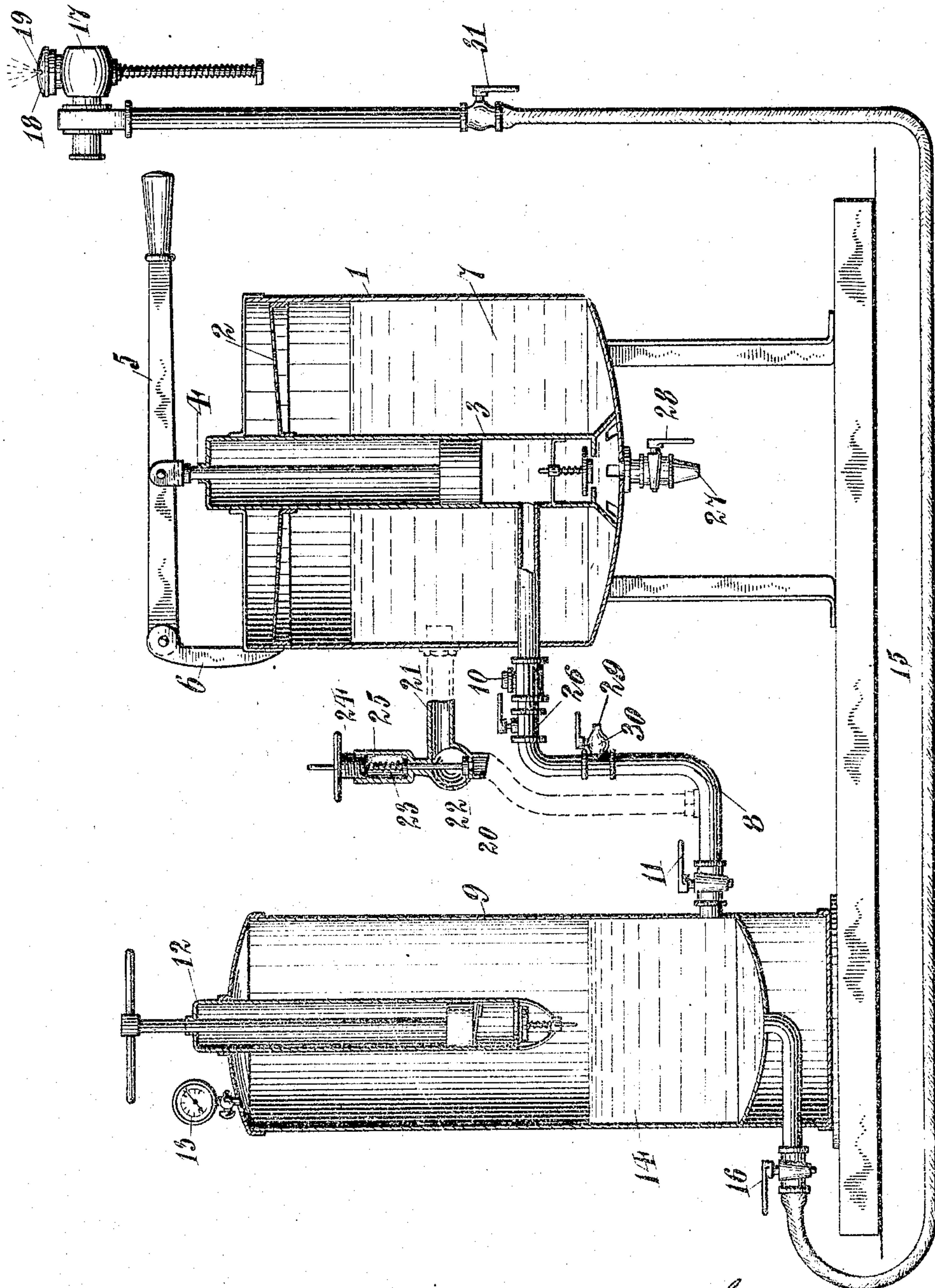


A. SALA.
 SPRAYING APPARATUS.
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924,501.

Patented June 8, 1909



Witnesses:
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UNITED STATES PATENT OFFICE.

ANTENOR SALA, OF MEXICO, MEXICO.

SPRAYING APPARATUS.

No. 924,501.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, ANTENOR SALA, a citizen of the Republic of Mexico, residing at the city of Mexico, Republic of Mexico, have invented certain new and useful Improvements in Spraying Apparatus, of which the following is a specification.

This invention relates to an apparatus for spraying paints or other materials by means of a compact and easily transportable apparatus which may be operated by hand. Its object is to provide an apparatus of this sort which can be continuously charged and operated, and by means of which the spraying may be done at any desired pressure and this pressure maintained continuously uniform and constant.

One form of apparatus which I may use for this purpose is shown in cross section in the accompanying drawing forming part of this specification. It consists of a receptacle 1 provided with a perforated or sieve-like diaphragm 2, through which the paint or other material may be percolated and sifted. 3 is an ordinary pump (shown inclosed in the receptacle 1 for economy of space) and having its piston rod 4 connected with a lever 5 fulcrumed to a bracket 6 on the receptacle. The paint or other material to be sprayed, which has been first sifted or strained through the perforated diaphragm 2 into the receptacle 1, is shown at 7. This strained material is adapted to be forced through a tube 8 from said pump with which it is connected, into an air tight tank or receiver 9. This tube 8 is provided with an ordinary check valve 10, and also has a cock 11, near the tank 9. This tank has previously been charged with compressed air, which charging may take place by means of an air pump 12, and which may be as shown within said tank. This compression of air should be carried to a point somewhat lower than the desired working pressure, and which will be indicated by the pressure gage 13, on said tank. The material is then pumped into the tank (see 14) until the desired working pressure is obtained; and this pressure will be indicated by the pressure gage 13.

15 is a pipe or hose, of any desired length, leading from the bottom of the tank 9 and provided with a cock 16, and a spraying device 17. When the cock 16 is opened, the paint or other material is allowed to flow

through the pipe or hose 15, being forced therethrough by the compressed air in the tank 9. The paint or other material then issues from the nozzle or spraying device 17, which may be of any suitable form, but is one preferably consisting of a plate 18, provided with a small hole or orifice 19. This nozzle or spraying device is not an essential feature of my invention. The check valve 10 controls the passage of the material from the receptacle 1 to the tank 9.

It should be understood that the air in the tank 9, being at the start compressed to a suitable pressure, does not issue from the said tank at 16 together with the paint or material to be sprayed, but is behind said material, forcing it through the pipe 15 and nozzle 17. The pressure in the said tank is maintained at the desired working pressure, as indicated by the pressure gage 13, by continuously pumping the material into the tank 9, by means of the force pump 3. By observing the pressure gage, the paint or other material can be pumped or forced into the tank 9 at a rate approximately equal to that which it leaves through the outlet and nozzle, and the pressure be thus maintained. This regulation of the rate of forcing the material into the tank 9 may also be done automatically by any suitable device, for example by one which controls the speed of the force pump, or by one which returns the composition to the receptacle when the necessary pumping speed is exceeded.

The regulation of the force of the material, which is pumped into the tank 9 to keep the pressure in said tank constant, may be accomplished automatically by means of an automatic valve connected with the pipe 8. In the drawing is shown an elbow pipe, one arm 20 of which is connected with said pipe back of the stop cock 11, and the other arm 21 being connected with the receptacle 1. In the elbow joining the arms 20 and 21 is an automatic valve 22 controlled by a spring 23, the stem of the valve passing loosely through a nut 24, which is screwed into casing 25, the pressure of the spring against the valve being regulated by screwing the nut in either direction. The automatic valve performs no function unless the passage way through pipe 8 is open. The mechanism above described can be used with or without check valve 10, the check valve 10 being always

open, while it is desired that the automatic valve performs its proper functions. During the operation of the apparatus, as long as the pressure in the tank 9 does not exceed that for which the valve has been regulated, the material will be pumped from the receptacle 1 through the pipe 8 into the tank 9. As soon, however, as the desired working pressure is exceeded, which will be enough to force the valve 22 against the action of the spring, said valve will open and the material will flow back through the pipe 21 in to the receptacle 1. As long as the above described valve and its connected mechanism is in order, and during the operation of the apparatus, all valves and cocks in the pipe 8 may remain open and the material can flow from the receptacle 1 into the air tight tank 9; when and only when the pressure therein falls below the desired working pressure. At all other times, that is, whenever the desired working pressure is exceeded, the material will flow back into the receptacle 1.

26 is a stop cock in the pipe 8 between the check valve 10 and the elbow arm 20. 27 is a discharge outlet in the bottom of the receptacle 1, which is controlled by a cock 28, and 29 is a discharge outlet in the pipe 8 between the cock 26 and the elbow arm 20 controlled by cock 30. In order to clear out the entire apparatus after using it for painting or spraying, or just before it is to be used for such purpose, the cock 26 should be closed and the cock 28 opened, and the material from the receptacle 1 is permitted to discharge through the outlet 27. Water or cleansing material can be used also to clean the receptacle 1, and be discharged through the outlet 27. The cock 30 is opened when the paint or other material remaining in the pipe 8 is to be discharged or drawn off through said pipe, and it is evident that water or other cleansing material from the receptacle 1 may be forced into pipe 8 and be discharged and drawn off from the outlet 29. In the beginning of the operation of the apparatus the cock 30 should be opened until any material that has remained in the pipe 8 has discharged through the outlet 29. As soon as this discharge ceases, the cock 30 should be closed so as to prevent the escape of any compressed air that may be in the tank 9. Of course when the machine begins to be operated and when the material is placed in the receptacle 1 the valve 28 must be closed, and the cocks 11 and 26 must be open.

31 is a stop cock in the pipe 15, which may be applied at any desired point on said pipe to enable the operator handling the spraying end of the apparatus to shut off or open the passage way for the material of the spraying device whenever desired.

From the above it will be seen that my invention provides means for spraying paints

or other materials, and by any desired pressure, and a pressure that may be maintained continuously, uniform and constant, and one that may be continuously charged and operated.

It is exceedingly advantageous to have the pumps 3 and 12 located within the tanks 1 and 9 since it protects them and prevents them from becoming broken or otherwise damaged and thus causing troublesome leaks. These features also make the apparatus much more sightly and convenient. And, especially with regard to pump 3, by placing this pump within the tank 1 the operator may use the spraying nozzle with one hand and work the pump 3 with the other and at the same time keep the proper pressure on the liquid and be in a position to operate the various valves and see whether the tank 1 is nearly empty. If the pump 3 was in almost any other position these advantages would not be obtained. Prior devices have been found disadvantageous in this respect.

I do not limit myself to the precise construction herein described and shown, as many changes may be made therein without departing from the spirit of my invention or sacrificing its chief advantages.

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

1. A spraying apparatus consisting of an air tight tank, means connected with said tank for supplying compressed air to the same, an inlet to said tank, means for forcing the liquid or other material through said inlet and into said tank, an outlet for said material from said tank and communicating with the spraying nozzle, means for indicating the pressure on said material, and means for automatically regulating said pressure on said material, whereby it may be continuously sprayed and under a constant, uniform and desired pressure.

2. A spraying apparatus comprising a receptacle for the material to be sprayed, an air tight tank, and a passageway between said receptacle and tank for said material, an air pump connected with said tank for supplying compressed air to the same, a force pump having its cylinder inclosed within said receptacle for forcing the material through said passageway and into said tank, an outlet passage leading from said tank for the material, and terminating at the ejecting outlet.

3. A spraying apparatus comprising a receptacle for the material to be sprayed, an air tight tank, and a passageway between said receptacle and tank for said material, an air pump having its cylinder inclosed in said tank for supplying compressed air to the same, a force pump having its cylinder inclosed within said receptacle for forcing the material through said passageway and into

said tank, an outlet passage leading from said tank for the material, and terminating at the ejecting outlet.

4. A spraying apparatus comprising a receptacle for the material to be sprayed, an air tight tank, and a passageway between said receptacle and tank for said material, an air pump connected with said tank for supplying compressed air to the same, a force pump having its cylinder inclosed within said receptacle for forcing the material through said passageway and into said tank, an outlet passage leading from said tank for the material, and terminating at the ejecting outlet, and means for automatically regulating the pressure on the material in the tank.

5. A spraying apparatus comprising a receptacle for the material to be sprayed, an air tight tank, and a passageway between said receptacle and tank for said material, a plurality of stop-cocks and a discharge valve arranged in said passageway, an air pump having its cylinder inclosed in said tank for supplying compressed air to the same, a force

pump having its cylinder inclosed within said receptacle for forcing the material through said passageway and into said tank, an outlet passage leading from said tank for the material, and terminating at the ejecting outlet, and means for automatically regulating the pressure on the material in the tank.

6. A spraying apparatus consisting of an air tight tank, an air pump having its cylinder inclosed within said tank, a receptacle for the material to be sprayed, a force pump having its cylinder inclosed within said receptacle, a passageway leading directly from said pump cylinder to said tank, an ejecting outlet from said tank and spring actuated automatic means for regulating the pressure of the material in said tank.

In testimony whereof, I have signed my name to this specification, in the presence of two subscribing witnesses.

ANTENOR SALA.

Witnesses:

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EDWIN SEGER.