawings to Specification.*

Compositions containing fats and lime.—A plaster applied to roofing-fabrics by a trowel consists of 325 parts by weight of lime, 20 parts of tallow, 20 parts of copper sulphate, and water to suit. It may be coloured by means of ferric oxides, such as Venetian red, chromic oxides, or graphites.

11,876. Elsner, J. May 21.

Slag cements; cements, Portland.—Relates to the manufacture of Portland cement by heating the residue resulting from the burning of household and street refuse, sewage sludge, &c. to a temperature of 600–1050° C. with enriching substances such as lime, clay, or silicates and also contact salts such as alkali chlorides, salts of aluminium and magnesium, calcium chloride, and the like, which bring about a reaction in the heated mixture without sintering or melting. The additions may be mixed either with the residue after burning, or with the refuse itself, but in each case heating subsequent to the addition is necessary. A residue consisting of 52 per cent of silica, 12 per cent of alumina, 11 per cent of ferric oxide, 16 per cent of calcium oxide, 1.5 per cent of magnesium oxide, 2 per cent of sulphur and phosphorus, and 5.5 per cent of alkali chloride, is treated with 139 per cent of sulphur and phosphorus lime and a suitable quantity of contact salts, and heated for a short time to 600–1050° C. If silicates have to be decomposed, the heating is preferably done in an atmosphere of air and steam. In the burning of sewage sludge, the additions may be made before the gas extraction process. In ferruginous residues, the iron may be removed by chemical or mechanical means, or the percentage may be diminished by the addition of lime, clay, silicic acid, or blast furnace slag before or after burning.

12,640. Hereng, V. May 30, 1912, [*Convention date*].

Stone, artificial; concretes.—Artificial lithographic stones are made from a mixture of equal parts of Portland cement, trass, and oolite limestone. The mixture is sifted and then beaten in a mould formed with a number of small perforations, and is then subjected to a high pressure which is maintained while the mould is inserted in water for a day, thereby producing a stone free from air bubbles &c. The stone is left in water for three months and is finally dried slowly. The Portland cement employed consists of a mixture of cements obtained from different manufacturers.

13,072. Burley, S. W. June 5.

Refractory substances.—Fire-bricks or blocks for the construction of kilns &c. are made of strong or tenacious earth or loam, or a mixture of both, any admixture of sandy earth or chalk being avoided. Preferably 4 parts by bulk of strong earth and 1 part of loam are used. The material, without being washed, is ground and tempered with a little water, it is then moulded and sun, wind, or force dried and not burnt.

13,838. Burnyeat, W. J. D., Moncur W., Sibbald, R., and Lochhead, J June 16. *Drawings to Specification.*

Refractory substances containing carborundum.—A refractory material used in making blast-furnace or other tuyeres or water-blocks, consists of carborundum fire-sand, ground fire-clay, sodium silicate, and water.

14,063. Halle, G. June 18.

Compositions containing bituminous materials.—A plastic composition for coating roofing-felt &c., or roofs and other outer surfaces, consists of stearin pitch or the asphaltic residues of petroleum, tar or fat, a mineral colour, such as lithophone, oxide of iron, or ochre, and monton wax or residues from the manufacture of monton wax.

14,664. Merrylees, H. June 25.

Compositions containing bituminous material and vulcanized oil.—A composition for use in paving, covering ships' decks, heat-insulation, or the like consists of coal-tar pitch, a vulcanized oil, and a filling-material such as clay, kieselguhr, slate, cork, sawdust. In an example, 5 parts of linseed oil are mixed with 30 parts of China-clay, 25 parts of melted coal-tar pitch are added, and the whole is heated with 1 part of sulphur until the oil is vulcanized. If desired, the oil may be vulcanized prior to its incorporation with the other ingredients.

15,159. Gloess, M. P. P. July 4, 1912, [Convention date].

Concretes &c.—Mucilages which render lime or cement impervious to water, forming insoluble compounds with the alkaline or alkaline-earth salts, are obtained from marine plants, algæ, sea-wrack, &c. by graduated progressive treatment with an alkaline oxidizing-agent, for example, sodium peroxide or chloride of lime, iodine being obtained as a result of the first step. The plants are treated with a 0.1–5 per cent solution of the agent, preferably cold, giving a solution containing the iodine. The plants, after the solution has been separated off by filtration, straining, &c., are next treated once or more times with a more concentrated solution, preferably hot, of alkaline peroxide, about 0.5–2.5 per cent, dissolving the mucilaginous matter and yielding a mucilage available for treating the lime or cement.

The Specification as open to inspection under Section 91(3)(a) comprises also the use of acid or neutral solutions of oxidizing-agents, for example, chlorine or hydrogen peroxides, instead of alkaline oxidizing-agents, for the first step. The mucilaginous matter obtained by the second step may be neutralized before use. This subject-matter does not appear in the Specification as accepted.

15,379. Pictet, R. P. July 3.

Refractory substances containing carbon.—Retort or furnace tubes or chambers are made from a paste which is prepared from powders of highly refractory materials mixed with chemically prepared carbon obtained in atomic or molecular condition by the dissociation of hydrocarbons or carbonaceous material. The materials are mixed with a suitable liquid and moulded into the desired form, for instance, in an hydraulic extrusion press, and the tubes or chambers so formed are fired in a furnace, or by an electric current passed through them. The refractory material may consist of finely powdered silica, magnesia, alumina, lime, carborundum, or calcium carbide, and the carbon may be obtained by the dissociation of methane (CH_4). About 30 per cent of carbon is a suitable amount. The liquid used for making the paste may be alcohol, chloroform, petroleum, or water.

15,612. Basset, L. P. July 7. Drawings to Specification.

Cements, Portland.—In a process for the manufacture of cement by heating a mixture of calcium sulphate, coal and clay, an additional quantity of air is supplied to the escaping furnace gases for oxidizing the gaseous sulphur compounds to sulphur dioxide.

Reference has been directed by the Comptroller to Specifications 9545/94, [Class 51, Furnaces &c.] and 24,620/09 [Class 51 (ii), Furnaces &c. for applying &c.].

16,296. Kohn, L., and Koenigsberg, I. Aug. 3, 1912, [Convention date].

Stone, colouring.—Imitation marble &c. is made by sprinkling dry colour on the surface of a slab of artificial stone composition which may be coloured with the ground colour, folding the slab on itself or building up layers, so that the colour is entirely inside the mass, and subjecting the mass to great pressure to spread the colour and remove superfluous water.

16,299. British Thomson-Houston Co., [General Electric Co.]. July 15. Drawings to Specification.

Refractory substances.—A fibrous refractory and heat-insulating material of low density, approximating in composition to silicon carbide, SiCO , is obtained by heating silicon or silicon-producing material in presence of a suitable catalyst, and in contact with gases containing carbon monoxide or dioxide or both. Suitable catalysts are calcium fluoride, cerium fluoride, calcium silicofluoride, pumice, or mixtures for instance of calcium fluoride and pumice.

16,636. Langlois, M. J., and Langlois, G. H. July 20, 1912, [Convention date].

Cements, Portland and Roman, treating after manufacture.—A cement is made by intimately mixing in calculated proportions natural or artificial Portland cement and powdered feldspathic rocks such as feldspar, pegmatite, albite, or granite, singly or combined. The proportions are so calculated that the silica of the Portland cement and of the rock is reduced to the composition 3 Si O_2 , 4 Ca O and the alumina to $\text{Al}_2 \text{ O}_3$, Ca O . The ingredients are ground by a crushing and tearing action, for instance, in a centrifugal ball grinder. In examples, 100 parts of a given Portland cement are mixed with 32.6 parts of a given feldspar with 36.95 parts of a given granite.

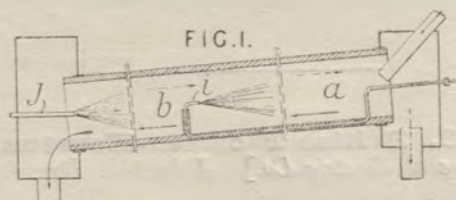
17,285. Wilson, J. A. July 28. Drawings to Specification.

Concretes.—Irrigating tiles are formed of sand and 8 to 10 per cent of cement, mixed with barely sufficient water to render the material plastic.

17,396. Saunders, H. B. July 29. *Drawings to Specification.*

Compositions containing bituminous and siliceous materials.—Cement is formed of two parts of concrete to one of pine tar.

17,873. Basset, L. P. March 4, [*Convention date*].



Cements. Portland, materials and compositions for.—In the manufacture of cement by the action of a reducing-agent on a mixture of calcium sulphate and clay, an excess of reducing-agent such as carbon is employed to reduce more of the sulphate to the sulphide than is necessary to react with the remaining sulphate, this excess sulphide being afterwards oxidized to the oxide. Suitable proportions are 1580 kg. of sulphate of lime, 350 kg. of clay, and 125 kg. of charcoal. The process is carried out in a rotary furnace having two zones, a reducing-zone *a* into which carbon, or carbon monoxide is injected by a tuyere *i* and an oxidizing-zone *b* into which air is introduced by a tuyere *j*. Sulphur or sulphur dioxide produced during the process is collected at the outlet of the furnace gases, air being introduced into these gases if it is desired to obtain the dioxide free from sulphur and carbon monoxide.

18,806. Evans, W. E., [*Sutcliffe, E. R.*]. Aug. 19. [*Cognate Application, 7027/14.*] *Drawings to Specification.*

Slags, treatment of.—Granulated slag is run into a slip of lime and water to which ground slag may be added, so that each particle becomes coated with lime. The slag may be granulated by running it into such a slip, the particles that float being separated from those that sink. The slip is pumped on to an inclined trough into which molten or heated slag is delivered. The slip and slag pass to a reservoir, the light particles being carried over to waggons with the overflow, while the heavier particles are dredged from the sump and conveyed to other waggons. Slag thus treated is pressed into blocks or the like in the usual manner.

19,037. Fraser, J. J. Aug. 22.

Ornamented artificial stone.—A plastic magnesite composition is moulded and a printed design is transferred at the same time to the surface by lining the mould or frame with cloth or paper upon which the design has been printed with a mixture of 50 per cent of liquid magnesium chloride of strength 56° Tw., 40 per cent of pigment or dye, 5 per cent calcined magnesia, and 5 per cent of extract from hardwood ash. The composition to be moulded consists of 35 per cent of liquid magnesium chloride, 20 per cent of fine ground calcined magnesite, 8 per cent of fine ground calcined magnesia, 30 per cent of sand, 5 per cent of fine ground wood flour or cork, 1 per cent of hardwood ash extract, and 1 per cent of linseed oil. In a modification, the plastic composition may be applied as plaster to a wall, and the printed side of the paper or cloth applied thereto, the paper being removed when the mass has hardened.

20,116. Wallbaum, R. Dec. 4, 1912, [*Convention date*].

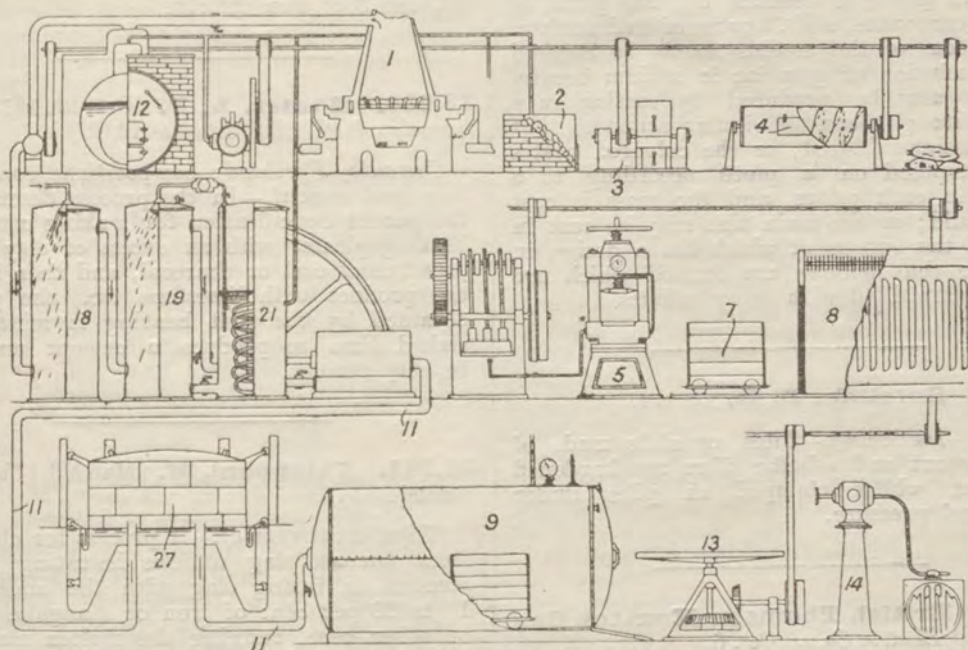
Emulsified bituminous compositions.—Artificial asphalt is made by adding to finely-ground limestone, whiting, trass, stone-dust or the like an aqueous emulsion of asphalt-bitumen, which may be prepared as described in Specifications 28,178/10 and 23,468/11, [both in Class 95, Paints &c.]. About 900 kg. of ground limestone are moistened and 200 kg. of an emulsion of bitumen are added, the whole being kneaded and dried at 60° C. to produce a powder suitable for ramming.

20,926. Venturi, A. Oct. 18, 1912, [*Convention date*] *Void.* [*Published under Section 91 of the Act.*]

Stone, artificial; stone, hardening; concretes.—Calcareous rocks and other calcareous material which may contain magnesium carbonate &c. are calcined, if desired, at a temperature not exceeding 500° C., and the product is pulverized, moistened, if desired, mixed with fillers &c. where necessary, moulded, and treated with a mixture of carbon dioxide and steam under pressure to produce artificial stone &c. More particularly, the rocks are calcined in a furnace 1, crushed in a mill 3, or "deflorated" by means of water or steam in an apparatus 2, and mixed with water or steam, and, if desired, with colouring and other matters in a mixer 4. The product is placed in moulds and compressed in a press 5; or it may be cast in moulds of plaster, rubber, gutta-percha, gelatine, oxidized oil or sulphur &c. The articles are placed on trucks 7 and introduced into a drying-

kiln 8, from which they are transferred to an autoclave 9, to which carbon dioxide is supplied through a pipe 11 and steam from a boiler 12. The stones &c. are finally ground

and polished by machines 13, 14, fluo-silicate of magnesium, aluminium, or zinc being employed to facilitate the process by hardening the surface, and a polishing-paste of stannic or



stannous oxide, with stannates, soluble or insoluble lead compounds, and oxalic acid being used. The carbon dioxide may be purified in apparatus 18, 19, 21 and stored in a gas-holder 27. The resulting artificial stone may be employed for lithographic printing, and the synthesized lime carbonate can be agglomerated

with various substances to produce files, emery-wheels, sand, glass-powder, carborundum, agglomerants for paving streets and pavements, small cubes for mosaics, sand bricks for building, asbestos sheets for covering roofs and for non-conducting coverings, bricks containing metal filings, and for other purposes.

21,579. Macdonald, J. M., and Keswick, J. J. Sept. 24.

Concretes; stone, hardening and preserving.

Pulverized materials, such as refuse slate to which may be added sand, powdered brick, stone, and colouring matter, are mixed with Portland cement, and the mixture is moistened with water or a solution of the borosilicate. The mass is moulded and the articles produced are immersed in a solution of the borosilicate. In an example, the body material is mixed with not less than 15 per cent of its weight of cement, and the solution of borosilicate has a density of 35°-55° Tw.

produced by adding 10-30 per cent of this mixture to oils to which glycerine has been added, or from which glycerine can be obtained, such as linseed or tung oil, and heating quickly to about 550° F. Fabric, paper, or like material is dipped in this composition, and dried at a temperature not exceeding 300° F. A glue is made by adding 2-30 per cent of a mixture of three parts of cement such as Portland, and one part of a metallic oxide.

21,943 Kelly, T. D. Oct. 18, 1912.

Compositions containing resinous and siliceous and like materials and oils.—A mucilage is formed by mixing a gummy resin, such as that from which turpentine is distilled, with an equal quantity of a non-drying vegetable oil. An insulating and waterproofing composition is

22,297. Douzal, E. May 10, [Convention date].

Figured stone; compositions containing oils.—Artificial marble is made by adding a mineral hydrocarbon, such as vaseline oil, to a plastic mass composed preferably of calcium carbonate and a mixture of halide and oxide or basic halide of a divalent metal having a non-coloured oxide, such as calcium, barium, or zinc. The basic chloride or mixture of oxide and chloride may consist of compounds of more than one metal. Fluorspar and

quartz may also be added. To the mixture a solution of lead acetate is added. The following is an example of proportions viz:—100 parts of chloride, 500 parts of oxide, 150 parts of water, 75 parts of vaseline oil, 950 parts of calcium carbonate, and 60 parts of lead acetate. The bottom of the moulds should be covered with a solution of gum lac in sodium borate. Veining may be produced by casting in a mould through boxes of similar shape to that of the designs desired; or the coloured pastes are juxtaposed on a plate according to a pattern in each colour, and the mass is cast in a mould; or the main tint may be cast in a mould the bottom of which has a design in relief, so that hollows are formed which are subsequently filled with other colours.

22,423. Sutcliffe, E. R. Oct. 4.

Stone, hardening.—Tiles or slabs made of sand, cement and asbestos fibre are hardened by steam whilst clamped in piles under mechanical pressure.

22,544. British Thomson-Houston Co.,
[General Electric Co.]. Oct. 6.

Compositions containing esters.—Esters of polyvalent alcohols with a mixture of polybasic and monobasic acids, or esters of polybasic or monobasic acids, containing free hydroxyl groups, are heated with an oily ester such as castor oil, to increase the flexibility of the final product. Suitable mixed esters are prepared by treating glyceryl phthalate having a free hydroxyl group with oleic, benzoic, palmitic, or salicylic acid, and suitable simple esters are glyceryl phthalate having a free hydroxyl group, and similar esters prepared from glycol and mannitol or from camphoric, citric, and cinnamic acids respectively. The products may be used in the fused state or in solution as impregnating-liquids for fabric, paper, &c., as electric insulating-materials, or as varnishes, &c. Prolonged heating renders the esters infusible. Specifications 12,807/84 [Class 95, Paints &c.] and 9985/13, [Class 70, India-rubber &c.], are referred to.

22,738. Davis, D. J., Armstrong, J. T.,
Mordan, J., and Petroleum Solid Fuel
(Parent) Co. Oct. 8.

Compositions containing bituminous materials.—A binder for paving or other briquettes, or for road making, consists of gilsonite mixed with an untreated heavy hydrocarbon oil, or tar. Hardening agents such as iron chloride may be added to the mixture. In briquetting coal, gilsonite is melted, mixed with Mexican or other bituminous oil previously rendered liquid, and poured while hot, or sprayed by means of steam or compressed air,

on to the heated coal; after incorporation for a short time, in a heated mixer, the mass is briquetted. A binder for road making may consist of 5 parts of gilsonite, 92 of bituminous oil, and 3 of iron chloride.

23,538. Basset, L. P. Oct. 21. 1912, [Convention date]. [Addition to 12,927/12.]

Cements, Portland; compositions containing lime and cement.—In the process described in the parent Specification for making cement by heating plaster with an excess of clay in the presence of coal or charcoal, and then heating the product with limestone &c., the product obtained by the first heating is mixed with slaked lime to produce a cement analogous to slag cement.

24,141. Chiapponi, M. March 3, [Convention date].

Slags, treatment of.—A process for obtaining from furnace slag, articles imitating pottery consists in fusing slag with the addition of 10 to 20 per cent of iron or manganese oxide or other base, running the molten mass into a heated mould, allowing it to cool sufficiently to set, removing the article from the mould, and rapidly cooling it in a bath of water or other liquid kept cold. The slag is fused in a cupola or reverberatory furnace, or both furnaces are combined, and the fused slag is run from the cupola furnace to the reverberatory furnace, whereby a more homogeneous mixture is obtained. The articles may be placed on an endless band travelling in a tank of cold water.

24,304. Moses, T. Oct. 27.

Stone, artificial and imitation.—A ceramic mass is produced by burning a mixture of powdered pottery waste and glass, the proportion of glass being less than 25 per cent of the whole. In an example, 100 parts of porcelain fragments, 35 parts of earthenware, and 20 parts of glass are finely ground, mixed, moulded, and burnt at a temperature of 940–1350° C. The articles are polished on iron, stone, and wood plates, or they may be glazed as usual.

24,420. Flesheim, S. W. Aug. 11, [Convention date]. Drawing to Specification.

Concrete surfaces, hardening.—Concrete structures, such as floors, roadways, walls, ceilings, roofs, docks, embankments, conduits, reservoirs, &c., are hardened to resist the action of wear, climatic conditions, &c. by applying to the surface, immediately after the concrete has been laid, a thin layer of cement

containing a large proportion of metallic iron in the form of irregular jagged particles. The surface is trowelled as soon as it has become thoroughly moistened, and a second trowelling under pressure is performed when the surface has become firm but while it is somewhat plastic. The surface is kept moist for several days subsequently.

25,572. Illemann, R. Nov. 8.

Lime cements, processes for making.—In the manufacture of cement from the waste lime from soda manufacture which has been exposed to the atmosphere, the lime is heated to a temperature of 100 to 1500° F., ground, and mixed with water.

Reference has been directed by the Comptroller to Specifications 15,406/89 and 9412/03.

25,593. Mende, E. Nov. 9, 1912, [Convention date]. *Drawings to Specification.*

Compositions containing bituminous and siliceous and like materials.—Relates to the manufacture of artificial stone suitable for paving and building purposes in which pebbly material, such as stone, gravel, sand, and slag from boiler or blast furnaces, or refuse destructors, is coated with a bituminous adhesive by immersion, the excess being allowed to drain off under the action of heat, and consists in using soft pitch, that is, a mixture of hard pitch and tar oils which is practically solid at normal temperatures, as the adhesive and in allowing the draining to proceed to such an extent that only a thin and closely adhering pellicle remains on the individual particles.

28,417. Rinne, A. Dec. 9.

Stone, hardening.—Artificial stone or synthetic marble slabs and the like, composed of or containing calcium hydrate or hydrate of magnesia or other alkaline earth mixed with mineral filling materials or colouring matter, are cast or pressed separately in moulds of the

same size as the required slab and are then suspended vertically while being hardened by carbonic acid treatment so as to prevent distortion. The suspending means, such as metal wires, threads, or grips, are pressed or embedded in the slabs during the casting or pressing operation. The slabs thus produced may be smoothed by means of powders and polished in the usual way, but preferably polished steel moulds are used, the smoothing operation being thereby rendered unnecessary.

29,082. Mankau, K. A. Dec. 17.

Refractory substances containing spinels.—A refractory substance consists of limestone to which have been added small quantities of oxides of the type RO , and R_2O_3 , so as to produce on burning polyacid and polybasic spinels in the mass, as described in Specification 23,725/12. The foundation material may consist of limestone to which has been added 4–12 per cent of magnesite or chrome iron ore, in which case the other oxides added are correspondingly modified to produce about 6 per cent of a polybasic and polyacid spinel.

29,265. Ivatts, E. A. Dec. 18. *No Patent granted (Sealing fee not paid).*

Compositions containing wax-like materials.—In making talking-machine records, paper or like material is coated upon both sides with a composition consisting of 75 per cent of purified stearate wastes and 25 per cent of ordinary record wax, coloured with bitumen.

29,301. Barter, C. Dec. 19.

Concretes.—A composition for making floors, walls, &c. consists of white Portland cement, ground calcined flint, and coarse calcined flint, with or without ground marble or other white stone dust, and with or without a solution of calcium chloride. Suitable proportions are 180 lb. of white cement, 144 lb. of ground calcined flint, 144 lb. of coarse calcined flint, 18 lb. of stone dust, and 1 lb. of calcium chloride dissolved in one gallon of water.

A.D. 1914.

528. Tarassoff, K. Jan. 8.

Compositions containing phenol-aldehydes.—Condensation products are obtained by the action of formaldehyde or its polymers &c. on mixtures of phenol or homologues thereof with sulphonated fats or fatty oils, aromatic sulphofatty acids, or the sulphonic acids obtained by sulphonation of naphtha, petroleum distillates, or other hydrocarbon oil. According to the conditions of the reaction, soluble resinous bodies or hard insoluble products may be obtained. The sulphonated compound employed enters into the composition of the product, increasing its elasticity, and also acts as a catalyst in the reaction, so that other catalysts may be dispensed with. According to examples, sulphonated castor oil, the aromatic sulphofatty acid obtained according to Specification 4741/98, [Class 2, Acids and salts, Organic, &c.], from naphthalene and cleic acid, a mixture of sulphonated castor oil, sunflower-seed oil, or rape-seed oil, and sulphonated vaseline oil, are used. Instead of formaldehyde, paraformaldehyde, trioxymethylene, hexamethylenetetramine, or other substance having active methylene groups, may be used. The liquid, resinous, or rubber-like intermediate condensation product may be mixed with sand, sawdust, asbestos, fibres of cellular bodies, &c. before the final product is obtained.

838. Schol, C. H. Dec. 12, 1912.

Slags, treatment of.—Basic slag is rendered more viscous by the addition of siliceous or aluminous material, such as pumice, and formed into porous lumps, for example by the process described in Specification 839/14, the lumps being used in compositions such as are described in Specification 28,642/12 or in the manufacture of blocks as described in Specification 26,704/11. In an example, 5–8 per cent of a powdered siliceous or aluminous material is added to the molten slag.

839. Schol, C. H. Dec. 12, 1912.

Slags, treatment of.—Slag is converted into porous bulky lumps by causing it to flow over wet sand or the like. The sand may be formed into a sloping bed, or may be spread on a conveyor band and carried past the slag outlet. The lumps are used as an aggregate in the manufacture of artificial stone.

922. Küppers, H., and Akt.-Ges. Peiner Walzwerk. Jan. 13.

Slags, treatment of.—The solubility of phosphate slag in citric acid is increased by stirring in siliceous material before the slag solidifies. Slag from the converter is run into trucks, and about 500–600 kg. of sand is added to 7,000 kg. of slag. A crust is allowed to form, and then stirrers are plunged through this crust to incorporate the sand with the slag.

1428. Cowell, W. B. Jan. 19. *Drawings to Specification.*

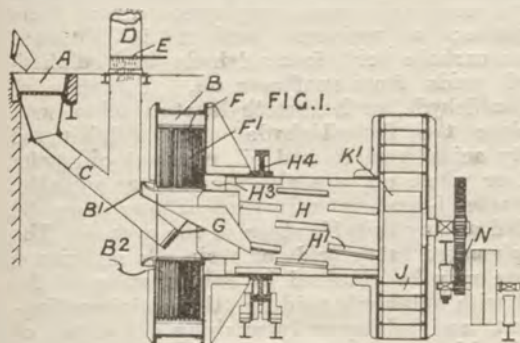
Compositions containing bituminous and calcareous materials and oils.—A mixture of, for example, 35 parts of coal-tar pitch or natural bitumen and 15 parts of anthracene oil or heavy bituminous hydrocarbon oil, such as maltha, is incorporated with a base consisting of a mixture of 10·5 parts of gypsum, 21 parts of chalk or limestone, and 3·5 parts of French chalk, talc, or steatite, for use as a paving-material. Fifteen parts of Portland, Roman, or slag cement and a small proportion of gum resin or pure bitumen, or both, may also be added. The product is used for binding the road metal, or may be used alone or mixed with granite chips or dust &c. for forming slabs, or blocks for making or repairing road surfaces. After the road metal has been laid, rolled, and preferably heated, slabs of the material are laid thereon and heated so that the composition penetrates into the interstices. Alternatively, slabs or blocks of the composition may be cemented to the road foundation or existing road surface and to each other, for example by means of the bituminous binder used in making the composition.

1438. Alpine Maschinenfabrik Ges., vorm. Holzhäuersche, Maschinenfabrik Ges., and Meyer, F. M. Feb. 8, 1913, [Convention date].

Cements, Portland; mortars.—Artificial puzzuolana is made by burning mixtures of argillaceous and calcareous dolomitic or magnesian material with a sintering-agent, for example 5 per cent of calcium chloride, at a temperature below that of sintering, for example 800° C., the proportion of the base being less than that of Portland or Roman cements. The ground product, when mixed

with, for example, three times its weight of white or hydraulic lime, may be used as a cement, and the latter product may be mixed with sand to form a mortar.

2661. Park, G. M. Feb. 2.



Cements, Portland, treating after manufacture.—In apparatus for treating clinkers with water in the manufacture of Portland cement, the material from the kiln falls into a hopper A and passes down a shoot C into a rotary chamber B containing water or fitted with a water spray. The free lime in the material is hydrated and the hydrate, together with surplus water, flows over a flange B¹ into a trough B². The escaping steam is condensed by a water-spray E in a stack D and returns to the chamber B. The clinkers are lifted by radial plates and screens F, F¹ into a second shoot G leading to a drum H and concentric trays J, in which the material is cooled by air. The chamber B with the shoots and stack D may be fitted at the front end of an ordinary cooler.

3625. Trigg, O. G. Feb. 12.

Compositions containing resinous and calcareous materials.—A cement for preserving iron or steel consists of a mixture in the following proportions, namely, $\frac{1}{2}$ lb. chalk, 2 oz. colophony resin, $\frac{1}{2}$ lb. pumice stone, 1 lb. shellac, 1 gal. Stockholm tar, 1 qt. methylated spirit, and $\frac{1}{4}$ lb. graphite. The cement may be put on with a brush or trowel.

4928. Park, T. G., and Hill, F. R. Feb. 25.

Figured artificial stone.—Relates to processes for making artificial marble. In one process, coloured cementitious fluid is poured into a mass of cementitious material without being mixed, and the combined mass is then poured in a succession of streams on to a polished surface and manipulated to modify the distribution of the colour, the product being backed with a thin layer of cement and subjected to pressure. Two or more coloured cementitious fluids may be separately poured into the cementitious mass so as to avoid intermingling of the colours. When making

pilasters, mouldings, &c. a smooth flexible sheet such as moistened paper is placed upon the polished surface to receive the cement, and a woven fabric is applied to the backing before it sets. The complete mass is then removed from the polished surface and the flexible sheet is then transferred to a mould by means of the woven fabric and a backing of cement is applied to the moulded marble. The figured face may be polished with spirit polish or putty powder (tin oxide). When it is desired to apply the artificial marble to walls, a canvas backing is employed. The product may be secured in position by means of a paste consisting of white lead, gold size, and Parian cement.

5184. Twynam, T. Feb. 28. [*Cognate Application, 9124/14.*]

Slags, treatment of.—Finely-ground basic phosphatic slag is treated with a restricted amount of nitric acid insufficient to act upon the iron compounds or to cause the formation of any notable amount of gelatinous silica. The nitric acid is preferably obtained from the air by an electric-arc process. After drying, the deliquescent mass which is obtained may be converted into a dry condition by adding potassium, ammonium, or sodium sulphate. Specifications 11,873/02, [Class 1. Acids, alkalis, &c.] and 5586/10, [Class 111, Sewage &c.], are referred to.

5242. Amies, J. H. Feb. 28.

Compositions containing Portland cement, lime, and calcium sulphate; concretes and mortars, lime and cement.—One form of the cement consists of 50 parts by weight of Portland cement, 30 of calcium hydroxide and 20 of calcium sulphate. A modified form consists of 60 parts of Portland cement, 30 of calcium hydroxide and 10 of a readily soluble alkali such as caustic soda or potash; soda ash is preferred. These cement are employed for mixing with natural earth, loam, &c. in the proportion of 1 part by volume of cement to 5-10 of natural earth, according to the amount of sand, pebbles, &c. in the earth. Water is then added and the mass employed in forming roads, paths, floors, silos, fence posts, bricks, masonry, walls, and as plaster.

5461. Mustière, N. March 3. [*Drawings to Specification.*]

Compositions containing vulcanized oil.—A composition for filling tyres consists of a mixture of a solution of vegetable oil (300 grm.), essence of turpentine (15 grm.), and gum elemi (6 grm.), to which is added oxide of magnesia (25-30 grm.) and a solution of rectified protochloride of sulphur (12-15 grm.) and benzol (0.6-0.75 cc.). The proportions stated are only by way of example. The ingredients are mixed in the cold and injected into the tyre under pressure and allowed to solidify.

5859. Hereng, V. March 7, 1913, [*Convention date*]. [*Addition to 12,640/13.*]

Stone, artificial; compositions containing cement and sand &c.—Artificial lithographic stones are made by a process similar to that described in the parent Specification with the addition of white sand to the other materials used, namely, cements, oolitic limestone, and trass, these materials being mixed in somewhat different proportions from those given in the parent Specification. A mixture of three parts of cement and one part each of limestone, trass, and white sand, after being sifted, mixed, and compressed in a mould formed with fine perforations, is left in water for a day, and is subjected to the action of the air for a period of about two days. The stone is then placed in water for three months, and dried slowly for four months in a cool chamber free from the action of air currents.

5989. Lovegrove, E. J., and Crompton, N. G. March 9. [*Cognate Application, 7539/14*]

Compositions containing bituminous, siliceous, calcareous and like materials.—Clinker or ash such as refuse-destroyer clinker is ground and mixed with 10–20 per cent of a bituminous material to form a paving composition suitable for ramming. Alternatively, clinker ground to an impalpable powder may be employed with a grit composed of sand, stone, or the like and 10–20 per cent bituminous material added. The clinker may be ground as it leaves the destructor, or after it has cooled, and is mixed with the bitumen at a temperature of 275–375° F., the heat for drying, mixing, &c. being supplied by the destructor, or otherwise. According to the Provisional Specification, the clinker may be used in the form of grit, and the interstices filled with powder derived from other sources.

6275. Twynam, T., Scott, E. K., and Howles, F. March 12.

Slags, treatment of.—Phosphatic basic slags are subjected to the action of the oxides of nitrogen and air issuing from a nitrogen fixation furnace, in which the oxides are produced by a high-tension electric arc, whereby the slag gives rise to a substance containing a soluble phosphate and the nitrates of the bases present in the slag. The temperature of the mass may be controlled to prevent the formation of nitrate of iron by injecting water, or steam, or a sludge composed of ground slag and water.

6716. Tarassoff, K. March 17. [*Addition to 528/14.*]

Compositions containing phenol-aldehydes.—The condensation of phenols with aldehydes is effected in the presence of sulphonated fatty

acids, or sulphonated resin oils, or mixtures of these bodies with each other or with the sulphonated products referred to in the parent Specification. Fusible, soluble, resinous bodies, or infusible, insoluble products are obtained according to the conditions under which the reaction is effected. According to examples: an infusible insoluble product is obtained from carbolic acid, formaldehyde, sulphonated acids from seal oil, and sulphonic acids from naphtha; a resinous product is obtained from carbolic acid, formaldehyde, and sulphonated acids from sunflower oil. Polymers of formaldehyde, or hexamethylenetetramine, may replace the formaldehyde. The sulphonated fatty acids from linseed oil, coco-nut oil, palm oil, or whale oil, are also specified as suitable. Suitable fillers or colouring-matters may be added at any suitable stage of the process. The sulphonated fatty acids or resin oils mentioned above may be obtained by sulphonation in the cold with sulphuric acid or other sulphonating-agent, and subsequently washing out excess of acid with water and salt solution.

7560. Tarassoff, K. March 25.

Compositions containing phenol-aldehydes.—The condensation of phenols with aldehydes or derivatives thereof is effected in the presence of the sulphonated compounds described in Specifications 528/14 and 6716/14, and also organic compounds free, or substantially free, from phenolic, aldehyde, or sulphonic groups; examples of the last-mentioned compounds are terpenes, such as turpentine oil, coal- or wood-tar or their non-phenolic distillates, resins, for example, colophony, resin oils, oils, fats, fatty acids, naphtha acids, or residues obtained in the acid purification of naphtha or its distillates. The products are hard infusible bodies, or fusible resinous compounds, according to the conditions under which the reaction is effected. According to examples, hard infusible bodies are obtained from the following parent materials: phenol, formaldehyde, sulphonic acids obtained from the vaseline distillates of naphtha, and coco-nut oil acids; phenol, formaldehyde, naphtha sulphonic acids, and turpentine oil; phenol, formaldehyde, aromatic sulpho-fatty acids, and acid-free by-products obtained in the purification of naphtha by sulphuric acid; phenol, formaldehyde, aromatic sulpho-fatty acids and wood- or coal-tar; a fusible resinous body is obtained from phenol, formaldehyde, sulphonic acids from the vaseline distillates of naphtha, and turpentine oil. The reaction may be effected in stages, the formaldehyde being added in two separate portions.

7954. Denny, Sir A., and Anderson, D. G. March 30.

Compositions containing calcium sulphate, Portland cements, &c.—A composition for coating ships' decks, floors, and the like consists of

a mixture of gypsum cement, and a relatively small portion of Portland cement, together with filling-materials such as pumice, coke breeze, asbestos, sawdust, &c. mixed with water or with a dilute solution of sodium aluminate. The term "gypsum cement" does not include plaster of paris, stucco, or like hydrated sulphates. In an example, 100 parts of gypsum cement, 15 parts of Portland cement, 20 parts of pumice, and 20 parts of sawdust are made into a stiff paste with a 2 per cent solution of sodium aluminate or with water.

8611. Richards, A. April 4. *Drawings to Specification.*

Stone, artificial.—In the treatment of tin ores by the processes described in Specifications 26,244/11, [Class 141, Wearing apparel], and 56/12 [Class 1 (iii), Oxides &c., Metallic], in which the ore is heated with a reducing-agent and a solid chlorine or bromine bearing substance, the charge is treated at about 750–850° C. in thin slabs or blocks, and after the extraction of the tin as fume, the temperature may be raised to convert the residue into building bricks, or slabs, or other commercial forms.

8820. Bourne, H. B. Fox-, and Bourne, W. Fox-. April 7.

Compositions containing bituminous or resinous materials.—Homogeneous articles such as bottle-stoppers and buttons are made from a mixture of a body material, such as powdered asbestos or hard wood, and of a binder, such as pitch or shellac, by disintegrating the body and binder, mixing, compressing into a solid block, heating until the binder becomes viscous or liquid, cooling, disintegrating the block and again mixing, and compressing the re-mixed materials into solid form. The binder may be in such small proportion that even when the mixture is hot it does not become plastic or dough-like.

8839. Wessely, E. April 9, 1913, [Convention date]. *Drawings to Specification.*

Stone, hardening.—In forming cored cement plates, magnesium oxychloride cement is run into a mould, and when the cement has set, the mould with the enclosed plate is introduced into a water-bath for an hour or so. The face of the block is then coated with a solution of a metal salt, such as ferrous sulphate or copper sulphate. After drying, the ornamental face of the plate is preferably coated with a solution of soap and washed; it is then preferably rubbed with a paste containing paraffin, stearin, and bees-wax or the like.

9186. Gill, H. A., [Stern-Coleman Diamond Machine Co.]. April 11. *Drawings to Specification.*
Compositions containing resinous materials, or

lime and borax.—A cement for securing a diamond to an arbor, for polishing, consists of (1) anthracite coal 75 parts, shellac 25 parts, a boron compound, such as boracic acid, 50 parts, chloride of magnesium, or chloride of calcium, 25 parts, and a sufficient solution of caramelized cane sugar or coal tar to make the whole into a stiff paste; (2) powdered coke, rye flour, and shellac, with water or thin molasses; (3) powdered silica combined with boracic acid, or (4) a combination of calcium oxide and borax. The first two compositions are carbonized by baking. Specifications 9063/87 and 20,717/96, [both in Class 43, Fastenings, Dress], are referred to.

9291. Redman, L. V. Feb. 24, [Convention date].

Compositions containing phenol-aldehydes.—A fusible resinous product is obtained by condensation of phenols with hexamethylenetetramine in the absence of water, the proportion of phenol used being such that the resin contains more than 25 per cent of free phenol; proportions of 9 to 13 molecular parts of phenol to 1 molecular part of hexamethylenetetramine are suitable. The process may be effected by heating the mixture until self-heating occurs, allowing the reaction to proceed by self-heating only until the evolution of ammonia slackens, and again applying heat until all the ammonia is driven off. The ammonia evolved may be collected and converted into hexamethylenetetramine for re-use. The product is converted into an insoluble infusible product by treatment with a suitable methylene compound, for example hexamethylenetetramine, formaldehyde, or formaldehyde and ammonia. Fillers such as kieselguhr, silica, powdered slate, stone, asbestos, wood fibre, or cellulose, may be added before the final step; the product may be coloured by suitable dyes. The resinous product may be employed as a varnish, and the infusible product for electric insulation.

Reference has been directed by the Comptroller to Specifications 3496/11, [Class 70, India-rubber &c.], 3497/11, [Class 95, Paints &c.], 3498/11, [Class 70, India-rubber &c.], and 6363/12, [Class 2 (iii), Dyes &c.].

9727. Utzschneider & E. Jaunez. April 26, 1913, [Convention date].

Stone, artificial.—Roughened paving-slabs and like blocks are made by compressing and burning a mixture of pottery, clay and carborundum so that the carborundum is enclosed in the clay which has been reduced to a slag by the burning.

The Specification as open to inspection under Section 91 (3) (a) comprises also the use in place of carborundum of any hard material which does not shrink during the burning. This subject-matter does not appear in the Specification as accepted.

10,130. Brothers, J. M. April 24.

Compositions containing plaster and lime.—A plaster is made by mixing together hydrated gypsum and dehydrated lime, and heating the mixture preferably to 212–300° F. to dehydrate the gypsum and slake the lime.

10,161. Becker, H. April 24, 1913, [Convention date].

Stone, imitation.—Crystalline glass products, resembling stone, granite, &c. are manufactured by heating the raw materials for glass-making (for instance, sand, soda, lime, clay &c.) until incipient fusion takes place, and then removing the mass from the furnace or beyond the range of smelting temperature and cooling or annealing, as usual.

10,130. Helbronner, A. April 25, 1913, [Convention date]. Void. [Published under Section 9i of the Act.]

Cements; Portland cements.—White or slightly coloured Portland cement and alkaline chlorides are manufactured by adding alkaline-earth chlorides, such as those of calcium, barium, or magnesium to feldspars, or to the ordinary ferruginous raw materials, such as slag or calcareous clay, with or without coal, and injecting steam while the mixture is subjected to a high temperature. The calcium chloride is decomposed at a temperature of 800–1,200° C., and the cement formed at a temperature of 1,400–1,500° C. Water gas alone or mixed with air may be used to replace the whole or part of the coal.

11,154. Parkinson, H. May 6.

Compositions containing bituminous and siliceous materials.—Consists in heating granite or basalt to a temperature of from 400–500° F., which is sufficient to dry the tar used to cover the stones with a thin primary coat, the tarred stone being then cooled and subsequently mixed with a thicker tar which constitutes the bond between the stones when laid on the road.

Reference has been directed by the Comptroller to Specifications 22,105/00, [Class 107, Roads &c.], and 17,618/02.

11,824. Dynamidon Ges. July 31, 1913, [Convention date].

Refractory substances containing alumina.—A lining for the sintering zone of a rotary kiln or furnace consists of an inner layer of material having a high content of fused alumina and a thermally insulating outer layer. The inner layer may comprise bricks made from corundum and clay as described in Specification 12,796/02, the proportions preferred being 4 to 1, and the outer layer may consist of asbestos or porous bricks such as are used in blast stoves.

12,073. Lovegrove, E. J., and Crompton, N. G. May 15.

Compositions containing bituminous and siliceous and like materials.—Native bitumen, or bitumen from asphaltic oils, is mixed with very finely ground ash, refuse-destroyer clinker, or like residue of combustion, in the proportion of 30 to 70 per cent of the former, for the manufacture of a grouting for making, dressing, and similarly treating roads. The material may be applied upon macadam roads or roads formed of granite setts or wood blocks, by flowing it and distributing with a brush; or it may be forced in under pressure. The fine dust produced during the crushing operation, and which is not usually collected, is gathered by means of a fan, or after the crushing is finished, and is particularly suitable for the present invention. Specification 5989/14 is referred to.

12,136. Radmann, P. May 16

Cements, Portland, materials for.—Alkali-ferous rocks and weathering products (especially feldspar) are heated with gypsum with or without limestone while avoiding fusion, and the alkali salts are washed out. The washed residue, with or without addition of limestone, may be burned to make cement.

12,987. Leger, J. F. May 28, 1913, [Convention date].

Refractory substances containing silica.—Refractory bricks &c. are formed from a mixture of 1 part of calcined magnesia, 1 to 20 parts of granulated flint and 1 to 10 parts of powdered flint, bound with a solution of magnesium chloride.

13,440. Mannesmannröhren - Werke. Feb. 5, [Convention date].

Compositions containing vulcanized oils.—A rubber-like substance is obtained by adding sulphur or sulphur chloride in small portions to a heated mixture of equal parts of an oil such as linseed or rape oil and resin, until the mixture can be drawn out into threads.

13,448. Brown, H. E. June 2.

Cements, Portland; concretes; slag-wool, preparation of; stone, artificial.—An hydraulic cement is made by melting together calcareous, siliceous, and aluminous materials, preferably under non-reducing conditions, and treating the molten mass with a solution of a salt of an alkali; alkaline earth, or iron or other salt capable of increasing the hydraulic properties,

and producing a finely-divided hydraulic cement containing approximately 50 per cent of lime. If the alkaliferous siliceous material, such as feldspar, be employed, the alkali is volatilized during the furnacing operation and may be collected, and, if desired, it may be collected in the form of halogen salt by adding a sufficient quantity of calcium chloride or other halogen salt to the furnace charge. The fused mass may be treated with the alkali or other salt by running it upon a rotary drum so that it is distributed in finely-divided particles in a chamber filled with a spray of, for example, a 5 per cent solution of magnesium sulphate. Plaster or gypsum may be added to the product to control setting. The calcareous material added to the charge may be in the form of carbonate, sulphate or other calcium compound. Specification 2466/15 is referred to.

The Specification as open to inspection under Section 91 (3) (a) comprises also the use of the fused material after the volatilization of alkali in the manufacture of slag brick, fillers for concrete mixtures, glass-wool, and "silicate roofing materials." This subject-matter does not appear in the Specification as accepted.

13,542. Goddard, J. F. June 3.

Cements, Portland, treating after manufacture.—In making Portland cement, the clinker is mixed with gypsum or other suitable form of calcium sulphate previously treated or incorporated with tannic acid or tannin, and the mixture is ground. Cement thus made is stated to be waterproof. Suitable proportions are 1 part by weight of tannic acid or tannin to 5 parts of gypsum, and 0.8 part of treated gypsum to 100 parts of clinker. Specification 20,782/10 is referred to.

14,013. Eaton, E. June 10.

Cements, Portland, compositions for.—An ash suitable for making cement is yielded by a fuel containing 40 parts of carbonaceous material, 40 of chalk, 12 of clay, and 8 of solidified tar. Specifications 3876/74 and 6981/12 [Class 50, Fuel, Manufacture of], are referred to.

14,812. Woodhead, G. June 19.

Compositions containing oily materials, glycerine, carbon, and cement.—A joint-making composition, which is not acted upon by paraffin oil or petroleum, and is applicable also for coating tanks or other articles, consists of a mixture of a vegetable oil, such as boiled linseed oil, with glycerine, and lamp-black or other impalpable form of carbon, preferably ground in oil. These materials are thoroughly mixed, and Portland cement is then added in an amount varying with the desired consistency. The composition may be used by

itself, or may be employed for coating or impregnating canvas, or other woven fabric, or marine spun yarn. For some purposes the Portland cement is replaced in part by litharge.

14,865. Hannen, B. June 20.

Cements, Portland.—A white hydraulic cement is made by burning mixtures of argillaceous and calcareous materials containing a small proportion of iron compounds in the presence of a chloride of an alkali or alkaline-earth metal and at a temperature below that at which the mixture clinkers but sufficiently high to produce a caked mass, which requires reduction to powder form. The proportion of chloride used is for example 1 to 4 per cent of the raw mixture, and a temperature between 1,000° and 1,250° C. may be employed. Specification 14,336/08 is referred to.

15,271. Johnson, G. W., [Chemische Fabrik Griesheim-Elektron]. June 25.

Compositions containing esters.—Organic vinyl esters, such as vinyl acetate or vinyl chloracetate are polymerized by exposure to light or heat, or otherwise; the polymerization may be assisted by catalysts, such as organic peroxides, ozonides, organic acid anhydrides in the presence of oxygen or oxygen-yielding agents, perborates, percarbonates, metal oxides, for example silver oxides &c. The products may be used as celluloid substitutes; they may be mixed before, during, or after polymerization with camphor, colouring-matters, organic acids, alcohols, cellulose esters, zinc oxide, &c. The products may be dissolved in suitable solvents and converted into films &c. by evaporating the solvent. The viscous products of partial polymerization may be further polymerized to yield films &c., or they may be squirted into precipitating-liquids such as alcohol or ether to produce threads. The solid polymerization products dissolved in suitable solvents or softened by heat or solvents, or the viscous polymerization products alone or mixed with solvents may be used for coating, painting, or impregnating wood, paper, textile fabrics, artificial stone, &c., the treated article being exposed to light, heat, &c. to complete the polymerization when partially polymerized products have been used. The solid products can be used as electric-insulating material and are fireproof and odourless. The solutions of the products may be used as lacquers; suitable solvents for the purpose are acetic ether, esters, ketones, acetylene tetrachloride, dichlorethylene, trichlorethane, ethylene chloride, &c., or mixtures thereof; hydrocarbons, chlorobenzene, &c. may also be added to these solvents. Additional substances, such as castor oil, dyes, zinc oxide, camphor, camphor substitutes, &c., may be mixed with the lacquering, painting, or impregnating materials. Specification 17,379/00, [Class 37, Electricity, Measuring &c.], is referred to.

15,875. Chemische Fabriken Dr. K. Albert, and Berend, L. July 2.

Compositions containing phenol-aldehydes.—Phenol-aldehyde resins are rendered soluble in fatty oil by melting with natural or artificial resins or fatty oils or a mixture thereof; colophony, wood oil, turpentine resin, copals, cumaron resins, and hardened and esterified resins may be employed. The phenol-aldehyde products used may be either fusible or infusible when heated alone. The resins or fatty oils may be added to the reaction mass before or during the manufacture of the phenol-formaldehyde resins. Specification 1269/12. [Class 70, India-rubber &c.], is referred to.

16,560. Denny, Sir A., and Anderson, D. G. July 11.

Compositions containing plaster and lime.—Consists of a mixture of anhydrous gypsum and from 2 to 10 per cent of crystalline ferrous sulphate or the equivalent of anhydrous ferrous sulphate or salt containing iron sulphate, with or without 1 to 4 per cent of slaked lime or Portland cement, and filling-materials such as sawdust, coke breeze, &c. A solution of the sulphate may be sprayed upon the gypsum. The product may be used as a flooring for ships' decks.

17,161. Soc. Italiana di Elettrochimica. Aug. 9, 1913, [Convention date].

Refractory substances containing oxides of iron; stone, artificial.—Iron oxide castings in which the ratio of Fe_2O_3 to FeO is greater than 3 and may reach pure Fe_2O_3 are obtained by fusing an iron oxide (which may be a crude oxide such as burnt pyrites) or metallic iron in an electric furnace and injecting into the mass, in the furnace or in a converter, oxygen or an oxidizing gas or adding an oxidizing agent with stirring, the treatment being effected under pressure, and casting in an oxidizing-atmosphere. Mixtures of iron oxide with other oxides such as oxides of manganese, tungsten, titanium, chromium, vanadium, cobalt, nickel, molybdenum, and uranium may be similarly treated. The castings may be vessels, pavements, coatings, &c., and articles for electric use such as arc-lamp electrodes and anodes and cathodes for electro-chemical purposes.

17,686. Walker, W. H. July 27.

Compositions containing oils.—A composition consisting of 60 to 80 parts of prepared chalk, 10 to 30 parts of vaseline, 1 to 5 parts of castor oil, and 1 to 5 parts of iron-oxide paint, is employed for making water-tight the joints of covers of boxes for underground electric mains and distributors and of other boxes in exposed positions.

17,756. Longan y Senan, E. July 27. Drawings to Specification.

Cements, Portland; concretes.—The free lime present in cements or hydraulic limes is caused to react with a suitable proportion of granite or diorite which has been heated for at least two hours at about 1000°C . and afterwards finely powdered. A concrete may be made from the cement thus produced by adding calcined fragments of granite or diorite of the same nature as that used in the preparation of the cement or hydraulic lime.

18,005. Golightly, R. E. July 30.

Stone, artificial and imitation; stone, hardening.—Relates to the manufacture of asbestos-cement tiles wherein the tiles are subjected to pressure, and subsequently treated with steam in an autoclave, and comprises a process for preventing any of the press-expelled water or water of condensation in the autoclave from working back into the tiles; such process consisting in dusting the edges of the tiles, whilst under pressure and after most of the excess water has been expelled, with Portland cement, slag cement, hydraulic lime, &c. In carrying out the invention, the pile of tiles in the press is screened by a box and cement dust is forced into the space between the tiles and box by an air or steam blast.

18,439. Crawford, W. W. Aug. 8.

Refractory substances.—Refractory articles, such as bricks, tiles, crucibles, furnace linings, &c., are made by mixing silica, for example in the form of kieselguhr or washings from China-clay, with a substance such as refuse oil which will yield carbon on burning, heating to about 2000°C . till clinkered, and moulding the ground clinker with sodium silicate. Tungsten oxide may be added at any stage of the process. The clinker is stated to be a carbide of silicon or similar thereto.

18,520. Pelton, J. C. Aug. 10.

Cements, Portland, treating after manufacture.—Portland or other cement, whitening or Paris white is coloured by first making a paste of sulphuric acid and ordinary commercial ferrous sulphide, diluting this paste with water according to the tint required, adding this mixture to the cement &c., drying the product, reburning, and regrinding.

19,211. Harbutt, W. Aug. 28.

Compositions containing oils.—A plastic composition comprises a mixture of permanently plastic material of the kind usually employed for modelling, such as "plasticine," and fibrous material, such as wool or cotton-wool. Plasticine is stated to have as its chief constituents sulphur and pure vegetable oils. Suitable proportions are 1 lb. of wool per hundredweight of plasticine. The composition is applicable for ear-stoppings for preventing gun-deafness, for resetting broken bones, and, when rolled into sheets, as surgical bandages.

20,258. Twynam, T. Sept. 28.

Concretes and mortars; slags, treatment of.—Silica is separated in a gelatinous form in a process for treating blast furnace slag, and may be used as an ingredient of mortars and bricks. At a subsequent stage, a precipitate is obtained which is treated with soda to obtain sodium aluminate, and the residue, consisting of magnesia and manganese oxide, may be used for the production of magnesia bricks.

21,264. Hemming, E., and Hemming Manufacturing Co. Oct. 20.

Plastic compositions containing phenol-aldehydes.—Relates to the preparation of moulded bodies with the aid of phenol-aldehyde condensation products. An initial condensation product is prepared by reaction between a phenolic body and a methylene body according to any of the known processes at a temperature below 95° C., the reaction being arrested when the product has a specific gravity between 1.15 and 1.25. This product, which is of a suitable consistency for cold-moulding, or which may be brought to this condition by thickening by heat or thinning with a solvent, is mixed with a filler, moulded under pressure and at ordinary temperature, and hardened by heat after removal from the mould.

21,378. Podszus, E. Oct. 22, 1913, [Convention date]. Void. [Published under Section 91 of the Act.]

Refractory substances.—Coherent bodies of nitrides of boron, titanium, zirconium, aluminium, &c. are obtained by forming the initial material such as an oxide or sulphide, or an oxide mixed with a nitride or another material, for instance a metal such as tungsten, or boron, titanium, or aluminium alone or mixed with their carbides, and then converting

into nitride. The conversion into nitride may be effected by heating in ammonia or, in the case of the free elements with or without other materials such as their carbides, in nitrogen. Before nitriding, the bodies may be heated to a sufficiently high temperature or melted, to avoid the occurrence of fissures in the finished articles. When a mixture of oxide and nitride is used as initial material, this may be obtained by mixing, for instance, boron nitride with organic binding material and allowing the article to remain wet until a sufficient quantity of oxide is formed; it is then dried, burnt in an oxidizing atmosphere to remove the binding material, and nitrified in a stream of ammonia. The article may be thickened by dipping into "boroglycerine" or fused boric oxide, or, according to a claim, a solution of boric acid, and again heating. In another example, burnt or molten titanium oxide in powder is mixed with organic binding-material and, if desired, with a metal such as tungsten, and the formed object is heated in an oxidizing-atmosphere or directly in ammonia. The nitride bodies produced may be thin objects, such as tubes, threads &c., or crucibles, or may be used in the construction of furnaces. They do not conduct the electric current.

21,524. Ottorepetz, V. Oct. 26, 1913, [Convention date].

Compositions containing modified oils.—An india-rubber substitute is obtained by dissolving sulphur in linseed or other vegetable oil and heating the solution with dilute nitric acid or other oxidizing-agent. Asphaltum, solutions of resin, india-rubber, gutta-percha, &c., and filling substances such as chalk, kaolin, pigments, &c., may be added together with sulphur for vulcanization.

21,787. Larsen, A. Sinding-, and Boyesen, R. Oct. 31, 1913, [Convention date].

Figured artificial stone.—Friezes, cornices, columns, capitals, panels, &c. are made by lining a mould with coloured stone chippings, broken pieces of stone, glass &c. and pouring in a backing of cement, gypsum, &c. The faces of the pieces of stone &c. which are to be exposed are, before being fitted in place in the mould, coated with a material capable of preventing the moulding material employed from adhering to the exposed face of the finished product. This coating substance may be pitch, paraffin wax, &c. which is used to stick the pieces of stone to the mould before pouring in the backing material.

21,987. Denny, Sir A., and Anderson, D. G. Nov. 4.

Compositions containing calcium sulphate and cement.—A quick-setting cement having an alkaline reaction is produced by mixing substantially anhydrous gypsum with 1 to 10 per cent of Portland cement.

22,030. Porter, J. E. Nov. 5.

Stone, artificial.—A porous composition made by fusing together 75 to 85 parts of sand, 25 to 15 parts of powdered glass, and infusorial earth, for example 2 to 15 parts, is used as a heat-insulating material. Instead of glass, glass-forming constituents may be employed.

22,644. Basset, L. P. Nov 18, 1913, [*Convention date*]. [*Addition to 17,873/13.*]

Cements, Portland.—Relates to modifications in the process described in the parent Specification for producing cement or hydraulic lime from calcium sulphate, clay, and charcoal, and consists in employing a furnace having two zones, the first neutral and the second oxidizing.

The Specification as open to inspection under Section 91 (3) (a) comprises also (1) the employment of two zones, one of which is reducing or less oxidizing than the other according to the proportion of carbon in the charge, and in the extreme case the charge may contain no carbon, (2) first treating the calcium sulphate with carbon under the conditions described in the parent Specification, and subsequently mixing the lime obtained with clay, (3) using an excess of clay so as to obtain a slag, and then either roasting the slag in presence of lime or calcium carbonate, or granulating the slag and mixing it with slaked lime to form slag cement. This subject-matter does not appear in the Specification as accepted.

24,266. Eaton, F. E. Dec. 18.

Compositions containing chalk, calcium phosphate &c.—A mixture of 86 to 98 per cent of calcium carbonate (chalk), 1.98 to 12.5 per cent of calcium phosphate (powdered bone), and 0.02 to 1.5 per cent of silica (sand), together with a suitable binder, is used for forming dolls' heads &c. Suitable binders are: (1) a mixture of 1 quart of glue solution, 1 teaspoonful of Venice turpentine, and 1 pint of a strong solution of alum, or (2) a mixture of a solution of casein, water-glass, and gum arabic.

24,419. British Thomson-Houston Co., [*General Electric Co.*]. Dec. 21.

Compositions containing modified oils.—Moulded compositions for electric insulation are made by thickening Chinese wood oil by heating, mixing therewith a mineral filler, moulding, and baking at a temperature at which the oil is solidified, say 180–220° C. To ensure homogeneity, the mixture of oil and mineral matter may be compressed and kneaded, and then disintegrated, prior to moulding into the final form. In an example, the mixture consists of 15 parts of asbestos, 74 parts of ground marble, 10 parts of thickened Chinese wood oil, and 1 part of carbon black. Specifications 2679/01, [*Class 95, Paints &c.*], and 26,371/02, [*Class 91, Oils &c.*], are referred to.

24,761. Deckers, A. March 31, [*Convention date*]. *Void.* [*Published under Section 91 of the Act.*]

Mortars; slag cements.—A dry mortar or cement is made by grinding quicklime and granulous slag together. The lime is slaked by the "hydrate water" from the slag. Continued grinding produces a cement.

A.D. 1915.

2438. Thompson, W. P., [*Knöfler & Co., O.*].
Feb. 16.

Refractory substances containing colloidal hydroxides &c.—Fireproof vessels &c., such as crucibles, are made from a paste containing water and very finely powdered oxides of titanium, beryllium, zirconium, thorium, or rare earths, or mixtures of such oxides, together with a colloidal hydroxide of one or more of these metals and a small quantity of a free acid. Solid sol or a colloidal solution may be employed. The proportions may be one part of solid sol and 100 parts of solid oxide, and the paste should contain about 0.1 per cent of free acid. The cast or moulding is dried and rapidly calcined to about 2,100° C., for example, in the case of zirconium oxide.

2466. Brown, H. E. *June 2, 1914.*

Cements, Portland, materials and compositions for.—Alkalies are recovered from alkali-ferous materials such as feldspar by fusing with calcareous material with or without additions such as calcium chloride or other cheap halogen salt to render the alkali easily volatile, the proportion of calcareous material being such that the residue, after volatilization of the alkalies, contains from 40 to 55 per cent of calcium oxide. It is preferred to conduct the operation in a non-reducing or oxidizing atmosphere. The residue is suitable for the production of an hydraulic cement as described in Specification 13,448/14. Specifications 26,497/12, [*Class I (iii), Oxides &c., Metallic*], and 28,970/12, also are referred to.

2578. Sidebottom, J. B. Feb. 18.

Refractory substances.—A composition for lining crucibles consists of 112 parts of yellow sand and 8 parts of gas tar. The composition is placed in the crucible and baked for 5 hours at 200° F.

2708. Kahn, M. Feb. 19.

Compositions containing waxes.—A mixture of 50 per cent sand, powdered stone, &c., 40 per cent paraffin, beeswax, or ozokerit, 10 per cent carnauba wax, and vegetable black to colour the

composition is used as a substitute for floors, walls, &c. The sand or powdered stone is warmed, molten wax poured over it, and the whole stirred until the particles are thoroughly coated. The composition is cut into slabs and, when required for use, reheated and spread over the required surface.

3030. Ford & Sons, P., and Ford, H.
Feb. 24. *Drawings to Specification.*

Stone, artificial; concretes; compositions containing calcium sulphate.—Alabaster or gypsum, in granular form or in pieces of irregular or regular form, is mixed with Keene's, Martin's, Parian, or other cement, or vulcanite or other adhesive, and the resulting mass is poured into moulds and made into blocks, shades, reflectors, or screens for light-diffusing purposes, electric-light bowls, vases, slabs, columns, pilasters, cornices, pedestals, &c. The cement may be semi-transparent, and the blocks may be sawn into slabs. The resulting articles may be turned and polished. The pieces of alabaster &c. may be coloured, or naturally coloured pieces may be employed.

4080. Just, W. R., [*Assignee of Fraenken, M.*]. March 23, 1914, [*Convention date*].

Refractory substances containing carborundum.—A mixture of carborundum and zirconia which is moulded and then burnt is used as a refractory material for muffles, crucibles, furnace linings, building materials, or for electrical resistances. Equal proportions are stated to be applicable but the proportions may be varied.

4142. Schauer mann, F. L. March 16.

Refractory substances containing silica, lime, &c.; concretes.—According to one part of the invention, a mixture consisting preferably of 7 lb. of silica or flint, 4 oz. of blue-lime, 2.3 oz. of sodium silicate, 1 oz. of cuttle-fish powder, and 2.3 oz. of water is used for moulding into fire-brick or other refractory material, the moulded product being dried and burnt. The finer portion of the silica or flint is first mixed with the other ingredients, and

finally the coarser portions are added. According to a second portion of the invention, a mixture consisting preferably of 7 lb. of sand, 4 oz. of cement, 4 oz. of sodium silicate, and a solution of 1 oz. of cuttle-fish powder in 4 oz. of water is used for moulding into bricks, building and paving slabs, and artificial stone.

4246. Ford, A., and Ford & Sons, P. March 18.

Concretes; compositions containing plaster, calcium sulphate, &c.—Artificial stone resembling natural stone, such as granite, amygdaloid &c., is made by mixing the crushed stone with a cement having substantially the same hardness and expansibility. As an example, 60 parts by weight of crushed stone with or without coarse siliceous sand is mixed with a cement consisting of 30 parts of monohydrated or anhydrous calcium sulphate, 5 to 8 parts of Portland cement, and 1 to 3 parts of aluminium sulphate. The mass is mixed with water and, when set, may be treated with sodium or other alkaline silicate to harden the surface. For polished stone, crushed alabaster or marble is used, together with the mixed cements, with water containing about 3 per cent of alum or aluminium sulphate, and sometimes boracic acid. After setting, the stone is hardened with alkaline silicate and washed, and the surface is ground and polished.

4289. Ford & Sons, P., and Ford, H. March 18. *Drawings to Specification.*

Stone, artificial; compositions containing calcium sulphate.—Relates to the invention described in Specification 3030/15, in which alabaster or gypsum, in granular form or in pieces of regular or irregular size and shape is mixed with a binding-agent, and consists in mixing celluloid or other binding-agent having celluloid in its composition dissolved in acetone or other solvent as the binder. The product is moulded into slabs, light reflectors or shades, panels or bowls, screens for indirect lighting, vases, slabs for partitions, wall and ceiling coverings, columns, pilasters, cornices, pedestals, &c. The moulded articles may be turned and polished. Naturally or artificially coloured alabaster &c. may be employed.

4414. Studer, A. April 22, 1914, [*Convention date*].

Compositions containing bituminous and siliceous materials.—Road-surface material consists of broken stone bound together by a mixture of 35 parts of gas tar freed from light oils, 35 parts of Trinidad or other good bitumen, 20 parts of powdered rock asphalt, and 10 parts of blast-furnace slag sand. The bitumen, asphalt, and sand are melted together, and the tar afterwards added and boiled with them. From 80–100 kg. of the hot mixture are mixed

with 1 cubic metre of broken stone heated to 40–50° C.

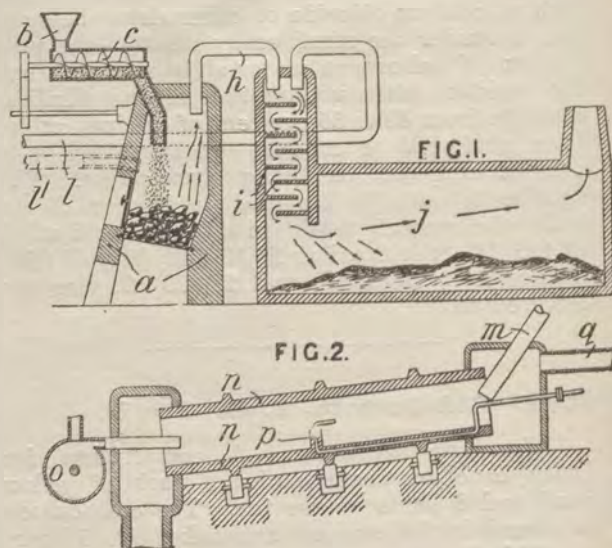
4820. Sharp, R. C. March 29.

Compositions containing bituminous and siliceous materials.—A dielectric composition for filling troughs, conduits, &c. for electric cables consists of spent shale and a binding-agent, such as pitch or bitumen, for example in equal quantities by weight. The pitch &c. is melted, and the ground shale stirred in. Specification 9933/10 is referred to.

6823. Westrum, L. S. van. May 6.

Compositions containing bituminous materials.—Relates to a cold process for manufacturing waterproof material for road surfaces, walls, or ceilings, and for building or fuel blocks, and consists in mixing an emulsion of bitumen, such as asphalt, tar, and its distillates, or rock-oil residues, with a suitable aggregate, such as stones, earth, stone dust, sawdust, hydraulic lime, cements, cellulose, and chalk, and then adding unslaked lime in the proportion of $\frac{1}{2}$ to 2 per cent by weight of the emulsion, for the purpose of separating the bitumen from the water in the emulsion. Specification 15,960/03, [*Class 107, Roads &c.*], is referred to.

8128. Basset, L. P. June 11, 1914, [*Convention date*].



Cements, Portland.—In the production of sodium sulphate and hydrochloric acid or chlorine by the Hargreaves process, in which the reaction is effected with the sodium chloride in the form of vapour or fine mist produced by condensation of the vapour, the sodium chloride is mixed with materials which, on heating, liberate sulphurous acid, for instance gypsum, clay, and coal, cement also being produced. The sodium sulphate is carried forward by the gas

stream and deposited. The sodium chloride, in quantity equivalent to the gypsum, is mixed with a cement charge of gypsum, coal, and clay, the dry or wet mixture being charged through a feed *m* into a rotary cement furnace *n* of the kind described in Specification 17,873/13, heated by oxidizing or neutral gases from a fire-box *o*. Further air and, if desired, steam may be admitted about the middle of the furnace *n*. The sodium sulphate is carried off by the gases at *q* and collected in a settling-chamber.

8551. Gresly, J. June 29, 1914, [Convention date].

Cements, Portland, compositions for.—A slow-setting, white, hydraulic cement containing little or no alumina or iron oxide is made by adding calcium sulphate as the sole sintering-agent to a mixture of lime or calcium carbonate and quartz, or to calcium silicate or lime-stones containing silica, sintering, and grinding. The materials used may be crude, or may have been previously heated and suddenly cooled. As an example, 34 parts of calcium sulphate are mixed with 250 parts of calcium carbonate and 60 parts of silica.

9473. Gill, H. A., [Johnston Co., G. S.]. June 29. Drawings to Specification.

Compositions containing resinous materials.—Relates to a cement, composed of particles of graduated sizes and a binder, which is particularly applicable to the mounting of eyeglasses in their frames. As an example, the following proportions are given: filling-material 80 per cent, shellac 20 per cent. The filling-material is composed of silix 27 per cent, extra-finely ground glass ("Ground glass special") 18 per cent, and ground glass 35 per cent. The filling-material is graded so that 41.1 per cent of the cement will pass through a screen of 200 meshes per lineal inch, 61.3 per cent through a 100-mesh screen, and 100 per cent through a 50-mesh screen. Such proportions are designed to give substantially the minimum percentage of interstices to be filled by the binder. The cement may be fused into sticks and used in that form, or the sticks may be ground into powder.

9838. Richardson, C. July 25, 1914, [Convention date].

Compositions containing bituminous materials.—Bituminous matter, such as native and artificial bitumens, coal-tar pitch, and petroleum residue, in liquid form, is intimately mixed with colloidal clay uniformly dispersed in water, and the water is removed by evapora-

tion, the temperature not being allowed to exceed the boiling-point. At least 30 per cent of bitumen, as compared with clay, is required in order to form a continuous phase, and the amount of clay should be at least 1 or 2 per cent. With highly colloidal clays, 3 parts of water are used to 1 of clay. The mixing may be effected by agitation with air or steam. The product may be used for paving. Specification 15,100/08 is referred to.

The Specification as open to inspection under Section 91 (3) (a) describes also the use of solid disperse colloids in general in place of clay; this subject-matter does not appear in the Specification as accepted.

10,029. Dauphin, P. July 9.

Compositions containing calcium sulphate; compositions containing resinates and oils.—A composition consisting of zinc oxide, hydrated sulphate of lime, dehydrated sulphate of lime, manganese resinate, and ultramarine blue is used as a filling for joints and for fixing earthenware or metal linings to their supports. The mixture may be mixed with oil, spirit, or other vehicle.

10,055. Reeser, W. July 29, 1914, [Convention date].

Plastic compositions containing phenol-aldehydes.—The condensation of phenols with aldehydes is effected in the presence of fatty or oily bodies and alkali in amount equal to twice that required for saponifying the fatty or oily body. Resins such as colophony may be used in addition to, or in place of, the fatty or oily body. The phenol is first mixed with the fat and alkali and heated, the aldehyde is then added and the heating continued; the product may be rendered infusible in the known manner; fillers may be added before the hardening.

10,811. Philipp, H. Aug. 14, 1914, [Convention date].

Compositions containing wax-like materials.—"Neuburger Weiss" is used to replace wholly or in part the barium sulphate &c. usually employed in making playing-records. Neuburger Weiss is found in Neuburg on the Danube and consists essentially of 84 per cent of silicic acid and 10-12 per cent of alumina.

centages of 200-mesh powder (impalpable powder) upon the softening-point of asphalt. The following particular compositions are claimed: (1) a composition of 6 in. or more in thickness containing 79 per cent of mineral aggregate passing a 3 in. sieve but retained on successive sieves down to a $\frac{1}{8}$ in. sieve, 18 per cent of mineral aggregate passing a $\frac{1}{8}$ in. sieve but retained on successive sieves down to a 200-mesh sieve, 3 per cent or less of impalpable powder passing a 200-mesh sieve, and an additional 4 per cent or more of bitumen; (2) a composition of from 2-6 ins. thick containing 59 per cent of mineral aggregate passing a 1 in. sieve but retained on successive sieves down to a $\frac{1}{8}$ in. sieve, 31 per cent of mineral aggregate passing a $\frac{1}{8}$ in. sieve but retained on successive sieves down to a 200-mesh sieve, 10 per cent or less of impalpable powder passing a 200-mesh sieve, and an additional 4 per cent or more of bitumen; (3) a composition of 1-2 ins. thick containing 40 per cent of mineral aggregate passing a $\frac{1}{8}$ in. sieve but retained on successive sieves down to a $\frac{1}{8}$ in. sieve, 42 per cent of mineral aggregate passing a $\frac{1}{8}$ in. sieve but retained on successive sieves down to a 200-mesh sieve, 18 per cent or less of impalpable powder passing a 200-mesh sieve, and an additional 4 per cent or more of bitumen; and (4) a composition of $\frac{1}{4}$ -1 in. thick containing 74 per cent of mineral aggregate passing a $\frac{1}{8}$ in. sieve but retained on successive sieves down to a 200-mesh sieve, 26 per cent or less of impalpable powder, and an additional 4 per cent or more of bitumen. The bitumen and impalpable powder are to a certain extent interchangeable, and the powder may be increased above the proportions given. The phrase "retained on successive sieves" indicates that, in the proportions given, all the sieves of any series must be used, and the proportions of the material retained by each sieve are in accordance with those shown on the curves given in Fig. I.

13,856. St. Laurent, E. E. P. J. P. S. J. de., and Aluminium Solder Co. Sept. 29.

Refractory substances.—A plumbago crucible is lined with a mixture of 70 parts of alumina and 20 parts of carbon, preferably charcoal.

14,600. Larsson, J. A. Nov. 28, 1914, [Convention date]. Void [Published under Sect. 91 of the Act].

Concretes.—Clay by itself or mixed with clay-like, chalk-mingled or calcareous earth, is mixed in a dried state with magnesite, dolomite, or cement, after which a solution of a magnesium salt, for example magnesium chloride, is added.

Uprights, beams, mine-props, &c., are produced therefrom by casting.

15,163. Twynam, T. Oct. 27. [Cognate Application, 16,237/15.]

Refractory substances.—Refractory bricks are made with a single burning by mixing and grinding magnesite, dolomite, limestone, or lightly burnt magnesite with not less than 20 per cent and not more than 80 per cent of chrome-iron ore. A burning-temperature of 1600° C. is suitable, and, in moulding, a high pressure is avoided.

15,248. Harkko, E. Oct. 28.

Composition containing oils.—Putty is made by boiling rosin oil, for example 700 parts, till it ceases to froth and then stirring in 300 parts of petroleum; chalk is added to this mixture.

15,979. Forrest, C. N., and Barber Asphalt Paving Co. Nov. 12.

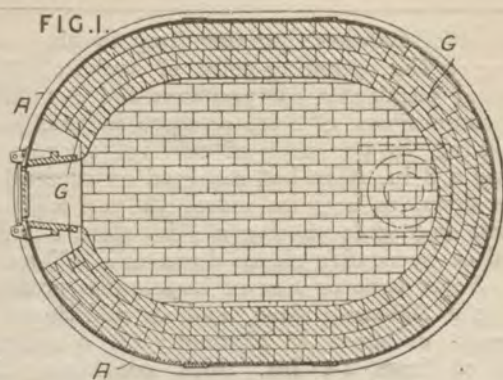
Asphalts; compositions containing bituminous materials.—Asphalt is refined, and asphalt cement made by adding to crude sulphur-bearing asphalt a sulphur-absorbing agent, such as linseed oil, soya-bean oil, fish oil, tung or Chinese wood oil, petroleum or like fixed oils, and heating to remove water and other volatile matter so as to conserve the sulphur. In an example, 15 to 20 parts of oil are added to 100 parts of asphalt. Flux may also be added.

17,447. Mineral Products Co., [Assignees of Hershman, P. R.]. Dec. 21, 1914, [Convention date].

Refractory substances containing carbides.—Material capable of forming a refractory carbide, such as aluminium dust, alumina, and calcined alumite, is mixed with insufficient carbon, such as finely ground coke, to convert the whole of the material into carbide, and the mass is heated slowly and gradually, without melting, to a temperature of 1500-2200° C., until a refractory product suitable for furnace linings, bricks, flue linings, vessels for holding hydrofluoric acid, &c., is obtained. The mixture may be briquetted with tar or glue prior to heating. Porosity may be produced by adding straw or carbonates, and the heating is preferably conducted in an atmosphere which contains little free oxygen, for example, producer gas.

17,955. Ridley, T. W. Dec. 23.

Slags, treatment of.—Kilns for annealing slag bricks or blocks are made with their length greater than their width, and the latter decreases towards either or both ends, as shown in plan in Fig. 1. The sides A may be straight or slightly curved, so long as either or both ends G are of semicircular, oval, triangular, polygonal, or similar shape.



APPENDIX.

The following abridgments should be inserted in place in the present volume.

A.D. 1909.

1339. St. Laurent, E. J. S. de, Lancaster, E. W., McNeale, H. T., and Collins, J. W. Jan. 19.

Refractory substances.—The crucibles and moulds used in melting and casting alloys are coated with a paste containing carbon and alumina, to which may be added oxide or croconate of lead.

4462. Briggs, F. H. Feb. 23. *Drawings to Specification.*

Compositions containing plaster of paris and Tripoli sand or marble dust are employed as a mould material in dental casting.

16,224. Bunet, P., and Badin, A. Aug. 17, 1908, [Convention date]. *Drawings to Specification.*

Refractory substances.—The walls of an electric furnace may be constructed of briquettes of cast alumina.

26,266. Harden, J. Nov. 12. *Drawings to Specification.*

Refractory substances.—A refractory lining for an electric furnace consists of magnesite, chromite, or zirconite, separated by a carbon layer from a hollow steel plate. The carbon layer may be a rammed-in mixture of graphite and a binder, or a block prepared after the manner of making carbon electrodes. Specification No. 18,523, A.D. 1908 [Class 72, Iron &c.], is referred to.

30,565. Griffiths, W. Dec. 31. *Drawings to Specification.*

Compositions containing oils.—An adhesive contains one part by weight of pitch, one part linseed oil, one part soft soap, and six parts of ordinary glue. According to the Provisional Specification washing-blue is used instead of glue in the adhesive referred to above, and the parts are measured by volume.

A.D. 1910.

12,535. Weber, E. June 23, 1909, [*Convention date*].

Rendering non-plastic materials plastic.—Castable masses are produced from powdered non-plastic substances, such as quartz, carborundum, steatite, magnesite, zinc oxide, sulphur, graphite, and metals by adding a small quantity of alkali from 0.05 to 0.2 per cent and a little water, with or without the addition of humus or high molecular carbonaceous substances, such as humic acid, grape sugar, gum, brown coal, and turf, in small quantities such as from 0.05 to 0.2 per cent. Barium and lead salt solutions may also be added to precipitate soluble sulphates, and the masses may be hardened by an addition of acids or salts. The powdered materials may be in different state of division.

13,946. British Thomson-Houston Co., [*General Electric Co.*]. June 8.

Compositions containing phenol-aldehyde condensation products.—Insulating-materials of which the disruptive strength increases with rise in temperature are made from a condensation product of phenols and aldehydes dissolved in alcohol and paraffin oil dissolved in amylacetate. The material when dried forms a hard rubber-like mass, and the solution may be applied to fabrics or fibrous material to produce insulating bodies. According to the Provisional Specification, the aldehyde phenol condensation product used is that known as Bakelite. Specifications 8875/05, 1921/08, and 2122/08, [all in Class 70, India-rubber &c.], are referred to.

21,401. Pollak, F. Sept. 14.

Compositions containing phenol-formaldehyde condensation products, which are white, infusible, and insoluble resins, are produced by heating a phenol and formaldehyde with an acid in quantity not exceeding 1.5 per cent of the final product, and coagulating and hardening the soluble intermediate compound by the action of heat. The reaction may be varied by reacting with a condensing-agent upon a phenol and such a quantity of formaldehyde that a soluble transparent resin is

formed, then partly or entirely eliminating the condensing-agent, and adding a further quantity of formaldehyde and so small a quantity of acid that this latter does not exceed 1.5 per cent of the insoluble final product. The process may be interrupted at any stage, and the product is mixed with asbestos, graphite, sand, powdered metals, tar, resins, oils, &c., the mixture being hardened by heat. Specification 12,880/02 is referred to.

23,573. Cohoe, W. P. Oct. 11. *Drawings to Specification.*

Compositions containing fibres and phenol-aldehydes.—A digester has an acid-proof lining of asbestos impregnated with "Bakelite"; a stuffing-box is made of graphite mixed with "Bakelite" or of metal coated with "Bakelite."

27,645. Muller, A., and Veltener **Schwermmstein-Industrie Ges. fur Schlackenverwertung.** Nov. 28. *Drawings to Specification.*

Slags, treatment of.—Furnace residues are first ground to uniform grains and are then separated into (1) coke, forming a smokeless fuel suitable for household use, (2) slag, applicable for making building-bricks, concrete, mortar, or the like, or as an insulating-filling for walls, floors, and ceilings, and (3) ashes. The separation is effected by a centrifugal apparatus.

28,155. Johnson, J. Y., [*Bakelite - Ges.*]. Dec. 3.

Compositions containing phenol-aldehydes.—Fibrous matter is mixed in the presence of water with chemical agents capable of transformation by heat into an insoluble and infusible condensation product of a phenol and formaldehyde, such as phenol and formaldehyde themselves or partial reaction products therefrom, with or without condensation agents, and in the latter case an alkaline solution of phenol and formaldehyde may be employed, the alkali being subsequently neutralized or eliminated. The mass is formed into a plastic

body, dried, heated, and pressed. The mixing is preferably performed in a beater similar to that used in paper making. Sizing and thickening agents, such as starch and gelatinous bodies, or the initial reaction products or phenol and formaldehyde, or alkaline solutions thereof, may be added, and filling-materials such as China-clay, soapstone, mica, alumina, or a certain amount of pulverized final condensation product. The mass is pre-

ferably made into paper or pulp-board, which by hot-pressing, can be moulded into any desired shape, such as buttons, knife-handles, &c. Electric insulators may also be produced. The paper may be dusted or otherwise coated with the aforesaid condensation products to give a gloss or the moulds may be similarly treated. Paper of various colours may be mixed or combined to produce marbled, tortoise-shell, or mottled effects.

28,491. Kunisch, H., and Brunn, G. Dec. 7.

Compositions containing phenol-aldehydes.—Phenol and formaldehyde are condensed in the presence of ammonia as condensing-agent and also in the presence of sulphuretted hydrogen with or without carbon disulphide. Zinc oxide may be added to the reaction mass if desired. The condensation product is finally heated to a temperature exceeding 130° C., under a

pressure of 100-300 atmospheres. The sulphuretted hydrogen, which may be employed in the gaseous form or in aqueous solution, may be replaced by substances which liberate sulphuretted hydrogen during the reaction, such as thiophenol. Specification 21,566/08, [Class 2, Acids and salts, Organic &c.], is referred to.

A.D. 1911.

3496. Aylsworth, J. W. Feb. 11.

Compositions containing phenol-aldehydes.—Infusible resins are produced by heating a methylene amine compound, such as hexamethylene tetramine, with a fusible phenol-formaldehyde condensation product. The fusible resins used as parent materials may be produced by the interaction of approximately three molecular proportions of phenol with two of formaldehyde, and may be completely anhydrous and free from uncombined formaldehyde. With the ingredients of the infusible resins, prior to heating, may be incorporated compounds which are capable of rendering the final resins plastic when hot, or a portion of the fusible resin may be utilized for this purpose. Suitable additions are organic-acid anhydrides such as benzoic and phthalic anhydrides, saturated higher fatty acid anhydrides such as stearic anhydride, naphthalene and its chlor and nitro derivatives,

dinitrobenzenes, acetanilide, ricinoleic and ricinelaiddic acids and their anhydrides, diphenylamine, acid amides, &c. The acid anhydrides added also combine with free ammonia and water present in the resins, and thereby render them innocuous. Fibrous and inert powdered substances and pigments may also be added. Specification 28,009/07, [Class 95, Paints &c.], is referred to.

3497. Aylsworth, J. W. Feb. 11.

Compositions containing phenol-aldehydes.—In obtaining hard insoluble condensation products of phenol or cresol with formaldehyde or its polymers as a surface for embossing operations, or making negative matrices for engraving or printing, or forming a hard surface for moulding sound-records, or mixed with inert pulverised materials and pigments to form

veneers for wood, an intermediate fusible condensation product is obtained and is mixed with a substance which reacts with it on heating, such as hexamethylenetetramine or other methylene amine, formaldehyde or its polymers. The substances may be mixed while fused and the mixture rolled into sheets. When the composition is to be applied to a surface in the form of a film, a substance that will dissolve the final condensation product at a high temperature is added. Suitable substances are naphthalene or its chloro or nitro derivatives, dinitrobenzenes, acetanilide, ricinoleic, or ricinelaidic acids or anhydrides such as benzoic or phthalic anhydrides, or anhydrides of the higher members of the acetic series.

3498. Aylsworth, J. W. Feb. 11.

Compositions containing phenol-aldehydes.—An infusible phenol-formaldehyde resin is produced by heating a fusible phenol-formaldehyde resin, preferably anhydrous, and free from uncombined formaldehyde, with the necessary quantity of formaldehyde, for example 5-10 per cent, and with or without addition of certain hydrochlorides, such as those of aniline, hydroxylamine, pinene, &c., as accelerating-agents. In order to render the product plastic when hot, certain organic additions are made to the mixture of fusible resin and formaldehyde before hardening. Such additions are naphthalene, and its chlor, nitro, and other derivatives, dinitrobenzenes, acetanilide, ricinoleic and ricinelaidic acids and their anhydrides, benzoic and phthalic acids and their anhydrides, and diphenylamine, or a portion of the fusible phenol-formaldehyde resin may be utilized for the same object. The addition of organic-acid anhydrides also serves to render innocuous any water that may be present. The products may be used as solid solvents for cellulose acetate and nitrate. A suitable fusible condensation product for use as parent material may be produced by heating phenol and formaldehyde or their equivalents, in absence of an accelerating-agent, in such proportions that there is a small amount of uncombined phenol in the product, and to such a temperature that the resin is completely anhydrous. This may be done by forcing formaldehyde gas into liquid phenol or its equivalent until only a small percentage of phenol remains uncombined. According to another method, an infusible condensation product may be first produced by heating phenol and formaldehyde with an accelerating-agent, and then heating the infusible resin with phenol, cresol, or a mixture of phenol and naphthalene, whereby a fusible resin results. The uncombined phenol may be distilled off or converted by means of gaseous formaldehyde into fusible resin. The fusible phenol-formaldehyde resins obtained as above described are not rendered infusible by application of heat.

5165. British Thomson-Houston Co.,
[General Electric Co.]. March 1.

Compositions containing phenol-aldehydes.—A condensation product of phenol and aldehyde is dissolved in a common solvent such as amyl-acetate with a fatty pitch such as stearin pitch, cotton-oil pitch, wood-oil pitch, palm pitch, &c. The saponaceous residue from the purification of oils by caustic soda may be used, and the solvent may be evaporated to give a product the resistance of which increases with rise of temperature. Specifications 1921/08 and 2122/08 [both in Class 70, India-rubber &c.] are referred to.

5167. British Thomson-Houston Co.,
[General Electric Co.]. March 1.

Compositions containing phenol-aldehydes.—Insulating-materials are made from phenol-aldehyde condensation products by first drying the product in air and then subjecting it to heat under pressure. Fibrous material or mineral matter such as Portland cement or plaster of paris which combines with water may be incorporated with the condensation product prior to the treatment described above.

9559. Aylsworth, J. W. April 19.

Compositions containing phenol-aldehydes.—Infusible phenol-formaldehyde resins produced for example by addition of formaldehyde or hexamethylenetetramine to fusible resins and heating, have incorporated with them a halogen substituted phenol or naphthol at some stage of their formation prior to hardening. The resulting product is plastic when heated and may be employed in the manufacture of sound records, embossed articles, printing and engraving plates, electric insulators, buttons, roofing and other building materials, furniture, bookcovers, toys, &c. An additional organic substance such as naphthalene may also be added to the resin to lower the melting point of the halogenphenol used. When hexamethylenetetramine is employed as hardening agent, a compound of ammonia with a chlorphenol is formed within the mass. This product may also be separately formed and added to the resin. When the composition is employed in sheet form for roofing and other building purposes, other non-inflammable halogen compounds may be used, such as chlor-naphthalenes, -benzenes, -toluenes, -anthracenes, and perchlorethane. A mineral pigment or filler such as plaster of paris, barium sulphate, sand, clay, infusorial earth, silica, mica, &c., and a fibrous substance such as hemp, cotton, flax, jute, hair, wood pulp, asbestos, or filamentary metal such as wire gauze may also be used. A fusible phenol-formaldehyde resin may be mixed with sufficient formaldehyde or its equivalent and dissolved in

a suitable solvent, the fibrous material added, and the mass thoroughly mixed. The solvent is then removed and the dried mass, after being comminuted, pressed while heating. Specifications 16,247/99, 3496/11, and 3498/11 are referred to.

10,666. Soc. Anon. des Forges et Fonderies de Montataire. July 19, 1910, [Convention date]. Drawings to Specification.

Refractory substances containing dolomite.—In the manufacture of converter bottoms a mixture of crushed dolomite and tar is poured between the pins or tuyeres, and the bottom is stove for about two days at a temperature of 300–400° C.

24,124. Aylsworth, J. W. Nov. 4, 1910, [Convention date].

Compositions containing phenol-aldehydes.—India-rubber or gutta-percha is mixed with a powdered infusible condensation product of phenol, or its homologues or derivatives, and formaldehyde, or other substance containing the methylene radical, and prepared for example as described in Specifications 3496/11 and 3498/11, and with sulphur or other vulcanizing agent. The mixture may be made dry, or the rubber may be in solution. In making the condensation product in a closed vessel, when the reaction is partly finished, steam may be allowed to escape in order to make a porous mass which may be easily crushed. Very elastic compositions are made by allowing the molten partial reaction product of phenol, formaldehyde, &c., or a molten fusible phenolic condensation product mixed with hexamethylenetetramine or the like, to fall into a jet of heated gases. The particles may be further heated in water, light

paraffin oils, &c. to prevent them from sticking. They are then cemented together with rubber. The condensation product may be made porous by hardening it in solution in a volatile solvent, such as alcohol or acetone, and removing the solvent. The final product may be used for packing, floor tiling, gaskets, abrasive surfaces of conveyer belts and other belting, mechanical rubber goods, vehicle tyres, battery jars, valve seats, electric insulators, &c.

26,029. Aylsworth, J. W. March 11, [Convention date].

Compositions containing phenol-aldehydes.—Phenol-aldehyde condensation products which are infusible are produced by treating a fusible phenol-formaldehyde or similar condensation product with formaldehyde or other like methylene-containing substance in the gaseous condition. The fusible parent resin is preferably anhydrous and free from uncombined formaldehyde and any appreciable quantity of free phenol. With the fusible product, prior to treatment with gaseous formaldehyde, &c., may be mixed agents such as anthracene, tetrachlorophenylene oxide, higher chlornaphthalenes, eugenol, oil of cloves, amyl alcohol, anisol, chlorphenols, chlorcresols, naphthaleneamines, nitronaphthalenes, benzene derivatives such as *m*-dinitrobenzene, stearic, ricinoleic, and ricinelaidic acids, and their anhydrides, and other substances described in Specifications 3496/11, 3498/11, and 9559/11. By this means products are obtained on hardening, which though infusible are plastic when hot, and in some cases also when cold. The treatment with formaldehyde may be carried out at a temperature below the hardening temperature, and the temperature then raised. Oxygen should preferably be removed from the vessel prior to the reaction.

A.D. 1912.

636. Scherrer, K. Jan. 9, 1911, [Convention date].

Compositions containing organic derivatives; compositions containing fatty oils.—A mixture of ground naphthalene residues, with or without

a small quantity of vegetable oil, and filling-materials, such as powdered wood, leather, cork, vulcanite clippings, graphite, balata, or mineral substance, is used for making elastic and other products for electric insulation &c. The naphthalene residues consist chiefly of the non-

volatile sulpho-acids obtained in the purification of naphthalene by treatment with sulphuric acid, followed by distillation. If desired, the product may be vulcanized.

1269. Albert, K., and Berend, L. Jan. 16.

Compositions containing phenol-aldehydes.—Phenol-formaldehyde condensation products are produced by condensing phenols with formaldehyde or substances giving rise to this compound, in the presence of natural resins, oils, waxes, balsams, tars, or mixtures of these substances. The free acids or the products of alkaline saponification of these compounds may be employed, products soluble in water or alkali being then obtained. The condensation products obtained with oils &c. may themselves be saponified, giving products soluble in water and having a disinfecting action. The products of the condensation reaction are in some cases suitable for use in manufacturing plasters, salves, teeth-fillings, &c.

1598. Collardon, L. Jan. 20.

Compositions containing phenol-aldehydes.—Cellulose xanthate or sulphohydrocellulose or a mixture of both is compounded with the condensation products of formaldehyde and phenols or cresols with or without rubber or resins. The product is made into sheets, and when sulphohydrocellulose is not used the sheets are steamed and washed to produce hydrocellulose. When both xanthate and sulphohydrocellulose are used, the former is converted into hydrocellulose before mixing. The product is suitable for insulating cables. The Provisional Specification also states that the hydrocellulose or sulphohydrocellulose may be first treated with castor or other vegetable oil and with sulphur chloride and then washed, and that cuprammonium cellulose, cellulose dissolved in zinc chloride, cellulose treated with sulphuric acid and then with sulphur chloride, viscose treated with sulphur chloride, cellulose acetate, palmitate, formate, or other esters may be used and that sulphur, fillers, gutta-percha, murex, balata, bitumen, and the like may be added.

4796. Marks, E. O. R., [North American Chemical Co.]. Feb. 26.

Compositions containing oxidized or vulcanized oil &c.—A composition for filling the space between the inner and outer soles of boots consists of a body material of a light highly-resilient nature, such as ground solidified oil, a mixture of glue and glycerine rendered insoluble and shredded, pith, and the like, with

or without the addition of light fluffy fibres, and a sticky binder, which allows the mass to be spread in the shoe, and which, when set, retains its resiliency. Several binders are described containing casein, glue, or starch, glycerine and water, resin dissolved in naphthalene, creosote oil, petroleum tailings, Wilmington tar, and the like. The tool used for spreading the composition is kept moistened with a solution which renders the binder insoluble, such as formaldehyde, tannic acid, alum, lime, or calcium chloride according to the composition of the binder.

6405. British Thomson-Houston Co., [General Electric Co.]. March 14.

Compositions containing phenol-aldehydes.—A mixture of a phenol-aldehyde partial-condensation product, polymerizable by heat to a final infusible state, and of a stable permanently fusible phenol-aldehyde condensation product may be used for electric insulation and for other purposes. After the hardening of the polymerizable product, the mixture still softens below its charring-temperature. The polymerizable product may be made by heating phenol or its homologues with formaldehyde or its homologues, in approximately molecular proportions, in the presence of a small quantity of a base such as sodium carbonate or ammonia. The resulting viscous layer, when separated from the watery layer, yields the desired product. A stable fusible product is similarly made but by using an acid condensing-agent. In order to permit control of the reaction, a considerable amount of water is added. An example of the proportions used is 1120 c.c. (90 per cent solution) of phenol, 800 c.c. (40 per cent solution) of formaldehyde, 120 c.c. of hydrochloric acid, and 8000 c.c. of water. A moulded product containing asbestos or similar filler may be made by mixing 25 to 30 parts of a solid, polymerizable product, 10 to 15 parts of a stable, fusible product, and about 60 parts of asbestos or other fibrous materials.

8402. Diesser, G. G. April 9.

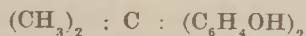
Compositions containing phenol-aldehydes.—Albumen dissolved in formic acid is rendered elastic by the addition of phenol-aldehyde condensation products. In an example, to a solution of albumen in formic acid are added phenol and a solution of oxalic acid in formic acid. The solution is evaporated, and the resulting substance placed in formaldehyde at ordinary temperature. The mass is heated and then washed with cold water.

10,353. Heinemann, F., and Boehm, W.
May 1.

Compositions containing phenol-aldehydes.—In the construction of pneumatic tyres a material consisting of a mixture of rubber and phenol-aldehyde condensation products may be employed.

18,822. Beatty, W. A. Aug. 16.

Compositions containing phenol-ketones.—A celluloid-like composition is prepared by adding to a cellulose ester a condensation product of phenol or the like and a ketone. In an example 80 parts of nitrocellulose and 20 parts of dioxypiphenyldimethylmethane having the formula



are dissolved in a solvent such as amyl acetate, and the solvent is evaporated off. The nitrocellulose may be replaced by acetyl cellulose, in which case a smaller proportion is employed. The phenol-ketone compound may be partly replaced by camphor substitutes such as acetanilide, methyl- or ethyl-acetanilide, amides of aromatic sulphonic acids, derivatives of borneol or isoborneol, aromatic phosphoric acids, aromatic esters of acids of the aliphatic series, and the like. Specification 18,824/12, [Class 2 (iii), Dyes &c.], is referred to.

20,986. Wennagel, T. S., and Wenjact Ges. Sept. 14.

Compositions containing phenol-aldehydes or phenol-ketones.—Fatty-acid soaps, or resinsates are added in the manufacture of phenol-aldehyde or ketone condensation products, to produce an insoluble rubber-like mass, the amount of soap being in excess of one-fifth the molecular equivalent of the phenol employed. Instead of phenol, other cyclic compounds such as anthraquinone may be employed, and aldoses or ketoses, such as raw sugar, may replace the aldehyde or ketone. Albuminous substances, such as glue and gelatine, may be added to take part in the reaction, giving a horn-like product. A celluloid-like product is obtained by the addition of cellulose before the water split off in the condensation is evaporated. In the preparation of the bodies, the soaps or resinsates are added to the aromatic bodies and caused to react by heat. The aldehyde or the like is then added and the mass is heated until it begins to thicken, whereupon it is moulded, or the phenol soap product may be placed in the mould with the aldehyde, and heated under pressure. Several examples of proportions are given.

22,449. British Thomson - Houston Co., [General Electric Co.]. Oct. 2. *Drawings to Specification.*

Compositions containing esters.—Moulded articles can be made from citric-acid esters by mixing a syrupy solution of citric acid and a polyhydric alcohol with asbestos, clay, talc, silica &c., moulding the mass, and baking. Suitable alcohols are glycerine, glycol, mannitol, &c. Instead of the alcohols, condensation products thereof, such as glycides, may be used.

23,776. British Thomson - Houston Co., [General Electric Co.]. Oct. 17.

Compositions containing esters.—Phthalic acid esters of polyhydric alcohols, such as glycerine, are obtained by heating together the acid and alcohol until the resinous product is infusible. It is then caused to swell by treatment with a liquid such as chloroform, acetone, toluene, benzene, carbon tetrachloride, &c., and the soft flexible mass obtained is moulded under pressure, with or without admixture with a mineral filler or powdered resin. The moulded products are suitable for electric insulation.

24,059. British Thomson - Houston Co., [General Electric Co.]. Oct. 21.

Compositions containing esters.—Camphoric esters of polyhydric alcohols which are of a resinous or gummy consistency are produced by heating the alcohol, such as glycol, glycerine, mannite, &c., with camphoric acid. A fusible product is obtained which, on further heating, becomes infusible. The product may be used for electric insulation, and the fusible resin may be mixed with a flexible condensation product from glycerine and malic acid, by solution in a common solvent. Specification 24,060/12 is referred to.

24,060. British Thomson - Houston Co., [General Electric Co.]. Oct. 21.

Compositions containing esters.—Malic esters of polyhydric alcohols which are of a resinous or gummy consistency are produced by heating the alcohol, such as glycol, glycerine, mannite, &c., with malic acid. A fusible product is obtained which on further heating becomes infusible. The product may be used to impregnate tape or other electrical insulation. It may be mixed by solution with resins such as those from camphoric acid or with the condensation product of glycerine and phthalic acid.

24,254. British Thomson - Houston Co., [*General Electric Co.*]. Oct. 23. *Samples furnished.*

Compositions containing esters.—Esters of polyhydric alcohols which are of a resinous or wax-like nature are obtained by heating a polyhydric alcohol such as glycerine with an amount of a polybasic acid or its anhydride insufficient to esterify the hydroxyl groups completely and then completing the esterification by treating the product with another acid. Polybasic acids or their anhydrides which may be used are succinic, tartaric, glutaric, malic, and camphoric acids and phthalic anhydride. Suitable acids for use in completing the esterification, are, in addition to the above-mentioned polybasic acids, various monobasic and substituted mono- or dibasic acids, such as propionic, stearic, palmitic, oleic, benzoic, lactic, salicylic, glycollic, chloroacetic, chlorobenzoic, and chloropropionic acids, also colophony, &c. The esters may be hardened by further heating to a higher temperature.

They may also be powdered and moulded under pressure with addition of fillers such as asbestos or ground slate. The products are useful as electric insulating-materials, and for the production of varnishes. Specifications 12,807/84 and 9027/86, [*Class 2, Acids and salts, Organic, &c.*], are referred to.

24,255. British Thomson - Houston Co., [*General Electric Co.*]. Oct. 23.

Compositions containing esters.—The hard brittle resinous products obtained from polyhydric alcohols such as glycerine and polybasic acids or their anhydrides, such as phthalic anhydride, are rendered flexible, both in their fusible and infusible conditions by combination with butyric or isobutyric acid. The polyhydric alcohol, acid, and butyric acid or its isomer, may be caused to interact simultaneously if desired.

A.D. 1913.

607. Edison, T. A., and Aylsworth, J. W. Jan. 8.

Compositions containing phenol-aldehydes.—Sound-records are made from infusible condensation products of phenols and formaldehyde or other material containing the methylene radical, such as are described in Specifications 3497/11, 3498/11, 9559/11, and 26,029/11, with a record groove not more than 0.018 cm. in width and having vertical undulations. A plasticity ingredient, such as pentachlorophenol, described in Specification 9559/11, may be added, and a backing, which may consist of a fusible phenolic condensation product containing an inert filler such as wood pulp, may be used.

such as resorcinol or pyrogallol, an acid, alkali, acid or alkaline salt, or other initiator of the condensation, and a viscous retarder, such as glycerine or sugar solution, is allowed to permeate the teeth and set.

2098. Albrecht, J. Jan. 25.

Compositions containing phenol-aldehydes.—Teeth are filled, without removal of the decayed part, by a phenol-aldehyde condensation product. A mixture of formaldehyde, a phenol

3271. British Thomson-Houston Co. [*General Electric Co.*]. Feb. 7. [*Cognate Application, 22,358/13.*]

Compositions containing esters.—Consists in producing hard infusible homogeneous materials suitable for electric insulation and for other purposes by the heat treatment of condensation products of polyhydric alcohols, such as glycerine, and phthalic acid or anhydride. According to one example two or more parts of phthalic anhydride are mixed with one part of glycerine, and the mixture is heated in stages from 100-185° C., and preferably to 210° C., until a sample is hard and brittle without stickiness after cooling. This intermediate product is next heated for some time

at a moderate temperature, from about 85-135° C., under atmospheric or higher pressure, until a hard first infusible product free from bubbles is obtained. This product may be used for coating electric coils, wires, condenser plates, &c. For this purpose, the acetone solution of the intermediate product, or the fused product, may be used for impregnating the usual fibrous covering of the parts, or may be painted on, the article then being hardened by heating for a long period at, say, 85-135° C. The intermediate product may be powdered or not, moulded, and afterwards hardened; the first infusible product may be softened by heating and moulded, with or without the addition of filling-materials such as asbestos, flint, wood fibre, &c. Instead of glycerine, glycol, glucose, saccharose, cellulose, starch, or dextrine may be used. A harder and more insoluble product is produced by further heating the first infusible product, at a temperature of about 180-250° C. for about 5 to 10 hours, or at about 135-150° C. for several weeks; or, to obtain the final product, the heat treatment of the glycerine-phthalic anhydride may be continued with special precautions beyond the point where the intermediate brittle product is obtained. The final hard product may be moulded either alone or with fillers, dye-stuffs, &c. The product may be used for making articles such as phonograph disks, buttons, combs, billiard balls, battery tanks, &c. A solution of the intermediate brittle product in acetone may be used as a varnish.

3566. British Thomson-Houston Co.,
[General Electric Co.]. Feb. 11.

Compositions containing esters.—Materials suitable for moulding, electric insulation, varnishes, &c., are formed by heating a polyhydric alcohol (glycerine, glycol, &c.) with an excess by weight of succinic acid, tartaric acid, or pyrotartaric acid. Part of the acid may be replaced by a polybasic acid of the aromatic series or by its anhydride, such as phthalic anhydride. The materials may be mixed with molten resin. Varnishes may be prepared by dissolving some of the products in acetone. Fibrous or cellular materials may be impregnated with the acetone solution, the materials then being hardened by heating. According to the Provisional Specification 4147/08, [Class 2, Acids and salts, Organic, &c.], is referred to.

5448. British Thomson-Houston Co.,
[General Electric Co.]. March 4. Drawings to Specification.

Compositions containing phenol-aldehydes.—Insulating sleeves may be made of a mixture of

asbestos and phenol formaldehyde condensation product.

8417. British Thomson-Houston Co.,
[General Electric Co.]. April 9.

Compositions containing condensation products of alcohols and acids.—Naphthalene, anthracene, phenanthrene, or other hydrocarbons of the aromatic series or their substitution products are added to resinous condensation products of a polyhydric alcohol, such as glycerol, and a polybasic acid or anhydride, like phthalic anhydride, to prevent them from hardening while in the fused state during the impregnation of cellular or fibrous material &c. The fusible intermediate product described in Specification 3271/13 has dissolved therein about 13 to 18 per cent by weight of naphthalene, and for impregnating materials the mixture is kept under air pressure. To harden the resin and remove the naphthalene &c., the coils &c. are baked after impregnation at temperatures from 135° C. to 150° C., the second stage of hardening taking place at a temperature of from 180° C. to 250° C. for several hours, or from 135° C. to 150° C. for several weeks.

9985. British Thomson-Houston Co.,
[General Electric Co.]. April 28.

Compositions containing esters.—A rubber-like material is made by the vulcanization of a synthetic mixed ester of a polyhydric alcohol containing an unsaturated acid radicle, in which the multiple linkage occurs in an aliphatic group as in oleic and cinnamic acid. The mixed ester may be mixed with castor oil or pitch before treatment with sulphur, and the vulcanized product may be mixed with a filler such as talc, zinc oxide, silica, ground rubber, &c. In a particular example glycerol and phthalic anhydride, preferably in molecular proportions, are heated at about 200-210° C. until bubbles cease to rise. One molecular proportion of oleic acid is added and the heating resumed for several hours. The product is heated with 10 to 30 per cent. of sulphur. Specification 24,254/12 is referred to.

13,657. McCoy, J. P. A. June 12.

Compositions containing phenol-aldehyde-sulphurchloride condensation products.—Phenols are condensed with disulphurdichloride in the presence or absence of a solvent, and the product is treated with formaldehyde. The parent materials may be allowed to interact in varying orders, and sulphurchloride-oil compounds may replace disulphurdichloride. The product may be rendered insoluble by continued heating of the initially plastic resinous substance. To the plastic mass may be added,

before heating, solvents such as camphor or glycerine, to render it permanently plastic, and nitrocellulose or rubber may be added as fillers. Other fillers such as asbestos, silica, wood flour, mica, &c. may also be employed. The mass being hardened by subsequent heating the product has electric insulating properties.

14,481. Stockhausen, H., and Gruhl, R.
June 23.

Compositions containing phenol-aldehydes.—Phenol-formaldehyde condensation products, prepared for example by heating phenols and formaldehyde with alkali until a product just insoluble in water is obtained, are treated with salts of trivalent metals such as ferric and aluminium chloride, whereby the contained water is removed. Before or after these additions, sulphur, caoutchouc, filling-materials, &c. may be added, and the products may be used to impregnate fabric, wood, paper, &c. The products are useful as adhesive media for

fibrous materials of cotton, wadding, wool, cellulose, asbestos, cork, &c.

22,421. British Thomson-Houston Co.,
[General Electric Co.]. Oct. 4. Addition to 24254/12.

Compositions containing condensation products of alcohols and acids.—A resinous product is prepared by heating a mixture of glycerine and phthalic acid or anhydride in about equimolecular proportions, and then adding one fourth of a molecular proportion of phthalic anhydride and one half of a molecular proportion of oleic acid, the mass being then further heated to form a soluble ester. This may be hardened by a prolonged heating at 160° C. By varying the proportions of the acids, the flexibility of the product may be varied. The resin may be used, fused or in solution, for impregnating fabrics, paper, wood, or as a varnish for metal surfaces. It may also be used as an electric insulating-material, and may be moulded with asbestos, clay, ground slate, silica, &c.

A.D. 1914.

9292. Wade, H., [Karpen & Bros., S.].
April 14.

Compositions containing phenol-aldehydes.—A binder consists of phenol-formaldehyde condensation products prepared by heating together, under practically anhydrous conditions, a methylene body, a phenolic body, and either a phenolic body different from the first phenolic body and having an alkylated hydroxyl group in the molecule, or methyl benzoate, or phenylmethyl ketone. Hydrobenzamide may be used instead of a methylene body. In an example, a mixture of phenol, anisol, and hexamethylenetetramine is heated in an open vessel. The first product of the reaction is a viscous material, which solidifies on cooling and, on further heating with or without pressure, is converted into an insoluble infusible solid. Alcohol or other solvent may be added to the mixture to control the reaction, and also to dissolve the fusible resin formed in the first stage. The product may be used for insulating purposes, and as a varnish, or mixed with

lead oxide, sand, &c. as a paint or coating, or as a binder, for example for abrasive material, in which case the reaction mixture after a short heat treatment is mixed with aluminium oxide, and the mixture baked.

16,530. Jackson, W. J. Mellersh,
[Krupp Akt.-Ges. Grusonwerk, F.]. July 10.

Cements, Portland.—Portland cement and volatile alkali salts are manufactured from rocks or natural substances containing alkali by burning the ground rock &c. with lime limestone or the like and a contact salt or salts. These salts should be chosen so that their bases will become incorporated with the clinker, whilst the acid radicle will combine with the alkali and pass off therewith as vapour. Salts of calcium, magnesium, aluminium and iron other than the carbonates, may be employed, or they may be formed in the mass by addition of acid. Ferric oxide facilitates the reaction.

17,728. Hagendorf, K., and Breslauer, A. July 28, 1913, [Convention date]. Void [Published under Sect. 91 of the Act].

Compositions containing phenol-aldehydes.—Formic acid and "trioxymethyl" or formaldehyde are added to bovine blood serum and the resulting mass heated with phenol and sodium peroxide until it becomes hard. In an example, 100 parts of blood serum are mixed

with 25 parts of formic acid and 20 to 30 parts of "trioxymethyl," and 80 to 90 parts of phenol and sodiumperoxide in water are then added until the mixture becomes alkaline; finally, 10 parts sodium sulphite are added to the mass which is heated and poured into moulds when it is again heated until it hardens. The use of albumens other than blood serum and of hydrogen peroxide instead of sodium peroxide is mentioned.

A.D. 1915.

7384. Lockwood, A. A. May 17. *Drawings to Specification.*

Bituminous compositions containing glass &c.—The material used for moulding small statuary may be a mixture of crude bitumen with glass, sand, asbestos, or wood pulp.

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ABRIDGMENTS OF SPECIFICATIONS

(A.)—Illustrated Abridgments classified in 146 volumes for each of nine consecutive periods, dealing completely with all Specifications published from 1855 to 1908. The price of each volume is 2s. per period, including inland postage. Postage to Colonies and foreign Countries extra.

List of Periods.

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1867-1876.
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List of Classes.

1. Acids, alkalies, oxides, and salts, Inorganic.
2. Acids and salts, Organic, and other carbon compounds, (including Dyes).
3. Advertising and displaying.
4. Aeronautics.
5. Agricultural appliances, Farmyard and like, (including the housing, feeding, and treatment of animals).
6. Agricultural appliances for the treatment of land and crops, (including Gardening-appliances).
7. Air and gas engines.
8. Air and gases, Compressing, exhausting, moving, and otherwise treating.
9. Ammunition, torpedoes, explosives, and pyrotechnics.
10. Animal-power engines and miscellaneous motors.
11. Artists' instruments and materials.
12. Bearings and lubricating apparatus.
13. Bells, gongs, foghorns, sirens, and whistles.
14. Beverages, [excepting Tea, coffee, cocoa, and like beverages].
15. Bleaching, dyeing, and washing textile materials, yarns, fabrics, and the like, [excepting Dyes].
16. Books, (including Cards and card cases and the like).
17. Boots and shoes.
18. Boxes and cases, [excepting Trunks, portmanteaux, hand and like travelling bags, baskets, hampers, and other wickerwork].
19. Brushing and sweeping.
20. Buildings and structures.
21. Casks and barrels.
22. Cements and like compositions.
23. Centrifugal drying, separating, and mixing machines and apparatus.
24. Chains, chain cables, shackles, and swivels.
25. Chimneys and flues, (including Ventilating-shaft tops).
26. Closets, urinals, baths, lavatories, and like sanitary appliances.
27. Coin-freed apparatus and the like.
28. Cooking and kitchen appliances, bread-making, and confectionery.
29. Cooling and ice-making, (including Refrigerators and Ice-storing).
30. Cutlery.
31. Cutting, punching, and perforating paper, leather, and fabrics, (including the general treatment of paper after its manufacture).
32. Distilling, concentrating, evaporating, and condensing liquids, [excepting Steam-engine condensers].
33. Drains and sewers.
34. Drivins.
35. Dynamo-electric generators and motors, (including Frictional and influence machines, magnets, and the like).
36. Electricity, Conducting and insulating.
37. Electricity, Measuring and testing.
38. Electricity, Regulating and distributing.
39. Electric lamps and furnaces.
40. Electric telegraphs and telephones.
41. Electrolysis, (including Electro-deposition and Electro-plating).
42. Fabrics, Dressing and finishing woven and manufacturing felted, (including Folding, Winding, Measuring, and Packing).
43. Fastenings, Dress, (including Jewellery).
44. Fastenings, Lock, latch, bolt, and other, (including Safes and strong-rooms).
45. Fencing, trellis, and wire netting.
46. Filtering and otherwise purifying liquids.
47. Fire, Extinction and prevention of.
48. Fish and fishing.
49. Food preparations and food-preserving.
50. Fuel, Manufacture of.
51. Furnaces and kilns, (including Blowpipes and blowpipe burners; Smith's forges and rivet hearths; and Smoke and fumes, Treating).
52. Furniture and upholstery.
53. Galvanic batteries.
54. Gas distribution.
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56. Glass.
57. Governors, Speed-regulating, for engines and machinery.
58. Grain and seeds, Treating, (including Flour and meal).
59. Grinding, crushing, pulverizing, and the like.
60. Grinding or abrading, and burnishing.
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62. Harness and saddlery.
63. Hats and other head coverings.
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65. Hinges, hinge-joints, and door- and gate furniture and accessories, [excepting Fastenings, Lock, latch, bolt, and other].
66. Hollow-ware, (including Buckets, Pans, Kettles, Sauce-pans, and Water-cans.)
67. Horseshoes.
68. Hydraulic engineering.
69. Hydraulic machinery and apparatus, [excepting Pumps and other means for raising and forcing liquids].
70. India-rubber and gutta-percha, (including Plastic compositions and Materials of constructive utility, other than metals and stone).
71. Injectors and ejectors.
72. Iron and steel manufacture.
73. Labels, badges, coins, tokens, and tickets.
74. Lace-making, knitting, netting, braiding, and plaiting.
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78. Lifting, hauling, and loading, (including Lowering, winding, and unloading).
79. Locomotives and motor vehicles for road and rail, (including Portable and semi-portable engines).
80. Mechanism and mill gearing.
81. Medicine, surgery, and dentistry.
82. Metals and alloys, [excepting Iron and steel manufacture].
83. Metals, Cutting and working.
84. Milking, churning, and cheese-making.
85. Mining, quarrying, tunnelling, and well-sinking.
86. Mixing and agitating machines and appliances, [excepting Centrifugal machines and apparatus].
87. Moulding plastic and powdered substances, (including Bricks, building and paving blocks, and tiles, and Pottery).
88. Music and musical instruments.
89. Nails, rivets, bolts and nuts, screws, and like fastenings.
90. Non-metallic elements.
91. Oils, fats, lubricants, candles, and soaps.
92. Ordnance and machine guns.
93. Ornamenting.
94. Packing and baling goods.
95. Paints, colours, and varnishes.
96. Paper, pasteboard, and papier mâché.
97. Philosophical instruments, (including Optical, nautical, surveying, mathematical, and meteorological instruments).
98. Photography.
99. Pipes, tubes, and hose.
100. Printing, Letterpress and lithographic.
101. Printing other than letterpress or lithographic.
102. Pumps and other means for raising and forcing liquids, [excepting Rotary pumps].
103. Railway and tramway vehicles.
104. Railways and tramways.
105. Railway signals and communicating-apparatus.
106. Registering, indicating, measuring, and calculating, [excepting Signalling and indicating by signals].
107. Roads and ways.
108. Road vehicles.
109. Ropes and cords.
110. Rotary engines, pumps, blowers, exhausters, and meters.
111. Sewage, Treatment of, (including Manure).
112. Sewing and embroidering.
113. Ships, boats, and rafts, Div. I.
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115. ————— Div. III.
116. Shop, public-house, and warehouse fittings and accessories.
117. Sifting and separating.

LIST OF CLASSES

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120. Spinning, (including the preparation of fibrous materials and the doubling of yarns and threads).
121. Starch, gum, size, glue, and other stiffening and adhesive materials.
122. Steam engines, (including Details common to fluid-pressure engines generally).
123. Steam generators, [excepting Furnaces].
124. Stone, marble, and the like, Cutting and working.
125. Stoppering and bottling, (including Bottles, jars, and like vessels).
126. Stoves, ranges, and fire-places.
127. Sugar.
128. Table articles and appliances.
129. Tea, coffee, cocoa, and like beverages.
130. Tobacco.
131. Toilet and hairdressing articles, and perfumery.
132. Toys, games, and exercises.
133. Trunks, portmanteaux, hand and like travelling bags, baskets, hamper, and other wickerwork.
134. Umbrellas, parasols, and walking-sticks.
135. Valves and cocks.
136. Velocipedes.
137. Ventilation.
138. Washing and cleaning clothes, domestic articles, and buildings.
139. Watches, clocks, and other timekeepers.
140. Waterproof and like fabrics.
141. Wearing-apparel.
142. Weaving and woven fabrics.
143. Weighing-apparatus.
144. Wheels for vehicles, [excepting wheels for Locomotives and tramway and traction engines; Railway and tramway vehicles; and Toys].
145. Wood and wood-working machinery.
146. Writing-instruments and stationery, and writing-accessories, (including Educational appliances).

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1909-1915.

1916-1920.

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List of Classes.

- 1 (i), Chemical processes and apparatus.
- 1 (ii), Inorganic compounds other than metallic oxides, hydrates, oxyacids, and salts, (including Alkali manufacture and Cyanogen compounds).
- 1 (iii), Oxides, hydrates, oxyacids, and salts, Metallic, (other than Alkali manufacture and Cyanogen compounds).
- 2 (i), Acetylene.
- 2 (ii), Cellulose, Non-fibrous, and cellulose derivatives, (including Artificial filaments, sheets, and the like containing same).
- 2 (iii), Dyes and hydrocarbons and heterocyclic compounds and their substitution derivatives.
- 3 (i), Advertising and displaying apparatus, Moving and changing.
- 3 (ii), Advertising and displaying other than by moving and changing apparatus.
4. Aeronautics.
- 5 (i), Farmyard and like appliances, (other than Housing and feeding animals).
- 5 (ii), Housing and feeding animals, (other than Chaff and vegetable cutters).
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- 6 (iii), Harvesting-appliances.
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- 7 (ii), Internal-combustion engines, Arrangement and disposition of parts of, (including Construction of parts peculiar to internal-combustion engines).
- 7 (iii), Internal-combustion engines, Carbureting-apparatus, vaporizers, and heaters for.
- 7 (iv), Internal-combustion engines, Igniting in.
- 7 (v), Internal-combustion engines, Starting, stopping, and reversing.
- 7 (vi), Internal-combustion engines, Valves and valve-gear for, (including Other means and methods for regulating and controlling internal-combustion engines).
- 8 (i), Air and gases, Compressing, exhausting, and moving, (including Bellows and Vacuum and like dusting and cleaning apparatus).
- 8 (ii), Air and gases, Treating otherwise than by compressing, exhausting, and moving.
- 9 (i), Ammunition and ammunition receptacles.
- 9 (ii), Torpedoes, explosives, and pyrotechnics.
10. Animal-power engines and miscellaneous motors.
11. Artists' instruments and materials.
- 12 (i), Bearings and bearing-surfaces.
- 12 (ii), Lubricating passages, channels, reservoirs, and baths, and lubricating-cans.
- 12 (iii), Lubricators and lubricating bearing-surfaces, (other than Lubricating passages, channels, reservoirs, and baths).
13. Bells, gongs, foghorns, sirens, and whistles.
- 14 (i), Aerating liquids and gazogenes, seltzogenes, and siphon bottles.
- 14 (ii), Beverages, malt products, and organized ferments, (other than Aerating beverages).
- 15 (i), Dyeing and otherwise treating textiles, textile materials, and the like with liquids and gases, Apparatus for, (including Bleaching and washing, Processes and materials for).
- 15 (ii), Dyeing, Processes and materials for.
16. Books, mercantile forms, and the like.
- 17 (i), Boots and shoes, Apparatus for making and repairing.
- 17 (ii), Boots and shoes, Construction of.
- 17 (iii), Boots and shoes, Protectors and trees and other accessories for.
18. Boxes and cases.
19. Brushing and sweeping.
- 20 (i), Buildings and structures, Kinds or types of.
- 20 (ii), Buildings and structures, Miscellaneous accessories and details applicable generally to.
- 20 (iii), Doors and windows and their accessories.
- 20 (iv), Floors, roofs, walls, and ceilings.
21. Casks and barrels.
22. Cements and like compositions.
23. Centrifugal machines and apparatus, (other than Centrifugal fans, pumps, and reels).
24. Chains, chain cables, shackles, and swivels.
25. Chimneys and flues, (including Ventilating-shaft tops).
26. Closets, urinals, baths, lavatories, and like sanitary appliances.
27. Coin-freed apparatus and the like.
- 28 (i), Bread-making, confectionery, and cooking-appliances.
- 28 (ii), Kitchen and like appliances other than cooking-appliances.
29. Cooling and ice-making, (including Refrigerators and Ice-storing).
30. Cutlery.
- 31 (i), Cutting and severing machines for paper, leather, fabrics, and the like.
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32. Distilling, concentrating, evaporating, and condensing liquids.
33. Drains and sewers.
- 34 (i), Drying gases, clothes, and materials in long lengths.
- 34 (ii), Drying systems and apparatus (other than Drying gases, clothes, and materials in long lengths).
35. Dynamo-electric generators and motors, (including Frictional and influence machines, magnets, and the like).
36. Electricity, Conducting and insulating.
37. Electricity, Measuring and testing, (including Electric resistances and inductances).
- 38 (i), Electric couplings, and cut-outs other than electromagnetic and thermal.
- 38 (ii), Electric currents, Converting and transforming other than by rotary converters and rotary transformers, and condensers.
- 38 (iii), Electric motor control systems and motor and like controllers.
- 38 (iv), Electric supply and transmission systems and apparatus not otherwise provided for.
- 38 (v), Electric switches and electro magnetic and thermal cut-outs, (other than Motor and like controllers).
- 39 (i), Electric lamps, Arc and incandescent-arc, and vacuum or low-pressure apparatus for electric discharges through gases or vapours.
- 39 (ii), Electric lamps, Incandescent.
- 39 (iii), Heating by electricity, (including Electric furnaces and ovens).
- 40 (i), Electric signalling systems and apparatus, (other than Telegraphs and Telephones).
- 40 (ii), Phonographs, gramophones, and like sound transmitting and reproducing instruments.
- 40 (iii), Telegraphs, Electric.
- 40 (iv), Telephones and telephone systems and apparatus, Electric.
- 40 (v), Wireless signalling and controlling.
41. Electrolysis, (including Electro-deposition and Electro-plating).

LIST OF CLASSES

- 42 (i), Fabrics, Finishing and dressing.
- 42 (ii), Fabrics, Treating otherwise than by finishing and dressing.
- 43, Fastenings, Dress, (*comprising* Buckles, Buttons, Jewellery, and *certain other fastenings specially applicable to wearing apparel*).
- 44, Fastenings, Lock, latch, bolt, and other, (*including* Safes and strong-rooms).
- 45, Fencing, trellis, and wire netting.
- 46, Filtering and otherwise purifying liquids.
- 47 (i), Fire-escapes and fire and temperature alarms.
- 47 (ii), Fire-extinguishing and firepreventing and minimizing.
- 48, Fish and fishing.
- 49, Food preparations, food-preserving, and the like.
- 50, Fuel, Manufacture of.
- 51 (i), Furnaces and kilns, Combustion apparatus of, (*including* Details in connexion therewith).
- 51 (ii), Furnaces and kilns for applying and utilizing heat of combustion, (*other than* Combustion apparatus and details in connexion therewith).
- 52 (i), Furniture, Fittings and details applicable generally to articles of furniture not otherwise provided for.
- 52 (ii), Furniture for sitting and lying upon.
- 52 (iii), Tables, desks, and leaf turners and holders.
- 52 (iv), Upholstery, wall furniture, screens, and looking-glasses.
- 52 (v), Window, stair, and like furniture, brackets, racks, and stands, (*including* Antimacassars and Table and like covers).
- 53, Galvanic batteries.
- 54, Gas distribution.
- 55 (i), Coking, gas-producers, and retorts.
- 55 (ii), Gas manufacture other than gas-producers and retorts.
- 56, Glass.
- 57, Governors, Speed-regulating, for engines and machinery.
- 58, Grain and seeds, Treating, (*including* Flour and meal).
- 59, Grinding, crushing, pulverizing, and the like.
- 60, Grinding or abrading, and burnishing.
- 61 (i), Hand-tool, brush, mop, and like handles.
- 61 (ii), Hand-tools, (*other than* Wrenches and bolt, nail, screw, and like inserting and extracting tools).
- 61 (iii), Wrenches and bolt, nail, screw, and like inserting and extracting tools.
- 62, Harness and saddlery.
- 63, Hats and other head coverings.
- 64 (i), Heating liquids and gasses.
- 64 (ii), Heating systems and apparatus, (*other than* Heating liquids and gasses and Surface apparatus for effecting transfer of heat).
- 64 (iii), Surface apparatus for effecting transfer of heat, (*other than* Apparatus in which the heat is transferred from products of combustion).
- 65 (i), Door and gate operating-appliances, furniture, and accessories, (*other than* Fastenings, Lock, latch, bolt, and other and Hinges and pivots).
- 65 (ii), Hinges and pivots.
- 66, Hollow-ware, (*including* Buckets, Pans, Kettles, Sauce-pans, and Water cans).
- 67, Horseshoes.
- 68 (i), Excavating earth and rock, booms, buoys, canals and rivers, ferries, and water supply.
- 68 (ii), Subaqueous buildings and structures, diving, and raising sunken ships and objects.
- 69 (i), Hydraulic apparatus not otherwise provided for.
- 69 (ii), Hydraulic presses, meters, motors, and like apparatus for use with high pressures.
- 69 (iii), Spray-producers and liquid-distributing sprinklers and nozzles.
- 70, India-rubber and gutta-percha, (*including* Plastic compositions and Materials of constructive utility, other than metals and stone).
- 71, Injectors and ejectors.
- 72, Iron and steel manufacture.
- 73, Labels, badges, coins, tokens, and tickets.
- 74 (i), Braid and braiding-machines, crochet, lace, and lace-making, and net-making machines.
- 74 (ii), Knitting and knitted fabrics.
- 75 (i), Burners and burner fittings.
- 75 (ii), Lamp chimneys, globes, lenses, shades, reflectors, and smut-catchers, and holders therefor.
- 75 (iii), Lamps for lighting and heating. Details and accessories applicable generally to, (*including* Lighting burners, pipes, cigars, and the like).
- 75 (iv), Lamps for lighting and heating, Kinds or types of, (*including* Lighting Systems of).
- 76, Leather, (*including* Treatment of hides and skins).
- 77, Life-saving, (Marine), and swimming and bathing appliances.
- 78 (i), Conveyors and elevators for dealing continuously with articles and materials in bulk.
- 78 (ii), Lifting, lowering, and hauling not otherwise provided for.
- 78 (iii), Lifts, hoists, and jacks.
- 78 (iv), Loading and unloading, (*including* Transporters and cranes).
- 76 (v), Winding and paying-out apparatus for lifting, lowering, and hauling, (*including* Pulley-blocks and the like).
- 79 (i), Locomotives and tramway, traction, portable, and semi-portable engines.
- 79 (ii), Motor vehicles, Arrangement and disposition of driving, transmission, balance, and reversing gearing on.
- 79 (iii), Motor vehicles, Arrangement and disposition of parts of, not otherwise provided for, (*including* Construction of parts peculiar to motor vehicles).
- 79 (iv), Motor vehicles, Frames and undercarriage work of.
- 79 (v), Motor vehicles, Steering and controlling.
- 80 (i), Gearing, Belt, rope, chain, toothed, and friction, and gearing for converting and conveying rotary or reciprocating motion.
- 80 (ii), Gearing, Variable-speed, differential, and reversing and for stopping and starting, and shafting and its accessories.
- 80 (iii), Link-work, cams and tappets, and ratchet and screw-and-nut gearing.
- 80 (iv), Mechanism not otherwise provided for.
- 81 (i), Disinfecting and deodorizing, and medical and like preparations.
- 81 (ii), Medical, surgical, and dental appliances.
- 82 (i), Metals, Extracting and refining, and alloys.
- 82 (ii), Washing granular, powdered, and like materials, and amalgamating, cleaning, coating, and granulating metals.
- 83 (i), Casting and moulding metals.
- 83 (ii), Metal articles and forms, Combination apparatus and processes specially designed for producing and treating.
- 83 (iii), Metals, Cutting.
- 83 (iv), Metals, Working.
- 84, Milking, churning, and cheese-making.
- 85, Mining, quarrying, tunnelling, and well-sinking.
- 86, Mixing and agitating machines and appliances.
- 87 (i), Bricks, building and paving blocks, slabs, tiles, and pottery.
- 87 (ii), Moulding plastic and powdered substances, (*including* Casting substances other than metals and Presses, Mechanical).
- 88 (i), Musical instruments, Automatic.
- 88 (ii), Music and musical instruments other than automatic.
- 89 (i), Bolts, studs, nuts, washers, and rivets.
- 89 (ii), Hooks, nails, cotters, pins, staples, wedges, and wood-screws.
- 89 (iii), Nailing and stapling and wire-stitching.
- 90, Non-metallic elements.
- 91, Oils, fats, lubricants, candles, and soaps.
- 92 (i), Ordnance and machine-gun carriages and mountings.
- 92 (ii), Ordnance and machine guns.
- 93, Ornamenting.
- 94 (i), Packing and wrapping-up for transit and storage, (*including* Baling).
- 94 (ii), Paper bags, sacks, wrappers, and the like, (*including* Making envelopes).
- 95, Paints, painting, and the like.
- 96, Paper, pasteboard, and papier mâché.
- 97 (i), Optical systems and apparatus.
- 97 (ii), Surveying, nautical, and astronomical instruments.
- 97 (iii), Thermometers, photometers, meteorological and mathematical instruments, and miscellaneous philosophical instruments.
- 98 (i), Photographic cameras and auxiliary appliances therefor.
- 98 (ii), Photographic processes and apparatus other than for taking photographs, (*including* Photographic plates, films, and papers).
- 99 (i), Pipes and tubes, Joints and couplings for, (*including* Joints for tubular framework and like Wire and rod couplings and joints).
- 99 (ii), Pipes, tubes, and hose, (*other than* Joints and couplings for).
- 100 (i), Feeding and delivering webs and sheets.
- 100 (ii), Printing processes and apparatus, (*other than* Type setting and composing).
- 100 (iii), Type making, setting, and composing, (*including* Type-bar making machines).
- 100 (iv), Typewriters and like machines.
- 102 (i), Pumps, Reciprocating, for liquids, (*including* Steam-engine air-pumps and Combined pumps for liquids and gases).
- 102 (ii), Water and other liquids and semi-liquids, Raising and forcing otherwise than by pumps.
- 103 (i), Brakes and retarding-apparatus.
- 103 (ii), Rail and road vehicles, Details applicable generally to.
- 103 (iii), Railway and tramway vehicles, Accessories for.
- 103 (iv), Railway and tramway vehicles, Body details and kinds or types of.
- 103 (v), Railway and tramway vehicles, Draught, coupling, and buffing appliances for.
- 103 (vi), Railway and tramway vehicles, Undercarriage and underframe details of.
- 104 (i), Railway and tramway crossings and points and switches.
- 104 (ii), Railway and tramway permanent way other than crossings and points and switches, and railway and tramway systems other than electric.
- 104 (iii), Railways and tramways, Electric, (*including* Electric traction).

LIST OF CLASSES

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| <p>105, Railway signals and communicating-apparatus.
 106 (i), Calculating, counting, and cash-registering apparatus.
 106 (ii), Dynamometers, gauges, measures of length, steam-engine and like indicators, and testing-apparatus.
 106 (iii), Fares and admission-fees checking, revolution and speed indicators, and odometers.
 106 (iv), Indicating, recording, and registering apparatus not otherwise provided for.
 106 (v), Measured quantities delivering, measures of capacity, and sampling liquids.
 107, Roads and ways.
 108 (i), Road vehicles, Body details and kinds or types of.
 108 (ii), Road vehicles, Undercarriage details and draught appliances for.
 108 (iii), Springs and vibration-dampers.
 109, Ropes and cords.
 110 (i), Centrifugal and screw fans and pumps.
 110 (ii), Rotary engines, pumps, blowers, exhausters, and meters.
 110 (iii), Turbines and reaction-wheels.
 111, Sewage, Treatment of, (<i>including</i> Manure).
 112, Sewing and embroidering.
 113 (i), Ship and boat fittings and accessories, and pontoons and rafts.
 113 (ii), Ships and boats, Kinds or types and structural details of.
 114, Ships, boats, and rafts, Propelling, steering, and manœuvring.
 115, Ships, boats, and rafts, Rigging, sails, and spars for, (<i>including</i> Boat raising, lowering, and disengaging gear).
 116, Shop, public-house, and warehouse fittings and accessories.
 117, Sifting and separating.
 118 (i), Indicators and burglar and like alarms.
 118 (ii), Signals, (<i>including</i> Marine signals).
 119, Small-arms.
 120 (i), Spinning, Preparation of fibrous materials for, (<i>including</i> Obtaining, opening, carding, and like treatment of fibres in general).
 120 (ii), Spinning, twisting, and winding yarns and threads, (<i>including</i> Winding cords, wire, and the like).
 120 (iii), Yarns and threads and miscellaneous spinning accessories and processes and treatment of fibres.
 121, Starch, gum, size, glue, and other stiffening or adhesive materials.
 122 (i), Engine and like cylinders, connecting-rods, cross-heads and guides, fly-wheels, piston-rods, and pistons.
 122 (ii), Steam-engine distributing and expansion valves and valve-gear and valve-actuating arrangements therefor.
 122 (iii), Steam-engines, Kinds or types of, and details not otherwise provided for, (<i>including</i> Steam and other fluid-pressure hammers and presses).
 122 (iv), Steam-engines, Regulating or controlling, starting, stopping and reversing, (<i>including</i> Engine turning-gear).
 122 (v), Stuffing-boxes and substitutes therefor, (<i>including</i> Packing therefor).
 123 (i), Liquid-level regulating, indicating, and registering, incrustation and corrosion preventing and removing, and door lids and covers for resisting fluid pressure.</p> | <p>123 (ii), Steam-generators.
 123 (iii), Steam separators and superheaters.
 124, Stone, marble, and the like, Cutting and working.
 125 (i), Bottles, jars, and like vessels, (<i>including</i> Non-refillable bottles, jars, and like vessels).
 125 (ii), Bottles, jars, and like vessels, Filling, opening, and closing, (<i>other than</i> Stoppers, lids, covers, and capsules).
 125 (iii), Stoppers, lids, covers, and capsules, Bottle, jar, and like.
 126, Stoves, ranges, and fire-places.
 127, Sugar.
 128, Table articles and appliances.
 129, Tea, coffee, cocoa, and like beverages.
 131, Tobacco.
 131, Toilet and hairdressing articles, and perfumery.
 132 (i), Amusement and exercising apparatus other than games and toys.
 132 (ii), Games.
 132 (iii), Toys.
 133, Trunks, portmanteaux, and like travelling bags, baskets, hampers, and other wickerwork.
 134, Umbrellas, parasols, and walking-sticks.
 135, Valves and cocks.
 136 (i), Velocipede, cycle, and like vehicle brakes, steering-mechanism, and miscellaneous accessories.
 136 (ii), Velocipede, cycle, and like vehicle driving-mechanism, (<i>including</i> Hand and foot driving-mechanism for apparatus other than vehicles).
 136 (iii), Velocipedes, cycles, and like vehicles, Kinds or types and structural details of.
 137, Ventilation.
 138 (i), Washing and cleaning buildings and domestic articles other than clothes.
 138 (ii), Washing, mangling and wringing, ironing, and starching clothes.
 139, Watches, clocks, and other timekeepers.
 140, Waterproof and like fabrics.
 141, Wearing-apparel.
 142 (i), Looms, Driving, reversing, stopping, and starting, and loom shedding-mechanism and pattern cards, chains, surfaces, and the like.
 142 (ii), Looms, Kinds or types of, and details not otherwise provided for.
 142 (iii), Looms, Weft supplying, inserting, beating up, cutting, doubling, and twisting in.
 142 (iv), Woven fabric and articles, and warping, leasing, balling, and beaming yarns, (<i>including</i> Pile fabrics and Floor coverings).
 143, Weighing-apparatus.
 144 (i), Wheels for vehicles, (<i>other than</i> Wheel tyres, Pneumatic and other elastic, and rims for use therewith).
 144 (ii), Wheel tyres, Pneumatic and other elastic, and rims for use therewith.
 145 (i), Wood, Cutting, (<i>other than</i> Sawing).
 145 (ii), Wood, Working, (<i>including</i> Sawing).
 146 (i), Filing papers and documents.
 146 (ii), Stationery, wafers and seals, educational appliances, and ciphers and codes.
 146 (iii), Writing-instruments, ink, receptacles for writing-materials, pads, and blotters.</p> |
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FIFTY YEARS SUBJECT INDEX, 1861-1910.

A subject index of all complete specifications for the period 1861-1910 has now been published in 271 volumes corresponding to the new series of Illustrated Abridgment Classes (List B above). The classification is in accordance with the "Abridgment Class and Index Key," as amended up to date. To some extent the headings in the "Fifty Years Subject Index" may be regarded merely as a compilation of the corresponding headings in the abridgment volumes, and, so far as this is the case, the Index may be used with the abridgments. But, generally speaking, the headings represent an improved and extended classification of matter, and it may often be found more convenient to use the "Fifty Years Subject Index" with the specifications, as the contents of the new index headings will not always be found collected in any one Abridgment Class.

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