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1,583,918

PROCESS OF COATING BUILDING BLOCKS

Filed April 16, 1923

2 Sheets-Sheet 1

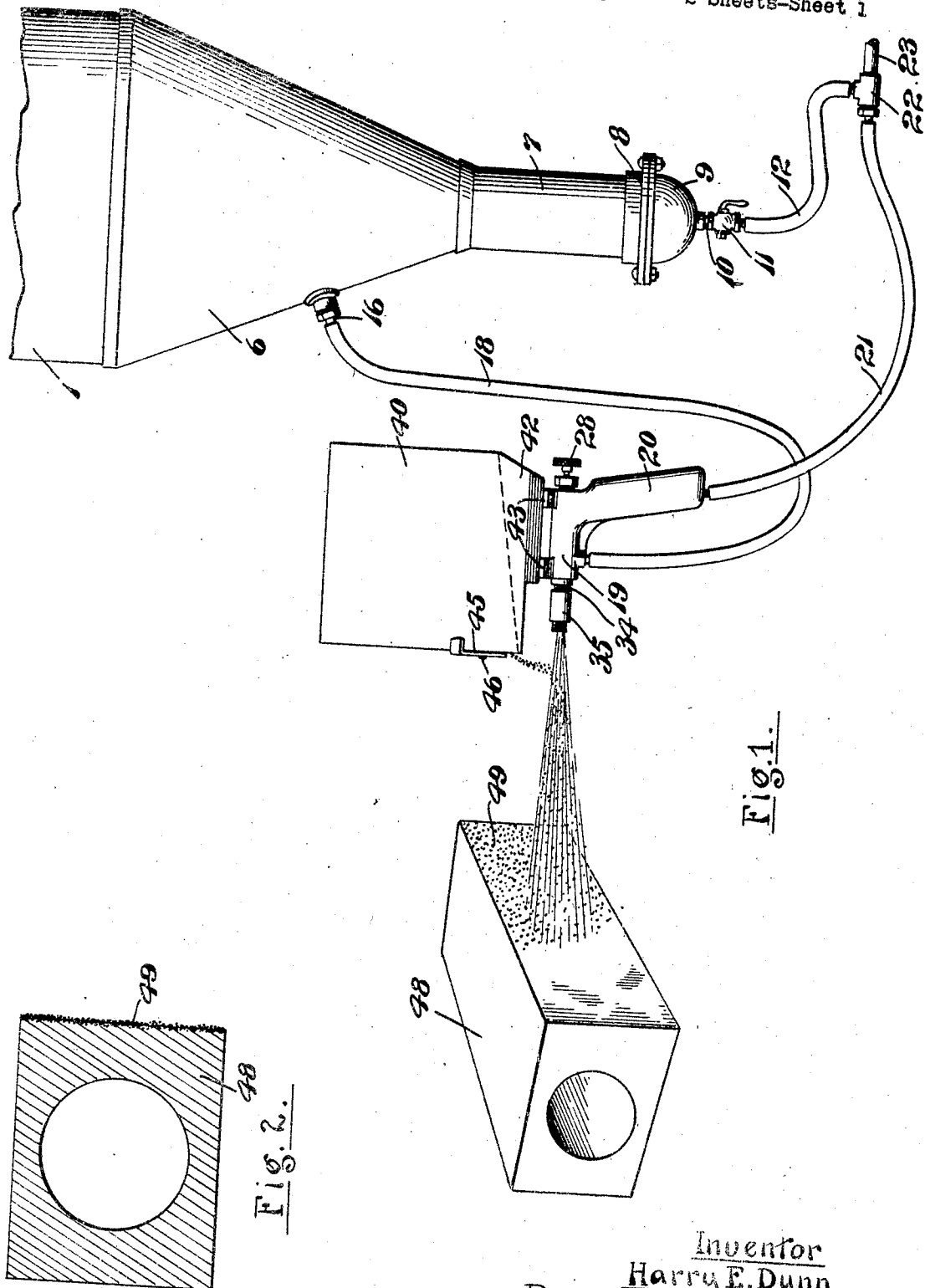


Fig. 1.

Fig. 2.

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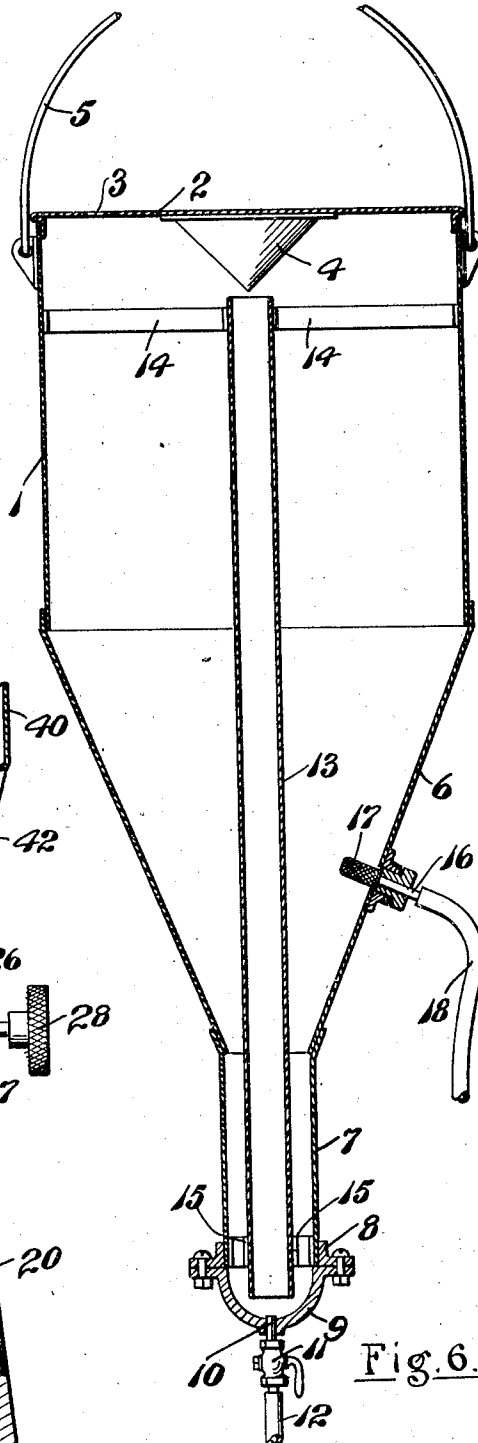
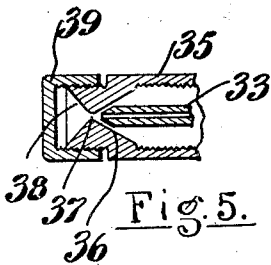
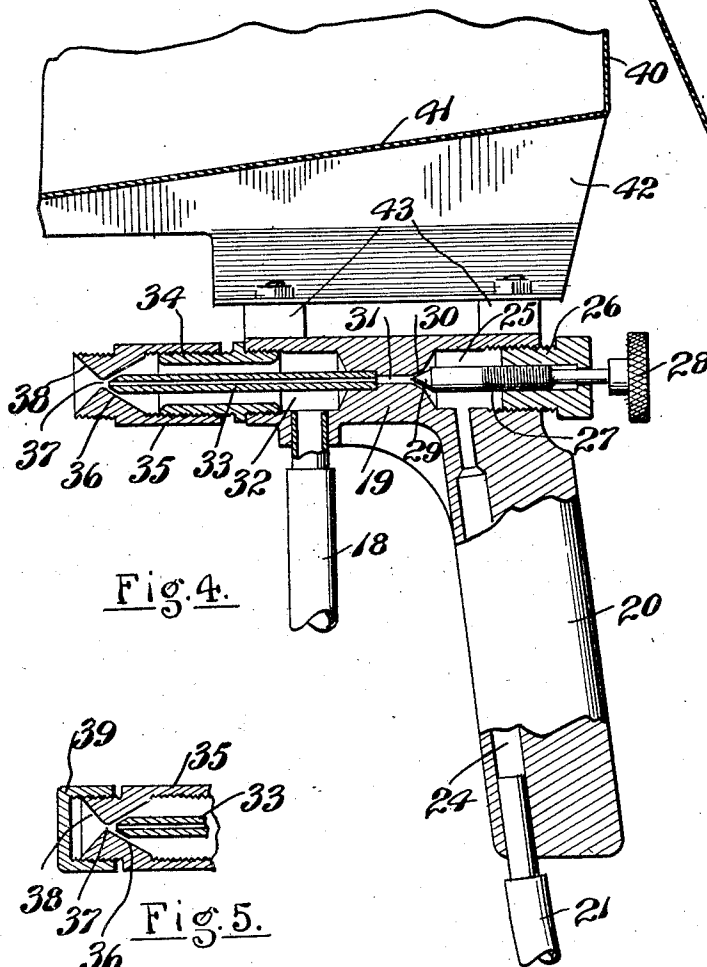
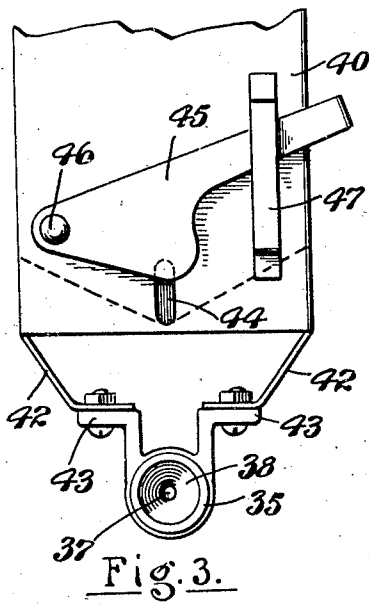
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2 Sheets-Sheet 2



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UNITED STATES PATENT OFFICE.

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PROCESS OF COATING BUILDING BLOCKS.

Application filed April 16, 1923. Serial No. 632,321.

This invention relates to a process of coating cement building blocks. Cement blocks may be made in many ways but as a rule all sides thereof are more or less rough and pitted and in order to provide a proper face for exposure to the elements and for appearance, it is sometimes the practice to give the block on the side or face to be thus exposed a finishing coat either of neat cement or a relatively rich mixture of cement and sand, preferably the latter, such coat or strata of finer cementitious material being placed in one side of the block form prior to putting in the coarser aggregate from which the major portion of the block is made.

With my process the cement block is made from a single relatively coarse aggregate and before the cementitious material has set and hardened, a coating is applied to the side which is to be exposed in a novel manner and in such a way that the coating adheres and interlocks with the block and a relatively smooth and water resistant coating or face is permanently attached with a saving of time in block manufacture so that quantity production is helped. This novel process of applying the coating or face to the blocks includes many novel steps for the successful and practical attainment of the results desired, as will appear in detail as understanding of the invention is had from the following description, taken in connection with the accompanying drawings showing the best form of apparatus for carrying out the process known to me, in which drawings,

Fig. 1 is a side elevation of the apparatus used and showing the same as used in applying a facing coat to a block.

Fig. 2 is a transverse vertical section through a block to which the facing coat has been applied.

Fig. 3 is a fragmentary front elevation of the sand carrying receptacle or hopper and an end elevation of the spraying gun connected thereto and lying below the same.

Fig. 4 is a fragmentary side elevation of said hopper and a vertical longitudinal section through the gun.

Fig. 5 is a fragmentary vertical longitudinal section through the outer end of the gun, showing the covering cap therefor when the device is not in use, and

Fig. 6 is a central vertical section through the receptacle in which the cement, water, coloring matter and waterproofing material is mixed and held.

Like reference characters refer to like parts in the different figures of the drawings.

In the construction of the apparatus used in performing the process a mixing and holding receptacle is used, comprising a cylindrical sheet metal wall 1, having an open upper end normally closed by a cover 2 in which a vent opening 3 is made and on which at its center and on its under side an inverted cone 4 is attached for a purpose later described. The receptacle may be suspended from any suitable overhead support by means of a bail 5, as shown in Fig. 6. At the lower end of the member 1, a second member 6 also of sheet metal is secured, the same tapering inwardly and downwardly to its smaller open lower end at which a cylindrical member 7 of relatively small diameter is attached and extends downwardly for a distance, at its lower end having a flanged collar 8 permanently secured thereto. A casting 9, substantially semispherical in shape is attached to the collar 8 by bolts or equivalent fastenings, closing the lower end of the receptacle. A nipple 10 passes through the lower side of the member 9, to which nipple a valve 11 is connected, there being an air carrying hose 12 connected to the valve in turn.

Centrally of the receptacle thus made a vertical tube 13 is located, its upper end coming directly below the point of the cone 4 and its lower end being located a short distance above the inner side of the member 9 and directly over the end of nipple 10. Bars 14 and a fixture 15 are used at the upper and lower ends of the tube 13 to secure it in position and permit free passage of the contents in the receptacle to the lower end of the tube. The contents of the receptacle, in practice, comprises water and Portland cement, together with a suitable cement waterproofing material and any desired kind of coloring matter, all being dissolved as much as may be in the water. By opening valve 11, compressed air is entered into the lower end of the receptacle and passes upwardly through the tube 13, carrying the cement and other materials in solution up-

wardly through the tube and projecting the same against the cone 4 whereby such materials are directed back into the mass of materials in the receptacle. There is a continuous circulation of the materials in the receptacle and a continual stirring and mixing thereof when the air is passed to the receptacle. The flow of air is regulated by the valve 11 and the air escapes from the receptacle through the vent 3.

In a side of the member 6 of the receptacle, an outlet pipe or nipple 16 is secured, having a screen applied thereto at its inner end within the receptacle, as shown at 17 and a hose 18 connected to its outer end for carrying the mixture of water, cement, coloring material and waterproofing material to the spraying gun which directs the same against the face of the cement block.

The gun comprises a horizontal barrel portion 19 at the rear end of which a handle 20 extends downwardly. An air carrying hose 21, at one end has connection with a T 22 to which the first hose 12 has connection at one side, the supply of air for the two lengths of hose 12 and 21 being carried to the T through a hose 23. The hose 21 leads to the lower end of handle 20 and has communication with a longitudinal passage 24 lengthwise of the handle and which joins with a relatively large opening 25 bored in the rear end of the barrel 19. A plug 26 is threaded into the rear end of the opening 25, closing the same and leaving an interior chamber to which the air from hose 21 passes. A regulating needle 27 is passed through the plug 26 and has a screw connection therewith, at its outer rear end being equipped with an operating head 28 for manual operation. The inner end of the needle 27 has a conical point to conform to the conical seat 30 made at the rear end of a restricted passage 31 in the barrel 19 between the opening 25 and a second opening 32 bored in the front end of the barrel and into the rear part of which the connection of the hose 18 to the barrel leads. The front end of the opening 32 is interiorly threaded, a tube 33 of relatively small size and with a restricted passage therethrough is fixed in the barrel at its rear end so that its passage is in alinement with the passage 31. A sleeve 34 is screwed into the front end of barrel 19, the tube 33 passing therethrough, and on to the front end of the sleeve a nozzle member 35 is attached, at its front end being formed on its inner sides with a conical restriction 36 which leads to a small passage 37 in the end of the nozzle, the nozzle flaring outwardly from said passage, as indicated at 38. The free end of the tube 33 extends nearly to the passage 37.

It is evident that when the air is permitted to pass through the passage 31 and tube 33 by operating the needle 27 outwardly,

such passage creates a suction which serves to draw the mixture in the receptacle through the hose 18 into the spaces around the tube 33 and as the air passes outwardly at the end of the nozzle, the mixture of water, cement, waterproofing material and coloring matter joins therewith and is projected outwardly in a jet or spray, as indicated in Fig. 1. The quantity of air allowed to pass is controlled by the needle 27 and the same may be entirely shut off and the protection of the jet or spray stopped by turning the needle so that its end 29 seats against the seat 30. A cap 39 may be fitted over the end of the nozzle when the device is not in use, as shown in Fig. 5.

A hopper 40 made from sheet metal and having a downwardly and forwardly inclined bottom 41 is attached to the gun so as to be positioned above it by means of supports 42 on the lower side of the hopper which connect to lugs or brackets 43 cast with the barrel 19 at the upper side thereof. In the front side of the hopper substantially at its lowest point an opening 44 is made so that sand carried in the hopper may flow therethrough into the projected jet or spray from the nozzle and be carried forward with it when the opening is open. A closure member 45 of sheet metal is pivotally mounted at one end at 46 to the front of the hopper and at one side of the opening 44, said member being manually operable up and down to open or close the opening 44, the free end portion of the closure member being held behind a guide 47 so as not to spring outward under pressure of the sand and to safeguard it against bending outwardly accidentally. The volume of sand that passes through the opening 44 may be controlled by raising and lowering the member 45 to gage the extent that opening 44 is opened.

The front of the hopper 40 is a distance in front of the nozzle so that the stream of sand passing from the opening 44 drops directly into the jet or spray projected from the nozzle. The block 48 formed from cementitious material is taken from the form in which it is made very soon after the material for the blocks has been entered into the form and before the cementitious material has hardened and set. Immediately after taking from the form the facing coat is applied by directing the jet from the nozzle with the sand falling into the same against the side of the block to be faced. The cementitious mixture adheres to the side of the block and penetrates the voids therein at the said side of the block, retains the sand and makes a water impervious coating for the block which soon sets and hardens like any Portland cement mixture, thereby completing the block ready for building purposes. The coloring matter may or may

not be used, it being a matter of choice in this respect. Of course the waterproofing material may also be omitted if desired and the facing consist only of cement and sand. However, the process contemplates the use of any combination of the elements which may be held either in suspension or in solution in the water in the receptacle where the same are mixed and stirred, and is not limited in any respect in this connection.

This process of finishing building blocks is very effective and has proved so in practice. The appended claims define the invention and are to be considered as comprehensive of all methods and processes coming within their scope, irrespective of the apparatus or instrumentalities used.

I claim:

1. The process of coating a side of a building block which consists in projecting a jet of water and cement in solution or suspension in said water toward said side of the block and introducing sand into the moving jet immediately prior to the contact thereof with the block.

2. The process of coating a side of a building block which consists in projecting a jet of water and cement in solution or suspension in said water toward said side of the block, and continuously feeding sand into the moving jet before it reaches said block.

3. The herein described process of coating a building block which consists in projecting a cementitious composition including water and cement against a surface of a block of cementitious material, newly formed and not set or hardened, and feeding sand into the moving jet of cementitious

composition before it strikes the side of the block.

4. The process of coating a structure formed of cementitious material which consists in projecting a jet of mixed water and cement in solution or suspension therein toward and against a side of the structure, and continuously dropping a stream of sand into the moving jet to mix therewith and be carried to said structure.

5. The process of coating a structure formed of cementitious material which consists in pneumatically projecting a jet of mixed water and cement toward a side of the structure, and continuously feeding a stream of sand from above into the moving jet to mix therewith and be carried to said structure.

6. The process of coating a structure of cementitious material of relatively coarse aggregate, which consists in projecting a jet of mixed water, cement and waterproofing material continuously against said structure, and continuously introducing sand into the moving jet to mix therewith and be carried therewith to said structure.

7. The herein described process of coating a structure formed of cementitious material of relatively coarse aggregate, which consists in pneumatically projecting a continuous jet of mixed water and cement against a side of the structure, and continuously feeding a stream of sand by gravity into the moving jet at the upper side thereof to mix therewith and be carried therewith to said structure.

In testimony whereof I affix my signature.

HARRY E. DUNN.