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ABRIDGMENTS OF SPECIFICATIONS.

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CEMENTS AND LIKE COMPOSITIONS.

PERIOD—A.D. 1893-96.

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PRICE ONE SHILLING.

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EXPLANATORY NOTE.

The contents of this Abridgment Class may be seen from its Subject-matter Index. 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., price 1*s*., postage 5*d*.

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 8*d*., may be purchased at the Patent Office, or ordered by post on the Patents Form C[1] (to be obtained from any Post Office), 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.

NAME INDEX.

The names in *italics* are those of persons by whom inventions have been communicated to the applicant for Letters Patent.

ERRATA.

Page 18. The abridgment of No. **10,086,** A.D. **1894,** should be *deleted.*
Page 31. *For* **20,395** *read* **20,295.**

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. The price of each Specification is 8*d*., including postage.

A.D. 1893.

508. Bloomfield, J. C. Jan. 10.

Cements or plasters.—A plaster which will dry with a hard polished face is formed by mixing together in a dry state hydraulic or semi-hydraulic lime and barium sulphate, finely ground raw shale being added when an ordinary plaster with a blue tint is required. Suitable colouring matters such as red ochre may be added when desired.

823. Davies, J. Jan. 13.

Cements.—Relates to improvements on Specification No. 16,692, A.D. 1891. Slate débris is mixed in proportions varying with the applications with one or more of the following substances, viz., silica, manganese, iron, granite, asphalt, and lime.

1582. Montagne, F. G. Jan. 24.

Artificial marble is prepared from cement (such as Keenes or Portland) with or without the addition of silica, pulverized marble, &c. The mixture is formed into a paste, and moistened with a hardening solution consisting of a solution of zinc chloride containing zinc oxide. In some cases, magnesium chloride may be used in place of zinc chloride. The paste is cut into pieces, which are variously coloured and combined as required, the tinted portion intended for the ground colour being run upon them. The upper surface is smoothed and treated with the zinc-chloride solution. If veins are required, coloured tresses of silk &c. which have been soaked in the hardening solution are first placed in the mould, and after the paste has been added are withdrawn singly so as to leave coloured veins. Barium sulphate may be added to increase the density of the artificial marble. The slabs are polished in the usual way, or after treating with the hardening solution are dried, smoothed with pumice, and polished with a pad composed of alcohol, oil, plaster, white gum-lac, turpentine, and yellow wax. Or the surface may be rubbed with pumice and fatty matter, and polished successively with spirits of wine and plaster, linseed oil, and white gum-lac dissolved in alcohol and a little plaster.

1675. Webster, W. Jan. 25.

Cements.—Alkaline effluents, resulting from the treatment of sewage, are mixed with Portland cement, burnt chalk, or caustic lime, and then exposed to the action of the gases evolved during the burning of Portland cement, chalk, or lime. The precipitates obtained from the effluent may be burnt for the production of cement.

2156. Foster, A. Jan. 31. *Drawings to Specification.*

Casting gutta-percha &c. Relates to forming the driving plate and guide plates for the drills of a multiple boring machine. The plates are cast, from gutta-percha &c., around dummy drills arranged in a pattern block to ensure that the holes in the plates are formed at the proper angles.

3106. Webster, W. Feb. 11.

Cements.—Relates to the invention described in Specification No. 11,765, A.D. 1892, and consists in the use of wood, coal, ashes, &c. in substitution for or in combination with sewage sludge when

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mixed with clay and chalk or river mud &c. to form cement. The ashes are obtained by burning straw, stubble, rushes, grass, paper, wood, &c., or coal-ashes may be employed, and are mixed with the other cement materials before burning.

3246. Rymer-Jones, T. M. Feb. 14.

Refractory substances.—Diatomaceous or infusorial earth is mixed with clay, loam, argillaceous earth, river mud, sediment, or other material, and the mixture is moulded into blocks, slabs, tiles, pipes, coverings for boilers, steam pipes, &c. A light fireproof brick or article is produced by burning in the ordinary manner.

3338. George, C. Feb. 15. *Drawings to Specification.*

Stone, artificial.—Slabs, pipes, &c. of artificial stone are strengthened by the insertion of ropes or cords into the material. These cords may be formed of jute, hemp, flax, Indian grass, &c., and can be used singly or woven, laced, or plaited. They may be tarred or otherwise coated, and are in some cases provided with cores of spring steel.

3661. Digby, E. J. T. Feb. 18.

Refractory substances for crucibles. Russian clay 5 parts, china stone 5 parts, and gas carbon 2 parts are powdered separately and then well mixed together with 17 parts of plumbago sifted through a No. 17, and 2 parts sifted through a No. 80 sieve, and water, and kneaded by hand into a thick paste and left to dry till it is ready to be made into crucibles. These are first dried at 150° F. for about 24 hours and afterwards baked for 48 hours.

4616. Barlerin, B. March 2.

Refractory substances for crucibles, firebricks, &c. From 25 to 75 per cent. of lime is mixed with one or more of the following substances, viz., quartz, silica, retort carbon, plumbago, and refractory earths, in proportions which may be varied according to requirements.

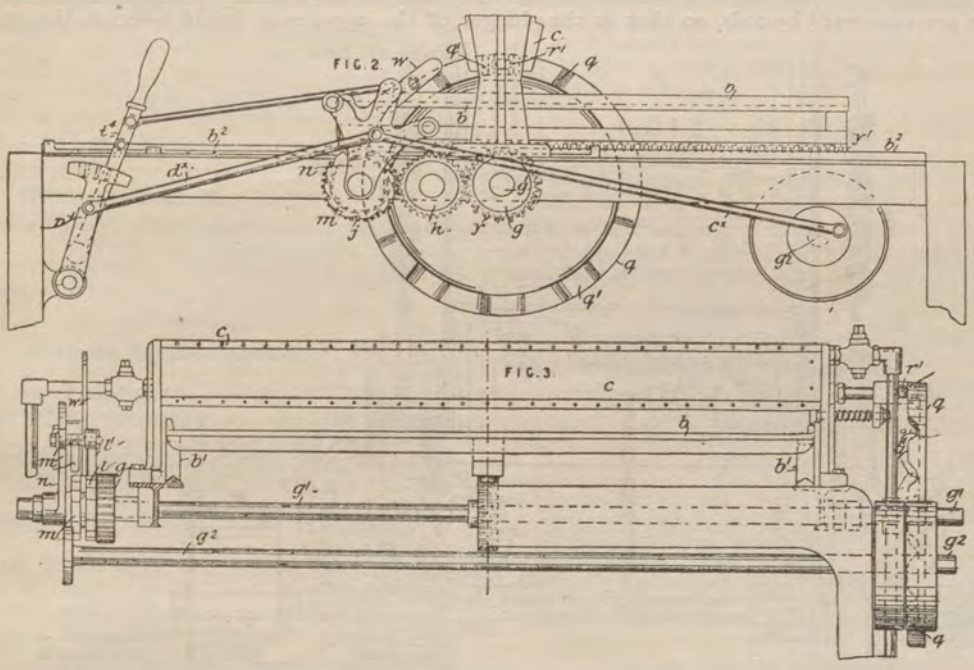
4737. Nathan, L. March 4.

Marble, artificial.—Consists of a process for making artificial marble and applying it whilst plastic to walls and other surfaces, so as to fix it in place without the use of screws &c. The wall is prepared by coating it with cement. The artificial marble is made on a slate, glass, or wooden bench with a smooth upper impervious surface, on which is spread a specially cleaned sheet of oilcloth, or in some cases paper, of the required length. Fine cement is mixed with various stains to produce the marbled effect, and is combined as required on a sheet of glass. Stained silk threads are laid on the oilcloth and other threads are drawn through the cement on the glass and placed upon them. Yellow tinted cement is next thrown on to the oilcloth; the silks are drawn out and the vacant spaces left are filled in with correspondingly coloured cement; the material is then smoothed. Thin calico is spread on the plastic mass and covered with dry coarse cement to absorb moisture. It is then removed, the surface of the marble smoothed, and cement is spread on it to form a backing; this is dried as before and smoothed. The marbled sheet and oilcloth are then removed bodily to the surface to which it is to be fixed. This is preferably accomplished by rolling it on a special roller. The surface having been damped the marble sheet is unrolled upon it, and pressed into contact therewith by india-rubber rollers &c. and the oilcloth is carefully stripped off. Other sheets are similarly applied, and by injecting coloured cement veins may be continued across the joints. The marble surface is finished by rubbing down &c. Inlaid and scroll designs may be produced in a similar manner by the use of profiles &c.

4900. Gelder, J. March 7.

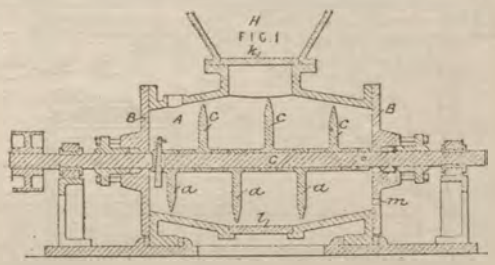
Casting lozenges and other articles. The moulds or trays are placed on a plate b which is moved beneath a trough c containing the liquid material; holes in the bottom of the trough are now automatically opened and allow the moulds to be filled. The holes then close and the plate is moved forward to bring another row of moulds beneath the trough. When b has moved to its full extent it is automatically disconnected from the driving gear. The moulds are removed and replaced by fresh ones. The driving gear is then connected and the plate returned in the reverse direction, the connecting and reversing being done by hand. The plate b is carried on brackets b^1 sliding in guides b^2. It is fitted with a rack y^1 gearing with a wheel y on the shaft g^2. The power is obtained from the shaft g^2. This is connected to a forked pivoted bracket n by the rod $c\times$. The bracket in turn is connected to a pivoted rod p by the rod $d\times$. The forks of the bracket n carry two pawls l^1, m^1 adapted to engage with ratchet wheels l, m. These pawls are fitted with pins working in a slot in the plate w, and, according to the position of the plate, one or other of the pawls may be placed in engagement with the ratchet wheels (to reverse the motion) or both may be disengaged (to stop the motion). This movement is controlled by the hand lever t^4, and is also moved automatically by stops on the moving plate b. The ratchet wheels are connected to the gear wheels j and motion is communicated through the wheels h, g to the shaft g^1. At the other end of g^1 is fitted a disc q having a series of depressions q^1 in which a bowl r^1 may spring when it is desired to open the holes in

the bottom of the trough c, r^1 being connected to a perforated plate which fits over the perforated bottom of the trough.



5132. Hill, J. March 9.

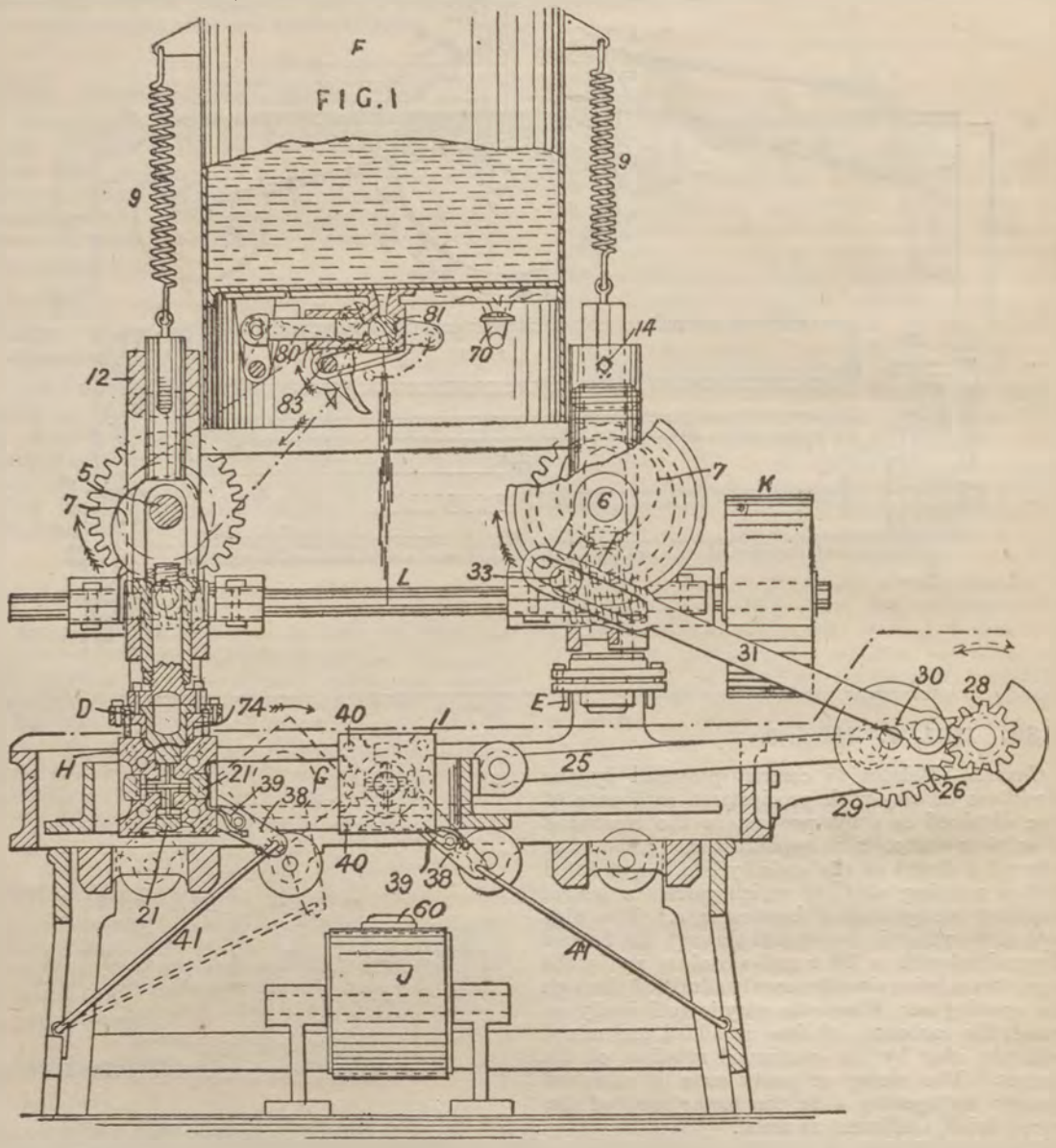
Cements.—Relates to cement prepared by the admixture of clay with precipitated carbonate of lime obtained as a bye product in the treatment of sulphur waste. The apparatus used consists of a barrel A closed at the ends by lids B and fitted with a rotating shaft C which carries a helical series of wedge-shaped beaters a, c. The clay with some water is introduced through the hopper H provided with a lid k and is broken up by the arms, steam being simultaneously admitted through the opening m. When the clay is sufficiently reduced, the carbonate of lime is added and mixed with the clay by the continued rotation of the stirrers. The slurry or pasty mass is removed through an opening l in the lower part of the barrel, dried, and burnt as usual.



5481. Dunbar, J. W. March 14. [Date claimed under Sec. 103 of Patents &c. Act, 1883, August 26th, 1892.]

Casting composition targets. Relates to a machine for making clay-pigeons or sportsmen's flying targets from a hot liquid mixture of coal tar and clay, or the like. The mixture is heated in a tank F by burners 70 and is fed to the moulds H, I in measured quantities by a plunger 80 and rotary valve 81. The plunger 80 is reciprocated by means of a rotary shaft 83, crank, connecting rod, and rock shaft, and the valve 81 is oscillated from the same rotary shaft by a cam, tappet arm, and crank. Two mould blocks H, I are mounted on trunnions within a carriage G, which is reciprocated by a crank 33, slotted link 31, crank shaft 30, toothed segment 29, pinion 28, crank 26, and connecting rod 25. The composition in the mould H is compressed by a plunger D whilst the liquid composition is falling into the mould I, and after the carriage G has been moved to the other end of its stroke the composition in the mould I is pressed by a plunger or ram E whils another mould in the block H

is filled. Each mould block H, I has four moulds, and is rotated through a quarter of a turn when it is moved towards the centre of the machine by a link 41, rocking arm 38, and spring pawl 39, which engages with pins on the mould blocks. The bottom or ejecting plungers 21 of opposite moulds are connected by rods, so that as the plunger of the uppermost mould descends the article 60



is ejected from the lower mould and falls on to an endless travelling band J. The carriage G is mounted on rollers within suitable guides. In order to solidify the composition cold water is circulated through the hollow pressing plungers and mould blocks. A shaft L, driven by an endless belt passing round a pulley K, rotates the shafts 5, 6 by worm gearing, and the shaft 5 rotates the shaft 83 by means of an endless chain.

5938. Doyle, R. J. March 20.

Fireproof coverings and compositions.—Lime water and vinegar are mixed in equal proportions and kept warm for some days with frequent stirring. Salt, alum, and white vitriol in the form of powder are added and the mixture boiled. Linseed or other drying oil is mixed with the solution, which is again boiled. Crude petroleum is then added, and after the mixture has been again boiled it is made into a paste with dry unctuous clay containing from 25 to 80 per cent. of silicate of alumina. Colouring matters may be added ; for light shades the petroleum is omitted.

6605. Parker, E. T. March 29.

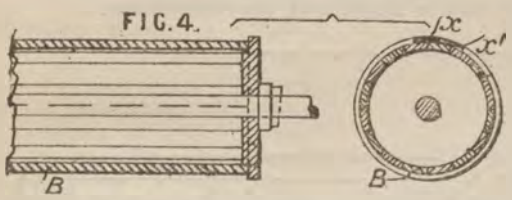
Mineral wool is prepared from calcium fluoride or cryolite by any suitable process, such, for instance, as that by which slag wool is made. Diaphragms for use in electrolytic processes, applicable also for filtering &c., may be woven from it; or it may be used in chemical processes where glass silicates would be attacked.

6723. Snedekor, C. T. March 30

Fireproof compositions for electric conductors consist of a mixture of magnesia, talc, asbestos, liquid glue, glycerine, bichromate of sodium or potassium, and lampblack.

6869. Wayss, G. A. April 1.

FIG.4.



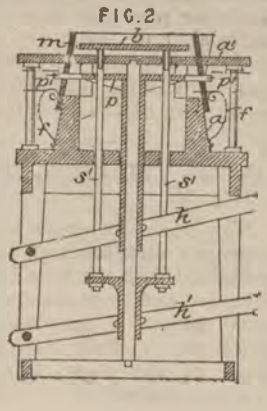
Casting drain pipes and hollow ware. On a cylinder B, Fig. 4, is poured, and evenly distributed, a layer x of asphalt in a hot fluid state, and when this has set the cylinder is rotated and a similar strip x^1 formed, and so on till a pipe is formed. On this is wound wire, or rings are placed equidistantly on it. A covering of cement is then applied in a similar way.

7211. Gin, G. April 7.

Cements. — Carboniferous schists, shales, &c. obtained as a waste material in coal mining are utilized for the manufacture of cement. The schists are pulverized and mixed with limestone or lime previously reduced to fine powder. The mixed materials are transferred to a wet mixer from which they are delivered to a briquette machine. The briquettes are preferably baked in continuous ovens until partially vitrified, and are finally ground and sifted.

7332. Böhm, J. April 10.

FIG.2



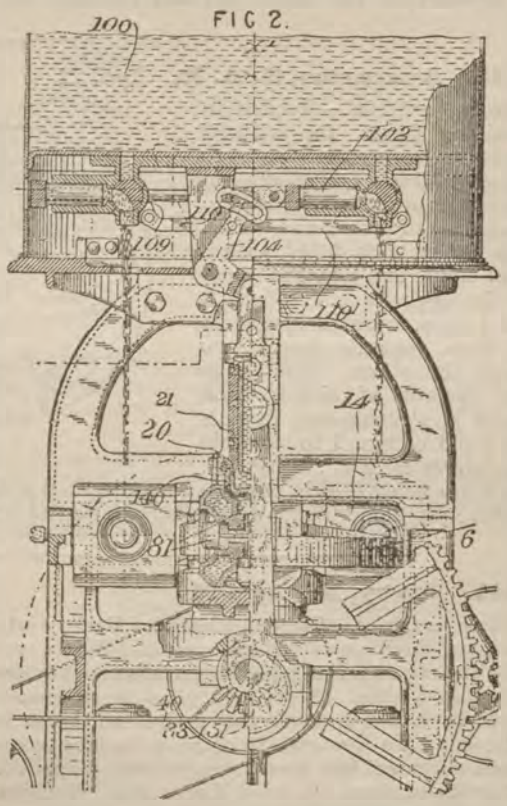
Casting artificial stone &c. Relates to casting tapered blocks. The sides m of the mould pass through slots in a table a^1, and are pressed against the tapered sides of a box or stand a by springs f. Each side m abuts against one adjacent side, and overlaps the other adjacent side. These sides are raised for moulding a block of artificial stone or plastic material, and are lowered for the removal of the block by means of a lever h, vertically adjustable table p, and projecting studs p^1 passing through slots in the plate m. The bottom b of the mould is connected by vertical rods s^1 with a sliding collar which is adjustable vertically by a lever b^1.

7372. Skelton, W. April 11. *Drawings to Specification.*

Stonework, ornamental.—Lead letters or ornamental designs are hammered into recessed letters or designs cut in the stone.

7375. Penrose, H. A. April 11.

FIG 2.



Casting flying targets &c. Hot composition 100 is fed by plungers 102 and oscillating valves 109 to moulds carried by blocks 14 which are mounted on hollow trunnions in a table or rotary carriage 6. The carriage is rotated to bring the moulds containing the composition under rams 20 by a toothed segment 51 gearing with a bevel wheel on the carriage shaft. Cams or locking segments on the shaft 23 enter recesses in a flange of the table, and lock it whilst the composition is fed to one pair of moulds, and the composition in another pair of moulds is compressed by the rams. Each time the carriage is rotated two opposite mould blocks are turned, in order to bring empty moulds under the filling apparatus, by wheels on the

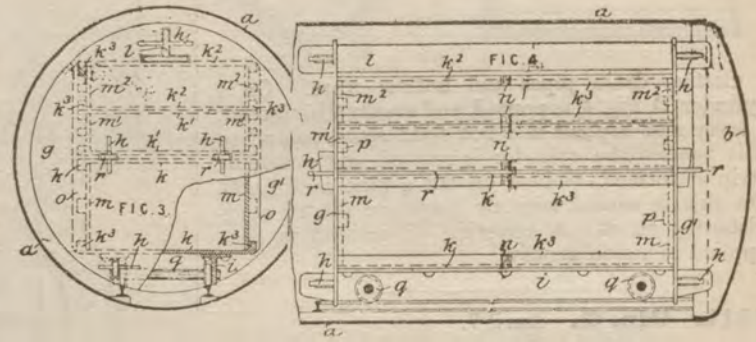
trunnions coming in contact with teeth or projections on a stationary ring. Opposite pairs of ejectors 81 forming parts of the moulds are connected by rods, and operated by gravity when the blocks 14 are rotated. The ejected targets fall on an endless conveying belt 40, and are cooled as they are carried away. A crosshead 21 carrying two rams 20 is operated by eccentrics on the driving shaft 23. The feed plungers 102 are worked from the crosshead by a lever 104 which is slotted to allow a period of rest. The valves 169 are rocked by the lever 104, a rod 110, and cranks. Water is circulated through the hollow rams and mould blocks in order to cool them and solidify the composition. A stripping ring 140 on the ram is pressed down by springs when the ram is raised, and prevents the moulded article adhering to the ram. This ring closes the mould in advance of the upper die, and prevents the composition escaping as it is compressed. The moulds may be convex, and the dies of the rams concave, and the moulds may be detachable from the blocks 14.

7499. Sykes, W. April 12.

Cements for paving &c. Archangel tar and Portland or other cement are mixed so as to form a plastic mass which is applicable for jointing pipes, being, when set, gas and water proof. For paving or building purposes, the composition may be made into blocks, or laid like asphalt and is preferably heated in a cauldron before use. Stockholm tar may be used instead of Archangel tar when a more pliable surface is required. To give a better foothold for horses, sawdust, sand, &c. may be mixed with the composition.

8142. Avenarius, E. A. R. April 22.

Stone, artificial.—Relates to moulding boxes for artificial sandstone constructed so as to run on rails in a boiler, wherein the composition is subjected to the action of steam and water. The boiler *a* is fitted with a fixed end *b* and a hinged cover at the opposite end. Figs. 3 and 4 show a mould composed of three separate boxes one above the other. The boxes are formed of circular end plates *g*, g^1 connected by rails *i*, *r*, *l* and cottars *h* to movable side pieces *m*, *k*, m^1, k^1, m^2, k^2, the latter being held in position by projections *p*, k^3. Rails *o* fitting in recesses *n* keep the boxes in their relative position. The lowest rails *i* carry axles furnished with wheels *q* which run on the rails *e*.



8441. Rigby, N. April 26.

Stone, artificial.—Cement, plaster of Paris, white lead, and finely powdered glass are mixed in water with the required colouring matter, and the mixture is laid on a sheet of polished glass in successive coats by a brush until the desired thickness is attained. To prevent fracture, a backing composed of cement and wood or paper pulp is applied. After the material has dried it is removed from the glass plate, and the face is soaked in varnish, or a mixture of linseed oil and varnish. The sheet or slab of material, which may be coloured in imitation of marble, tiles, polished stone, or the like, is finally cut into squares or other forms.

8518. Stone, R. April 27.

Fireproof compositions.— Pearl-ash, potash, or similar substances are added to the materials mentioned in Specification No. 16,789, A.D. 1890, whilst in a burning or molten state. When the material requires colouring, manganese, sulphate of iron, iron oxide, &c. is added thereto. In some cases the raw material, from which pearl-ash &c. is made, may be used in place of pearl-ash &c.

9550. Haddan, R., [*Anderson, G. R., Shotter, A. H., Kochler, W.,* and *Dorer, C. H.*]. May 12.

Asphalts.—Asphaltum or pitch is made by adding resinous materials and acid to the residue obtained in the distillation of hydrocarbon oils &c. and distilling the mixture. A residue is left, which on cooling forms a compound suitable for the manufacture of varnishes, electric insulation, paving, &c. Resin or pine tar may be used as the resinous material, and sulphuric acid as the acid. The sludge precipitated by sulphuric acid in the process of refining petroleum may be used for the production of the asphaltum or pitch.

10,358. Halford, T. E., [*White, H. J.*]. May 25.

Slag-wool.—In order to eliminate sulphuretted hydrogen, alumina and black-oxide of manganese are mixed with the blast furnace slag. The mixture is heated and then treated with a steam jet in the usual way. A composition consisting of silica, limestone or chalk, and felspar may be used in place of the slag; this mixture being treated as above described.

10,685. Jones, W., and **Jones, H.** May 31.

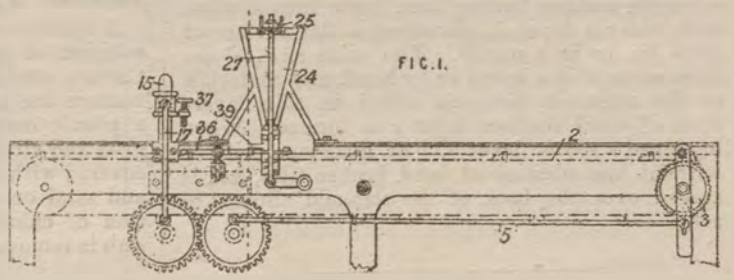
Stonework, ornamental.—In order to preserve photographs on slate for decorative and artistic purposes, the slate is first coated with a white or tinted enamel, then coated with a sensitive film on which the photograph is printed in the ordinary way. The photograph is then coated with a thin layer of very pale polishing copal varnish, which is dried at 170° and polished by rubbing with rotten stone.

10,746. Keim, A. W. June 1.

Cements or plasters.—Relates to the preparation of the surface, and to the painting of walls or the like for the production of fresco paintings, scene painting, and also for the production of movable paintings, easel pictures, and the like. The surface is prepared first from a foundation composed of plaster containing marble, sand, Portland cement, and carbonate of baryta, which is covered with a layer prepared from kaolin chalk, silicic hydrate, and silicate of potash and carbonate of baryta to form the painting surface. The painting may be made with all kinds of pigments. For weather proof painting, the paints are mixed with special ingredients, and are then fixed by the application, in the first place, of the solution described in Specification No. 4000, A.D. 1882, and afterwards of a solution of sulphate of ammonia with ammonia alum.

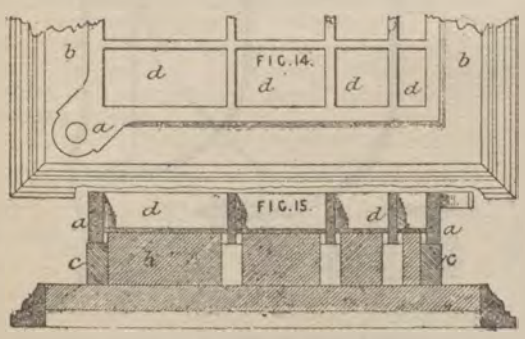
10,890. Deas, A. June 5.

Casting confectionery. Relates to machines in which the moulds are formed by making depressions in starch. The mould box is carried on an endless chain 2 driven through a pawl and ratchet 3 by a connecting rod 5 &c. A series of stamps for making the moulds are carried on a crosshead working between uprights 15 and actuated by a connecting rod 17. Bell crank levers are



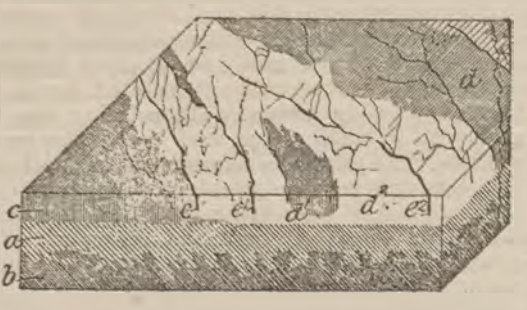
are arranged to disconnect the crosshead in the event of the stamps being over either of the edges of the mould box. The material to be cast is placed in the hopper 24 and is delivered through a row of nozzles into the moulds when brought underneath. The nozzles are closed by valves which are connected to a crosshead 25 actuated through a rod 27, arm 39, lever 36, &c. by an adjustable screw 37 carried on the stamp crosshead. Automatic disconnecting arrangements are provided to throw the lever 36 out of gear with the arm 39 except when the mould is in position to receive the material. Two casting hoppers may be used if desired; for instance, one may supply material for the body of fondants, whilst the other furnishes the materials for the ornaments. The details of construction may be varied.

11,978. Frankl, F. and **Herrmann, L. F.** June 17.



Casting toy building blocks. Relates to apparatus and compositions for use by children for casting toy building blocks. Figs. 14 and 15 show a mould constructed for simultaneously casting bricks of different sizes. The mould *b* is divided into compartments *d*, each of which is closed by a bottom plate resting on a plunger *b*. The thickness of the bricks is determined by the relative position of pieces *c* which support the mould. By placing suitably formed "inlays" in the compartments arches, pillars, cornices, tiles, and other blocks may be produced. Two compositions for casting are described. The first consists of plaster of Paris, sulphate of barium, dextrine, and pigment. The second consists of calcined magnesia, saw-dust, magnesium chloride solution, and pigment. The pigments preferably used consist of light ochre, cassel-earth, or English red, and bone-black or ultramarine, for yellow, red, and slate coloured stones respectively. The compositions are poured into the mould and the surface is scraped away until it is level. When sufficiently set the blocks are forced upwards by depressing the mould, and dried.

12,468. Goegg, G. A., and **Früh, J. C.** June 26. [Date claimed under SEC. 103 of PATENTS &c. ACT, 1883, November 28th, 1892.]



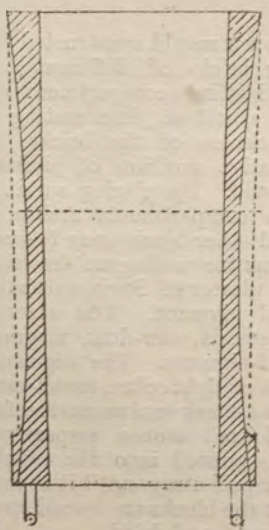
Artificial marble is prepared from dolomite, which has been calcined at a temperature not exceeding a red heat, and suitable colouring matters. The marble is formed in layers. The limestone and colouring matters having been made into a paste with water a layer is placed on a flat surface of glass &c. or in a mould. The veins e, e^1, e^2 are then made with a brush or by hand, and materials of the required tints are added in thin layers d, d^1, d^2 until the face layer c is formed. When hardened a second layer a, b of limestone, with or without the addition of sand, broken tiles, &c., is spread over the back of the slab and allowed to set.

12,791. Edwards, E., [*Overton, J. W.*]. June 29.

Cements or asphalts.—Titaniferous ores, such as menaccanite or ilmenite, are combined with asphalt or bitumen, coal tar, and sand, ashes, or pulverized stone. The composition may be, preferably whilst hot, compressed into blocks for paving, building, &c. By increasing the amount of coal tar the composition is formed into a cement suitable for coating walls, floors, &c.

12,798. Mayer, W. June 30.

Casting slag &c. The sides of slag tubs and other cast articles are made thinner towards the middle portions, as shown in the Figure, which represents an ingot mould.



12,880. Bammann, R. July 1.

Cements or plasters.—Relates to a composition for producing a marble-like plaster. Zinc dust or cuttings are subjected to the action of water for a considerable time and the mixture boiled. A small quantity of zinc dissolves and is converted into silicate by the addition of alkaline (preferably potassium) silicate. The solution is diluted and mixed with gypsum and lime to form the plaster.

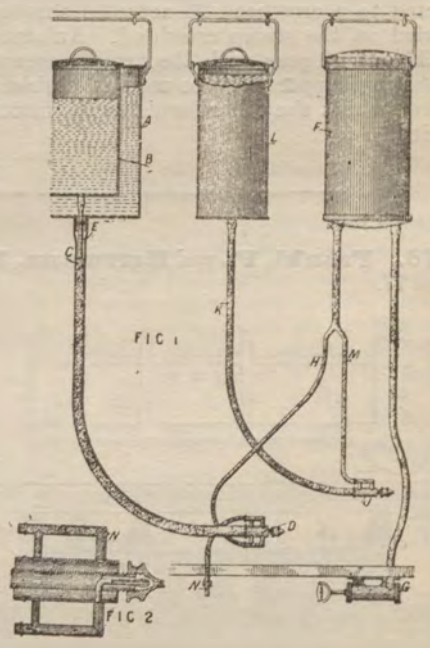
13,079. Typlt, A. July 4.

Casting slabs &c. A mixture of magnesia, chloride of magnesium, and waste basalt, granite, or syenite is cast in iron or other moulds which prevent the expansion of the mass as it hardens.

13,080. Typlt, A. July 4.

Artificial marble &c.—Magnesia is mixed with a solution of magnesium chloride, zinc oxide, and Carrara marble dust, and, if necessary, colouring matters are added. The whole is worked up into a plastic mass, which is applied as a coating to glass and allowed to harden. The coating is then covered with a composition, consisting of magnesia and sand or stone waste worked up with a solution of chloride of magnesium. When set the slab is removed and washed.

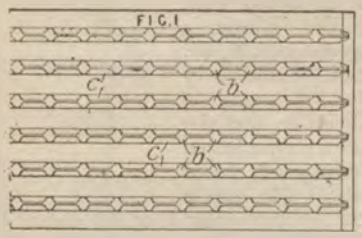
13,385. Boult, A. J., [*Peters, G. A.*]. July 10.



Casting.—Relates to apparatus for throwing a spray of molten paraffin upon an article of which a mould is to be formed. The paraffin is placed in a vessel B enclosed in a jacket A containing

hot water and communicating by a tube E with a nozzle D, shown in detail in Fig. 2. An outer tube C allows the hot water to circulate round the nozzle, from which it escapes by a waste pipe N. Compressed air is forced into the vessel F by a pump G, and from thence passes by the tube H to the nozzle D to produce the spray of paraffin. When the article has been covered with a layer of paraffin, a combined spray of cold water and paraffin is directed upon it, the water being discharged from the nozzle J connected by the pipes K and M respectively with a water reservoir L and the compressed air vessel F. The mould is backed with plaster of Paris and is cut into sections by threads previously placed on the article. The sections are then joined by a paste of plaster. In some cases the molten paraffin may be simply run over the surface of the article to be moulded.

14,005. Peters, J. A. July 19.



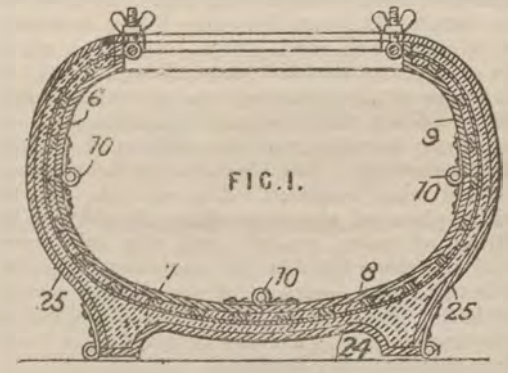
Casting sugar.—Slabs of sugar, having series of grooves at right angles to one another, are produced by pouring masse-cuite into moulds provided with division plates, one of which is shown in Fig. 1, in which *b*, *c* are sets of ribs at right angles.

15,500. Johnson, J. Y., [*Virginia Phosphate and Paint Co.*]. Aug. 15.

Asphalts. — Certain titaniferous minerals, as menaccanite, rutile, brookite, and anatase, are used for the manufacture of paints, preservative compositions, &c. The powdered minerals are mixed with asphalt, varnish, or other vehicle. The compositions are especially useful for coating iron or steel. They may be applied with a brush and heated, so producing a glazed coating. This coating may also be applied by a cementation process, the articles, as armour plates, being embedded in a mixture of mineral and carbon and heated in a furnace.

15,877. Garvey, H. A., and **Cordova, A. de.** Aug. 22.

Casting artificial stone coffins &c. Relates to the manufacture of burial caskets and other hollow articles from artificial stone, cement, plastic compositions, &c. in combination with a metallic core. A foraminous metallic templet or core, provided with small spurs or offsets, is placed between the inner and outer halves of a specially constructed mould, and the fluid or plastic composition filled in and allowed to harden. The two halves of the mould are then removed. In the form shown in the Figure, the inner half of the mould is formed of four longitudinal pieces 6, 7, 8, and 9 connected



together by hinges 10, and three pieces at each end, held in place by overlapping lugs and screws. The outer half is formed of a bottom piece 24, to which are hinged side pieces 25 and end pieces. The two halves of the mould are capable of being secured together at the top by bolts and nuts. The lid is made in a similar manner. In the Provisional Specification it is stated that the following composition may be employed:—Plaster of Paris, cork dust, washed animal hair, dextrine, Indian red, and water.

16,454. Boult, A. J., [*Hemmer, L. P.*]. Sept. 1.

Stone, artificial.—Relates to a plastic material adapted for use generally as a substitute for stone and similar materials, or for making rollers for use in machines for treating textile fabrics with water or other liquids. The principal ingredients are cement, india-rubber, gutta-percha, or balata, to which may be added white lead, oxide of zinc, red lead, chalk, barytes, pulverized glass, quartz, fluorspar, or sulphur, in order to obtain a more intimate mixture of the first named materials and to colour the resulting product. About 100 parts of cement, 40 parts of water, and 10 parts of india-rubber solution are mixed with about 20 per cent. of the other ingredients referred to, and the material, after casting, moulding, &c. is dried and then hardened by immersion in water or a solution of water glass, or by exposure to a damp atmosphere.

16,840. Clery, A. Sept. 7.

Artificial stone, cement, &c.—Relates to a composition for coating stone and other surfaces to protect them from damp, which is applicable also as a substitute for plaster of Paris, for repairing articles of stone, or for casting and for making artificial stone. The composition consists of a mixture of pulverized freestone, zinc oxide, pounded glass, powdered marble, and calcined magnesia made into a paste with a solution of tin in hydrochloric acid to which sal-ammoniac has been added. Suitable colouring matters to produce veinings &c. may be added to the solid materials.

17,142. Grote, L. Sept. 12.

Artificial stone &c.—Relates to artificial stone, preservative and other compositions, consisting of combinations of magnesium chloride, lead acetate, magnesite (freed from carbonic acid), plumbate of lime, baryta, &c., together with filling materials such as slag-wool, sand, gravel, clay, &c., wood pulp or shavings, saw-dust, paper, fibrous materials, &c. Some of the compositions are suitable for casting. When used for coating surfaces oil or varnish may be added, and the addition of cement delays the setting. Suitable colouring matters may be added when required. Zinc chloride can be used in place of the magnesium chloride. The addition of resins, asphalt, and oily substances render the stone suitable for insulating purposes, but in this case a plumbate of the alkaline earths, or soda &c. must also be used. The compositions containing wood pulp &c. may be worked like wood before they are fully hardened.

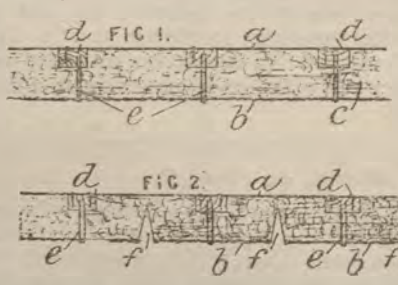
17,322. McLean, A., and **Wilson, C. W.** Sept. 14.

Stone, artificial.—The clinker obtained by the incineration of town refuse in destructors is granulated, mixed with water and Portland or other cement, and moulded under pressure into blocks. The moulding is done in an iron frame, sheets of felt and canvas being placed above and below the material. A facing of coloured material may be used, or the stone may be coloured throughout.

17,514. Smith, W. Sept. 18.

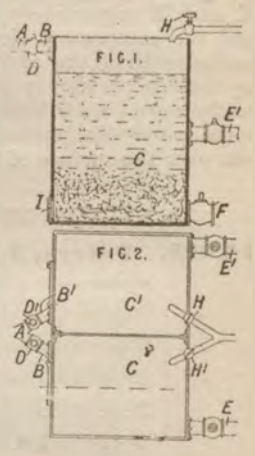
Asphalt composition for preserving timber, or timber piles or structures, and ships' bottoms from sea-worms, vermin, damp, dry-rot, fungoid growths, &c. The composition is formed by mixing asphalt with pitch oil and boracic acid or other antiseptic not of a volatile nature.

19,123. Stewart, R., and **Jones, F. M. H.** Oct. 11.



Sound-deadening and fire-proof compositions.—The invention has reference to fireproof coverings which also obstruct the passage of heat and sound. A compound sheet is constructed by taking a layer of silicate cotton *c*, Fig. 1, of sufficient thickness, and backing it with a thin flexible metal plate *a* and a corresponding inner sheet of wire net of the kind described in Specifications No. 7357, A.D. 1885, and No. 6977, A.D. 1892. The compound sheet is held together by staples *e* driven through the netting *b* into the strips of wood *d* nailed on the inside of the metal sheet *a*. Suitable notches *f*, Fig. 2, can be cut into the sheet to permit it being bent round boilers and the like. Modified forms of sheeting are described and illustrated.

19,705. Rigby, B. K., Neill, F. A. R., and **Carr, A. C.** Oct. 19.



Cements.—Relates to the utilization of Le Blanc, ammonia-soda, or other alkali waste for the manufacture of cement. In order to reduce the amount of soluble impurity, the waste is washed in the apparatus shown. The waste is led into the tanks C, C¹ by the branched pipe A, B, B¹ fitted with cocks D, D¹. Water is supplied by the taps H, H¹, and when sufficiently washed the waste is allowed to settle, and the supernatant water is drawn off through pipes E, E¹ or by a siphon. The waste is removed by the cocks F or the doors I, and is mixed with sufficient lime or carbonate of lime to reduce the proportion of deleterious matter in the dry mixture to three per cent. or less. The waste is then used in place of chalk or lime in cement manufacture, being mixed with clay and treated in the usual manner.

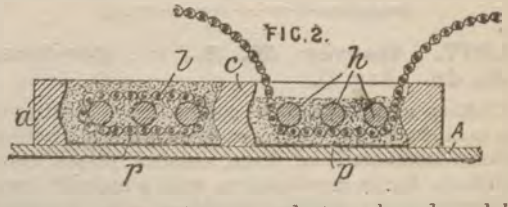
19,797. Martin, J. W. Oct. 20.

Stone, imitation.—Sheets of glass, roughened at the back by a sand blast or otherwise, are cemented to a brick or other surface by coloured mastic cement.

19,799. Boult, A. J., [*Jones, J. D.*]. Oct. 20.

Fireproof coverings and compositions.—A mixture is made of mica, kieselguhr, fire clay, and mineral carbon in varying proportions, and the composition so formed is used as a non-conducting, damp-proof, and fireproof covering.

19,939. Mack, A. Oct. 23.



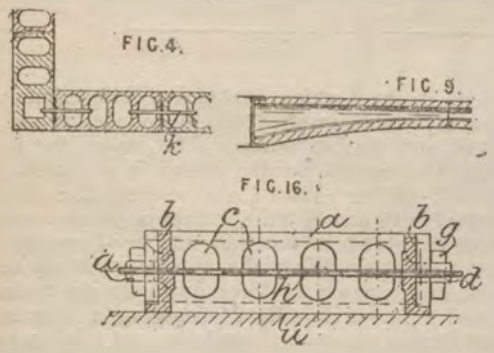
Casting composite or plaster boards, slabs, mouldings, and the like of the type described in Specification No. 17,180, A.D. 1886. Gypsum

burned or calcined in a kiln at a red heat is mixed with ground gypsum which has been burnt at a temperature of about 150° C., and the mixture forms a slow-seting waterproof cement. A layer or core *l* of woven fabric is inserted in the cement, which is filled into the mould *a* about the rolls or cores *h*. When the cement has set, the rods *h* and detachable partition *c* are withdrawn, and the slabs are removed. The base plate A or bottom of the mould may be lined with asphalt, felt, zinc, or india-rubber *p*.

22,227. Williams, M. Nov. 21.

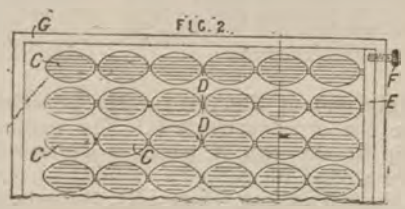
Cements.—Refers to Specifications Nos. 7255 and 11,948, A.D. 1884, and relates to a dry, air-drying, or hydraulic cement or mortar in the form of powder, consisting of a mixture of powdered furnace or other ashes, cinders, coke, stone, brickbats, &c., with clay, clayey earth or alumina, and slaked lime. The sodium chloride referred to in the previous Specifications is omitted.

22,782. Behrens, H. Nov. 28.



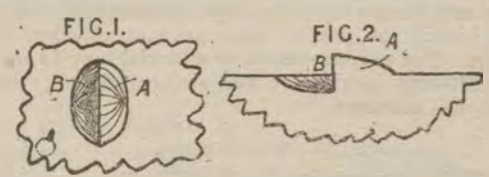
Casting bricks &c. Blocks for floors, walls, and other parts of buildings are made with circular, oval, square, or other holes which form continuous ventilating passages when the blocks are laid in position. Transverse holes through the blocks put the adjacent passages in communication, and are adapted to receive keys *k*, Fig. 4, which lock adjacent blocks together. Fig. 4 is a horizontal section of a wall; Fig. 9 is a vertical section of an arched flooring block; and Fig. 16 is a section of a mould for producing blocks of the kind shown in Fig. 4. Lugs *d* of the sides *a* of the mould pass through slots in the ends *b*, and the rectangular frame thus produced is secured together by cottars *g* driven through slots in lugs. Removable tapered cores *c* are inserted in holes in the sides of the mould, and a rod *h* is passed through holes in the ends *b* and cores *c*. The mould is laid on a smooth surface *u* and cement, concrete, or other material is poured or pressed in and smoothed off level with the top edges of the mould. When the material is sufficiently dry the rod *h*, cores *c*, and cottars *g* are withdrawn, and the ends and sides of the mould are detached. Interlocking ribs and recesses, or recesses for receiving mortar, are formed in the edges of the blocks by recesses and ribs at the sides and ends of the mould.

23,058. Child, W. C. Dec. 1.



Casting confectionery. The required patterns for fancy confectionery are made in a glass, pottery or other plate, the cavities C being connected by channels D so that the liquid can flow from one to another. When the moulds are all filled the liquid flows into a larger channel E provided with grooved cork or stopper F for regulating the height of the liquid. The plate is formed with a rim G to prevent waste of liquid.

23,278. Dickinson, H. Y. Dec. 4.

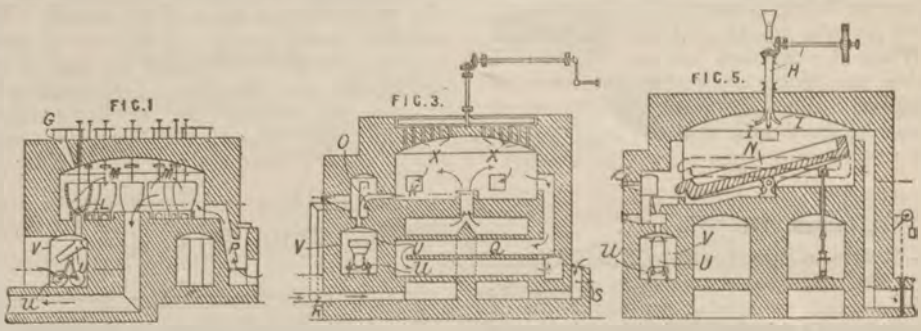


Stone, imitation &c.—Reversible lathing is produced between two rolls provided at suitable distances with projecting dies A and recesses B which engage one another so as to slit and at the same time stamp or bulge out the sheet metal to the required shape. Corrugations may be formed between the stamped puncturings to strengthen the lathing. The dies may be fixed on reciprocating carriages. Slabs may be formed from this lathing, covered with plaster, and be used for temporary buildings; or the lathing may be coated with cement, ornamented, and used as stone for building purposes.

24,191. Haddan, R., [*Compagnie du Sel Agglomeré*]. Dec. 15.

Casting salt. Relates to treating common salt so as to obtain it in blocks; and consists of the following series of operations:—Crushing, purifying, drying, fusing or melting, condensing, moulding, and coating the blocks. If the salt is required for industrial purposes, the purifying processes may be omitted. The furnace for fusing the salt may be provided with fixed crucibles M, Fig. 1, a fixed pan, Fig. 3, or a movable pan N, Fig. 5. The salt is fed in through hoppers G; through small

openings X, above which is a rotary feeding apparatus ; or through branches I of a rotary apparatus H. The arrows show the course of the heating gases. In Fig. 1 the furnace is supplied with a number of grates P for solid fuel ; in Figs. 3 and 5 it is heated by air and gas brought by S and R

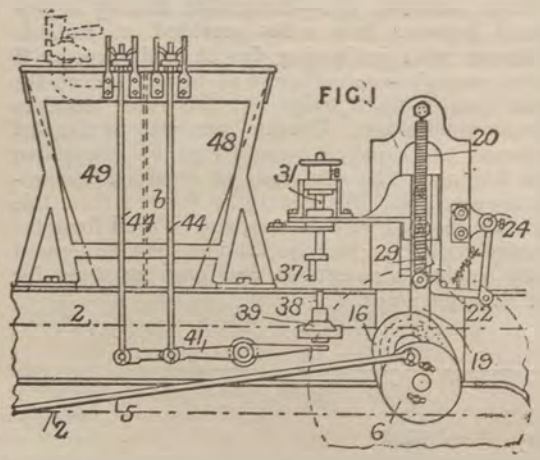


respectively, and in Fig. 3 is further provided with regenerators Q, and a separate gas heating arrangement for the overflow chute O. The molten salt is discharged through orifices L, an overflow K, or over a lip in the pan N which is depressed when desired. The molten salt runs into moulds U which are carried on rollers *u* running on a railway, and moved by a friction chain or the like. To prevent the salt cooling too rapidly, the moulds may be circulated in a tunnel V. The mould is formed of a metal unattackable by molten salt, as of nickel or aluminium.

24,283. Meran, J. E. G. Dec. 16.

Refractory substances.—Magnesite, talc, steatite, serpentine, or other rock or compound containing magnesia, is ground into powder, mixed with water and a binding agent such as clay, and the mixture is moulded into kitchen utensils, retorts, pipes, &c. The articles are fired at a high temperature, and in the biscuit or porous state are not attacked by acids. The porous vessels or material may be used for filtering liquids, or for electrolytic or other electrical purposes.

24,609. Deas, A. Dec. 21.

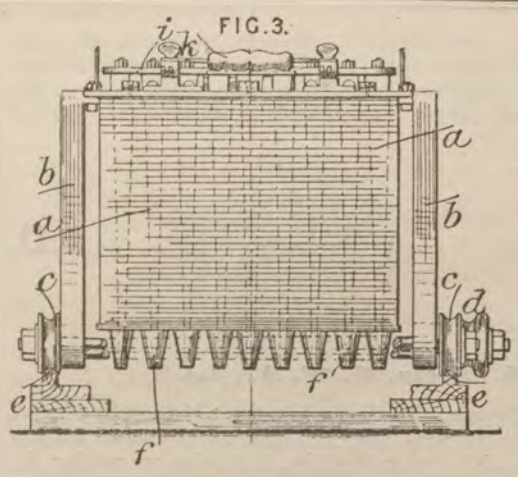


Casting confectionery. Relates to improvements in a machine for casting confections in starch moulds, as described in Specification No. 10,890, A.D. 1893. The mould trays containing starch are fed to the stamps and under the hoppers 48, 49 by endless chains 2 which are moved intermittently by an adjustable cranked disc 6, connecting rod 5, a pawl, and ratchet wheel. The stamp for producing the moulds in the starch is operated by cams 16, sliding rods 19, and springs 20; and is provided with one or more knives or plates for retaining the starch in position, and dividing off the rows of moulds. When the stamps are at the end of the stroke, pawls 29 force down spring catches 22, and rotate a spindle 24 carrying a hammer, which strikes the stamp crosshead, and vibrates the stamps so as to free them from the starch. The spindles or drop valves in the hoppers containing the semi-fluid material to be cast are raised at the proper moment by adjustable crank pins 37, carried by the stamp crosshead, acting through pins 38, levers 41, and rods 44, 44^b. The lower pins 38 pass through holes in sliding plates 39, which are moved by sliding clutches or cams set in motion by projecting catches of the travelling chains 2 acting on star wheels on the cam spindle when the trays are fed forward. By withdrawing the pins 38 from under the pins 37, this arrangement prevents the raising of the valves when the moulds are not in position. The valve mechanism can also be thrown out of action by turning the screwed cranked spindles 31 until the pins 37 clear the pins 38. The mould trays are fed to the endless carriers 2 by parallel horizontal angle bar supports attached to pairs of vertical endless chains which are operated by an eccentric, sliding-spring, eccentric-rod, lever, pawl and ratchet wheel, and bevel wheels. The motion of the driving spindle of the endless chains is regulated by an escapement which is released a tooth at a time as the tray passes below a roller carried by the escapement lever. When the escapement is locked, the halves of the eccentric rod slide past one another without actuating the feed mechanism.

24,810. Murray, R. S., and **Eames, F. W.** Dec. 23.

Casting confectionery. Relates to apparatus for casting sweetmeats or dropping liquids into bottles &c. Fig. 3 shows an end view. A frame *b* running on wheels *c* carries a reservoir *a* for the liquid or semi-liquid material. In the bottom are arranged a row of nozzles *f* adapted to be closed by plungers, shown in dotted lines, carried by a rod *i*. The moulds or bottles or other receptacles are placed between the rails *e*. The reservoir is secured to the frame by turn-screws so that it may be readily removed for cleaning &c. When the plungers are raised, by the handle *k*, the material flows from the nozzles into the receptacles, when sufficient has passed the plungers are depressed. The apparatus is preferably moved by a small hand wheel *d* fixed on one of the axles.

FIG. 3.



24,958. Taylor, W. R. Dec. 28.

FIG. 4.

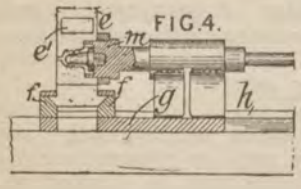


FIG. 1.

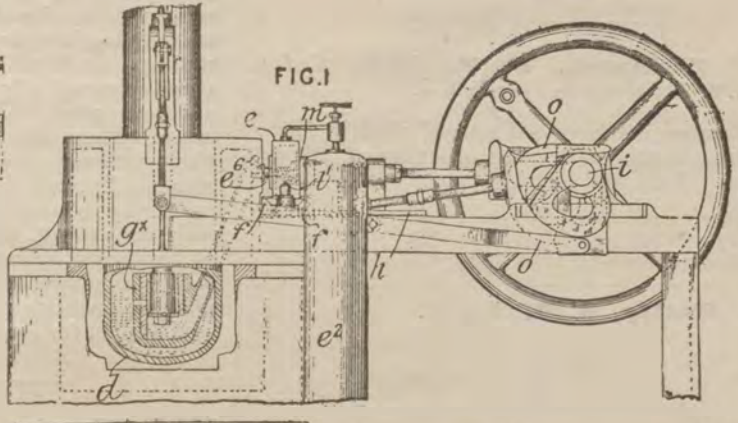
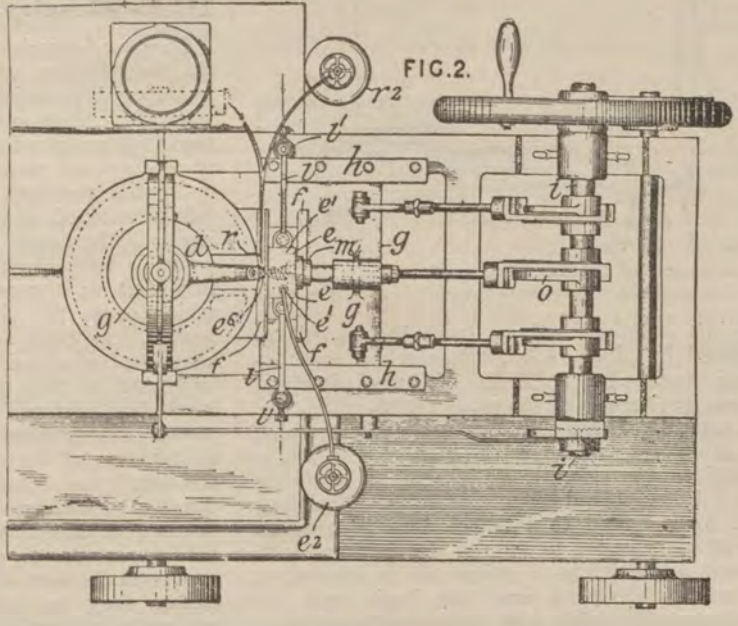


FIG. 2.



Casting. — The apparatus is for melting and casting metals of low specific gravity, particularly aluminium, and other substances; it is described in connection with the casting of a screw - bottle stopper. Fig. 1 is an elevation, Fig. 2 a plan, and Fig. 4 a section through the mould. The metal is melted in a crucible *d* and is forced by the pump $g^{\times}$ into the mould *e*, where its cooling is assisted by a jacket e^1 supplied with cooling media from the reservoir e^2. The parts of the mould are then separated and the casting falls out. The sides of the mould are attached to links *l* pivoted at l^1 and slide in guides *f* on the table *g*, which can also slide in guides *h*. To open the mould the core *m* is first withdrawn by the cam *o*, then the table *g* is drawn to the right and the mould is drawn away from the supply nozzle e^6 and opens. The nozzle e^6 is heated by a gas jet *r* supplied from a reservoir r^2.

A.D. 1894.

475. Stein, G. W. A. Jan. 9.

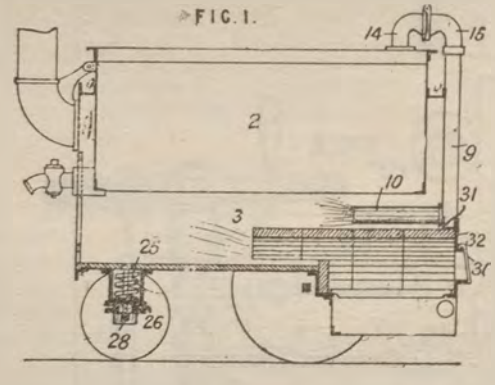
Cements.—In the preparation of hydraulic cement, blast furnace slag is added to the usual cement materials before burning, in order to render the burnt mass friable or brittle to facilitate breaking it up preliminary to grinding.

494. Thompson, W. P., [*Coffin, C. L.*]. Jan. 9. *Drawings to Specification.*

Refractory substances.—Parts of electric forges or furnaces are constructed of oxide of calcium prepared from well burnt dolomite, limestone, or marble.

640. Healey, B. D. Jan. 11.

FIG. 1.



Asphalt cauldrons.—Gases from the pan 2 are conducted by pipes 14, 15, 9 to combustion tubes 10 over the fireplace 3. A disc of gauze is inserted between the flanges of the pipes 14, 15, which are made conical, and the pipe 15 is hinged to the pipe 14 to allow free access to the gauze. The pan is attached to the sides of the casing by angle or channel irons secured by outside bolts. The door frame 32 is bolted to a trough iron 31, and the doors 30 are adapted to slide to the right and left. A spiral spring 25 in a casing 26 is interposed between the framing and the bogie axle 28. Specification No. 5959, A.D. 1886, is referred to.

736. Stringfellow, J. H. W. Jan. 12.

Asphalts.—Relates to a method of treating tar for the purpose of separating the lighter and heavier constituents and obtaining useful products, such as pitch, asphalt, and fuel. The tar is first treated with a small quantity of an alkaline base or saponifying agent, and then mixed with an equal weight of water. A quantity of petroleum or other liquid hydrocarbon is then stirred in. On standing, the liquid separates into three layers, (1) a red-coloured oily extract, (2) a body of soft unctuous pitch, and (3) a body of discoloured water. These are drawn off separately and the pitch removed to a press to remove free oil and water. The red liquor may be distilled in the usual way to obtain the various constituents. To make an asphalt, the mixture of tar, water, and oil, without separation, is mixed with earthy matter composed of powdered clay and lime. The solid residuum may also be pressed into blocks and used as fuel for gas making &c.

1126. Moseley, J. W. Jan. 18.

Fireproof coverings and compositions.—Relates to the manufacture of an ornamental fireproof and waterproof material for covering ceilings, floors, walls, &c. Two or more sheets of paper or strawboarding are glued together with a layer or layers of waterproof material between them, and woven or textile material, such as cotton, flax, hemp, or silk, is secured to the face by glue or size containing a little boiled linseed oil. The compound board is next placed between heated metal plates in a press, or is passed between calendering rollers which cause the glue or size to unite with the boards. Asbestos paint or powder is applied to a coating of glue and oil on the face, and ivory dust or plaster of Paris may be also applied to produce a hard fine surface. The surfaces of cardboard nearest the waterproof material are treated with a preparation of carbolic acid and coal tar to make the boards non-infectious, vermin-proof, and more durable. Small sections are suitable for parquet flooring or mosaic work, and large sections may be used for screens or partitions. The sheets may be embossed to any design or pattern, preferably before they are glued together, and the outer surface may be painted or decorated, and varnished. Alum and bicarbonate of potash may be added to the glue, and silicate of soda, or other damp proof substance may be used instead of coal tar. The

material may be secured to the wall or object by nailing or cementing, and can be cut with a saw, plane, and like tools.

1157. Lake, H. H., [*Gran, B.*]. Jan. 18.

Artificial marble is prepared from a mixture of gypsum, quartz, felspar, and calcined boracic acid, mixed with water, the composition being moulded or cast and then exposed to a red heat and slowly cooled. Coloured silicates may be added in small quantity to the mass, or surface colouring can be produced by metallic compounds. A suitable silicate may be prepared by melting together in a crucible, quartz, borax, potassium nitrate, and a metallic oxide corresponding to the colour required. For producing a flesh colour, the metallic oxide is omitted, the silicate is broken into small pieces, and mixed with felspar, auric and titanium oxides, heated, and suddenly cooled in water. The marble composition is applicable for the production of statuary casts and the like.

1370. Hooydonk, A., and **Hooydonk, H.** Jan. 22.

Fireproof coverings and compositions.—Fireproof castings for decorating walls, door panels, ceilings, mantelpieces, &c. are made from a mixture of gum arabic in solution, paper pulp, barium oxide, and plaster of Paris.

1427. McAra, A. Jan. 23.

Cements.—Argillaceous and silicious limestones, such as the Arden stone, are powdered by means of millstones &c., and if the powder is too poor in lime, a slip of rich lime or chalk is added, or if it is too rich in lime, limey blaes or shale, such as the deposit found above the Arden limestone, are added.

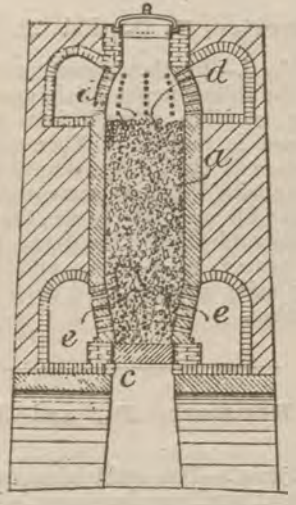
1608. Clapp, W. J., and **Sandbrook, W.** Jan. 25. *Drawings to Specification.*

Fireproof coverings and compositions; wicks and burners.—The wicks of lamps are composed of slag wool alone, or in combination with asbestos &c., and may be enclosed in woven material such as llama wool, mohair, &c., such material being first rendered fireproof by treatment with a solution of sodium tungstate and burnt alum, or ammonia chloride of platinum.

2247. Belloc, D., and **Bénard, E.** Feb. 1.

Cements. — Relates to a process for roasting chalk, marls, and other cement materials so as to produce a natural breaking down on cooling. The cement materials are placed in a kiln and hot gases from a producer are passed through them so as to gradually raise the temperature. The materials are then cooled in the kiln, or after removal therefrom, and screened so as to separate any lumps of underburnt or overburnt material. Solid

FIG. 1.



fuel is sometimes mixed with the cement materials. Fig. 1 shows a form of kiln adapted for burning the cement. The material is fed into the space *a* from above and removed below at *c*. The hot gases pass from the flues *d* through the kiln out into the flues *e*, as indicated by arrows. The arrangement of the feed holes and the flues may be modified, but in all cases the gases pass downwards through the kiln, and the material is fed in above and delivered below.

2582. Slicer, C. H. Feb. 6.

Asphalts.—Relates to a pulverulent or plastic composition consisting of a mixture of powdered lime-stone, sand, &c., and asphalt for use as a substitute for Neufchatel rock for paving. The asphalt is thinned with benzine, gasoline, or other compound, and the pulverized lime-stone &c., preferably in two degrees of fineness, are mixed therewith and agitated so that the grains become uniformly coated. The solvent is then driven off by heat or air currents, and the asphalt is heated to consolidate the coating, either at once, or just before laying. The material is sifted on to the roadway and tamped in the usual way. Pure or commercial asphalt or asphaltic rocks may be employed, and chalk can be used in place of lime-stone in producing the composition. The material thus prepared is granular, but by using a larger proportion of asphalt it becomes plastic when heated. The solvents may be recovered for re-use by condensing them in a worm.

2743. Preston, R., and **Thornley, T.** Feb. 8.

Cements.—For embedding the lining tiles in wood-pulp digesters, for pointing between the tiles,

and for making joints, a plastic mass or paste composed of asbestos and a solution of silicate of soda, silicate of potash, or a mixture of both silicates is employed.

3803. Harries, T. D. Feb. 22.

Stone, artificial.—Portland cement mixed with one or more of the following materials, granite, marble, quartz, spar, or silica is made into a paste with water and cast in moulds. When the stone has set the surface is rubbed down until smooth, and brushed over with Portland cement in a fluid condition so as to fill up air holes &c., the superfluous cement being rubbed off when dry. The stone is varnished, heated in a stove, and polished by successively using pumice, sand, rotten stone, and chamois leather.

4223. Baumert, P., and **Pieck, A.** Feb. 28.

Stone, artificial.—The artificial stone is formed of a backing of sand, powdered slag, or other cheap material, and a facing of marble or similar fine material. Both layers are mixed with cementing material, and are combined by pressure in a mould. The cementing material used is preferably magnesium sulphate or magnesite and calcined magnesia.

4632. Kuhlewein, A. March 5.

Fireproof coverings and compositions.—Asbestos and asbestine are mixed with pulverulent substances, such as gypsum, lime, chalk, fire-clay, graphite, &c. and applied as a cement or moulded into slabs, plates, arch-stones, &c. To give increased strength, wire netting, and sometimes also jute netting, is embedded in the composition. The composition is applicable in the construction of walls, ceilings, roofs, safes, strong-rooms, portable buildings, and for non-conducting coverings for boilers, &c.

4988. Dietz, E. March 9.

Slags, treatment of.—Relates to phosphatic slags produced in the basic steel process, and consists in using natural or artificial phosphates containing free lime, or with lime or magnesia added thereto, proportionate to the amount of phosphorus to be withdrawn from the iron. The process is carried out in the usual basic converter or in the Siemens-Martin furnace, the phosphates such as phosphorite or apatite, in the former case, being first calcined and added whilst hot. To obtain a still larger amount of soluble phosphate, phosphate may be heated in a separate Siemens-Martin furnace together with felspar, magnesia, &c., the mixture being then added to the slag.

5071. Stein, G. W. A. March 10.

Cements.—Materials for hydraulic cements are combined with a mixture of slag, sand, and lime before being made into bricks for burning. The addition of these materials prevents the disintegration of the bricks when handled.

5440. Herisse, E. March 15.

Casting confectionery. Relates to an india-rubber substitute for preparing flexible moulds for casting confectionery. Gelatine is soaked in water to render it soft, melted by heat and mixed with glucose which has been boiled until it is of the consistency of boiled sugar. After cooling it is again melted to enable the air to escape, and is poured into a starch, plaster, metal or other mould. When cold the mould is removed, treated with a solution of permanganate of potash, and dried.

5595. Ropes, C. A., and **Sellars, J. C.** March 17.

Cements.—Relates to cement which will resist the action of water, and hence may be used for stopping leaks in ships &c., and for joints for pipes, plates, &c., and for coating metal and other surfaces. The cement is composed of silicate of soda, barium sulphate or carbonate, and Portland or Roman cement. The Portland &c. cement should be mixed with the other materials shortly before use. In some cases the barium compounds and the sodium silicate are first applied, and the cement is then added by dusting, throwing, or blowing, pressure being afterwards applied to incorporate the layers. Existing cement work may be coated with the compound, or silicate of soda may be first applied and the cement dusted on. Ordinary cement may be made impervious to water by the addition of solutions of alum and silicate of soda, alone or in combination. The composition may be used as an adhesive for cementing materials together.

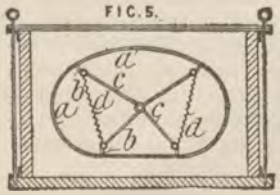
5718. Rons, H., and **West, G. N.** March 19.

Fireproof coverings and compositions.—Textile materials are treated with chemical solutions to render them waterproof and fireproof. The first solution is made by mixing acetate of lead with alum and allowing the precipitate to settle. The second solution consists of a mixture of tungstate of soda and bromide of potassium. After being soaked in the two solutions successively, the material is steamed, dried, and pressed.

6405. Kleine, J. F. March 30.

Casting cements &c. Collapsable cores *a* are inflated or expanded with air or liquid, and may be provided with metal lugs *b*, movable arms *c*, and tension chains *d* to regulate the shape. A tube at the end of the core is provided with a stop cock or other device, and by fitting a safety valve to the tube, hot or glowing masses may be cast by this method. When the mass has hardened sufficiently, the stop devices are opened, and the collapsed cores are withdrawn.

FIG. 5.



6639. Hérissé, E. April 3.

Casting sweatmeats. The object is to make elastic sweetmeats. A composition is prepared by soaking gelatine until it becomes soft and then melting with glycerine. The mixture is then added to a composition formed by boiling liquorice with treacle, moist sugar, or the like. The toys are cast from this composition in suitable moulds. For hollow sweets, after the outside has set, the still liquid portion is poured out, leaving a shell in the mould. The opening is closed by placing over it a slab of partially set composition. The toy is then dipped into a solution of permanganate of potash, and if desired, a whistle may be attached. For solid sweets, a little carbonate of soda is added to the composition and the moulds heated in an oven. The sweets are thus caused to distend under the action of the carbonate.

7855. Krieger, C. H., and **Puff, H. L. A.** April 20.

FIG. 5.

Cements; stucco-work.—Cornices, ornaments, and mouldings are made of a composition, consisting of 100 parts of gypsum, 62 parts of sulphite cellulose, 75 parts of water, 4 parts of carbolic acid, and 4 parts of roots of althea (marsh-mallow) mixed into a paste. Strengthening strips J, K of woven jute and reeds or vegetable stalks S are embedded in the moulding. The rear side of the moulding is saturated with hot glue water, and the outer face is painted.

8468. Keim, A. W. April 28.

Cements or plasters.—A mixture of china-clay, chalk, or calc-spar, water glass, glass powder, and sodium sulphide is burnt, ground, and mixed with barium carbonate and quartz or powdered marble, and worked up with water to form a composition suitable for wall plastering, priming, casting, &c. Suitable colouring-matter may be added to the composition if required.

8475. Kerr, J. L. April 28.

Cements or plasters.—Artificial plaster of Paris is made from the lime residue obtained in the manufacture of ammonium carbonate from ammonium sulphate. The residue, which consists of sulphate of lime, is dried in a retort or on plates until it loses its crystalline form and becomes a powder.

8549. Stone, R. April 30.

Cements.—Treating fire-proof plastic material for cement. Relates to the invention described in Specification No. 16,789, A.D. 1890, and consists in adding pearl-ash, potash, soda, sodium silicate, or similar material to the flux before its admixture with the raw materials. In some cases, raw material containing the above-mentioned substances may be substituted for the manufactured products.

9241. Sellars, J. C., and **Ropes, C. A.** May 10.

Stone, artificial.—Ground spar, flint, sand, fireclay, plaster of Paris, or equivalent material, is mixed with about a quarter of its weight of silicate of soda or potash, or borate of soda. The mixture is moulded into the required articles, which are dried and soaked in a solution of alum, whereby the silicate of soda or potash, or borate of soda, is converted more or less into silicate or borate of alumina. The articles may, if desired, be coated with cement or lime, or be painted, varnished, or enamelled.

9455. Hauers, R. May 12.

Stone &c., preserving.—Relates to a method of preserving the surfaces of buildings, building materials, or articles formed of plaster or similar porous material. The pores of the material are filled with oleate of alumina or analogous base. The oleate of alumina may be dissolved in a suitable solvent, such as benzene, and then applied to the surface, or the surface may be treated separately with solutions of potassic oleate in alcohol and of acetate of alumina, and the oleate of alumina be thus formed within the pores of the material being treated.

10,086. Hamilton, J. J., [*Aguilar, A. de*]. May 24.

Stone, artificial.—Lithographic stone is formed of finely ground pumice-stone mixed with a suitable binding agent, such as glue and water.

10,424. Johnson, P. F. May 29.

Refractory substances.—Relates to the preparation of plumbago for the manufacture of crucibles &c., and consists in combining it with steatite and alum or other aluminium compound. Finely powdered plumbago is added to a saturated solution of the alum &c. in a heated vat, and the steatite is afterwards added. The water is evaporated off, the composition is mixed and ground and compressed or moulded, as required.

10,607. Brasseur, J. P., and **Lambert, N.** May 31.

Cements; slags, treatment of.—To dispense with the usual drying in the manufacture of cement from slag, the moist slag is mixed with burnt lime which takes up the moisture. The slag is run direct from the furnace into water, and allowed to disintegrate in the air before admixture with lime.

11,788. Blyth, C. E. June 18.

FIG. 3.

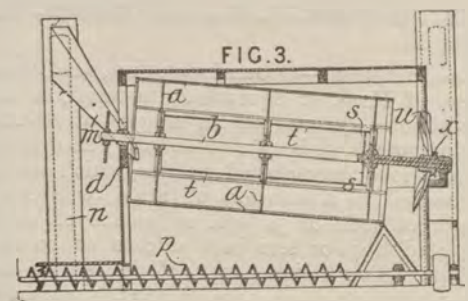
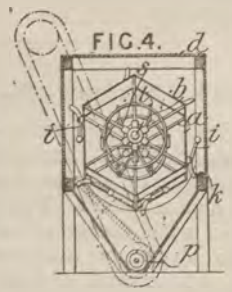


FIG. 4.



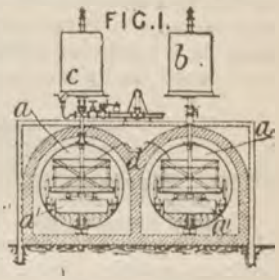
Cements. — An air cooling arrangement is fitted to a sifting and separating apparatus to enable hot materials to be treated. The material is fed into the sifting reel *a* by an elevator *n* and spout *m*, the sifted material being removed by the conveyer *p*. When hot materials are being treated, a blast of cold air is passed through the hollow shaft *b* and along radial arms *s* into the perforated longitudinal pipes *t*.

12,350. Brush, W. June 26.

Cements.—Relates to the utilization of precipitated sewage matters for the manufacture of cement. The mud (containing phosphate of lime) precipitated from sewage waters by the addition of caustic lime, and is calcined so as to destroy the organic matter and produce an orthophosphate of lime suitable for cement.

12,811. Pfeiffer, J. July 2.

FIG. 1.



Stone, artificial.—In the manufacture of an artificial stone, a mixture of quartz, sand, or any other silicious stone with lime is placed upon the frames of wagons *d*, which are run into cylindrical chambers *a*, communicating with water cylinders *b* and cylinders *c* containing compressed carbonic acid. Lime is placed in trays a^1 beneath the wagons and, after the wagons are in position, the cylinders are closed, and the lime in trays a^1 is slaked by water from *b*; after a time, carbonic acid is introduced from *c* and the stone blocks are finally removed. The slaked lime in the trays is used for mixing with the silicious materials for the next charge.

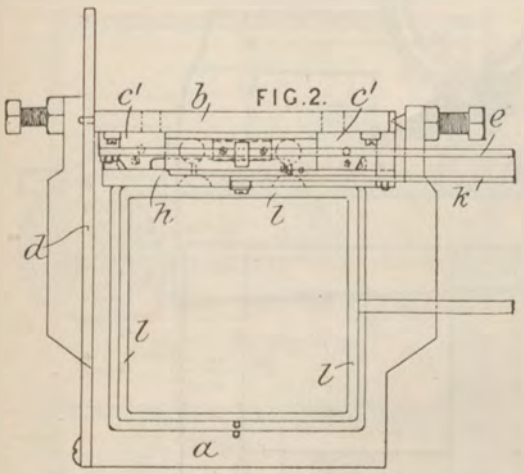
13,198. Lester, J. H., and **Thomlinson, F. E.** July 7.

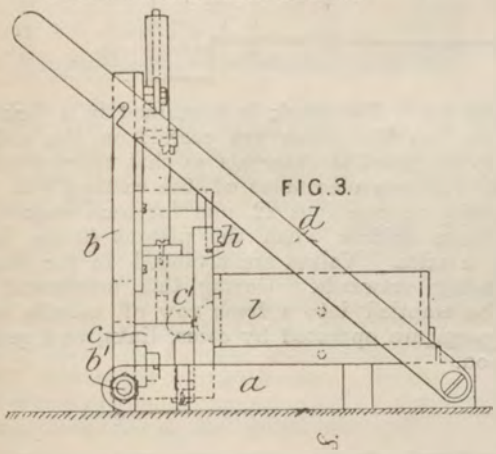
Cements or plasters.—Relates to the treatment of alkaline waste from ammonia manufactories to produce "boiled plaster of Paris," "mineral," or "terra alba," or "pearl hardening mineral" for stiffening, weighting, or whitening textile fabrics and paper. The waste material is mixed with water to form a cream, strained, and mixed with sulphuric acid, excess of acid being added if it is desired to removed iron oxide. The sulphate of lime formed is separated by filtration or decantation, and, if necessary, dried. For producing boiled plaster, the sulphate is dried on a plate fitted with stirring apparatus, and heated to a temperature not exceeding 300° F.

13,797. Slaytor, J. July 17.

Casting, glass &c. balls. Stopper balls, or other balls or similar articles of glass or the like, are cast in the mould shown in plan in Fig. 2, and in side elevation in Fig. 3. The receptacle *l* contains the molten glass, which passes through an opening in its side and through cup shaped openings in the plate *h* into the moulds. The mould consists of a fixed part *c* and a sliding part, c^1 both supported by the frame *b*, pivoted at b^1 to the base plate *a*. The sliding part of the mould is guided

by pins and can be lifted for the purpose of removing the balls when cast by means of the lever *e*. The plate *h*, sliding on the face of the receptacle *l*, is raised by the lever *k* after the mould has been





filled, and cuts off the "runner" close to the surface of the ball. The frame *b* is then released by lifting the bar *d*, and is turned into the horizontal position, the balls escaping through an opening in the frame when the parts of the mould are separated by the lever *e*.

14,846. Mack, L. Aug. 2.

Cements.—Schist or bituminous marl is powdered and mixed with lime or calcareous marl. The mixture is made into balls or bricks, after the addition of tar or other binding material, which are dried and calcined. The furnaces may be arranged so that the hydrocarbons given off can be utilized for driving crushing machinery &c., and chloride of sodium or potassium and water may be introduced into the furnaces. The chloride in presence of the incandescent schist or marl, forms a sodium or potassium oxide which combines with the silicic acid, hydrochloric acid being given off and collected.

14,934. Muirhead, A., and **Hackford, G.** Aug. 3.

Refractory substances.—A refractory artificial stone or firebrick composition is made in the following way:—Powdered sand, flint, or other form of silica is rendered fine and crystalline by successive firings after admixture with silicate of soda. It is then mixed with a solution of silicate of soda or potash, and a suitable hydrated silicate of alumina, such as china clay or kaolin, pumice stone, or fullers' earth, so as to form a plastic mass of the requisite consistency for moulding. On firing a refractory mass is obtained. Mica or other double silicate of alumina may sometimes be mixed with the kaolin.

15,095. Jost, C. Aug. 7.

Asphalts.—Relates to a composition for the production of paving blocks or slabs, conduits for electric cables, and the like. Petroleum residue is heated to 80° C., at which temperature finely powdered graphite is intimately mixed with it, and afterwards finely powdered slate, stirring being continued until a dry homogeneous sandy compound results. Trinidad asphalt is liquefied by heat and mixed with the above compound, a substance resembling caoutchouc being obtained; and with this asphalt powder is intimately mixed. The resulting composition, after partial cooling, is placed in moulds of the required shape, and subjected to a pressure of about 120 kilos per square centimetre.

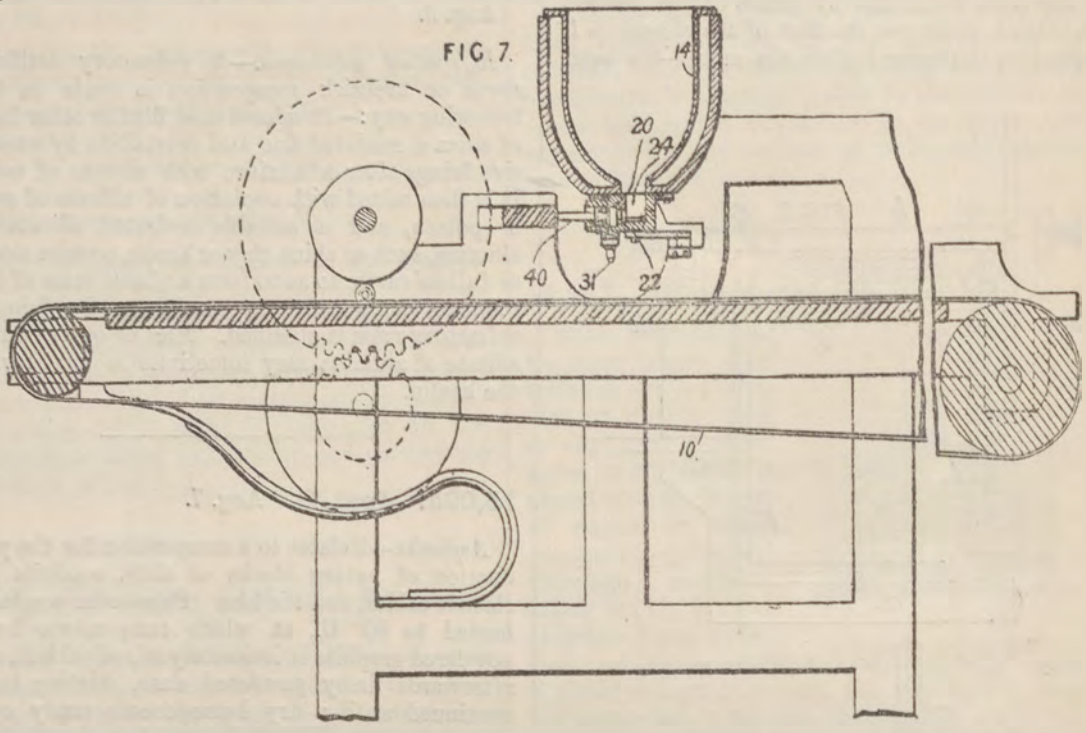
15,589. Jung, F. H. Aug. 16.

Cements; casting slabs. Plaster sheets for ceilings and partition walls are made of mixtures of water, lime, tan, shavings, sawdust, ashes, kiln dust, hair, plaster of Paris, coco nut fibre, and leather in suitable proportions. The mixture is run on to an india-rubber sheet on a table surrounded by iron bars, and is levelled by means of a roller. After drying the sheet for two or three weeks, it is ready for use.

15,755. Elliott, J. Aug. 18.

Cements or plasters; stone, artificial.—Relates to a composition for repairing stone, and refacing cement floors, steps, &c., and making artificial stone. Natural stones, such as Bath, Portland, Yorkshire, and Kentish rag, and chalk-flints or pebbles, are ground, dried, and mixed with Portland cement, oxide of iron and yellow ochre, and sometimes mineral chrome-yellow. The colouring matters are added in sufficient quantity to give the required tint. The composition is mixed with water.

16,485. Holmes, D. M. Aug. 29.



Casting confectionery. Machine for making fondants &c. The stock is contained in a jacketed vessel 14 and is expressed through nozzles 31 into the moulds, which are carried on the endless belt 10. The table supporting the band is arranged to be raised at intervals so that there shall be only a slight drop from the nozzles to the moulds at the commencement of the casting. At the bottom of the pot is a detachable box 20 having a series of openings 22, one for each nozzle. A plate 24 moving longitudinally is adapted to close these orifices when the pistons 40 are being pushed in, in order to express the stock through the nozzles. Valves are arranged in the nozzles to prevent ingress of air when the pistons are moving outwards. During this movement, the chambers above the nozzles are again filled, ready to be emptied into a fresh row of moulds when moved into position by the band 10. The moving parts are operated by cams, links, and gearing timed to give the movements in the required succession.

17,208. Lenders, F. H., [*Bertin, C.*]. Sept. 10.

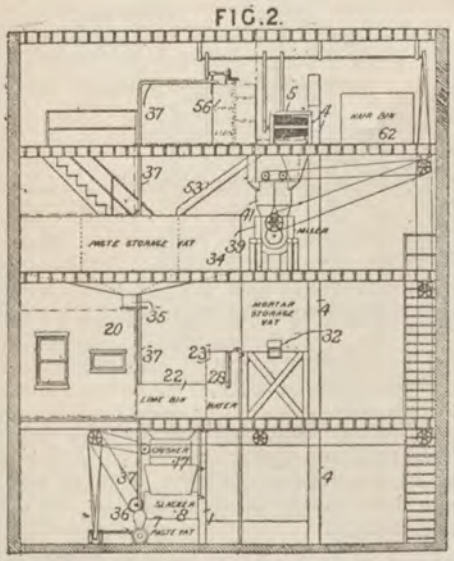
Cements or plasters; stone, artificial; refractory substances &c.—Relates to a composition or plaster which, after being mixed with cold water, will set with a smooth and polished surface. The basis of the composition consists of a hydrate of oxychloride of magnesia formed by mixing calcined magnesia with a solution of magnesium chloride. Calcined dolomite, magnesite, or other magnesium rock, and a little aluminium or potassium sulphate, or sodium or potassium chloride, may be added to the solution. Sand, powdered glass, white lead, barium sulphate, earthy silicates, zinc oxide, calcium oxide, magnesium carbonate, colours or colouring matters, &c. may be added to the composition. The composition may be employed to replace marble or artificial stone, to form blocks for sculpture, imitation alabaster, crucible and refractory bricks, plasters, cements, stucco-work, mouldings, &c. It may also be used for coatings applied with the brush or trowel, and in the manufacture of tiles, mosaics, enamels, &c.

17,597. Lake, H. H., [*Moores, F. L.*]. Sept. 15.

Cements or mortars.—The invention is described with reference to a building with four floors, the plant being arranged for making mortar. The ground floor 20 has an office in front, on each side and in the rear of which is a passage for carts for delivering and collecting materials. In the basement is a sand-bin 1 fed from a bin on the floor above and connected with an elevator 4 for delivering the sand to the screen 5 on the top floor. The lime is fed from a bin 22 on the ground floor to a pair of crushing rollers in the basement, and thence passes by shoots 17 to a pair of hoppers, fitted with water sprays and valves, which deliver it to a slacking apparatus 8. This slacker consists of two closed cylinders fitted with a longitudinal series of curved mixing blades. The slacked lime is fed into a paste vat 7, from which it is raised by a pump 36 through a pipe 37 to a paste storage vat 34 on the second floor, or to an agitator 56 on the top floor. On the ground floor is placed a water tank 23 for supplying water in measured quantities by means of a gauge 28. A weighing platform is also arranged on the ground floor for use when

mortar &c. is sold by weight. The mixing apparatus 39 is arranged on the second floor, and consists of a horizontal cylinder with a central shaft carrying helical blades. The materials are fed in

FIG.2.



through vertical feeders 41. Each of these feeders consists of a cylinder fitted with a central shaft with a helical blade which rotates so as to allow the material to drop by gravity. The gravel screened from the sand is delivered by a shoot 53 into a bin. On the upper floor is placed the same screen 5, above the feeder of the mixing apparatus. The agitator 56 receives the paste from the slacker. This agitator is fitted with a shaft carrying stirrers, and delivers the paste to the feeder 41. A hair bin 62 fitted with a picker delivers hair through a spout into either of the feeders. Spouts 35, 32, and others not shown, are arranged for the delivery of the paste, mortar, and gravel into carts.

18,519. Pfleger, J. Sept. 29.

Refractory substances, for use in cyanide reaction chambers, consist of magnesia, with or without a little clay or other non-injurious material.

18,899. Rowney, T. Oct. 5.

Cements.—Relates to the manufacture of stopping and cement for dental and other purposes. Any diatomaceous deposit, or any animal or vegetable matter containing silica, is calcined, boiled in nitric acid, washed, and dried. The "biosilica" thus obtained is mixed with zinc oxide (4 or 5 parts), and this composition is made into a paste, at the time of using, with ferro-phosphate of alumina. Or the "biosilica" or "biosilicated zinc oxide" may be combined with phosphate of lime, anhydrous lime, lime hydrate, gypsum, and alumina, either separately or together, so as to form cements for other purposes.

19,437. Tortora, E. Oct. 12.

Stone, preserving.—Relates to a method of treating articles of terra-cotta, wood, clay, gypsum, limestone, and other natural or artificial stones with a hydrocarbon to remove all traces of moisture or gases from the interstices of the same with the object of preserving them from atmospheric and other influences. The articles are placed, for a sufficient length of time, in a bath of a suitable hydrocarbon heated to over 100° C., and then allowed to cool down.

19,580. Williams, C. Oct. 15.

Cements.—Relates to compositions for making slabs, plates, sheets, &c. for ceilings, roofs, walls, floors, partitions for ships, panels, refrigerating chambers, &c.; or the mixture may be used as a cement, paint, or wash. Minerals containing iron and magnesium silicates, such as asbestos, chrysolite, talc, steatite, actinolite, picrolite, antholite, metaxite, crocidolite, arfvedsonite, and glauconite are pulverized, mixed, and saturated with a solution of barium chloride or magnesium chloride, or a mixture of both solutions. The plastic fibrous mixture is pressed, rolled, or moulded into the required form.

19,647. Owen, W. Oct. 16.

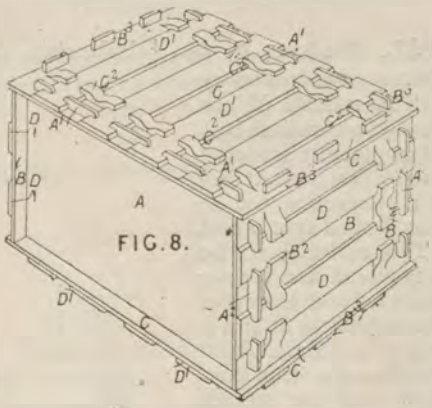


FIG.8.

Stone, artificial.—Relates to boxes for forming blocks of artificial stone, the boxes being subjected to external pressure of water or compressed air instead of steam pressure as usual. In the arrangement shown in Fig. 8, the sides A are formed with recessed projections A^1, A^2, which pass through slots in the top C, bottom, and ends B. The ends are formed with plain projections B^3, which pass through the top and bottom. The top, bottom, and end pieces carry overhanging lugs C^2, B^2, and locking bars D, D^1 are passed under the projections A^1, A^2 and the lugs B^2, C^2 so as to securely hold the parts of the box together. The sand and lime for forming the artificial stone are, of course, placed in the box before the top is put in position. In a modification, the projections are made L-shaped, and the parts are locked by a sliding movement,

the locking bars being dispensed with. The arrangement of the projections &c. may be varied in different ways.

20,155. McQuone, J. O. Oct. 22.

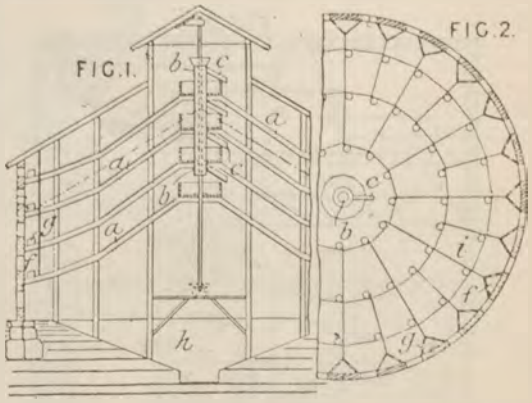
Concretes.—Relates to an elastic composition or concrete for sporting tracks, footpaths, garden walks, and the like. Equal quantities of red shale, engine or blue ashes, gravel or granite chips, flue dust, and ground blue lias lime are mixed with water to form a concrete, which is laid preferably upon a bed of stone. Slight variations in the composition may be made according to locality without altering the result.

20,535. Wittmann, F. Oct. 26. *Drawings to Specification.*

Cements.—A mixture of coal ashes or slag, cream of lime, cement and water is moulded into slabs, floors, platforms, and partition walls, with or without iron stiffening or strengthening rods embedded therein.

20,781. Fahnehjelm, O. Oct. 30.

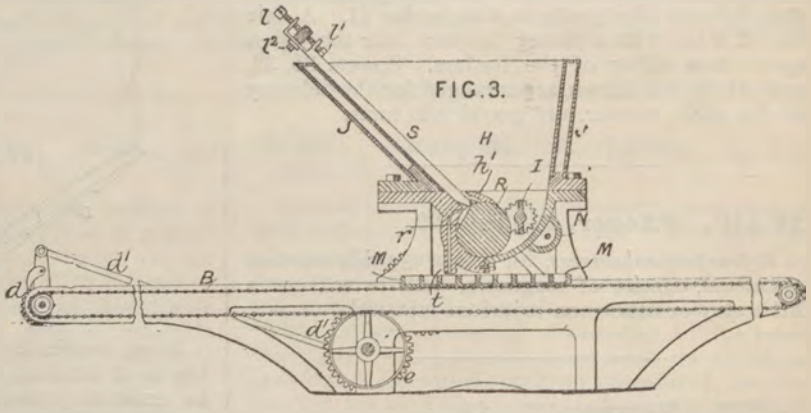
Cements.—Storing and mixing pulverulent substances, such as meal and cement. A circular chamber is fitted with a number of conical floors *a*, upon which the powder is fed by a central rotating tube *b*, having at each floor a branch *c*, which may be opened or closed as desired. The inclination



of the floors is such that the material distributes itself in uniform layers thereon, so that a sample taken of the thickness of the layer at any point gives a fair sample of the whole of the contents of the chamber. The floors are divided by radial partitions *i*, at the outer ends of which are discharge channels *f* provided with doors *g*, through which the contents can be discharged into sacks or on to the floor *h* for further mixing. The chamber may be polygonal or semicircular.

20,947. Baker, J. A., [*Grebenstein, C. H.*]. Nov. 1.

Casting confectionery &c. The moulds M are carried on an endless belt B intermittently actuated through a pawl and ratchet *d* by a connecting rod d^1 driven from a spur wheel *e*. The material to be cast is placed in a hopper H provided with hot water or steam jackets J, and is delivered in definite quantities through drop conduits *t* into the moulds by means of a rotating cylinder R formed with chambers *r*. These chambers are of any required size, and are arranged transversely in series, or in some cases may unite to form a single chamber. The cylinders are driven through spur pinions from the pinion *e*. The material is forced into the conduits by a scraper or scrapers S, which are reciprocated by a cam so as to enter the chamber or chambers as the cylinder revolves. The scrapers are adjustable by screws *l*, l^1, l^2. A rotary agitator I is fitted in the hopper near to an auxiliary heating jacket N. The cylinder is sometimes fitted with a hood h^1, formed with openings to allow the material to circulate through it. The various parts of the apparatus are arranged to work in proper sequences.



21,477. Preston, R., and **Thornley, T.** Nov. 8.

Cements.—The cement consists preferably of 20 parts of asbestos, 10 parts of litharge, and 70 parts of crushed slag. The crushed slag, or its equivalent in sand, may be omitted, and a suitable quantity

of sulphate of lime or of barium may be added. The dry ingredients are ground and made into a pasty mass by means of a solution of silicate of soda or potash of a strength of 100°–120° Twaddell. The cement is used for lining paper-pulp digesters and other metallic vessels, and is applied in two or more coats like builders' plaster, or it may be used for embedding in position lining bricks or tiles &c., and for pointing and making joints.

21,734. Weckwarth, E., and **Hoeft, M.** Nov. 10.

Cements or plasters; stone, artificial &c.—Relates to the manufacture of dry cements for making mortars suitable for the production of artificial stone. Albuminous matters such as albumen, casein, glue, blood, cheese, &c., are mixed with cement materials in a dry state, or the moist mixture is afterwards brought to a dry state. Hardening salts and colouring matters may also be added. As an example, egg albumen, dried by heating at 40° C., is added to crystallized potash-alum and borax, the mixture being powdered and mixed with a large proportion of plaster of Paris and slaked lime. The albumen may be dissolved in water, and added to solutions of potash containing lime in suspension, potash-alum, and borax, the whole being dried and finally mixed with plaster of Paris. The compositions are especially applicable for plaster and stucco-work, which may be polished by rubbing with the hand, a cloth, or asbestos, with or without powdered talc. The compositions are also adapted for the production of casts.

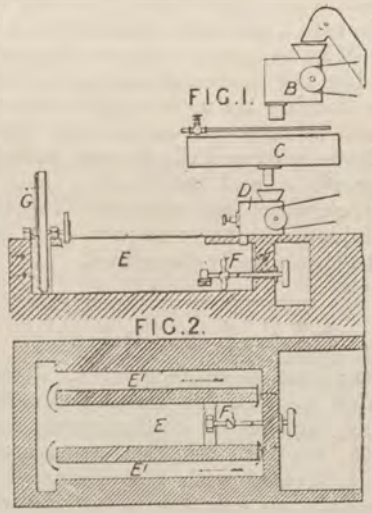
21,735. Weckwarth, E., and **Hoeft, M.** Nov. 10.

Cements or plasters; stone, artificial &c.—Relates to the manufacture of cement suitable for stucco work, artificial stone, &c., and consists in the addition of albumen to cement materials. Egg albumen, serum, or casein is dissolved in water, and mixed with a solution of potash; lime paste is then stirred in, and solutions of potash-alum and borax are added. To prepare for use, the above composition is mixed with plaster of Paris. Sulphate of potash or soda may be used in place of the alum &c., and colouring matters may be added if required. The stone made with this composition may be polished by rubbing with the hand, cloth, asbestos, &c., with or without powdered talc.

22,020. Tolhurst, A. Nov. 14.

Stone, preserving.—Relates to a composition for applying to the surface of stone and the like to preserve it. The composition consists of a mixture of equal parts of peroxide of iron, sulphide of zinc, barytes, gold size, boiled oil, and turpentine.

23,123. Campbell-Everden, W. P., and **Prime, E.** Nov. 28.

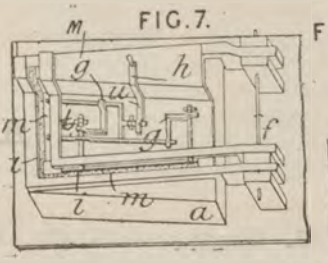


Slurry or slip, treating.—The clay is elevated to a pair of breaking rolls B, whence it drops into a tank C containing water. The soft pulpy mass then passes through a grinding mill D to a mixing chamber E, from which it is removed for drying, burning, and grinding by a wheel G.

24,092. Meyer, E. Dec. 11.

Slags, treatment of.—To facilitate the disintegration of Thomas slag, a small quantity of alkaline carbonate or water-glass (sodium silicate) is added thereto whilst in a molten state. To increase the effect, reducing agents such as coke powder, white iron pyrites, sulphides, &c. are also added.

24,648. Hoopmann, H. Dec. 18.



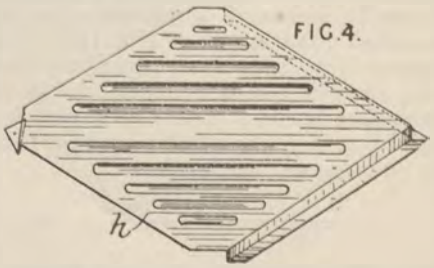
Casting cement roofing tiles. The tile shown in Fig. 5 is formed with a side rib *a*, an undercut upper rib a^1 which provides an air space to prevent water drifting past the joint, a bottom rib *l*, and a raised overlapping roll or edge *h*. A recess *g* is made in the upper right hand corner to receive and interlock with the left hand recessed corner of the tile above. The tiles are made by ramming cement in a mould *a*, Fig. 7, strickling the upper surface with

a gauge or board, and finally forming the ribs a, a^1 by filling in recesses i in a pivoted cover frame M. Sliding bars m are withdrawn by a lever h, pivoted at u, guide bars t, and bell crank levers g, to enable the cover M to be turned back on the pivot f without injuring the undercut edge a^1. The tile is raised by forcing up a movable bottom of the mould, and is removed on a loose metal plate. Fig. 9 shows a curved tile formed with an undercut upper rib c, and interlocking side ribs and grooves a, a^1, which are cemented together. The tile is moulded with the undercut rib c in a similar manner to that already described.

24,786. Hérissé, E. Dec. 20.

Cements; casting confectionery. Relates to a composition suitable for making moulds or trays for casting articles of confectionery, ornamental mouldings, frames, imitation wood carvings, &c. Sawdust is treated with boiled linseed oil, dried, treated with a hot solution of potassium permanganate, again dried and then mixed with a composition consisting of gelatine or glue, glucose or treacle, glycerine, and chloride of calcium. After moulding, the articles are immersed in a silicate solution, dried, immersed in a solution of manganate of sodium, and, after again drying, treated with a solution of alum. For confectionery moulds, a gelatine or glue composition similar to the one already referred to, to which citric acid may be added, is mixed with boiled linseed oil, precipitated chalk and sawdust.

25,165. Weil, A., and **Prasse, W.** Dec. 27.



Casting cement tiles. A sheet metal plate h, corresponding in shape to the under surface of the tile, is placed in the bottom of the mould, and is ejected with the tile by vertical sliding rods operated by a treadle.

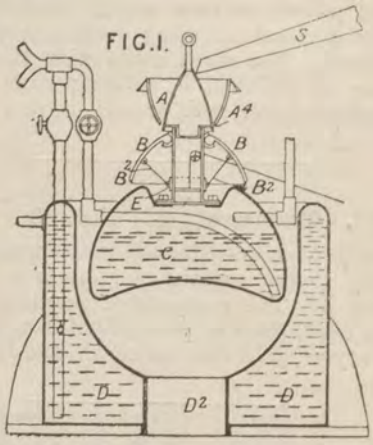
25,356. Stone, R. Dec. 31. *Drawings to Specification.*

Cements.—One to five cwt. of loam, sand, &c. is mixed with each ton of chalk, limestone, marble, gypsum, &c., and the mixture burnt down by a forced blast and ground into powder. When used as a substitute for Portland cement, the loam &c. may amount to from 25 to 45 per cent., or river mud or alumina clay may be added. The cement so prepared may be used for general building purposes, as plaster, mortar, &c. It is also applicable for lime light cylinders or for the body of paint, or may be moulded into bricks, slabs &c.

A.D. 1895.

465. Hydes, T. Jan. 8.

Slags, treatment of.—Slag from the furnace passes down the shoot S to a receiver A, from which through openings A^4 it flows to the deflectors B, the angle of inclination of which may be varied by means of the rods B^2 and sliding collars E. The liquid slag breaks up into globules whose size depends on the angle at which the deflectors are placed, and these globules fall on to the surface of the cooling vessels C, D, where they are chilled, and are finally discharged into trucks or receivers at D^2. The temperature of the water in the cooling vessels may be varied, so that the slag is either chilled rapidly, and so rendered brittle for crushing for cement purposes, or is slowly cooled, and so toughened for use in concretes, road making, &c.



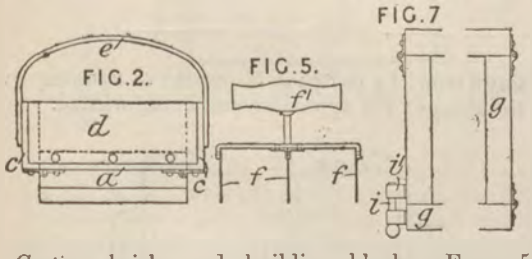
801. Angel, H. R. Jan. 12. *Drawings to Specification.*

Cements.—The cement used in constructing a metallurgical furnace consists of volcanic dust, or fire clay, mixed with oxide of iron, and a solution of silicate of soda.

1457. Sellars, J. C. Jan. 22.

Stone, preserving.—Relates to a composition to be applied to surfaces of metals, stone, and the like as a protective covering. A compound composed of a solution of silicate of soda thickened with ground silica to the consistency of thin paint is first applied to the surface, which is then dried and treated by means of flame jets or the like, so as to leave a porous layer on the surface. A composition consisting of a solution of alum thickened with flour or any other insoluble powder is then applied over the porous layer described above. The surface is again heated, and may then be covered with any suitable paint or the like. In the case of surfaces which are themselves porous, the application of the firstly described composition may be omitted.

1639. Fryer, J. T. Jan. 24.



Casting bricks and building blocks. From 5 to 25 per cent. of ground lime is mixed with clinker, coal ashes, cinders, broken bricks, sand, slag, burnt clay, oolite, shale, broken stone, or any suitable mortar-making débris, and sufficient water is added to make the mixture plastic. For bricks, the material is charged into a mould box shown in Fig. 2, and cut into the required shape and size by metal blades or cutters *f*, Fig. 5, secured to a handle f^1. The sides *c* of the mould are hinged to the bottom *a* and are maintained in a raised position during the moulding operation by metal clips *e*. The end plates *d* are fixed to the bottom by screws or otherwise. Fig. 7 is a plan of an open ended mould for producing building blocks. The sides or walls *g* are hinged together, and are maintained in position by a bolt *i* shot into a socket i^1. The mould may be divided into compartments by sheet metal partitions let into grooves cut in the walls *g*. When the material is sufficiently dry, the bolt is withdrawn, the mould is unfolded, and the blocks are exposed to the action of the atmosphere or heated air.

2688. Young, H. B. Feb. 7.

Hearthstone. — Relates to a composition for applying to steps, window sills, and other surfaces to give them a clean appearance. The composition consists of powdered lime mixed with powdered bath brick, to which may, if desired, be added salt, whiting, barytes, china clay, pipe clay, or similar substance, and any suitable aniline or other colouring matter.

2821. Bachert, M. Feb. 8.

Fireproof coverings or compositions.—The composition used consists of a mixture of phosphate and sulphate of ammonium in solution, to which anhydrous calcium chloride may be added. In the case of wood, it is placed in an exhausted chamber, and the solution is then run in under pressure. Fabrics, curtains, &c. are fireproofed by adding the composition to the starch or other dressing used therefor. The sulphate in solution may also be mixed with tallow, dextrine, and whiting to form a fireproofing composition.

3272. Purcell, M. F. Feb. 14. *Drawings to Specification.*

Cements.—The calcined residue withdrawn from furnaces burning sewage-sludge may be used as a cement.

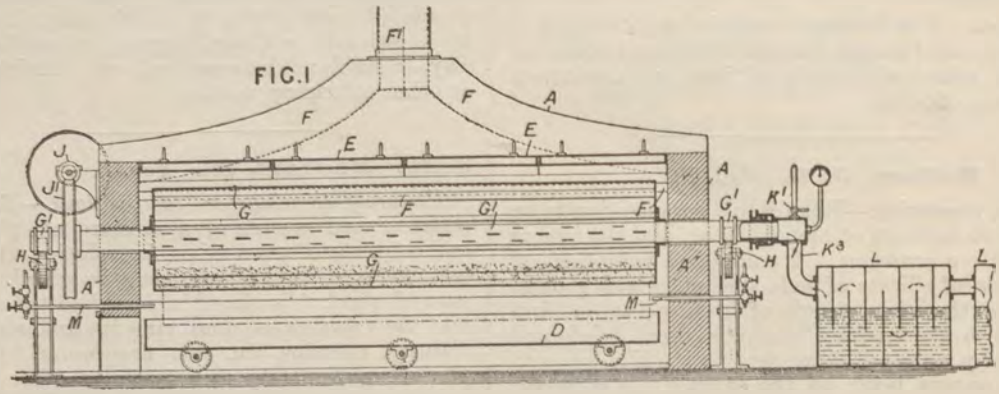
3608. Young, F. Feb. 19.

Refractory substances.—A refractory composition consisting of silica with sufficient alumina and alkali to bind the particles together is obtained by mixing from 50 to 85 per cent. of crushed quartz, sandstone, or sand free from iron, with from 5 to 15 per cent. of a waste product from the manufacture of silicate of soda or alkaline silicate, and from 5 to 15 per cent. of a fire-clay free from iron and other bases. The waste product contains about 40 parts of hydrate of silica, 50 parts of hydrate of alumina, and 2 parts of alkaline silicate. From 2 to 5 per cent. of aluminate of soda may be used instead of the fireclay, or a small quantity of the aluminate of soda may be used instead of the waste product. The materials are ground together with water, and the mixture is moulded into bricks, or used as an artificial fire-clay or ganister for furnaces &c.

4121. Coleman, W. E. Feb. 26.

Casting confectionery. Relates to the form of india-rubber moulds described in Specification No. 13,764, A.D. 1894, but instead of making the moulds as depressions in a solid sheet of rubber, the rubber a^4 is made to more or less exactly follow the outline of the moulds *a* so as to leave intervening air spaces *b* to facilitate cooling. The bottoms of the moulds are sometimes connected by a flexible backing. Openings a^3 may be made in the rubber to allow air circulation. The moulds when filled can be placed on a cooling slab S as shown.

4491. Navarro, J. F. de. March 2.



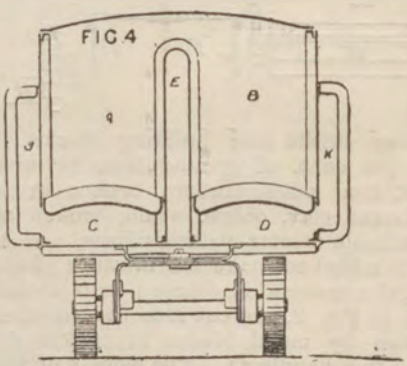
Cements.—Relates to a rotary retort for burning or calcining cement constructed so that the carbonic acid given off may be collected. A retort G carried by a hollow axle G^1 mounted on antifriction bearings H is fitted in a furnace or setting A, provided with flues F, F^1, and is heated by hot gases from a furnace or by liquid fuel injected by pipes M. The retort is driven by a worm and worm wheel J, J^1 and is provided with a longitudinal door for filling and discharging. The cement material is fed into the retort through an opening closed by doors E and the burnt cement is delivered on to a truck D running on rails under the furnace. Moisture &c. first given off escapes through the hollow axle G^1 to the cock K^1, the valve K^3 being closed. When carbonic acid comes off the cock K^1 is closed and the valve K^3 opened, the gas being then drawn by a pump through the washers L and being stored for use. The waste gases may be utilized for heating a second retort.

5254. Imschenetzky, A. March 12.

Fireproof compositions.—Asbestos fibre, with or without lime, chalk, or metallic oxides, is mixed with water to form a paste which is cast in moulds. To make the material waterproof, powdered resin or the residues of coal tar distillation may be added to the paste. After drying, the mass is saturated with silica by soaking in a solution of silicic hydrate or silicic acid, or in a solution of an alkaline silicate, in which case an acid is afterwards used to cause the formation of insoluble silica. Water glass may be employed, and in all cases the saturation process is preferably performed several times. The material may be heated for the purpose of melting the resin and drawing off volatile matter, or to diminish porosity the material may be saturated with boiled oil, varnish, paraffin, &c. The composition may be used for fireproof building materials, fireproof strong rooms, insulating material for electrical apparatus, acid-proof vessels for secondary or primary batteries, &c.

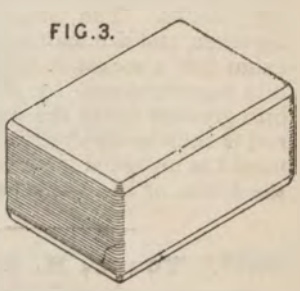
6396. Clayton, J. March 28.

Asphalts.—Boilers for asphalt, pitch, and the like are formed in two sections A and B, as shown in transverse section by Fig. 4, each section having separate heating furnaces C, D communicating with the central partition flue E and jacket flues J, K. The apparatus is provided with the usual doors and taps and is mounted on wheels to render it portable, while the design provides that either section can be heated independently, and should one of the sections boil over, the superfluous material flows over the partition E instead of running over the sides of the apparatus and being wasted.



7471. Terrey, L. April 11.

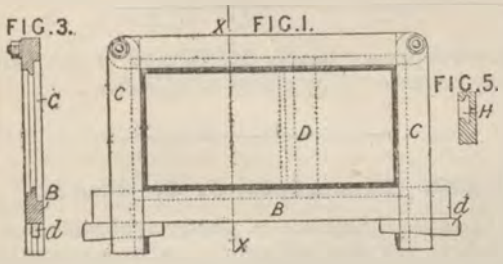
Hearthstone.—Blocks or tablets for use in cleaning hearths are made with rounded or bevelled corners or edges as shown in the Figure; the materials used being the dust and cement usually employed for the purpose, pressed or moulded into the required shape.



7542. Jenkins, G. T. April 13.

Stone, artificial. — A stone for building and paving purposes is made from Kentish rag, Portland stone, and Portland cement. Fig. 1 shows a paving stone without its exterior finish, the part *a* being coarse, and the part *b* finer grained. The top part *c* of the stone is finer grained than *b*, due to the use of a larger proportion of cement. The stone is coloured with red oxide. Such stone as is above described can be moulded into any shape, such as for copings, sills, steps, pier caps, ridging sinks, gravestones, finials, vases, and other articles.

8894. Gries, A. May 4.



Casting cements &c. Relates to moulds for casting plates or panels of cement, gypsum, &c. Fig. 1 is a plan view of the mould frame, Fig. 3 a section through the line X X, and Fig. 5 a section through the edges of two plates previously formed in the mould, placed edge to edge, and held together by cement filling the space H. The mould frame is opened for the purpose of withdrawing the plate or panel after casting, by removing the wedges *d* and the side B which they hold in position, and then turning the pivoted sides C outwards. D is a sliding crosspiece used for the purpose of casting smaller plates or panels. The interior edges of the frame are shaped as shown in Fig. 3, so that the edges of the plates will have corresponding grooves. Two such plates placed together, as in Fig. 5, form a joint which is filled with cement to unite the plates.

9024. Wetherill, J. May 7.

Asphalts.—Relates to an asphalt composition for filling the joints of setts or paving, the materials used being pitch, creasote oil, and sieved slaked lime. Creasote oil is added to melted pitch in proportion somewhat less than that required to make it tough when cold, the quantity being about 20 gallons to the ton. About 4 cwt. of slaked lime per ton is now mixed with the boiling pitch, and the composition is ready for use.

9210. Jörgensen, S. May 9.

Cements; slags, treatment of. — Relates to the manufacture of slag cements. The cement is first prepared in the usual way by mixing finely ground slag with slaked burnt lime, and to this is added from 10 to 30 per cent. of burnt slag cement. This burnt cement is obtained by mixing some of the ordinary cement with water, allowing it to set, burning or roasting it in a kiln, and then grinding it.

9283. Metcalfe, W. H., and **Wrightson, F. B.** May 10.

Stone, artificial.—Artificial stone for slabs and tiles, window sills, mantel-pieces, &c. is prepared from pottery waste or débris. The débris is crushed to a suitable size, and is mixed with Portland or other suitable cement and with a small quantity of siftings or dust. The artificial stone so prepared is moulded under pressure, and the surface may be ground or polished. The broken pottery may be selected of suitable colours, or colouring matters may be added to the composition.

9861. Hafter, A. May 18.

Cements.—The binding qualities of clay for use in cementing together light substances, such as vegetable and textile fibres, peat, sawdust, cork shavings, and the like, are improved by treating the clay with sufficient sulphuric acid to convert half of it into soluble sulphates. In the case of poor clay, soluble sulphates are also added to make up this proportion. The clay is further improved by adding to it 10 per cent. of an amylaceous substance.

10,207. Bird, S. G., and **Wright, J.** May 23.

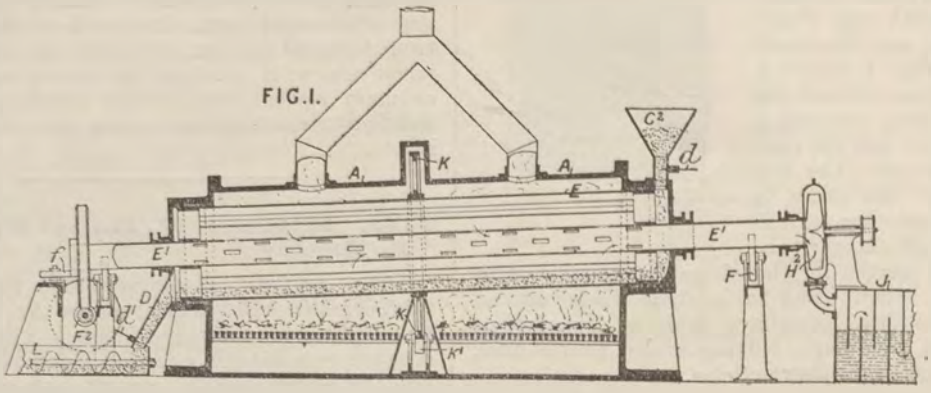
Cements; slags, treatment of.—Slag is ground with a small proportion of sulphate of iron to form a cement applicable for all the purposes for which ordinary cement is employed.

10,744. Navarro, J. F. de. May 30.

Cements.—In this apparatus cement-making or other carbonic acid containing materials are heated for the purpose of drying them, and driving off and collecting the carbonic acid gas they contain ; the operation being preliminary to the subsequent calcining. Ores may also be desulphurized in the apparatus. The pulverized material is fed from the hopper C^3 into the rotating cylinder E, which passes through the furnace shell A. Ledges or ribs on the interior of the cylinder ensure the mixing and scattering of the materials before they finally reach the spout D. The cylinder is driven by worm and wheel F^2, and may be supported in the middle by a wheel K running on antifriction rollers K^1. The axle tube E^1 of the cylinder runs on

antifriction rollers F, and the end thrust of the inclined cylinder is taken by the roller *f*. A fan or pump H^2 draws the carbonic acid from the cylinder through the perforated axle tube E^1, and forces it through the purifier J to the storage holder. A worm conveyor L carries the dried materials on to the

FIG. I.



calcining furnace or elsewhere. The valves *d*, d^1 so regulate the passage of the materials that no air is admitted to the cylinder.

11,267. Slark, W. June 8.

Cements.—Cement is prepared by a process in which the ordinary methods of preparing Portland and Roman cements are combined. A slurry of clay and chalk is prepared containing an amount of chalk in excess of that usually employed, and after drying is burnt in kilns with from 30 per cent. to 100 per cent. of Roman cement stone. The resulting clinker is ground to form cement.

12,242. Arndt, E. M., and **Bruyn, G. de.** June 24.

Stone, artificial; cements; plasters. — Mixed gypsum and lime are treated with an aqueous solution of sulphurous acid, or with a solution of aluminium or other sulphite. Cinders, slag, sand, infusorial earth, &c. may be added, as well as silicic and sulphuric acid. The proportions may be varied according as a hard artificial stone or a plaster or stucco are required. The chemical actions which take place are assisted by treating the mass, after it has hardened or set, with hot water. The artificial stone may be formed into slabs, and may be used in building walls, arches, ceilings, &c.

12,332. Cannot, G. A. June 25. *Drawings to Specification.*

Stone, artificial; fireproof coverings and compositions.—Peat is pulverized, sifted, mixed with resin, tar, varnish, or other agglutinating materials, lime, cement, sand, flour, and meal, colouring matters, &c., compressed in moulds, and baked to form artificial marble or stone for slabs, tiles, bricks, clocks, chimney pieces, vases, &c. Bricks &c. so prepared may be rendered fireproof by dipping them in a solution of peat powder, caustic soda, and alum, or they may be covered with an asbestos paste. Seams &c. formed in the moulds may be removed by emery wheels &c.

12,382. Bloomfield, J. C. June 26.

Cements or plasters.—A plaster applicable as a top finishing wash for ceilings &c., or for covering brick walls, consists of hydraulic lime, sulphate of lime, and ground shale, together with suitable colouring matters and sufficient water to make it of a creamy consistency. Being impervious to germ and atmospheric influences, it is specially adapted as a sanitary wash for the walls and ceilings of barracks, churches, hospitals, &c.

13,050. Tucker, A. E., and **Harbord, F. W.** July 6.

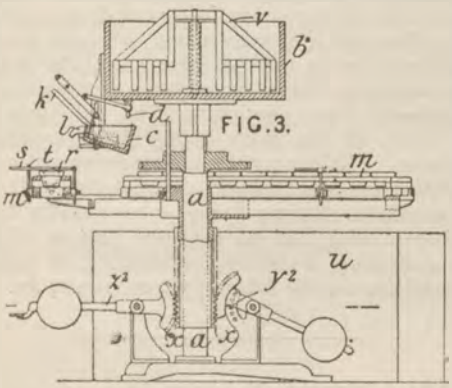
Refractory substances.—The hearths of heating furnaces for iron and steel are composed of a mixture of basic and ordinary blast-furnace slags, to which lime or dolomite may be added. Preferably, lumps of the compound are placed on the bed of the furnace and the interstices filled with ground slag, or a mixture of such and powdered limestone or dolomite. The whole is then fused into a compact mass.

13,073. Allison, C. A., [*Marquetelle Mosaic Co.*]. July 6.

Fireproof compositions.—Relates to a process of preparing a fireproof material to be used in buildings &c. as a substitute for wood, particularly for ornamental work. A mixture is made of wood pulp, fibrous asbestos, and colouring material. To this is added a composition in solution, containing

bichromated gelatine, silicate of soda, and tungstate of soda, and the whole is poured into a receiver with perforations to allow moisture to escape, and sprinkled with carbonate of magnesia. The composition is then pressed into moulds by hydraulic pressure, and afterwards cut to shape and sandpapered. Finally the blocks may be grained to imitate wood.

13,104. Illingworth, W. July 6.

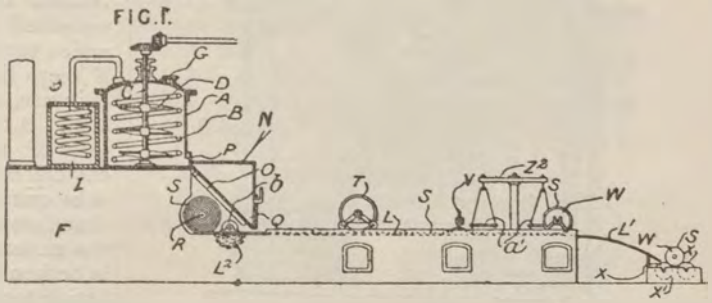


Casting pottery. Relates to improvements in the class of machines described in Specification No. 10,887, A.D. 1889. The liquid clay or slip is contained in the cistern *b*, and is supplied by cocks *d* to a partition trough *c*. The moulds are carried in three racks *m* mounted on a rotary frame about a central shaft *a*. The racks are mounted on trunnions, and can be inverted to empty out superfluous slip. The trough *c* having been filled, one series of moulds is brought into position beneath it, and by means of the lever *k* the trough is brought forward and tilted to empty the slip through spouts *l* into the moulds. The second series of moulds is then filled, and when a sufficient thickness of slip has adhered to the moulds in the first rack, it is inverted, and the superfluous material is drained off into the trough *u*. To retain the moulds in the rack when inverted, a series of arms *r* are provided, held down by the lever *s* and spring clip *t*. Stirrers *v* in the reservoir *b* are driven by toothed gearing when the frame carrying the racks is rotated. By means of racks x^1, treadle lever z^2, and pin y^3, the frame carrying the racks may be raised or lowered and fixed at any suitable height.

13,154. Church, M. B. July 8.

Cements.—Relates to a dry powdered material of the kind described in Specification No. 1620, A.D. 1882, which, when mixed with water, forms an adhesive compound suitable for coating walls and other surfaces, for relief decoration, modelling, &c., and for the production of casts or mouldings. In order to permit of the substitution of cold for hot water when preparing the material for use, animal glue, either in a powdered or liquid form, is mixed with hot calcined gypsum or other suitable base, water being sometimes applied. After the evaporation of the moisture, the material is allowed to cool, and is then ground to a fine powder. Sulphate of zinc and colouring matter may be added.

13,761. Badgley, E. F., Green, A. R., and **Crockett, A.** July 18.



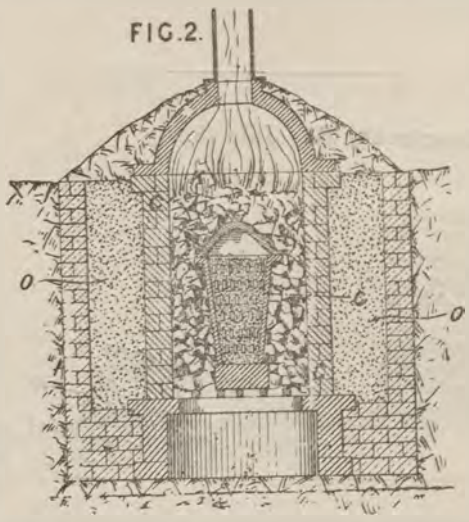
Asphalts.—Asphalt, maltha, residuum of black petroleum, or other bituminous compound is fed through an opening G into a mixing chamber A, which is provided with rotary blades D, and is heated by steam or hot air pipes B and a furnace F underneath. The petroleum fats and other oily matters are first driven off and condensed in a chamber I, and hot dry silicates or other like substances may afterwards be introduced into the mixing chambers by a heated rotary drum. A stream or sheet of the mixed material is allowed to run on to a travelling sheet S of perforated paper, canvas, open-mesh cloth, wire cloth, or sheet metal, and the two sheets are combined by passing them under a heated roller T. Doors P, Q regulate the supply of bituminous material, and hot pipes O keep the feeding chamber N at a temperature a little higher than that of the material. The fabric S is mounted on a reel R heated by the furnace F, and first passes through a thin solution of the bituminous substance in a basin L^2 beneath a roller *b*. The compound sheet is cut into the required lengths by a hot rotary cutter V adapted to work in a grooved block or plate slipped under the sheet. In making pipes, the compound sheet is wound on a core W, preferably made of or coated with nickel, and the core with the pipe on it is transferred along a plate L^1 to chilling rollers X located in a water trough X^1.

14,187. Hirsch, A. July 25.

Stone, artificial.—Fragments of glass, porcelain or ceramic materials, volcanic rocks such as basalt, trachyte, &c., are broken up and packed in an iron mould lined with sand, talc, or other refractory material. The mould is then placed in a glass furnace and the materials partially fused or vitrefied, to form a conglomerate slab, brick, or block of varigated appearance and colour. The bottom of the mould may be lined with pieces of coloured glass, or the top surface may be polished by completely fusing the materials and passing a roller or wooden rabble over them. The mould is placed in an annealing furnace and slowly cooled, and the block may then be cut, polished, or enamelled. Imitations of marble, granite, &c. may be obtained by suitable arrangements of the coloured fragments or mosaic effects may be obtained by using thin metal partitions ; which are removed when the compartments formed by them have been filled with suitably coloured materials. Rods of lead may be used to separate the tesseræ, and may be left to fuse in the mass. The lower surface of the bricks may be made rough for attachment to cement &c. by using large fragments at the bottom of the mould, or a smooth surface may be obtained by using small fragments and a flux such as fluor spar. The bricks may be stamped or embossed while still plastic.

15,103. Pellett, E. A. Aug. 10.

FIG.2.



Refractory substances.—Refractory material specially designed for use in arc lamps, in which the carbon pencils bear against a block of material whilst burning. Carbonate of magnesia, purified by roasting, is pulverized, and the articles are moulded from it under great pressure, and baked with powdered charcoal in the crucible G. The blocks C are of compressed carbonate of magnesia, and are surrounded with carbon or charcoal dust O. Broken gas carbon is used for fuel. The furnace is constructed in a pit and is covered with earth, the articles being allowed to cool slowly when the fire has died out.

15,167. Voltz, C. Aug. 12.

Cements.—Mortar and cements are strengthened by an admixture of alga or esparto grass, and used for the manufacture of building blocks, or as wall and ceiling coverings.

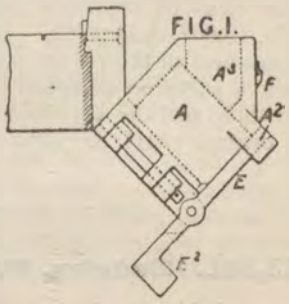
15,283. Lester, J. H., and **Thomlinson, T. E.** Aug. 14.

Cements or plasters.—Waste products from ammonia manufacture containing sulphate, carbonate and hydrate of lime are treated, when of a creamy consistency, with hydrochloric acid, the sulphate removed in a filter press, and the solution of chloride of lime precipitated by sulphuric acid, the whole of the lime being thus recovered as sulphate. The process is an improvement on that described in Specification No. 13,198, A.D. 1894, the sulphate of lime being subsequently treated as therein described to produce plaster of Paris, or a stiffening, weighting, whitening, or polishing material for textile fabrics, yarns, paper, &c.

15,561. Brand, C. Aug. 19.

Casting slag bricks. Slag is cast in the form of bricks for paving purposes &c. in the mould shown in Fig. 1. The mould is attached to the edge of a turntable C supporting many moulds, and consists of two hinged side pieces A and a hinged bottom E having a weighted end E^2 which tends to make it close upwards. A catch F keeps the side pieces together when the mould is in use, and claws A^2 hold the bottom E in position. A "head" is cast on the block in the extension A^3 of the mould, which serves to prevent cavities in the brick due to contraction, and is subsequently broken off. This head is cast on that face of the brick which is afterwards to be the underside, so that the rough surface, where it is broken off, shall not interfere with the accurate fitting together of the blocks in paving.

FIG.1.



15,935. Hill, A., and **Barratt, A. A.** Aug. 24.

Casting plaster &c.—Relates to a method of producing photographs in true relief in plaster, metal, or the like. A print is first taken from the original negative, and this print is then retouched with colour so as to bring out each part of the portrait in correct relief when a second negative is taken on a film of bichromated gelatine. Besides bichromated gelatine, the film contains a little sugar and citric acid. After exposure, the film is cemented

on glass, and developed first in water, which produces a photograph in low relief. The relief is then intensified by soaking the film in a solution of citric acid. Plaster casts can be taken from this relief. Instead of taking a print to be retouched, the original negative may be reduced and intensified, where necessary, by ammonia and uranium.

16,661. Thomlinson, J. Sept. 5.

Cements or plasters. — Uncalcined chalk is ground, mixed with sand, and glue added as a binding material, together with sulphate of lime or other salts, such as alum or borax. The plaster so prepared may be coloured with a suitable pigment, and oxide of iron &c. may be substituted for a portion of the sand.

18,208. Goldstücker, L. Sept. 30.

Statuary.—A portrait is made, as in Fig. 1, on two pieces of paper or metal &c. A, A¹, the lower one A of which is bent as in Fig. 3, the edges being secured by tongues *a* engaging in slits *b*. The device thus constructed gives the appearance of a solid figure, and serves as a covering or casing for bottles and confectionery.

18,331. Robbins, E. Oct. 1.

Cements; plasters; concretes. — Lime is mixed with about ten per cent. each of saccharine and the oxide, chloride, or sulphate of magnesia to form cement. Sand, fragments of stone, fibrous material, &c. may be added to the cement, which may be prepared in granular or pulverulent form, coloured or otherwise. Oxide of tin, litharge, oil emulsion, silicates, clay, gum ammoniacum, turpentine, terebine, gelatine, salts of zinc, sal prunella, sulphuric, nitric, and boracic acids, glue, white and red lead, and other materials may enter into the composition of the cement, which is applicable for general building purposes &c., and as a protective fireproof covering. The cement or concrete is bonded together with fibrous material, rushes, iron and wood stanchions, &c. in the construction of buildings.

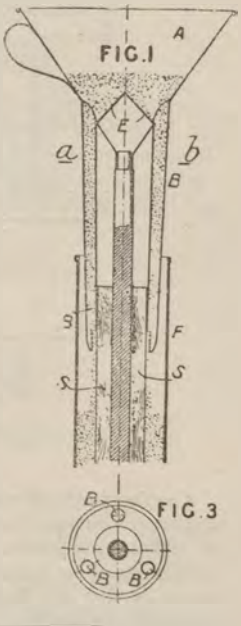
18,410. Hellewell, H. Oct. 2.

Asphalts for pavements, roadways, roofings, &c. are prepared by adding almeidina or potato gum, together with a small quantity of grease, oil, or fat, to hot pitch, and then incorporating with it a quantity of broken limestone, river sand, spar, shale, gravel, granite, &c. The asphalt may be cast in blocks for transport, and re-melted with bitumen, fat, oil, &c., as a flux. A mixture of rubber, guttapercha, resin, and oil may take the place of the almeidina.

19,101. Gosling, A. Oct. 11.

Stone, artificial.—A fine sandstone procured at Jackson Edge in Cheshire is crushed and mixed with Portland or other cement, hydraulic lime, sand, &c., to form an artificial stone, which may be moulded into building and paving blocks, tiles, or slabs, drain pipes, chimney pots, sinks, vases, &c.

20,395. Loosen, O., and **Jülicher, J. H.** Oct. 28.



Casting printers' inking-rollers, so that they may be uniform, smooth, and free from air bubbles. The composition is moulded on the core S in an upright mould F. The liquid composition is introduced into the mould by means of a funnel A having a conical spreader E, and three or more discharge tubes B. The latter are made of lead or other soft metal, so that they may be adjusted to discharge the composition on to the core S as shown in Fig. 1. Fig. 3 represents a section at *a–b*.

20,770. Büsche, W. Nov. 2.

Stone, artificial.—In constructing chambers for the manufacture of artificial stone into the composition of which lime largely enters, and which is hardened under the action of water and steam, means are provided for effecting a rapid and uniform cooling of the substance under treatment. They consist in constructing the chamber C, which may be of various shapes according to circumstances, of some good heat-conducting material, and enclosing the same by an outer shell C¹ of bad

heat-conducting material. Through the space

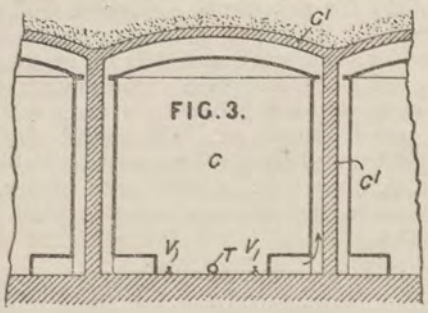


FIG. 3.

between them, the cooling medium, such as air, is transmitted. In the chamber shown, a pair of rails V are provided for trucks, and an admission pipe T for the hot water or steam.

21,293. Golby, F. W., [*Schmeisser, F.*]. Nov. 9.

Cements for repairing or restoring mouldings, floorings, roof coverings, &c., are prepared by intermixing cocoa-nut fibres with wet cement or gypsum, containing a binding material such as glue. The cement is applied to the article to be restored under pressure sufficient to prevent the formation of air spaces.

22,708. Maxim, H. S., and **Maxim, H.** Nov. 27.

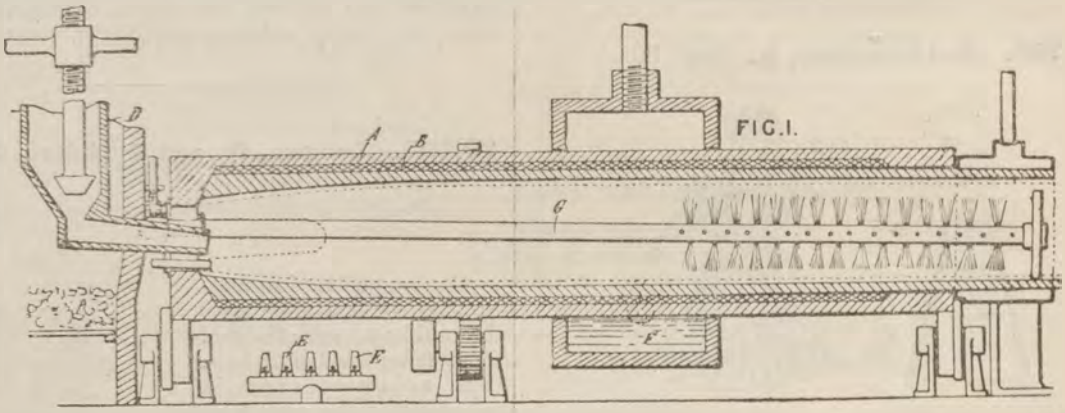


FIG. 1.

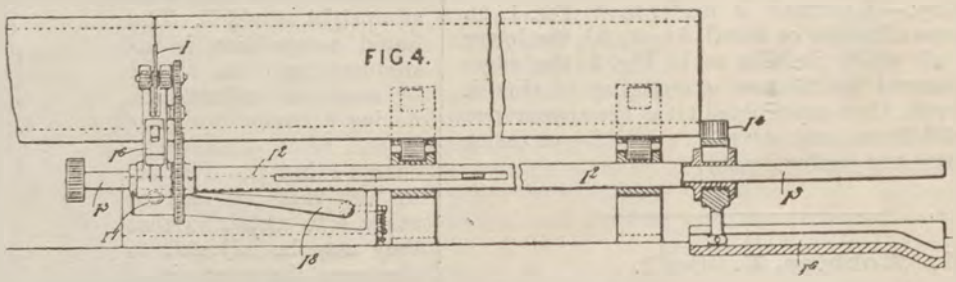


FIG. 4.

Casting pottery materials &c. Relates chiefly to the manufacture of metal pipes and tubes, but the apparatus is applicable with suitable modifications to the production of pipes made of earthenware or other substances, or of glass-lined pipes. The application to metal pipes is shown. A is a rapidly revolving horizontal or slightly inclined cylinder having a recess B for containing melted lead or other metal of higher density and lower melting point than the metal to be cast, and which will not alloy with it. The rotation causes this metal to form a smooth lining for the cylinder, into which the metal forming the pipe is run from a crucible D. This is kept hot by gas jets E or the like, and when formed into a tube by the centrifugal action is cooled by a water chamber F, and by jets from a pipe G, whence issues steam mixed with a hydrocarbon, or other reducing agent, to prevent oxidation. The metal issues from the mouth of the cylinder as a solid pipe, its movement being facilitated by skew rollers. Fig. 4 shows a cutting device consisting of a saw I, loosely mounted on a sleeve I^2, which rotates it by gearing. The sleeve slides in a shaft I^3, which rotates it by means of a feather. Normally a counterweight holds the saw out of the way of the pipe, but when the end of the latter strikes a tappet I^4 in the sleeve I^2, the saw is moved along with the pipe and made to come up to it by a spring guide I^8 engaging with an arm I^7 in the saw support. By the time the cutting is done, the arm I^7 has reached the end of the guide I^8, and the weight moves the saw away from the pipe, its lateral movement being arrested by the withdrawal of the tappet I^4 from the pipe by a cam groove I^6. The saw can then be returned to its position ready for a fresh cut. A form of apparatus is also described for producing tubes of considerable diameter.

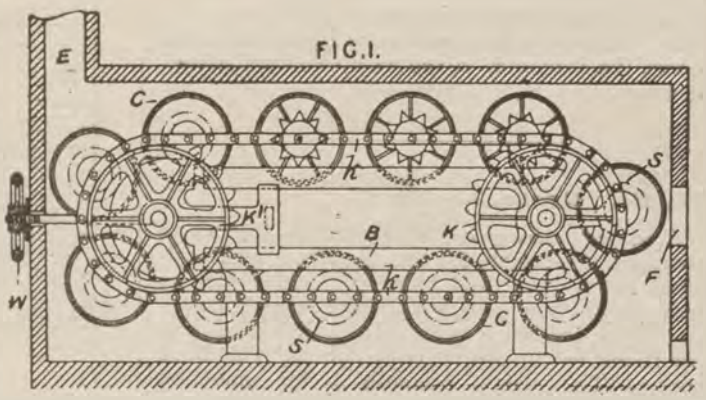
22,727. Gjers, J. Nov. 27. *Drawings to Specification.*

Refractory substances. — Ilmenite, a rich oxide of iron such as magnetite, or both, are used as a fettling for open-hearth furnaces used in the manufacture of steel and homogeneous iron.

22,918. Heys, W. E., [*Hundhausen, J.*]. Nov. 30.

Cements.—A semi-fluid, such as slurry, to be dried is fed in a uniform thin layer upon rotating cylinders externally or internally heated from which it falls when dry. Fig. 1 shows a form of apparatus which may be variously modified. The cylinders C, which receive the layers of material from the opening E, are traversed by an endless chain *k* passing over sprocket-wheels K, K¹, the latter of which is adjustable by the hand-wheel W. At the same time they are rotated by the pinions S engaging a frame B. Between the ends of the cylinders heating-appliances may be arranged, and hot air may be supplied at F by a fan or blower. In order that they may be as light as possible and require little driving power, the cylinders are constructed of thin sheet metal electrically welded at the seam.

FIG. 1.



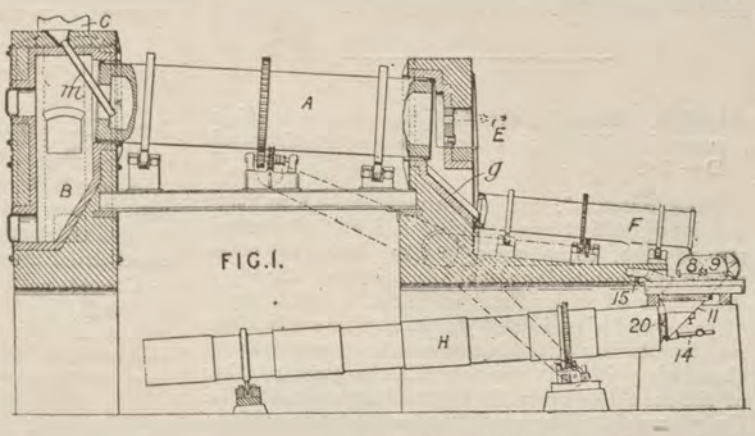
23,018. Coulon, E., and **Defalque, J. J.** Dec. 2.

Stone, artificial.—Sand is mixed in the dry state with lime or calcareous cement, and the mixture is introduced in tubs into digesters which are filled with water and subjected to steam pressure. A continuous or intermittent current of electricity is then passed through the mass to promote chemical reaction. Metallic oxides may be used as colouring-matters, and, instead of sand, cinder or slag, brick waste, refuse of stone, marble, alum, glue, &c. may be used. For lime and cement may be substituted gypsum, clay kneaded with linseed oil, potassium sulphate, &c.

23,145. Hurry, E. H., and **Seaman, H. J.** Dec. 3.

Cements.—Relates to apparatus for roasting the cement material in the manufacture of Portland or similar cement, and for cooling the hot clinker. The materials pass down the conduit *m* to the rotary roasting-furnace A, which is supplied with hydrocarbon from the burner E. The chamber B communicates with a stack C. The red-hot clinker passes down the shoot *g* to the rotating conduit F and gives up a part of its heat to the air passing up that conduit by natural draught to the furnace. The clinker on leaving the conduit is imperfectly crushed by rolls 8, 9 and wetted by sprays of water from the pipes 2, and then passes by the shoot 11 to the cooling-cylinder H, being, if necessary, further cooled at its entrance into the cylinder by water from the pipe 14. A draught of air produced by an exhaust fan communicating with the pipe 15 passes up the cooling-cylinder, which is provided with internal ledges or flanges. An airtight joint is provided at the upper end of the cylinder, an annular plate 20 being pressed against the rotating end by springs.

FIG. 1.



23,981. Ludewig, F. Dec. 14.

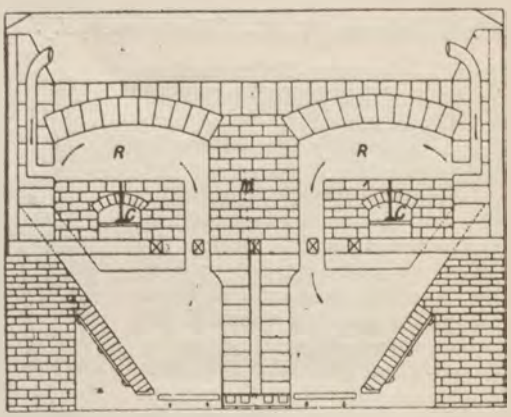
Cements or plasters.—A carbonaceous powder such as peat charcoal, bone black, coal, coke, or lignite is mixed with a binding-agent such as cement, santorin, lime, silicious earth, or kieselguhr, and sand may be added. The composition, when plastered on damp walls or like surfaces, absorbs superfluous moisture, and prevents the formation or accumulation of moisture, nitre, or acids. When the composition is intended for ice rooms, the cement is mixed with wood tar instead of water.

24,163. Grote, L. Dec. 17.

Fireproof coverings and compositions.—Relates to compositions suitable for the manufacture of acid-proof, damp-proof, and fireproof articles such as secondary battery cells, vats, pipes, cubical blocks, and plates, the latter being adapted for insulating partitions or linings, driving-pulleys, and book covers. The plastic composition for moulding purposes is prepared by steeping asbestos fibre or other fibrous material in a hot solution of water glass and then in an aqueous solution of a salt of aluminium, barium, strontium, or calcium. The resulting parchment-like material is powdered, mixed with an adhesive material such as a mixture of water-glass solution, and oxide of lead, and moulded into the required form, the articles being subsequently dried and raised to a high temperature. Plates are made by subjecting asbestos or other suitable paper to the preliminary treatment with water glass &c., as referred to above, and then coating with either (1) a mixture of alcohol, shellac, asphalt powder, and zinc white, or (2) a mixture of glue, litharge, linseed oil varnish, and water. The sheets are then pasted or glued together and subjected to hydraulic pressure. In a modified process for preparing a plastic mass, the first steeping-solution consists of a mixture of soluble glass, glue, and formaldehyde.

24,286. Boult, A. J., [*Soc. Anonyme Belge pour la Fabrication des Emaux Artistiques*]. Dec. 18.

Stone, artificial; casting statuary &c.—A mixture consisting half of crushed glass and half of crushed stone ware, china ware, bricks, tiles, or other refractory material is placed in a mould of the shape desired, lined with plaster of Paris. A thin layer of powdered glass is used on the surfaces which are required to be polished or enamelled, the powdered glass being either in contact with the plaster lining of the mould or upon the exposed upper surface of the materials. The mould is then introduced into a glass furnace and the materials fused into a homogeneous mass, after which the upper surface is polished by exposing it for a moment in a reverberatory furnace to the action of the flame. An artificial marble is thus obtained which is applicable for decorative purposes, mouldings, columns, reliefs, small statues, slabs or bricks for paving &c. The Figure shows a double reverberatory furnace applicable for agglomerating the materials and enamelling the surface, the operations taking place separately in the two chambers.



In the common brickwork wall M are provided canals for air, provided with dampers to regulate the temperature in the furnace. Supports C in connection with external levers are used for lifting the moulds to facilitate their removal.

24,479. Upham, R. D. Dec. 20.

Asphalts.—An asphalt composition for the purpose of sheathing iron or wooden ships, covering or roofing buildings, lining reservoirs or tanks &c., is prepared as follows:—Copper or other metallic filings are intimately mixed with an asphaltic cement consisting of refined asphalt, a flux such as liquid asphalt, and pulverized silica. The composition is applied hot to the surface to be protected, either by painting or plastering, and is then compressed by rolling, tamping, &c.

24,585. Schmitt, W., and **Kauert, E.** Dec. 23.

Asphalts for roofs and walls. 30 lbs. of Trinidad asphalt are boiled with 60 lbs. of coal tar, and 10 lbs. of Portland cement, 10 lbs. of sawdust, and some dried moss or peat are added.

Cements.—12 parts of Portland cement, 10 parts of sand, 6 parts of slaked lime, and 1 part of infusorial earth are mixed together. Another composition consists of 4 parts of hair lime, and 1 part of Portland cement.

24,898. Nahnsen, M. Dec. 28.

Cements; mortars. — Cement and mortar is prepared from the residues which occur in the

manufacture of sulphate of alumina from bauxite, clay, kaolin, alunite, &c. The residues are washed with water, preferably in a filter-press, and then partially dried, leaving not less than 25 per cent. of water contained in them. They are then mixed and ground with quicklime, a practically dry powder resulting, which may be used as cement or mixed with sand to form mortar. Hydrated lime may be employed, instead of quicklime, in which case a smaller percentage of water is left in the residues.

24,967. Hoeft, M. Dec. 30.

Cements or plasters; stonework, ornamental.—Plasters for walls, ceilings, and the like. Pure albumen or casein is dissolved in water or in a dilute solution of potash or soda, and to this is added slaked lime in the form of powder or paste. After the mass has been well stirred, finely-powdered marble or limestone, gypsum, sand, &c. are added to it to form a plastic mass of the consistency of ordinary plaster. Boric acid may be added to delay setting, and alum, together with suitable colouring-matters. The cement is applied with a trowel, preferably in a series of thin layers, to a backing of plaster, natural or artificial sandstone, &c. which may be previously moistened with a spray of glue water or potash solution. The surface of the cement may be rendered smoother by spraying upon it a thin solution of albumen and slaked lime and smoothing with the trowel when it has been absorbed. It may then be ornamented by painting with "body" or aniline colours which, when superficially dry, are pressed into the cement with the trowel. The watery exudation which comes out on the surface is repeatedly wiped off with a cloth until it ceases, and when wiping or working with the trowel powdered talc may be used to increase the smoothness of the surface. To obtain a dull gloss, the exudation may be allowed to dry on, after which it is rubbed off and the surface washed.

25,013. Woods, W. L. Dec. 31.

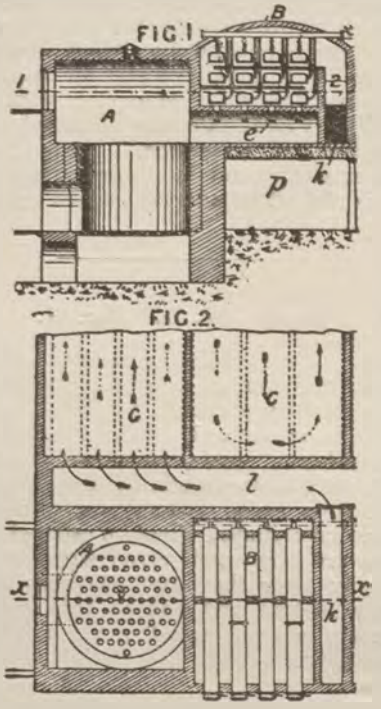
Concretes; stone, artificial; castings.—Relates to a material for use as a binding substance for mixing with stony materials to form concrete, or with metallic oxides and earths, adapted also for the production of casts, imitation bronzes, acid proof utensils, water conduits, drain pipes, wash and bath tubs, sinks, battery jars, coffins, monuments, and mouldings. Finely powdered magnesia and silica are dried and mixed with sulphur and mineral wax after the latter materials have been repeatedly melted and poured into cold water. The mixture is then heated until the sulphurous smell disappears.

A.D. 1896.

68. Taylor, W. R. Jan. 1.

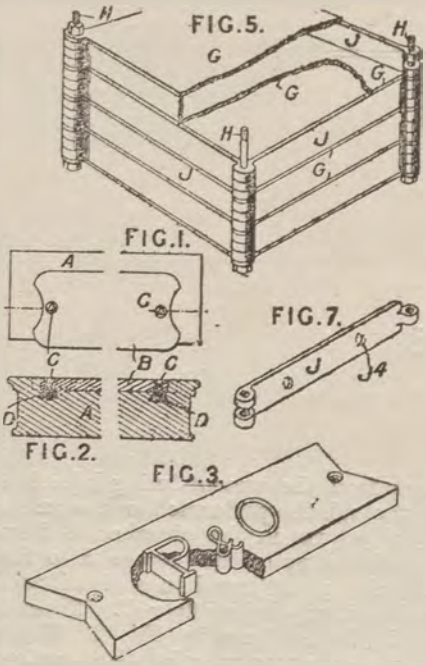
Cements.—Apparatus is provided for burning cement-making materials, lime, chalk, and the like, and for obtaining carbonic-acid gas therefrom. Fig. 1 represents a section of the kiln with a bed of drying-retorts as taken upon the line *x–x*, Fig. 2. Fig. 2 shows a sectional plan on the line 1–2, Fig. 1. The kilns &c. may be duplicated and placed back to back. The combustion products from the cement-fusing kiln A are conveyed through the perforated arch *e* and around a series of retorts in the chamber B from which they are led away by the passage *k* to the flue *l*. Thence the gases travel in a circuitous manner below the slurry-drying floor C. These flues are shown in dotted lines in Fig. 2. The space *p* below the structure may be also employed as a drying-chamber. The drying-retorts, charged from a suitable gallery around the mouths of the

retorts, drive off the remaining moisture. The material before being placed in the retorts is



preferably moulded into perforated bricks or blocks with grooved or fluted outer surfaces.

643. Perriman, A. W., and **Owen, W.** Jan. 9.



Casting monuments, slabs, treads for floors, &c. Slabs or treads B of artificial stone, concrete, asphalt, cement, or the like are made symmetrical about two axes so that they can be turned end for end, and also be reversed when worn. The treads are secured in recesses in the steps A by screws C which pass into nuts D moulded in dovetail recesses in the steps. The holes through the tread are countersunk to receive the heads of the screws. Metal letters extend through or partly through the slab, tread, or gravestone, or the letters may be cast in pairs back to back so that the inscription can be read from either side. The slabs are preferably moulded by the process described in Specification No. 19,647, A.D. 1894. Fig. 5 shows a series of moulds constructed of sides J threaded on corner bolts H with partition plates G interposed between them. The sides are formed with mortise and tenon ends, and perforations J^4 through them admit water to the interior of the mould for the purpose of converting the lime &c. into artificial stone. A mould is described constructed of flanged plates connected together by screwed pins, which are provided with cottars and nuts at the ends. The joints are tightened by screwing up the nuts, and the pins are withdrawn by driving out the cottars.

2223. Turner, F. Jan. 30.

Cements ; stone, artificial.—Powdered limestone, powdered slate, and powdered stone or stone chippings are mixed together with fresh or salt water. The slurry so formed, if for cement, is spread wet upon layers of coke in a kiln, dried, and burnt. For use as artificial stone for paving &c., it is moulded under pressure and may be ground or polished.

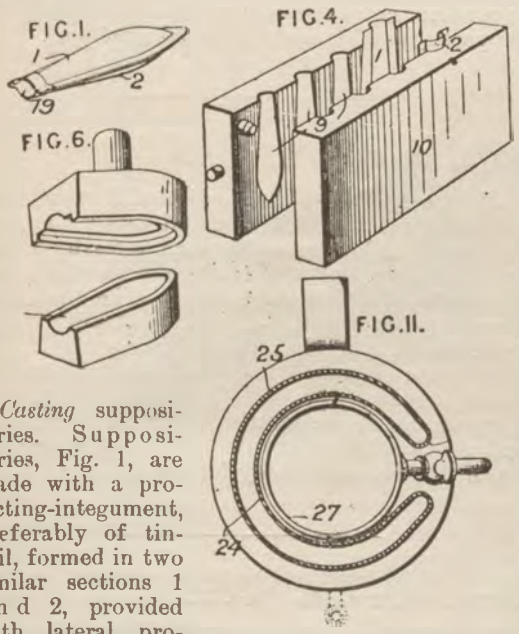
2451. Froment, D. J. J. Feb. 3.

Stone, colouring ; stonework, ornamental.—Marble or similar stone is immersed in a solution of aniline or other colouring-matter in alcohol or ether. The colour is then fixed by immersion in one or more baths of oil or other fatty matter or by their local application, the baths or the stone being heated if required The stone is then worked, polished, &c. as required.

2528. Zinzen, A., and **Beckmann, O.** Feb. 4. *Drawings to Specification.*

Fireproof coverings and compositions.—Consists of a mixture made of lime, ashes, and cement, with or without chemicals, such as alum or borax, and organic materials, such as hair, feathers, wood shavings, &c., the whole being mixed in suitable proportions, and formed into sheets or slabs. The inner surfaces of the sheets have ribs or projections of various forms, so that when wrapped round a pipe or other object an air space is left in order to prevent radiation and diminish the area of contact. A backing of jute, linen, wire, or the like may be provided to hold the composition together.

2531. Genese, D. Feb. 4.

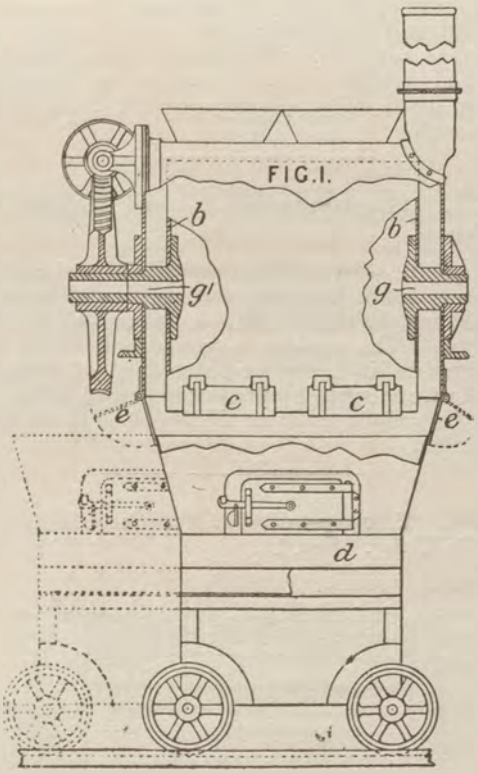


Casting suppositories. Suppositories, Fig. 1, are made with a protecting-integument, preferably of tinfoil, formed in two similar sections 1 and 2, provided with lateral projections united together and folded at their outer edges. The sections 1 and 2, having been shaped by means of a suitable former, are placed in the cavities 9 of the mould sections 10, Fig. 4, and these are then clamped together and the composition run in. When set, the suppositories have their rims pressed together and folded over by means of dies of the form shown in Fig. 6. The ends are closed by caps 19 or simply folded over. In order to maintain the composition in a semi-fluid condition for running it into the mould, it is placed in a vessel 27, kept hot by a steam jacket 24, 25 of the form shown in Fig. 11.

2614. Maxwell, F. W., and **Beer, W.** Feb. 5.

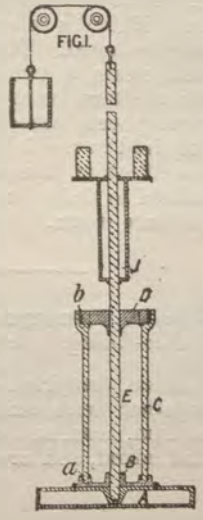
Stone, artificial.—Powdered stone, other than marble, is mixed in a dry state with magnesium oxide, magnesite, aluminium or potassium sulphate, magnesium or calcium carbonate, or equivalent substance together with suitable colouring-matters. The mixed materials are then moistened with a solution of magnesium or calcium chlorides or hydrochloric acid and are moulded, the blocks being left in the moulds until set hard. They are then roughly finished and saturated with an alcoholic solution of olive oil soap or other moisture-excluding material. After an interval the stone is immersed in a solution of aluminium acetate or sulphate &c., which may also be repeatedly applied with a brush, an insoluble soap being thus formed in the pores. The stone, after being allowed to harden for some days, is polished or finished as required. As an alternative process the acetate of aluminium &c. may be mixed with the magnesium chloride and the soap solution added to the mixture before moulding. The hardening of the stone may be accelerated by heating in an oven.

2938. Blake, H. D., and **Stapley, A.** Feb. 10.



Asphalts.—Heating pulverized asphalt for paving &c. A revolving cylinder or drum *b* is mounted in a frame at such a height that a van or other vehicle for conveying the hot pulverized asphalt can be passed underneath it. A portable furnace *d* runs on rails beneath the cylinder, and doors or flaps *e* are closed around the top of the furnace while the asphalt is being heated. The furnace is then removed and the materials discharged into the transporting-vehicle through doors *c*. The hollow trunnions *g*, *g*¹ permit the escape of vapours &c., and allow the contents to be sampled while the drum is rotating.

3466. Duckett & Son, J., and **Bullock, J. W.** Feb. 15.



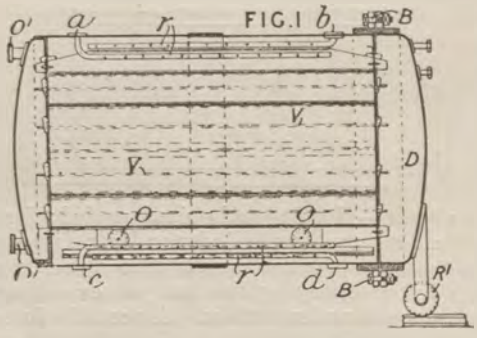
Casting jointing-material in that class of stoneware and other pipe joints described in Specification No. 4039, A.D. 1873. The appliances are specially designed to ensure the casting of the ring or lining of cement &c. accurately co-axial with the tube. The pipe C is placed with the spigot end resting in the mould B heated by a steam &c. chamber A. A counterbalanced rod E held in

guides J is passed through the top mould D of the socket end, and ensures its accurate alignment. The jointing-material is then run in at *a* and *b* and allowed to set, when the rod E is raised and the pipe removed. For smaller pipes a fixed rod screwed into the mould B may be used, the pipe being lifted off when the jointing-material has been cast.

3597. Hannemann, A., and **Boisly, G.** Feb. 17.

Asphalts.—An artificial asphalt is produced by treating tar or pitch, or the remains of resin or petroleum distillation, with sulphur and chloride of lime. The product is ground and mixed with amorphous lime, slag or other kind of stone, or sawdust, and again heated to the boiling point. It may be compressed in moulds and used in the form of bricks.

3799. Thompson, W. P., [*Soc. Anonyme la Néo-Litho*]. Feb. 19.



Stone, artificial.—Sand and lime are mixed, and are then moulded into blocks of artificial stone under steam pressure. The moulds are formed of perforated plates held together by rods V and are arranged to run on rollers *o* into the boiler D, which is supplied with steam through apertures *a*, *b*, *c*, *d* and perforated pipes *r*. Condensed steam is removed at o^1. One end of the boiler is secured by bolts B, and a roller R^1 is provided to allow of its easy removal. The materials are first saturated with steam at two or three atmospheres pressure, the pressure being then increased to five or more atmospheres according to the degree of hardness required in the finished stone. In the Provisional Specification it is stated that water is finally admitted to the boiler after treatment with the high-pressure steam.

3800. Thompson, W. P., [*Soc. Anonyme la Néo-Litho*]. Feb. 19.

Stone, artificial. — Sand and hydraulic lime, together with oxides of aluminium, potassium, sodium, iron, and calcium, are pulverized, sifted, and mixed, and are then submitted to the action of high-pressure steam in moulds to form a hard artificial stone, which will take a good polish. The colour can be varied by suitably selecting the proportions of the metallic oxides employed.

3972. Neffgen, S. Feb. 21.

Stone, artificial.—Pulverized slaked lime and sand, or pulverized unslaked lime and moist sand, are mixed with colouring-matter such as earthy colours or burnt clay, and the mixture is moulded into blocks &c. of the desired shape. The blocks are then placed in a heating-chamber containing vessels with water, and, the chamber being closed, the temperature is raised to 95° C. by suitable means, first by gradual steps and afterwards rapidly. The temperature is maintained at 95° for some days, and the chamber is then allowed to cool by degrees, when the blocks are ready for use.

3985. Cléry, A. Feb. 21.

Cements.—A cement, applicable for covering brick walls and for other purposes for which Portland, Roman, Keene, &c. cements are applicable, is prepared as follows :—Powdered marble, zinc oxide, and powdered sandstone are intimately mixed and sifted, and when required for use are mixed with a solution of zinc in hydrochloric acid. The powdered mixture may be preserved in casks &c., while the liquid may be stored in stone bottles or carboys.

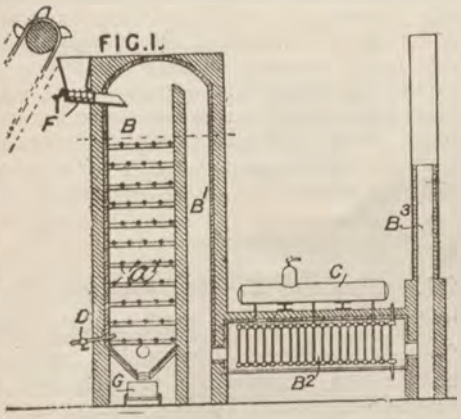
3993. Williams, W. F. Feb. 21.

Stone, artificial ; cements or plasters.—Stone waste in the form both of dust and chippings is mixed with Portland or other cement, and silver or other sand or grit may be added. The composition may be moulded into blocks, or applied in the plastic state as a covering for iron or brickwork. When used as a finishing coating the stone chippings are omitted. The surface when set should be rubbed by another piece of the same material, and may be indurated by applying a silicious hardening and preservative composition.

4071. Boult, A. J., [*Löschke, M. R. G.*, and *Opelt, A.*]. Feb. 22.

Casting cement slabs. Plaster, containing wood pulp, is poured into open-ended iron moulds on tables faced with plain or ribbed rubber covers, and is pressed and smoothed down.

4918. Chesebrough, R. A. March 4.



Cements.—Relates to means for roasting pulverized cement rock or a mixture of clay and carbonate of lime in the manufacture of cements, and consists in subjecting the powdered material while falling in a stream to the action of the flames and hot gases from an oil, gas, or coal fire. Fig. 1 shows the tower and accessories in section. The powdered materials fed in at F fall down the tower B, where bars a^1 assist to scatter them uniformly, and are calcined during their passage by the flames &c. from an oil spray burner D. The calcined materials are collected at G, and are ground to form cement. The hot gases descend the flue B^1 and traverse the water-heating chamber B^2 on their way to the chimney B^3. The steam generated in the boiler C may be utilized for the spray burner and for elevating the materials &c.

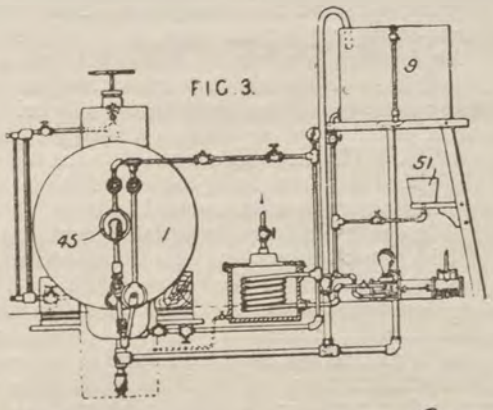
5772. Garchey, L. A. March 14.

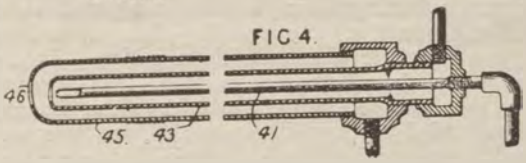
Stone, artificial.—Powdered glass, preferably that charged with lime and soda, is mixed with suitable colouring-materials and placed in an iron mould box shown in section in Fig. 1, having a movable bottom B capable of sustaining considerable pressure. The mould box is lined with sand, lime, &c. The mould is slowly heated till the glass is near its fusing point, in which condition it becomes devitrified. It is then heated to fusion, and the pasty glass moulded under pressure. The article is then removed from the mould and annealed. Marble is imitated by scattering over the pasty devitrified glass pieces of coloured glass, which, when melted, are stirred to and fro to form veins, the mass being then moulded under pressure.

6830. Clapp, W. J., and **Dauncey, F. S.** March 28. *Drawings to Specification.*

Slags, treatment of.—Bessemer, basic, or other slags, to be mixed with india-rubber, are prepared by powdering them, and heating in a regenerative or reverberatory furnace, in which they may be mixed with gas lime, while powdered lime is blown in through tubes with compressed air or superheated steam. Phosphorus, sulphur, and other substances are stated to be thus removed. The furnace is built of firebricks soaked in alum and borax solution, and clay made workable with the same. The interior of the furnace is glazed by applying alum, borax, and salt in solution. The treated slag is afterwards finely powdered.

7032. Clark, A. M., [*Electric Fireproofing Co.*]. March 31.





Fireproof coverings and compositions.—Relates to an apparatus for drying wood and saturating it with certain preservative and fireproofing solutions. The wood to be treated is placed inside a cylinder 1, being placed on a trolley running on rails inside the cylinder. A partial vacuum is first formed inside the cylinder, and the heat is applied by steam pipes, so as to drive the moisture out of the wood. The fluid products of this operation are driven out through pipes at the bottom of the cylinder. A vacuum is again produced in the cylinder, and the hot treating-fluid is forced in through a spraying-nozzle 45, Fig. 4, in which pressure steam flows through the pipe 41 and between the pipes 43 and 45, while the treating-fluid is forced in a hot spray into the cylinder through the opening 46, and saturates the wood. Heat is then applied by the steam coils, the above operations being repeated till the wood is thoroughly saturated. The treating-fluid preferred is a solution of phosphate and sulphate of ammonia, and is taken from the tanks 9 and 51.

8314. Preussner, L. April 20.

Stone, artificial.—Burnt magnesia is mixed with a solution of hydrochloric acid, and sand, quartz, flint, fluor-spar, marble, barytes, sawdust, cellulose, colouring-matters, &c. are added. To the mixture is added a solution of acid phosphate of lime, and after sifting it is moulded into the required form. The acid phosphate is prepared by dissolving the tribasic phosphate with dilute sulphuric acid, or phosphoric acid free from lime may be employed in its place. Instead of using hydrochloric acid and magnesia, pure magnesium chloride may be used. For the manufacture of whetstones emery and like materials may be introduced into the composition.

8595. Smith, T. April 23.

Cements.—Relates to that class of composition known as "Spence's metal," composed of sulphides and sulphur and used for pipe joints, fixing iron-work into stone, casting statuary, &c. Sulphides, preferably of iron, are washed and dried, ground, and placed in a revolving chamber which can be heated by gas burners &c. A quantity of purified sulphur is added together with slate dust or silica and alumina. The materials when hot are mixed with the aid of a stirrer or by loose steel balls &c. and the mass poured out in a mould to form a thin sheet. This is broken up, granulated, and again melted with a small proportion of bitumen and wax. The cement is then ready for use or may be cast in suitable moulds for storage. To produce a flexible composition the sulphur is dispensed with and bitumen, resin, and refuse wax substituted for it. The composition may be cast in warm moulds or frames to form printing or embossing surfaces, or for the production of a printing-plate direct from a glass or other photographic negative. In the Provisional Specification it is stated that pieces of wire, sheets of wire gauze, fibrous asbestos, &c. may be embedded or partially embedded in this or any similar composition for the purpose of strengthening the printing-rollers or other articles moulded therefrom under pressure.

9838. Wilkinson, J. May 8.

Cements or plasters; stone, artificial.—Boiled linseed oil is added to liquid glue and the mixture while hot treated with hydrochloric and sulphuric acids. The product is allowed to stand for about three days after cooling and is then of the consistency of dough, and may be preserved without change if not exposed to air. For use as plaster or for artificial stone, water and plaster of Paris are added. A dry friable powder which may be used as cement or plaster with the addition of water is prepared by adding water, plaster of Paris, and caustic lime to the dough-like product described above and drying it. For forming a first coat or base this second composition may be cheapened by the addition of plaster of Paris, sand, sawdust, or, to form a fireproof material, asbestos. When used for exteriors the composition is coated with a waterproof material consisting of oxide of zinc, a saturated solution of chloride of zinc, sulphate of iron, borax, and sal-ammoniac with or without sand. The waterproof composition may be used as artificial stone. To prevent the crystallizing out of salts contained in the bricks &c. to be covered, a solution of barium chloride is applied to them, or a solution of asphaltum, Burgundy pitch, paraffin wax, and petroleum.

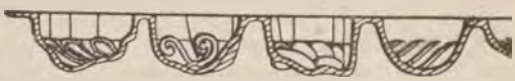
10,293. Henry, J. G., Henry, T. E. W., and Henry, R. O. May 14.

Refractory substances.—Lime-water, red liquor obtained in the manufacture of soda ash, sawdust, cork-dust, ground fireclay, and gannister are mixed together, and the mixture is moulded into firebricks.

10,841. Schneider, H. May 19.

Asphalts for paving. The surface to be paved is covered with a layer of concrete, a hot mixture of natural asphalt, pulverized granite, gravel, and bitumen is poured upon it to form a thin layer, and large prismatic stones are pressed into this layer so that their bases are almost in contact. The spaces between them are then filled up with a further quantity of the said mixture together with small stones and coarse gravel until the tops of the prismatic stones are reached, when the surface is levelled.

11,161. Ingram, J. G. May 22.



Casting confectionery. Sheet india-rubber moulds are produced by dipping a metal pattern plate into a solution of rubber a number of times, and allowing the solvent to evaporate after each dipping. When the required thickness of rubber has been deposited it is vulcanized, and the finished mould is stripped from the pattern ready for use.

11,738. Lake, H. H., [*Friedheim, M.*]. May 29.

Stone, artificial.—Relates to an antiseptic composition, which can be shaped into plates, bricks, ornaments, vessels, gutters, bowls, or other forms for building or decorative purposes. The composition is formed by mixing an antiseptic chloride, such as chloride of lime or chloride of aluminium, with slaked caustic lime, alumina, or magnesia, or a mixture of these materials in a carbonic-acid water bath, filling-substances being then added. The latter may consist of sand, powdered stone or marble, asbestos, heavy-spar, and

the like, if the product is required to possess a mineral character, or sawdust, peat, cellulose, and similar fibrous materials, if required to possess a vegetable character.

12,169. Boult, A. J., [*Thys, M.*]. June 3.

Stone, artificial.—Sand or other silicious material is mixed with cement and a solution of glue added, tiles of artificial stone being moulded from this, and coloured surfaces being obtained, if desired, by the use of suitably-coloured cement. The tiles are pressed, left for a few days during which they are repeatedly saturated with water, and are then placed in a tank of cold water for some days, after which they are washed and dried.

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12 368. Owen, W. June 5.

FIG.1.

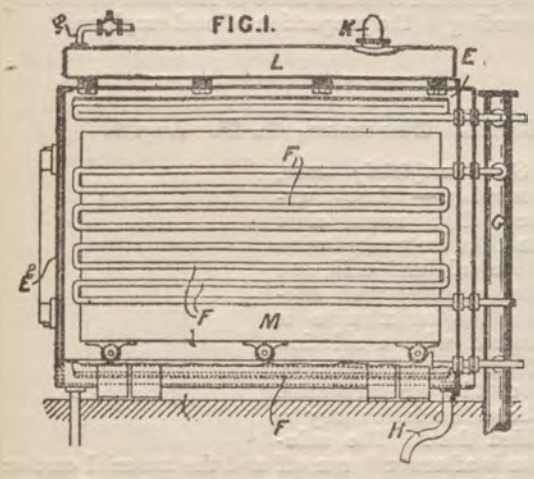
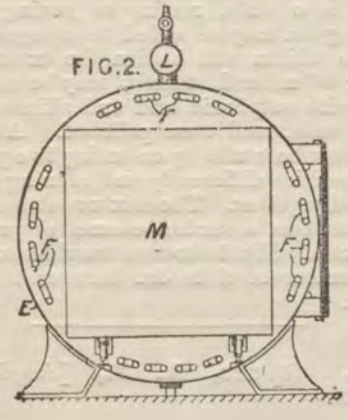


FIG.2.



Stone, artificial.—The mixture of sand and unslaked lime from which the stone is to be moulded is placed in a mould-box M running on rails in the drum E. The mould-box enters by the hinged door E^2, the other end of the drum being steam-jacketed. Distilled water free of air is admitted to the drum by the pipe H at about 212° F., and the pressure raised to 60 lbs. per square inch by means of a pump. Steam is then admitted to the heating-coils F from the pipe G, and the temperature slowly raised to 400° or 450° F. After about 30 hours, the water is drained off and the mould-box dried at about 200° F., the stone being then ready for immediate use. The small drum L placed above the drum E carries the safety-valve K and discharge-cock L^2. Artificial marble may be made by this process by using powdered marble and hydraulic lime. In the Provisional Specification, it is stated that the mould-box described in Specification No. 19,647, A.D. 1894, may conveniently be employed with the apparatus.

12,425. Mack, L. June 6.

Cements or mortars.—A quick-setting cement or mortar is prepared by adding to burnt gypsum, with or without sand &c., a small quantity of a salt or base such as sulphate, carbonate, or hydrate of potassium or sodium, which will form a double salt with it. The salt may be ground with burnt gypsum, or mixed with it in the wet state, or it may be burnt with the raw gypsum in the kiln. Ashes or raw materials containing the required salt may be used in its place.

12,451. Cadoret, E. June 6. *Drawings to Specification.*

Stone, artificial.—Relates to a plastic and incombustible material called "Textiloid," which has for its base products obtained by the saponification and oxidation of oils which are called "Résinolines." The material may be made to imitate marble &c., and, to obtain it, an oil is saponified by a metallic carbonate which is decomposed by nitric acid, the mixture being continually stirred. The supernatant liquid is decanted and saturated with an alkali. On cooling, the soap takes a colour which is determined by the oil employed, and, when treated with suitable acid, the resinoid body is set free, and may be purified by dissolving in alcohol &c. and evaporating the solution. The resinolines may be combined with natural resins, cellulose, nitro-cellulose, animal substances, oxides, earths, colouring-materials, &c., or with a mixture of one or more of these substances, to form textiloid, which may be transparent like glass or white or coloured. For mixing the cellulose, a suitably-heated boiler is employed containing a stirrer worked by hand, the alcohol and vapour being carried off to a condensing-worm.

12,991. Kynoch & Co., G., Jones, E., and East, W. June 12.

Refractory substances for crucibles, firebricks, &c. Peat is mixed with fireclay, and coke dust may be added to facilitate the decomposition or burning of the peat in the firing process, and produce a porous article.

13,187. Kleber, P. June 15.

Stone, artificial.—Sifted ashes, potash, or other alkaline carbonates are mixed dry with gypsum and hydraulic lime. The mixture is stirred with a solution of saturated gypsum water acidulated with sulphuric acid, and is then kneaded to a plastic mass, which may be moulded into bricks &c. under strong pressure. Bricks &c. so produced are dipped into a saturated solution of alum acidulated with sulphuric acid, and when dried are ready for use.

13,649. Strong, R. F. June 20.

Stone, artificial.—Dry disintegrated peat, sawdust, or other ligneous material is mixed with alkaline earth, such as lime, dolomite, and the like, and pyroligneous acid, and the mass is moulded into blocks.

16,446. Reinherz, T. July 24.

Stonework, ornamental.—Fresh natural flowers, leaves, and plants are converted into stucco ornaments by coating the back of the petals and leaves with paraffin, or with a mixture of glue, gypsum, and chalk applied while hot. The petals &c. may also receive a backing of textile fabric, paper, or leather, and may be stiffened with wire. When dry, they are dipped in a shellac solution, or in a mixture of glue, gypsum, and chalk, to which lead acetate, oil, gum, glycerine, or colophony may be added. The flowers thus prepared may be painted or gilt.

16,525. Selberg, E. July 25.

Cements; fireproof coverings and compositions; sound-deadening compositions.—Two parts of vegetable fibre, one part of cork, and one part of earthy material are mixed together, and salts or acids are added in small quantities in order to make the material more porous. The composition is moulded into bricks or blocks, or used as a porous mortar, or for covering boilers, steam pipes, &c.

16,892. Jones, T. R. July 30.

Stone, preserving.—Portland or other stone is hardened and preserved from atmospheric influences in the following manner:—The stone, having been sawn, carved, &c. into the required form, is dried in a current of air, and is then placed in a closed vessel partially exhausted of air by a pump. A hot solution of sulphate of zinc or other salt is admitted to the tank and allowed to soak into the stone, which, when covered with liquid, is subjected to ordinary atmospheric pressure. After drying, the stone is ready for use.

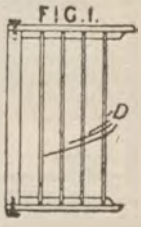
17,281. Bernstein, M. Aug. 5.

Stone, artificial.—Pulverized marble, with or without colouring-matters, is mixed with a suitable binding-medium, such as magnesite with a solution of magnesium chloride, and placed in a mould. Veins are formed on the surface with a trowel, the lines being formed with powdered marble and colouring-matters. The mould is then closed and the contents allowed to harden under slight pressure. The surface may finally be polished and worked.

17,799. Dumble, E. T. Aug. 11.

Asphalts.—Relates to methods of hardening liquid or viscid bitumens, tar, asphaltum, &c. without distillation. The hardening is effected by heating the material nearly to its boiling point, adding powdered bituminous coal, and boiling and stirring the mixture until the coal is dissolved. The material becomes more or less hard on cooling according to the proportion of coal employed.

18,622. Thomson, G. F. Aug. 22



Stone, artificial; stone, preserving.—Blast-furnace slag, ashes, clay, sand, &c. are treated with dilute sulphuric acid, and after standing and stirring the mixture is covered with a solution of silicate of soda, or caustic or carbonate. The soda solution may be added first. The solution is afterwards run off and the material cast or moulded into slabs, roofing or paving tiles, &c. Fresh slag &c. may be added to cheapen the process. To whiten and harden the exterior of the stone, or of natural stone, it may be successively treated with sulphuric acid and silicate or carbonate of soda, and then polished. An artificial marble may be made by colouring two portions of the composition differently and running them into the mould together. The mixture above described may be used as a surface enamel or preservative composition. Fig. 1 shows a mould-box for casting a number of slabs &c. between the division plates D.

18,714. Boult, A. J., [*Jungbluth, J.*]. Aug. 24.

Stone, artificial.—Blocks or slabs of an artificial stone or paving material are moulded in the following way:—A groundwork or bottom layer, consisting of broken and powdered stone, such as basalt, of a rocky hardness but porous nature, is introduced into the mould, together with a binding-material consisting of Portland cement, lime, or ground trass, the whole being warm and slightly damped.

A top layer of asphalt powder is afterwards introduced in a hot state, the mould is closed and the materials subjected to a pressure of 300 atmospheres. After being removed from the mould the stones are exposed to a water spray, a slow setting taking place throughout the mass.

18,990. Boult, A. J., [*Tortorici, C.*, and *Grasso, R.*]. Aug. 27. *Drawings to Specification.*

Statuary.—Cement or like statues are impregnated with tar, and may be coloured with silicates or oil colours.

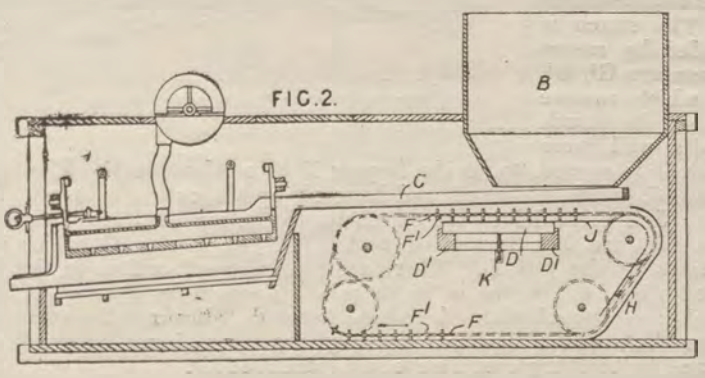
19,419. McLean, A. Sept. 2.

Stone, artificial.—Inferior qualities of York or paving stone, and the waste material of the better qualities, are ground to a fine powder, which is mixed with Portland cement and moulded under pressure into paving-slabs, bricks, building-blocks, &c.

20,415. Baker, G. S., [*Carlson, G.*]. Sept. 15.

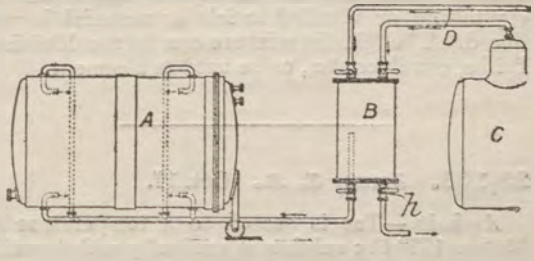
Casting confectionery. Relates to the machine for cleaning moulded confectionery &c. described in Specification No. 20,789, A.D. 1894, and consists of improvements connected with the return of the separated moulding-material (starch) to the moulding-trays. Fig. 2 shows a section of the machine. The sieve C is arranged beneath the hopper, and the trays D, sliding on guides D^1, are moved transversely by means of an endless chain K. A portion of the material falls directly on to the trays and the remainder on to the floor of the receptacle or on to the plate J. A conveyer, consisting of a pair of endless chains F with diagonal slats F^1, carries this material up the plate H on to a disposing or distributing plate J which is curved or otherwise suitably shaped so as to distribute the material evenly on to the transversely-moving trays. The slats moving over the trays also assist in levelling the material. A loose plate is also hung on the machine at the egress of the trays to further effect this. The moving parts are connected by spur gearing so as to produce the necessary relative movements.

FIG. 2.



20,432. Grunhut, J. Sept. 15.

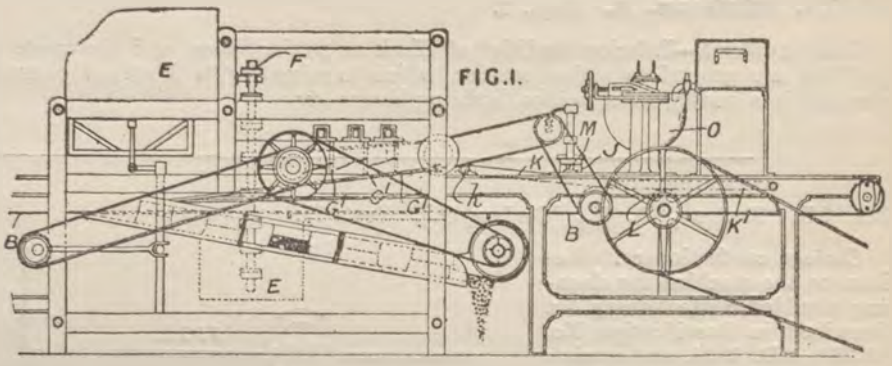
Stone, artificial.—Sand or powdered silicates and lime are mixed with finely-powdered sulphur in a dry state and the mixture is placed in moulds in the chamber A into which high-pressure steam is introduced from the boiler C, mixed or not with sulphur vapour led from any suitable source by the pipe D. A blow-off tap *h* discharges condensed water from the chamber B. As a substitute for the powdered sulphur, powdered sulphates of iron, copper, aluminium, or ammonium, or powdered sulphide of sodium, may be employed, and the steam, instead of being mixed with sulphur vapour, may be passed through, or in contact with, sulphur or the materials named above on its way to the chamber A.



20,612. Kleber, P. Sept. 17.

Stone, artificial.—Gypsum or hydraulic lime are mixed dry with sifted ashes, potash, or other alkaline carbonates, and the mixture is then worked with a solution of sulphate of lime acidified with sulphuric acid or kneaded to a plastic substance, which is moulded under pressure to the required form. The stone so formed is placed in a saturated solution of an alum salt acidified with sulphuric acid, and subsequently dried.

21,039. Robins, J., and **Confectioners' Vegetable Colours and Fruit Essences Co.** Sept. 23.



Casting confectionery. Relates to the construction of machinery for casting confections in moulds made in starch. Starch is fed from a hopper E to trays carried upon endless chains B. The starch is levelled by means of scrapers G^1, G^1, G^1, which remove the surplus starch into a well from which it is carried up to the hopper E by an elevator F. The trays are brought under the moulding-stamp J, which is raised and lowered by the action of a cam L and levers K pivoted at *k*. The stamp J is pressed into the starch by the action of a drop-hammer M suitably actuated at intervals. The trays are then forwarded to the filling-apparatus O, which is raised and lowered by levers K^1 actuated by the cam L. There are a number of orifices in the bottom of the vessel O, which are closed when the vessel is in its raised position by a series of stationary but adjustable plugs, but which are opened when the vessel descends, allowing the material to flow out and fill the moulds. After the material is cooled the trays are emptied and the starch sifted for re-use, and the confections cleaned by brushing over a sieve in a current of air.

21,781. Ponton, A. C. Oct. 2.

Cements; refractory substances.—Ground burnt flint, fine washed sand, or other suitable form of silica is mixed with silicate of soda, silicate of potash, or other suitable flux, water, and fibrous material, such as hay, straw, jute, wool, or hair. When fired at a high temperature, the fibrous materials, water, &c. are burnt out, and a cellular crystalline or vitrified article or material is produced. The plastic mixture can be moulded into bricks, crucibles, &c., or be used as a cement.

23,105. Just, J. A. Oct. 17.

Asphalts.—Tar is heated to a temperature of 138° to 177° C.; sulphur is gradually added until a sample cooled down to a temperature of 36° to 38° C. is sufficiently hard; the mixture is raised to a temperature of 177° to 204–5° C.; crushed or melted resin is added; and from 5 to 12 per cent. of a sulphurized heavy hydrocarbon is gradually mixed with the composition. The sulphurized hydrocarbon is obtained by adding about 1 part by weight of sulphur to 8 parts of petroleum sediment or other suitable hydrocarbon heated to a temperature between 155° to 177° C. For pavements, 13 to 18 parts of the above composition are mixed with 12 to 20 parts of finely-ground earth and 62 to 75 parts of fine sand

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23,244. Smart, L. A., and **Robertson, H.** Oct. 20.

Cements or plasters.—A composition for use in steel or iron ships for coating metal plates, filling up spaces, &c. is formed of Portland cement and coke-breeze or engine or smithy ashes.

23,597. Thwaite, B. H., and **Gardner, F. L.** Oct. 23.

Cements.—In the working of blast furnaces the waste gases therefrom are purified and used in a gas engine, and this is done whether the furnace is being used for the production of iron or not. In

the latter case the furnace is kept working on charges of fuel, sand, and limestone, so as to produce a liquid slag which may be used for making cement or for other uses.

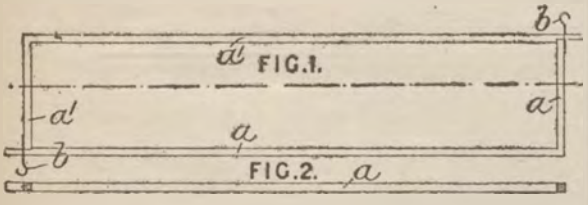
24,242. Cléry, A. Oct. 30.

Stone, artificial; cements or plasters.—An artificial stone for repairing decayed stonework, covering walls or other surfaces, paving, lining cisterns, moulding statuary or vases, and for other purposes is prepared by mixing with a solution of zinc in muriatic acid powdered zinc oxide, together with one or more of the following substances, according to the purpose for which the stone is required :—Powdered sandstone or freestone (preferably from Leronville), powdered Portland stone, silver sand, crushed granite marble or Belgian bluestone, coal waste, and pumicestone.

25,360A. Snyder, F. H. Nov. 11.

Statuary.—Relates to the coating or covering of metallic or other structures such as statuary &c. with metal or alloy or a vitreous material. The material, if a metal or alloy, is mixed in the form of filings with a paste and applied to the surface. It is then fused by means of the electric arc. In the case of conductors, the material to be coated is connected with one of the poles and a carbon or similar electrode is moved over the surface. In the case of a vitreous coating the material is fused in a similar manner. To smooth the coating the electric or gas-heated iron is moved over the surface.

25,880. Vÿgh, A. H. van der, Vÿgh, H. van der, and **Vÿgh, G. van der.** Nov. 17.



Stone, artificial.—A fireproof artificial stone is prepared by mixing coke-dust, lime, tan, and ordinary plaster with water and running the mixture into suitable moulds to form slabs or plates for walls, ceilings, division walls, vaults, and general building purposes. The mould may be formed of angle-irons *a*, *a*¹ fastened by pins *b*, or of end or side pieces fitted together with tongues and grooves. The plates or slabs may be bevelled and may be cast with passages produced by transverse rods in the mould. When used for exterior walls, the slabs should be covered with Portland cement.

26,077. Wucherer, W. F. Nov. 18.

Casting gypsum, cement, &c. to form moulds for sweetmeats. A model of the figure or article to be afterwards cast or moulded in chocolate &c. is made of clay, wax, or the like, and gypsum, tripolite, cement, or the like is cast about the model to form a mould. To increase the hardness of the gypsum, a solution of glue, alum, or the like may be added prior to pouring, and the dried mould is placed in a hot solution of glue. The faces of the mould are coated with copal, amber, or other varnish, which may be attenuated with sulphuric ether or benzene. The model may be divided into two or more parts.

26,493. McGhie, T. B., and **Ballard, E. G.** Nov. 23.

Refractory substances.—The hearths and linings of cupellation &c. furnaces are made of baryta, with or without admixture with cement, and a binding-agent such as sulphate of soda and potash.

27,648. Taylor, A. Dec. 4.

Stone, artificial.—An artificial stone for general building purposes, paving, &c. is prepared by binding together ashes, clinkers, destructor refuse, powdered or granulated stone, &c., with Portland or other cement, and moulding under hydraulic, steam, or other pressure. Silicate of soda &c. or silicic acid in solution may be used for hardening the stone.

28,728. Placet, P. E. Dec. 15. [Date claimed under SEC. 103 of PATENTS &c. ACT, 1883, July 24.]

Refractory substances.—Chromium sesquioxide is employed as a refractory substance for lining crucibles, converters, furnaces, and protecting earthenware and metal generally. Salts of chromium, such as bichromates of magnesia, lime, alumina, or potash, may be fused and applied in the molten state, being subsequently calcined at a red heat ; or the salts may be applied in the form of powder or solution, or mixed with tar, molasses, albumen, oil, &c. Other refractory materials, such as magnesia, lime, dolomite, alumina, chrome-iron, asbestos, or solvents such as chlorides, fluorides, cryolite, phosphates, boric acid, &c., may be used in combination with the salts of chromium.

29,212. Petrifite (Limited), [*Steiger, J.*]. Dec. 19.

Cements ; refractory substances.—A cement, which may be employed for general purposes, for use in the manufacture of artificial stone, and for making artificial or imitation fuel blocks, is prepared as follows :—Magnesium chloride is boiled

with a little water and agitated for some time until the mass is pasty. After cooling, the now solid mass is ground to a fine powder and mixed with magnesia, prepared by calcining magnesite, and with powdered lead acetate or other lead salt. The dry powder so prepared is mixed with water for use.

29,654. Kraner, O. Dec. 24.

Cements; sound-deadening compositions.—About 60 per cent. of magnesium chloride, 10 per cent. of paper or asbestos refuse, and 30 per cent. of water are mixed together, and ground clay, infusorial earth, or mineral or vegetable dust may be added to reduce the hygroscopic qualities of the composition. The preparation is mixed with magnesia or magnesium carbonate and water at the place where it is to be used. For sound-deadening or isolating purposes, ground cork, turf, bark, sawdust, paper, asbestos, or silicious earth is mixed with the composition. To prevent putrefaction, the sawdust &c. is freed from resinous, albuminous, and starchy matters. An acid-proof composition, suitable for chemical factories and laboratories, is obtained by the use of Canadian asbestos.

29,865. Zboril, A., and **Schenk, A.** Dec. 28.

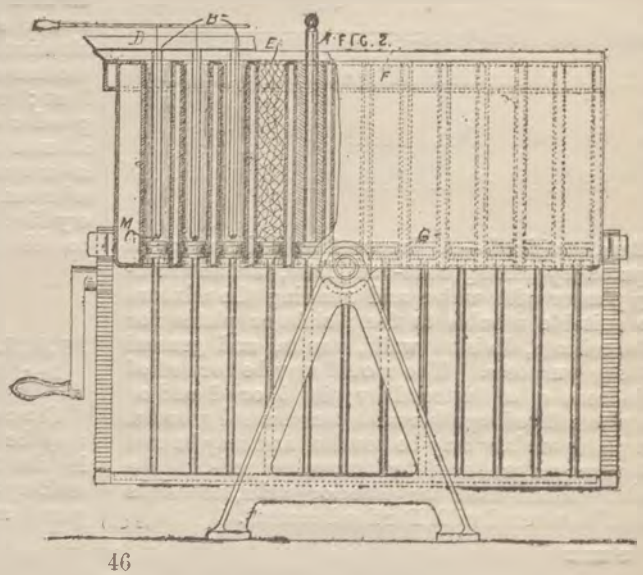
Cements; concretes; stone, artificial.—Relates to coverings for floors, roofs, walls, and the like. A mixture is made of burnt magnesite, silicate of magnesia, or silicic acid, either in the free or combined state, sawdust, cellulose, wood, wool, bark, peat, hair, straw, chaff, pine-needles, or the like, and a basic solution of magnesic chloride. Instead of the sawdust, cellulose, &c., stone or sand may be substituted. Such mixtures, when applied and allowed to solidify, become seamless fireproof coverings. Blocks or slabs of the wood cement or stone cement described above, formed in moulds with or without colouring-matter, may be used for paving, or the blocks may be composed of layers of these two varieties of cements so as to form composite bricks.

APPENDIX.

A.D. 1893.

4581. Finlay, R. H. F. March 2.

Casting soaps. Relates to an apparatus for the manufacture of soap tablets. The liquid soap is poured into moulds F, which, when variegated tablets are to be produced, may contain central solid cores A, tubes B, or may be loosely filled with lumps of a different soap E. When the soap has solidified, the core A is withdrawn and molten soap of another colour poured in, or the molten soap is poured into the tubes B, which are then slowly withdrawn, the valves M being opened to allow the soap to run out. A bar, having a central core of a different soap, may also be produced by allowing the soap to solidify only around the side of the moulds, then turning the

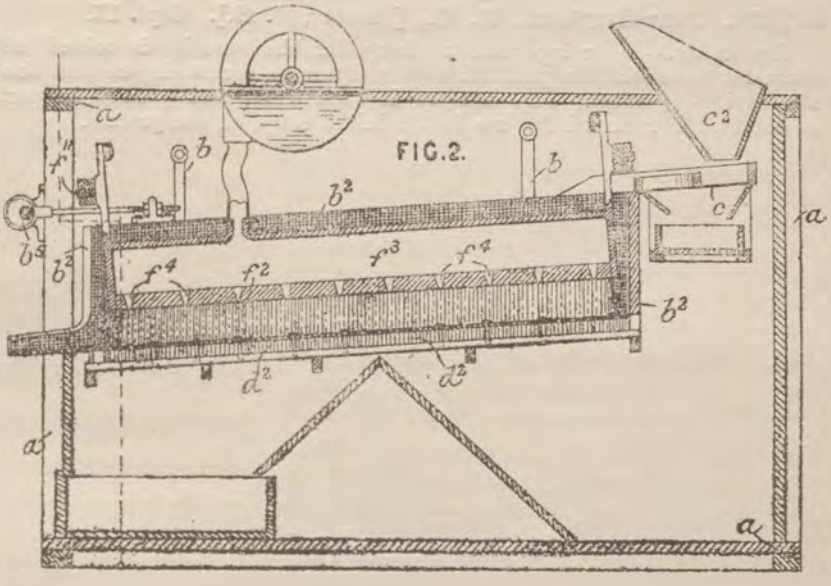


apparatus on a central trunnion, running out the still fluid soap, and afterwards pouring in molten soap of a different kind. When the bars have solidified they are forced out of the moulds by means of the pistons G. The bars are then cut into tablets by means of a cutter.

A.D. 1894.

20,789. Carlson, G. Oct. 30. [Date claimed under SEC. 103 of PATENTS &c. ACT, 1883, March 31.]

Casting confectionery. The object is to remove the starch from cast sugar goods &c. A semi-cylindrical sieve b^2 is suspended by hangers b within a casing a and is given a longitudinal movement by an eccentric b^5. Beneath the sieve are arranged sets of brushes d^2 with the bristles passing through the perforations. The brushes are arranged to give a stepped arrangement of the bristles above the sieve. Within, or above, the sieve is arranged a hollow brush f^3, the bristles of which meet the upwardly-projecting brushes d^2. Air is forced into the hollow f^3 and passes out through perforations f^4 to clean the brushes. The bar f^3 is supported by bars pivoted at f^{11} given a transverse motion by suitable links or eccentrics. The confections are fed from a hopper c^3 on to a sieve c whence they pass to the sieve b^2; here they are subjected to the scouring action of the longitudinally-movable brushes d^2 and the transversely-moving brush f^2. Trays for receiving the starch for re-use are placed beneath the sieve c. Sieves and brushes may be similarly arranged for use by hand.



A.D. 1896.

759. Hislop, G. R. Jan. 11.

Cements.—In apparatus for calcining cements &c., the material is passed from hoppers provided with crushing-rollers through drying-cylinders to rotary calcining-furnaces, the hot gases from which pass into the drying-cylinders.

20,603. Hardingham, G. G., [*Cummer, F. D.*]. Sept. 17.

Cements &c.—In drying cement slurry &c., the material is mixed with dust of a corresponding character to reduce the percentage of moisture to such a degree that the mixture will not adhere to the drying-apparatus. The mixture is then dried and ground, or partially ground, and the dust so obtained is returned for use in the initial stage of the process.

LONDON:
PRINTED FOR HER MAJESTY'S STATIONERY OFFICE,
By DARLING & SON, Ltd., 1–3, Great St. Thomas Apostle, E.C.
Published at the PATENT OFFICE, 25, Southampton Buildings,
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