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APPARATUS FOR SPRAYING MORTAR, CEMENTITIOUS MATERIAL AND THE LIKE

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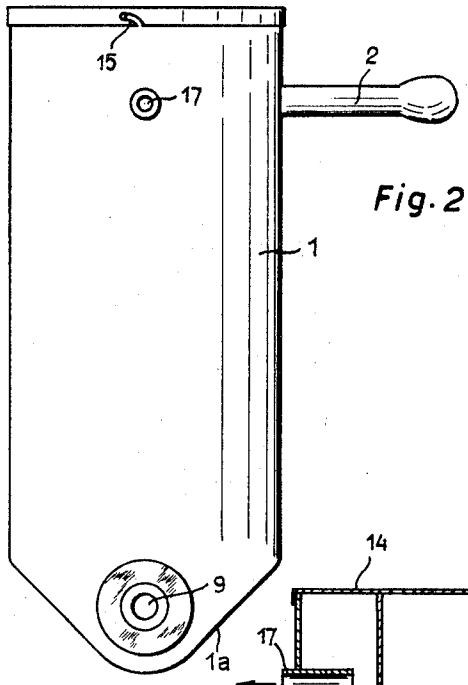
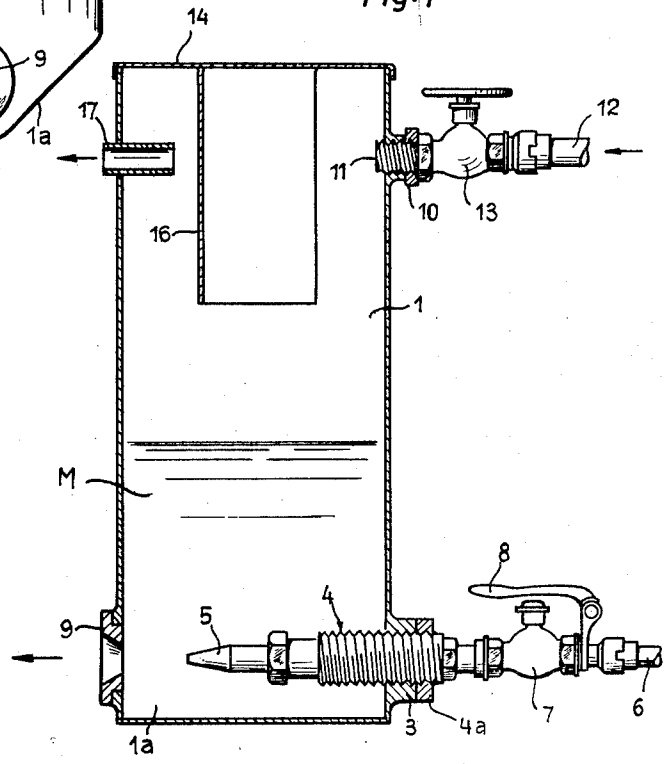



Fig. 2

Fig. 1




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Fig. 3

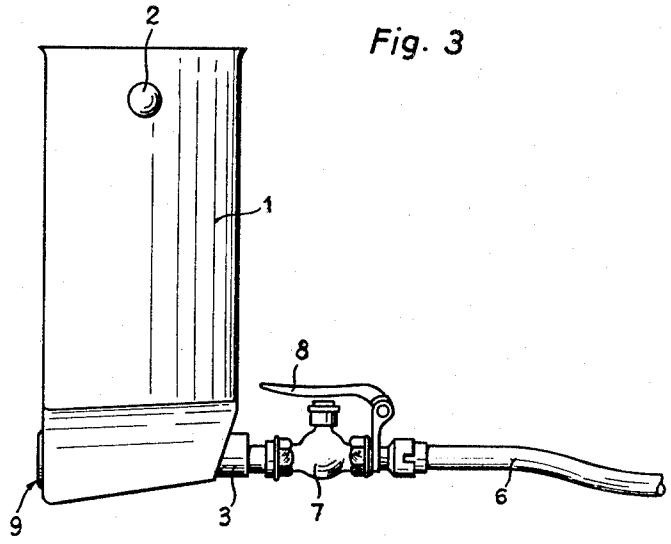
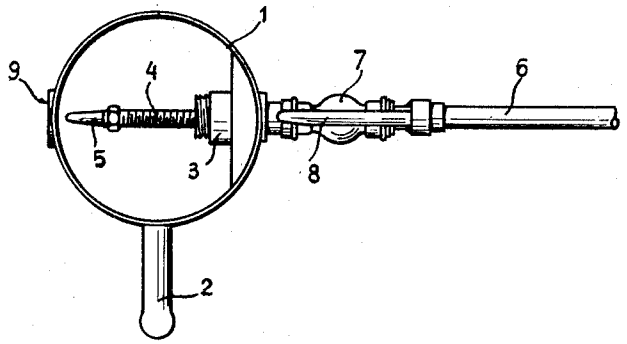



Fig. 4




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Fig. 5

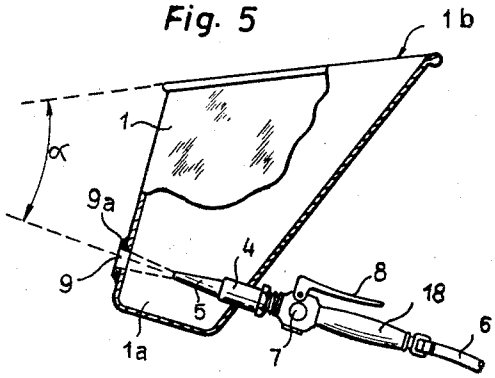



Fig. 6

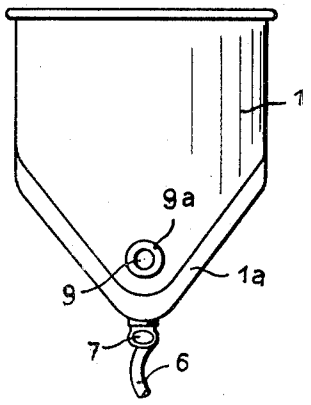



Fig. 7

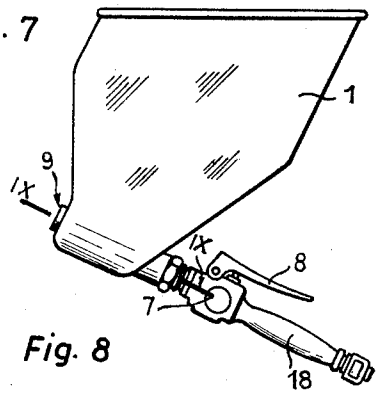



Fig. 8

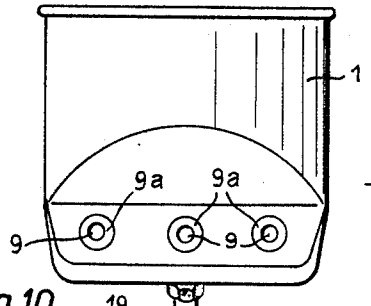



Fig. 9

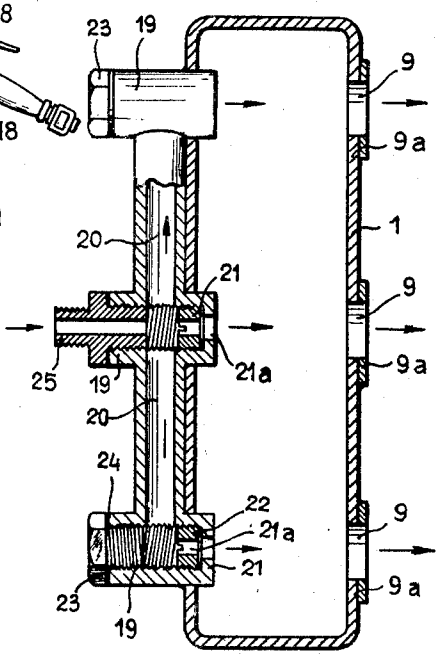
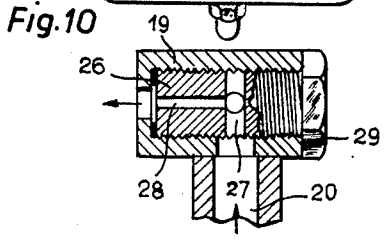



Fig. 10




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# APPARATUS FOR SPRAYING MORTAR, CEMENTITIOUS MATERIAL AND THE LIKE

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Application September 23, 1952, Serial No. 311,006

Claims priority, application Italy October 2, 1951

7 Claims. (Cl. 299—86)

This invention relates to an apparatus for spraying mortar, cementitious material and the like.

It is an object of this invention to provide an apparatus easy and inexpensive in construction, which can be easily handled by even unskilled workers and at the same time affords a uniform distribution and a satisfactory adherence of the mortar to the wall or other surface to be coated.

The apparatus comprises for this purpose a container in the form of a portable receptacle for containing mortar, a nozzle for the inlet of compressed air to the bottom of the receptacle and an outlet nozzle for the mortar, coaxial with the first-mentioned nozzle.

Further features of the invention shall be understood from the following specification in which reference is made to the accompanying drawing, wherein:

Figure 1 is an axial section of the apparatus,

Figure 2 is an elevation from the left of Fig. 1;

Figure 3 is an elevation of a modification;

Figure 4 is a plan view of Figure 3;

Figure 5 is a part sectional elevation of a further modified construction;

Figure 6 is a front view of Figure 5;

Figure 7 shows a modification of Figure 5 embodying three pairs of nozzles;

Figure 8 is a front view of Figure 7;

Figure 9 is a section on line IX—IX of Figure 7, and

Figure 10 is a detail view of a modified construction.

Referring to Figures 1 and 2, 1 denotes a cylindrical receptacle having a tapered bottom 1*a* and provided with a supporting handle 2. The bottom 1*a* of the receptacle carries a tapped fitting 3, having screwed therein a tube 4 which is secured by means of a tapped collar 4*a* and ends by a nozzle 5.

The tube 4 is fed with compressed air through a conduit 6. The compressed air flow is governed by a valve 7 controlled by a lever 8.

An outlet nozzle 9 for the lime, cement or similar slurry contained in the receptacle 1 is arranged on the axis of the compressed air nozzle 5.

The nozzle 9 is screwed into the receptacle 1 and may be replaced by nozzles differing in diameter according to the purpose for which the apparatus is used.

The apparatus operates in the following manner.

The receptacle 1 is filled with the mortar M to be sprayed, which may be a lime, cement or other slurry. The lever 8 is depressed in order to admit compressed air into the receptacle 1. The compressed air issues from the receptacle through the nozzle 9 carrying along the mixture which is sprayed on to the wall or other surface to be coated.

The apparatus is further provided with means for continuously supplying mortar to the receptacle. For this purpose the receptacle carries at its top a tapped fitting 10 having screwed therein a tube 11 connected through a hose 12 with a larger reservoir in which the mortar is prepared. A pump (not shown) supplies mortar from the main reservoir to the receptacle 1 and a cock 13 intercepts at will the mortar supply.



The receptacle 1 is closed by a top cover 14, which may be fastened by means of a bayonet joint 15 and is formed with a semi-cylindrical extension 16 extending within the reservoir and forming a baffle for the oncoming mortar jet. On the remote side of the baffle 16, a vent 17 is bored in the receptacle 1.

In the construction shown in Figures 3 and 4, the receptacle 1 is open at the top and mortar is filled in directly by the worker who holds the apparatus by his left hand gripping the handle 2, his right hand controlling the valve 7, the receptacle 1 being lowered like a spoon into the mortar reservoir.

In the modified construction shown in Figures 5 and 6, the handle 2 is dispensed with and a handle 18 is provided adjacent the valve 7. In this case the receptacle is smaller than in the previously described constructions and can be held by one hand only.

The edge 1*b* of the top opening of the receptacle is situated in a plane which is inclined to the axis of the spray nozzle, instead of being parallel thereto and forms to said axis a sharp angle $\alpha$ on the jet issue side. The jet can thus be directed obliquely upwards for covering ceilings without the mortar overpouring from the top opening of the receptacle.

An opening is bored in the casing in front of the nozzle 5 and has fitted to its outer edge a thin annular reinforcig disc 9*a*, forming a thin-walled, for instance 1–1.5 millimeter thick nozzle 9, which has afforded the best results in feeding the mortar.

According to the embodiment shown in Figures 7 to 9, the lower portion of the receptacle is tapered only on its front and rear walls, while the side walls are not tapered, so that a plurality of spray nozzles can be provided.

In the example shown, the casing 1 is provided with three air nozzles provided within tapped connections 19, transversely connected together by means of conduits 20. The structure comprising the connections 19 and conduits 20 is laterally welded to the casing 1. The casing 1 is provided at each connection with a nozzle 9 for spraying the slurry.

Each of the air nozzles comprises a member 21 that may be screwed into the connection 19 and secured therein through the interposition of a packing 22 against an annular abutment on the connection 19. An axial hole 21*a* is bored in the member 21 and forms the nozzle proper. The rear end of the lateral connections is closed by a screw-threaded plug 23 through the interposition of an annular packing 24.

The central connection 19 is fitted with an axially bored fitting 25, in lieu of the plug 23, to which the valve 7, handle 18 and air supply pipe 6 are fitted.

The compressed air is fed to the nozzles 21, whereby the slurry is sprayed simultaneously through all the nozzles 9.

According to the embodiment shown in Figure 10, the air nozzle for the lateral connection and the plug for closing the connection are in the form of a single member 26 that can be screwed into the connection 19 and in which cross holes 27 are centrally bored and communicate with the transverse conduits 20, an axial hole 28 being bored in the member 26 for the discharge of compressed air. The member 26 is provided with a rear hexagonal head 29 serving as a plug for closing the connection 19.

What I claim is:

1. An apparatus for spraying mortar, cementitious material and the like comprising, in combination, a container in the form of a portable receptacle open at the top, at least one compressed air delivery nozzle located in said container near its bottom and fitted in an opening provided in the side wall of the container, said nozzle being spaced from said bottom and facing a circular discharge

opening coaxial with the nozzle and provided in a zone in the side wall of the container substantially at right angles to the nozzle axis, at least the part of the container in which the nozzle is located being built up in the form of a hopper, whereby the material to be sprayed is directed to the zone at which the air jet leaves the nozzle outlet, a thin annular metallic reinforcing disc being provided on the outer surface of the portion of the side wall in which the discharge opening is formed, said disc being coaxial with said discharge opening and having its inner diameter equal to the diameter of said discharge opening.

2. An apparatus for spraying mortar, cementitious material and the like comprising, in combination, a container in the form of a portable receptacle open at the top, at least one compressed air delivery nozzle located in said container near its bottom and fitted in an opening provided in the side wall of the container, said nozzle being spaced from said bottom and facing a circular discharge opening coaxial with the nozzle and provided in a zone in the side wall of the container substantially at right angles to the nozzle axis, at least the part of the container in which the nozzle is located being built up in the form of a hopper, whereby the material to be sprayed is directed to the zone at which the air jet leaves the nozzle outlet, the common axis of the compressed air delivery nozzle and of the discharge opening forming with the plane in which the top edge of the container is located a sharp angle on the jet side whereby the latter can be directed obliquely upwardly for covering ceilings without the material being sprayed overflowing from the top opening of the container.

3. An apparatus for spraying mortar, cementitious material and the like comprising, in combination, a container in the form of a portable receptacle open at the top, at least one compressed air delivery nozzle located in said container near its bottom and fitted in an opening provided in the side wall of the container, said nozzle being spaced from said bottom and facing a circular discharge opening coaxial with the nozzle and provided in a zone in the side wall of the container substantially at right angles to the nozzle axis, at least the part of the container in which the nozzle is located being built up in the form of a hopper, whereby the material to be sprayed is directed to the zone at which the air jet leaves the nozzle outlet, means provided on the outer surface of the part of the side wall in which the discharge opening is formed to reinforce said discharge opening, said means being coaxial with said discharge opening and having its inner diameter equal to the diameter of the discharge opening.

4. An apparatus for spraying mortar, cementitious material and the like comprising, in combination, a container in the form of a portable receptacle having side walls and being open at its top and adapted to contain a substantial quantity of the material to be sprayed, at least one compressed air delivery nozzle disposed in said container near its bottom but spaced therefrom and communicating with the exterior of said container through an opening provided in one side wall of said container, the side wall of the container opposite the discharge end of said nozzle being provided with a circular discharge opening aligned with said nozzle, said discharge opening having an axial length which is less than the diameter of said opening, the discharge end of said nozzle being spaced from said outlet opening so that said opening is at all times free from contact with said nozzle.



5. An apparatus for spraying mortar, cementitious material and the like, as defined in claim 4, wherein the opening in said side wall of the container is threaded and wherein said nozzle has a threaded portion received in said opening.

6. An apparatus for spraying mortar, cementitious material and the like comprising, in combination, a container in the form of a portable receptacle having side walls and a bottom and being opened at its top and adapted to contain a substantial quantity of the material to be sprayed, a plurality of compressed air delivery nozzles disposed in said container in laterally adjacent parallel relationship adjacent said bottom, said nozzles having discharge ends facing one of said side walls, said side wall opposite said discharge ends being provided with a circular discharge opening aligned with each of said nozzles, each discharge opening having an axial length which is less than the diameter of said opening, the discharge end of each nozzle being spaced from its respective outlet opening so that said opening is at all times free from contact with said nozzle.

7. An apparatus for spraying mortar, cementitious material and the like, as defined in claim 6, wherein said compressed air delivery nozzles are supported by a transverse delivery duct having an inlet opening adapted to communicate with a compressed air delivery hose, said duct being secured to the side of the container opposite said side having the discharge openings adjacent said bottom, each of the nozzles projecting into the container from said transverse delivery duct.

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