

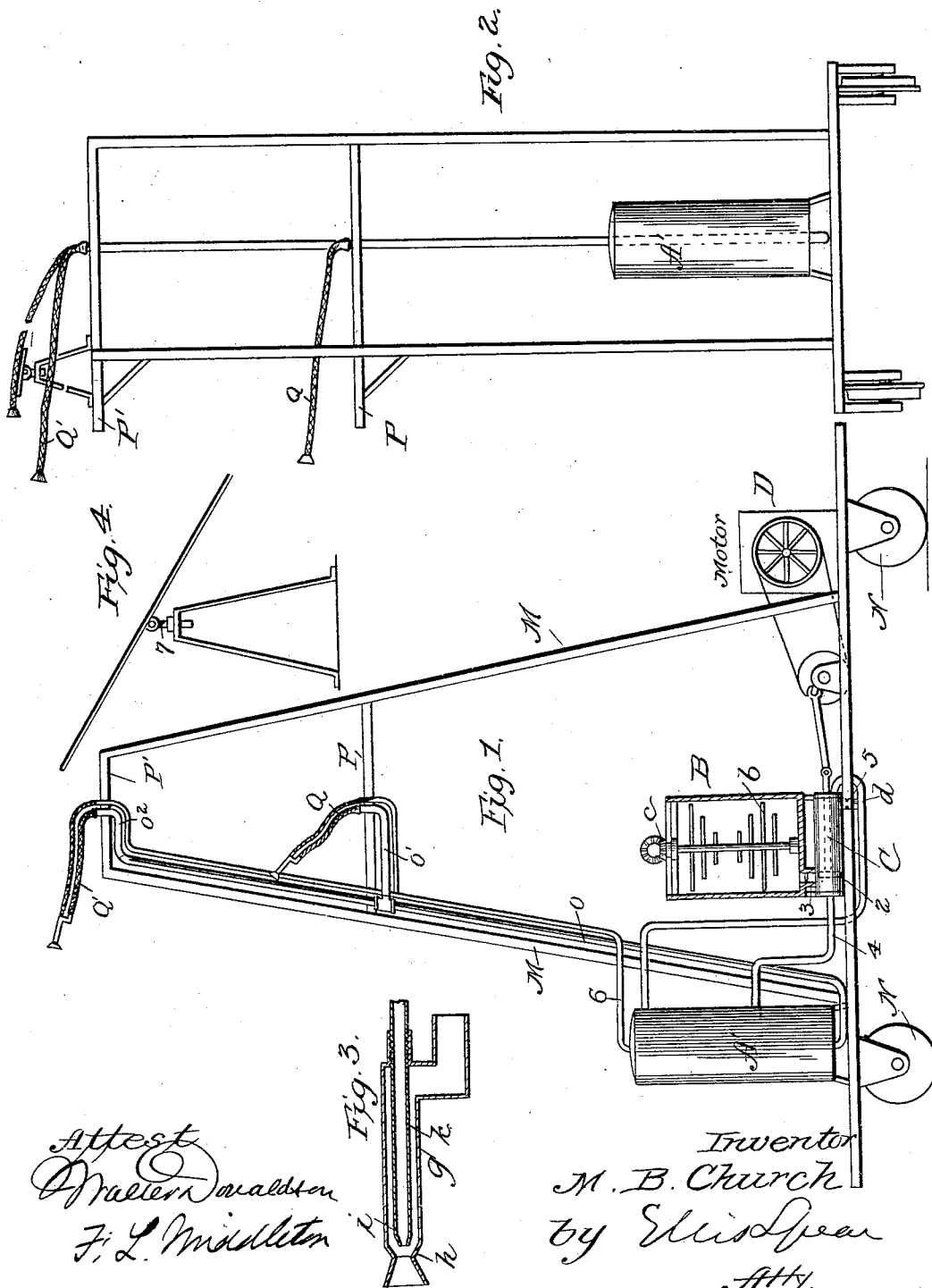
(No Model.)

M. B. CHURCH.

COATING SURFACES WITH PLASTIC MATERIAL.

No. 487,606.

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UNITED STATES PATENT OFFICE.

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COATING SURFACES WITH PLASTIC MATERIAL.

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To all whom it may concern:

Be it known that I, MELVIN B. CHURCH, a citizen of the United States of America, residing at Grand Rapids, in the county of Kent and State of Michigan, have invented certain new and useful Improvements in Coating Surfaces with Plastic Materials, of which the following is a specification, reference being had therein to the accompanying drawings.

10 The invention is designed for the purpose of applying substances in a plastic or approximately-plastic condition to walls, ceilings, or other surfaces in order to spread upon such surfaces in a divided condition a protecting or ornamental covering or coating.

15 The especial object which I have had in view in this invention is to lessen the cost of the covering of large or uneven surfaces and the exterior surfaces of buildings, and especially rough exterior surfaces for fireproofing, &c., and to provide a substitute for the ordinary handwork.

20 My invention is especially adapted for surfaces on which relief-work is used. The material which I have especially used in the practice of my invention is a mixture or composition of pulverized calcined gypsum and other substances, known in the trade as "alabastine;" but I do not limit myself to this material.

25 It is essential to my invention that the material be in a soft condition, in which condition it may be forced by an air-blast or by pressure directed against the wall or surface which is to be coated. I have found in practice that a good job can be done with an air-pressure of thirty pounds to the square inch. For the best effect I have found that the material should be in a condition a little softer than ordinary plastic material. It may be in such condition that it may be applied with a brush and not thicker than ordinary paint if the surface it is applied on is of a very absorbent nature. The especial limitation when the material is applied to a non-absorbent surface is that the material should not be so soft or so nearly in a liquid form that when driven in a divided condition against the wall it would run upon the surface.

30 My invention consists, essentially, in directly projecting a material suited to thus

coat a wall or other surface in a divided condition against such wall or surface.

In preparing the material for coating a non-absorbent surface I take alabastine, for example, and mix it with water to a soft plastic condition and such material as is ordinarily used with a brush and as is used in low relief-work. The substance being so mixed, it is then placed in a receptacle and pressure is applied thereto, preferably by air, and the material is forced through a pipe having a suitable nozzle upon its end. This nozzle is directed by the workman toward the surface to be covered. The material is thus thrown forcibly in a divided condition from the nozzle directly upon the surface and is distributed upon the surface, to which it adheres and does not run. The size of the opening in the nozzle and the thickness of material must be arranged, for the surface there points and pressure must be arranged each to suit the other to produce the best results; also, the pressure must be stronger where a broad spread is required or where the material is to be first raised some distance in a stand-pipe and also if it is to be thrown far from the nozzle.

In the accompanying drawings I have shown a suitable apparatus for carrying out my invention.

In the drawings, Figure 1 is a front elevation of the apparatus; and Fig. 2 is a side view, an additional support being shown on the top. Fig. 3 shows the central longitudinal section of a form of nozzle suited to the work. Fig. 4 represents a detail.

In Fig. 3 I have shown a form of nozzle adapted to more effectually divide or spray the material. The pipe *g* is that through which the material is forced. Near the delivery end it is contracted, as shown at *h*, and the extreme end is made flaring. Within the contracted end is a conical valve-like piece *i*, arranged with its axis coinciding with that of the pipe *g* and adjusted so as to leave an annular passage between the cone and the tapering or contracted walls of the pipe. This conical piece may be adjustable to enlarge or diminish the annular passage. When the coating material is forced through the pipe *g*, it is turned inwardly against itself, and

is thereby more effectually subdivided. The conical point may be the end of a pipe, as shown at *k*. This represents an air-pipe leading to any suitable source of air-pressure, and the air is forced through a small hole in the tip of the conical end. The air-blast thus applied aids to impel the material, and for some surfaces I force the plastic material through the center pipe and the air through the outer space.

As the invention is mainly designed to be worked upon large surfaces, I have shown in Fig. 1 a form of apparatus adapted for such purposes. In this *M* represents a tower mounted upon wheels *N*, by means of which it may be moved to different parts of the building, the apparatus being intended for outside work. Upon the platform is the receptacle *A'* for the coating material. From this pipes *o o' o''* (preferably fixed metal) lead to the stages or platforms *P P'*, respectively. On these the workmen stand in operating the apparatus. A flexible hose *Q Q'*, attached to the rigid pipes, has a suitable nozzle, which may be directed by the workman toward the wall. The material is supplied to the tank *A'* from the tub *B*, in which the material is prepared and mixed, a stirrer *b* being arranged therein, operated in any suitable manner through gearing *c'*. The material passes from the tub into the cylinder *C* through the valved connection 3. This cylinder, with the piston 2, constitutes a pump by which the material is forced through the pipe 4 into the tank *A'*. The valve in the connection 3 is an ordinary flap-valve, which falls to admit the material to the pump when the piston moves toward the right and closes on the other stroke of said piston. The piston is operated from the motor *D* through the connections shown, and this motor may be operated by electricity derived from a conductor extending around the building. The same pump may be utilized to secure the air-pressure through a pipe *d*, leading from the right-hand end of the cylinder and connecting with the upper end of the tank. A check-valve is used at 5, and the piston on the right-hand stroke acts as a compression to force and compress air into the tank *A*. The air is supplied to the nozzles through the pipe 6.

It will be understood that the apparatus may be used without the tower, if desired,

and for many structures the spray can be made to reach all parts without the use of the tower.

In Fig. 4 a swiveled support 7 is shown, upon which the hose may be laid and directed to any desired point, and this swiveled support may be replaced on the top of the tower, if desired.

This material, applied as above described, is sufficient for interior work and will withstand exposure on exterior surfaces for a long time; but to increase its durability and to give it a very high degree of resistance to atmospheric influences I have adapted the same method to fill or cover the plastic coat, applied as above stated, by a spraying of oil or paraffine in a liquid form or by any such well-known materials. Such materials thus applied to a hard or non-absorbent surface or only moderately-absorbent surface in the form of spray would run and produce an uneven and unsightly effect; but so applied upon the surface of a highly-absorbent material—such as that above described—the oil solution of paraffine or like substance is instantly absorbed and held and will not run; and another part of my invention consists in the method of combining with the process described above a further step consisting in spraying a waterproof and weather-resisting liquid upon the surface of the plastic coat after the latter has become hard.

I claim as my invention—

1. The hereinbefore-described mode of applying a plastic or semi-plastic material to walls or other surfaces, the same consisting in impelling said material through a pipe and directing it in a divided condition upon the said surfaces.

2. The hereinbefore-described mode of applying a plastic or semi-plastic material to walls or other surfaces, consisting in impelling said material through a pipe and directing it in a divided condition upon said surface and then spraying oil or like material over said material.

In testimony whereof I affix my signature in presence of two witnesses.

MELVIN B. CHURCH.

Witnesses:

G. W. BALLOCH,
WM. F. HALL.