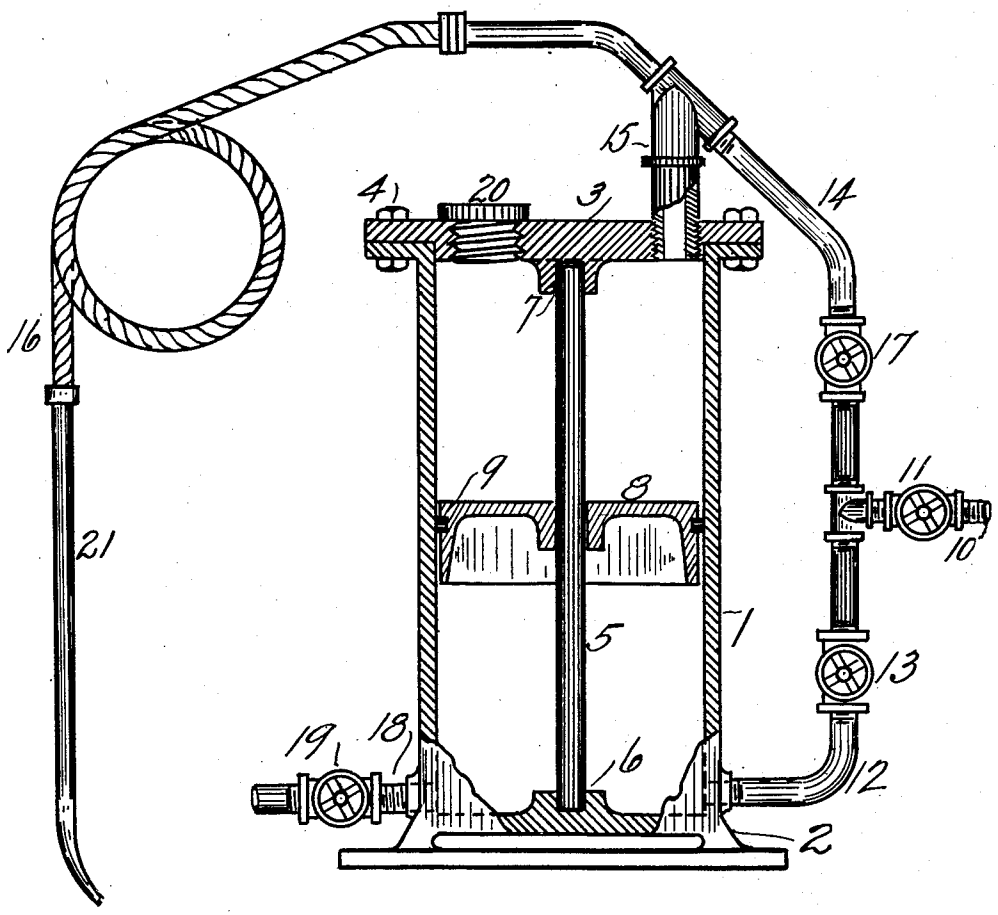
March 30, 1926. 1,578,944

R. M. WILKINSON

SPRAYING DEVICE FOR PLASTIC MATERIAL

Filed March 24, 1923



INVENTOR

Robert M Wilkinson

Patented Mar. 30, 1926. 1,578,944

UNITED STATES PATENT OFFICE.

ROBERT M. WILKINSON, OF PHILADELPHIA, PENNSYLVANIA.

SPRAYING DEVICE FOR PLASTIC MATERIAL.

Application filed March 24, 1923. Serial No. 627,431.

To all whom it may concern:

Be it known that I, ROBERT M. WILKINSON, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Spraying Devices for Plastic Material; of which the following is a specification.

This invention relates to that class of devices for spraying fluids, and the object of my said invention is to provide a spraying device that will spray a material that is in a semi-fluid or plastic condition.

My invention is particularly adapted to spray plastic fluid in places where space is restricted and where room for hand-work is impossible, for instance on brick baffle walls between boiler tubes or replacing broken bricks in such walls by filling the aperture with suitable plastic material.

My invention is also adaptable for spraying plastic fluid into cracks and crevices as the spraying force will cause said fluid to fill all small and irregular openings.

With this object in view, my invention consists of certain novel construction as will hereinafter be explained and pointed out in the claim, reference being had to the accompanying drawing forming part of this specification, and in which Figure 1 shows a convenient structure of my said invention, and in which the numeral 1 designates a vertical disposed cylindrical casing, the lower end provided with feet 2 for securing to a floor in order to maintain said casing in a vertical position.

The upper end of said casing 1 is provided with a suitable cap or cover 3 rigidly secured to said casing 1 by the bolts 4.

The numeral 5 designates a fixed guide shaft disposed in axial alignment with said casing 1. Said guide shaft is held in alignment by means of the shaft engaging with a suitable aperture in the boss 6 disposed centrally in the lower end of said casing 1 and also in a suitable aperture in the boss 7 located centrally on the inner surface of the cap or cover 3.

The numeral 8 designates a piston adapted to reciprocate the length of the casing 1. Said piston 8 is provided with a central aperture adapted to engage slidably with the guide shaft 5. Said piston 8 is provided with the usual piston ring 9 for maintaining a close contact between the piston and the inside wall of the casing 1.

The numeral 10 designates a pressure line controlled by the valve 11, said pressure being of any convenient kind, such as steam or air. Said pressure line 10 terminates into a bifurcated path, one line 12 leading to the bottom of said casing and in communication with the interior thereof, so that pressure can be exerted on the bottom of said piston, the other path 14 leading to a flexible hose 16 of a convenient length.

The numeral 15 designates a pipe line in communication with the line 14 and also in communication with the interior of said casing 1 on the top side of said piston, conveniently thru the cap or cover 3.

The numeral 13 designates a valve controlling the pressure in the line 12 and 17 designates a valve controlling the pressure in the line 14.

The numeral 18 designates a pipe line in communication with the interior of the said cylinder at the bottom thereof and terminates to atmosphere, said line is controlled by the valve 19. This line is used for draining the contents of said cylinder 1, either for emptying its contents or for washing out.

The numeral 20 designates a cap in screwed relation with an aperture in said cover 3, said aperture communicating with the interior of said casing 1 and is used for filling the said casing with a fluid or plastic material to be sprayed.

The numeral 21 designates a pipe line connected to the end of the flexible line 16 and said pipe terminates in a suitable spraying nozzle.

Having thus described the various parts throughout the view, its mode of operation will be substantially as follows:

Assuming the piston to be at the bottom of the casing, by reason of its weight and gravity, and that the casing is filled with the plastic fluid to be sprayed. Pressure being applied to the line 10 with the valve 17 open, will cause a flow of air or steam from the nozzle on the end of pipe 21. The valve 13 being now opened will place pressure on the bottom of said piston, forcing the plastic material from the casing 1 into the line 16

by way of the line 15, which obviously will be forced from the nozzle of pipe 21 under pressure.

The said pipe 21 being of a relative small diameter and of a convenient length, can be placed in restricted places, such as aforesaid, and the velocity of the discharged material will be such that it will force the plastic material in very fine cracks or crevices.

It will be understood that the volume of material sprayed will be regulated by the speed of travel of the piston 8, which in turn is controlled by the valve 13 and the force of the spray will be controlled by the valve 17.

It will further be noted that the plastic material is subjected to pressure across the entire area which is in contact with the piston, so that when pressure is introduced into the casing back of the piston the material has a mass movement toward the outlet. This is a very necessary action where plastic materials are concerned, since otherwise a pressure medium acting on less than the entire surface will cause only portions of the material to move toward the outlet, and the remaining portions become set within the receptacle, and this set mass is gradually added to until the quantity of material actually forced out of the casing is so reduced as to render the device ineffective and practically of no commercial value. Thus, by forcing all of the material toward the outlet the movement is a unitary one, and finally leaves the casing entirely empty of plastic material, because there is no chance for the material to set along the walls of the container.

I do not want to limit myself to the exact construction as shown in drawing, as it will be understood that certain departures can be made from the construction thereof without departing from the spirit and intent of my invention, for instance the piston can be moved by other means than by air or steam pressure such as a screw operating mechanism, also the piston may be actuated by a separate pressure means from the spraying means.

What I claim as new and desire to secure by Letters Patent is:

In a sprayer for plastic material, the combination of a casing having a material discharge at one end and an inlet for a pressure medium at the other end, a piston slidably mounted in said casing between said inlet and said outlet, a hose having communication with said outlet, a nozzle on said hose, means for respectively conducting a conveying pressure medium to said hose behind the material therein and to said inlet whereby said material has a mass movement to said outlet, leaves said outlet as a fractional part and is ejected through said hose in a continuous stream of particles, and separate means for independently controlling the pressure to said hose and to said inlet.

In testimony whereof I affix my signature.

ROBERT M. WILKINSON.