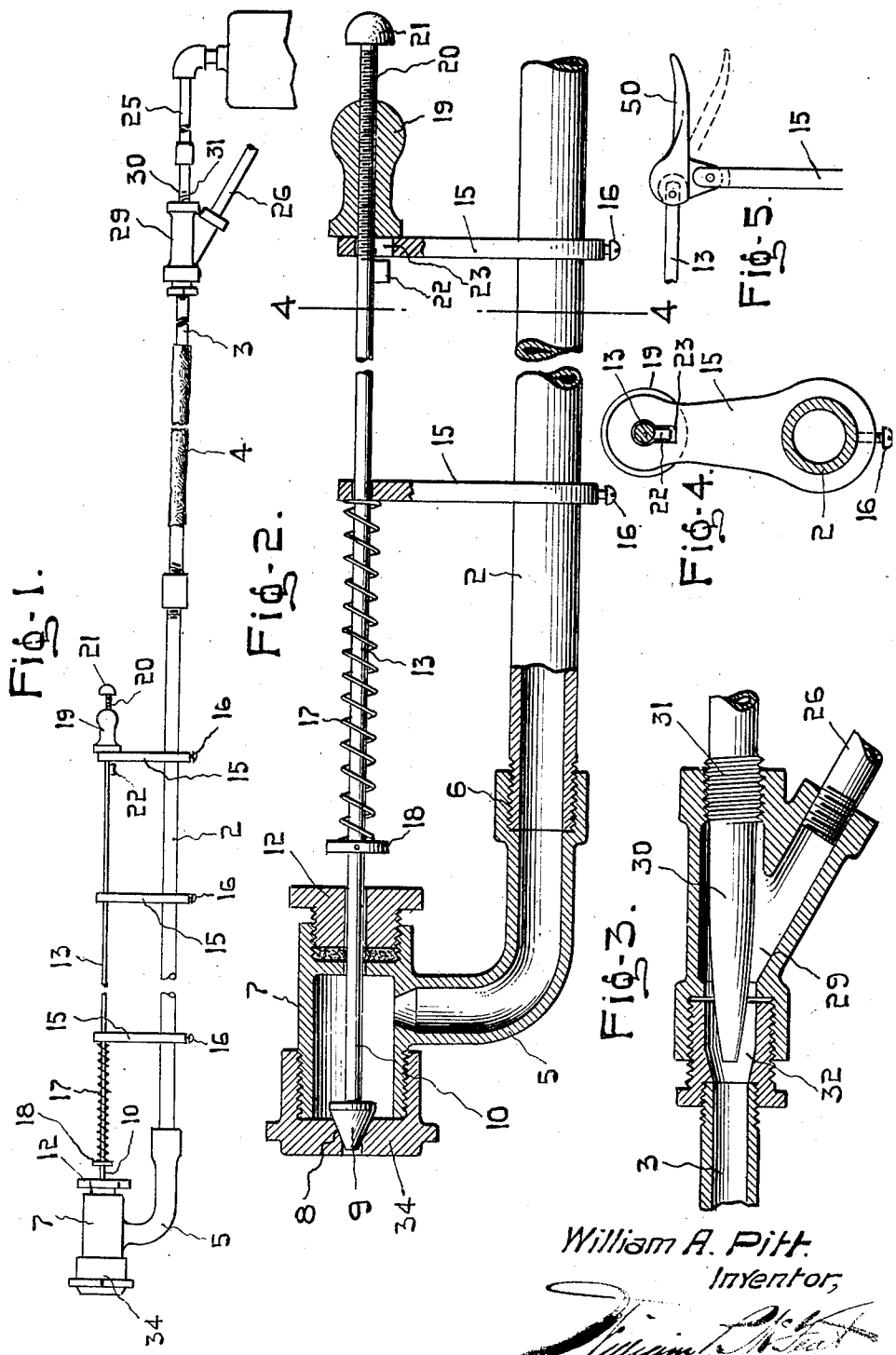
W. A. PITT.

SPRAYER.

APPLICATION FILED MAY 1, 1920.

1,411,513. Patented Apr. 4, 1922.



UNITED STATES PATENT OFFICE.

WILLIAM A. PITT, OF MONTREAL, QUEBEC, CANADA.

SPRAYER.

1,411,513. Specification of Letters Patent. Patented Apr. 4, 1922.

Application filed May 1, 1920. Serial No. 378,243.

To all whom it may concern:

Be it known that I, WILLIAM A. PITT, of the city of Montreal, Province of Quebec, Dominion of Canada, have invented certain new and useful Improvements in Sprayers; and I do hereby declare that the following is a full, clear, and exact description thereof.

My invention relates particularly to sprayers for applying paint, varnish and the like by means of compressed air and has for its object to provide a construction having a minimum number of parts and which will enable the delivery of the liquid to be controlled from a point at a greater distance from the discharge end than has heretofore been possible, thereby enabling more or less inaccessible points to be easily reached. A further object is to effect a more perfect atomization of the liquid than is obtained with paint sprayers in use at the present time.

To this end my invention consists of the particular construction and arrangement of parts hereinafter described and pointed out in the claims.

For full comprehension, however, of my invention, reference must be had to the accompanying drawings in which similar reference characters indicate the same parts, and wherein:

Figure 1 is a side elevation of a sprayer constructed according to my invention;

Figure 2 is a similar view drawn to a larger scale and illustrating the atomizer in section;

Figure 3 is a sectional view of the fitting connecting one end of the commingler pipe to the pressure line and section line;

Figure 4 is a transverse sectional view taken on line 4—4 Figure 2; and

Figure 5 is a detail modification of the means for manually actuating the valve controlling the discharge outlet of the sprayer.

The embodiment of my invention illustrated in the accompanying drawing consists of a commingler pipe comprising a comparatively long section 2, a short section 3 and a flexible section 4 effecting a connection therebetween. The commingler pipe may be of any desired length having an atomizer upon the discharge end thereof. The atomizer is offset relatively to the pipe and comprises a casting in the form of an elbow 5 one end of which is screw threaded as at 6 for attachment to the commingler pipe while the opposite end terminates in a T constituting a valve-case 7. The valve-case is disposed parallel to the commingler pipe and its discharge end is closed by a cap 34 screwed thereon. This cap contains an opening 8 constituting a valve seat for a needle-valve 9 the valve stem 10 of which extends axially through a stuffing-box 12 closing the opposite end of the valve-case, the free end of the valve stem being connected to the adjacent end of a push rod 13, constituting an axial extension of the valve stem and extending parallel to commingler pipe 2. This push rod is of any desired length according to the length of sprayer required and it is slidably mounted in guide brackets 15 mounted upon the commingler pipe and held in position thereon by set screws 16. A helical spring 17, encircling the push rod and bearing between the bracket nearest the atomizer and a collar 18 upon the push rod, resiliently maintains the needle valve upon its seat. Any means may be provided for opening and closing the valve. In the embodiment illustrated, this means consists of a nut 19 mounted upon the free end of the push rod which is screw-threaded as at 20. The nut is constructed and arranged to bear against the adjacent guide bracket 15 and when rotated, to cause the push rod to feed axially therethrough. An enlargement 21 prevents complete displacement of the nut from the push rod.

To obtain a quick opening of the atomizer the operator may exert an axial pull upon the push rod, the only means resisting such a pull being the spring 17. To maintain the push rod in full open position the latter is provided with a lateral rib 22 which is adapted to normally register in a notch 23 in the adjacent bearing bracket. When the push rod is in full open position the rib will be located in rear of the bearing bracket and by a slight turn may be moved out of alignment with its notch 23 and consequently will act as a lock preventing the push-rod returning to its initial position. The push rod is released from this position by turning it until the rib registers with the notch at which point it will be automatically returned to the closed position under the influence of spring 17.

It is to be distinctly understood that this is but one embodiment of my invention and any means may be provided for maintaining the push-rod with the valve in full open position.

The end of the commingler pipe opposite to that connected to the atomizer is connected to the air pipe line 25 and to the suction line 26 leading from the tank (not shown) containing the paint, varnish or the like, through the medium of a suction connection 29. This suction connection consists of a V-fitting containing a nozzle 30 leading from the air line, the nozzle being located in axial alignment with the commingler pipe and constructed and arranged to discharge the air thereinto.

The nozzle is screw-threaded as at 31 to enable it to be adjusted relatively to the discharge opening 32 of the suction connection in order that the suction within the pipe 25 may be increased or decreased as desired.

It will be seen that the arrangement of the atomizer is such that the valve may be operated at a considerable distance from the discharge end and consequently the operator is enabled to reach points which heretofore have been almost inaccessible with the sprayers now in use, as for instance in the painting of buildings and the like. Furthermore as the paint is commingled with the air or pressure medium at a considerable distance from the atomizer a more perfect atomization is obtained than would be possible if the air and suction lines were connected directly to the atomizer.

Figure 5 illustrates a modification of my invention, the nut 19 being replaced by a manually operated lever 50.

What I claim is as follows:—

1. A sprayer of the type described consisting of a commingler pipe having a suction connection and a pressure connection at one end and an offset discharge outlet at its opposite end.

2. A sprayer of the type described consisting of a commingler pipe having a suction connection and pressure connection at one end and an offset discharge outlet at its opposite end, and valvular means controlling said outlet.

3. A sprayer of the type described consisting of a commingler pipe having a suction connection and pressure connection at one end and an offset discharge outlet at its opposite end, valvular means controlling said outlet said valvular means consisting of a manually operated valvular member extending parallel to said pipe and means upon said pipe for supporting said member.

4. In a sprayer of the type described the combination with a commingler pipe having a discharge end; of an atomizer upon the said end and consisting of a fitting comprising an elbow one end of which is connected to said pipe and a valve case upon the discharge end of said elbow and disposed parallel to said pipe, said valve case having a discharge outlet, and valvular means controlling said outlet.

5. In a sprayer of the type described the combination with a commingler pipe having a discharge end; of an atomizer upon the said end and consisting of a fitting comprising an elbow one end of which is connected to said pipe and a valve case upon the discharge end of said elbow and disposed parallel to said pipe, said valve case having a discharge outlet, valvular means controlling said outlet said means consisting of a valve within the valve-case, a push-rod connected to said valve and located exteriorly of said valve-case, and means upon the commingler pipe for supporting the push-rod thereon.

6. In a sprayer of the type described the combination with a commingler pipe having a discharge end; of an atomizer upon the said end and consisting of a fitting comprising an elbow one end of which is connected to said pipe and a valve-case upon the discharge end of said elbow and disposed parallel to said pipe, said valve-case having a discharge outlet, valvular means controlling said outlet said means consisting of a valve within the valve-case, a push-rod connected to said valve and located exteriorly of said valve-case, means upon the commingler pipe for supporting the push-rod thereon, and means for resiliently maintaining the valve upon its valve seat.

7. In a sprayer of the type described the combination with a commingler pipe having a discharge end; of an atomizer upon the said end and consisting of a fitting comprising an elbow one end of which is connected to said pipe and a valve-case upon the discharge end of said elbow and disposed parallel to said pipe, said valve case having a discharge outlet, valvular means controlling said outlet, said means consisting of a valve within the valve-case, a push-rod connected to said valve and located exteriorly of said valve-case, means upon the commingler pipe for supporting the push-rod thereon, and means for maintaining the valve in full open position.

8. In a sprayer of the type described the combination with a commingler pipe having a discharge end; of an atomizer upon the said end and consisting of a fitting comprising an elbow one end of which is connected to said pipe a valve-case upon the discharge end of said elbow and disposed parallel to said pipe, said valve case having a discharge outlet, valvular means controlling said outlet said means consisting of a valve within the valve-case and a push-rod connected to said valve and located exteriorly of said valve-case, means upon the commingler pipe for supporting the push-rod thereon, and manually operated means for causing longitudinal movement of said push-rod.

9. In a sprayer the combination with a

closed receptacle, and a pressure line; of an elongated commingler pipe of diminutive bore having a pressure connection and a suction connection at one end, the former being connected to said pressure line and the latter to the interior of said receptacle, an atomizer upon the discharge end of said pipe and consisting of a fitting comprising an elbow one end of which is connected to said pipe and a valve-case upon the other end of said elbow and disposed parallel to said pipe and having a discharge outlet in one end, valvular means controlling said outlet said means consisting of a valve located within the valve case and controlling said outlet, a push-rod extending parallel to said commingler pipe into said valve-case and carrying said valve, brackets mounted upon said pipe and slidably supporting said push-rod the latter being axially movable therethrough, means located exteriorly of the valve-case for yieldingly maintaining the valve in position controlling the outlet said means consisting of an abutment upon said push-rod and a helical spring encircling the latter and bearing between the abutment and one of said brackets.

10. In a sprayer the combination with a closed receptacle and a pressure line; of an elongated commingler pipe of diminutive bore having a pressure connection and a suction connection at one end, the former being connected to said pressure line and the latter to the interior of said receptacle, an atomizer upon the discharge end of said pipe and consisting of a fitting comprising an elbow one end of which is connected to said pipe and a valve-case upon the other end of said elbow and disposed parallel to said pipe and having a discharge outlet in one end, valvular means controlling said outlet said means consisting of a valve located within the valve-case and controlling said outlet, a push-rod extending parallel to said commingler pipe into said valve-case and carrying said valve, brackets mounted upon said pipe and slidably supporting said push-rod the latter being axially movable therethrough, means located exteriorly of the valve-case for yieldingly maintaining the valve in position controlling the outlet said means consisting of an abutment upon said push-rod, a helical spring encircling the latter and bearing between the abutment and one of said brackets, means for maintaining the valve in open position said means consisting of a lateral projection upon said push-rod adapted to be positioned behind one of said brackets when the push-rod is withdrawn said bracket having a notch therein adapted to permit the passage therethrough of said projection when the valve is returned to closed position.

11. In a sprayer the combination with a closed receptacle and a pressure line; of an elongated commingler pipe of diminutive bore having a pressure connection and a suction connection at one end, the former being connected to said pressure line and the latter to the interior of said receptacle, an atomizer upon the discharge end of said pipe and consisting of a fitting comprising an elbow one end of which is connected to said pipe and a valve case upon the other end of said elbow and disposed parallel to said pipe and having a discharge outlet in one end, valvular means controlling said outlet said means consisting of a valve located within the valve case and controlling said outlet, a push-rod extending parallel to said commingler pipe into said valve-case and carrying said valve, brackets mounted upon said pipe and slidably supporting said push-rod the latter being axially movable therethrough, means located exteriorly of the valve-case for yieldingly maintaining the valve in position controlling the outlet said means consisting of an abutment upon said push-rod a helical spring encircling the latter and bearing between the abutment and one of said brackets, and adjustable means for limiting the closing movement of the valve.

12. In a sprayer the combination with a closed receptacle and a pressure line; of an elongated commingler pipe of diminutive bore having a pressure connection and a suction connection at one end, the former being connected to said pressure line and the latter to the interior of said receptacle, an atomizer upon the discharge end of said pipe and consisting of a fitting comprising an elbow one end of which is connected to said pipe and a valve-case upon the other end of said elbow and disposed parallel to said pipe and having a discharge outlet in one end, valvular means controlling said outlet said means consisting of a valve located within the valve-case and controlling said outlet, a push-rod extending parallel to said commingler pipe into said valve-case and carrying said valve, brackets mounted upon said pipe and slidably supporting said push-rod the latter being axially movable therethrough, means located exteriorly of the valve-case for yieldingly maintaining the valve in position controlling the outlet said means consisting of an abutment upon said push-rod, a helical spring encircling the latter and bearing between the abutment and one of said brackets, and adjustable means for limiting the closing movement of the valve said last-mentioned means consisting of an axially movable nut screwed upon the free end of said push-rod and adapted to bear against one of said brackets.

13. In a sprayer the combination with a closed receptacle and a pressure line; of an

elongated commingler pipe of diminutive bore having a pressure connection and a suction connection at one end, the former being connected to said pressure line and the latter to the interior of said receptacle, an atomizer upon the discharge end of said pipe and consisting of a fitting comprising an elbow one end of which is connected to said pipe and a valve-case upon the other end of said elbow and disposed parallel to said pipe and having a discharge outlet in one end, valvular means controlling said outlet said means consisting of a valve located within the valve case and controlling said outlet, a push-rod extending parallel to said commingler pipe into said valve-case and carrying said valve, brackets mounted upon said pipe and slidably supporting said push-rod the latter being axially movable therethrough, means located exteriorly of the valve-case for yieldingly maintaining the valve in position controlling the outlet said means consisting of an abutment upon said push-rod, a helical spring encircling the latter and bearing between the abutment and one of said brackets, and adjustable means for limiting the closing movement of the said last mentioned means consisting of an axially movable nut screwed upon the free end of said push-rod and adapted to bear against one of said brackets, means for maintaining the valve in open position said means consisting of a lateral projection upon said push-rod adapted to be position behind one of said brackets when the push-rod is withdrawn, said bracket having a notch therein adapted to permit the passage therethrough of said projection when the valve is returned to closed position.

14. In a sprayer the combination with a commingler pipe having a pressure connection and suction connection at one end; of an atomizer upon the opposite end thereof consisting of a fitting comprising an elbow one end of which is connected to said pipe and a hollow cylindrical valve-case upon the discharge end of said elbow and disposed parallel to said pipe one end of said valve-case being constituted by a removable cap screwed thereon and containing a discharge outlet and the other end being closed by a stuffing-box, valvular means controlling said outlet and consisting of a valve within said valve-case and a push-rod extending slidably through said stuffing-box and carrying said valve.

15. In a sprayer the combination with a commingler pipe having a pressure connection and suction connection at one end; of an atomizer upon the opposite end thereof consisting of a fitting comprising an elbow one end of which is connected to said pipe and a hollow cylindrical valve-case upon the discharge end of said elbow and disposed parallel to said pipe one end of said valve case being constituted by a removable cap screwed thereon and containing a discharge outlet and the other end being closed by a stuffing-box, valvular means controlling said outlet and consisting of a valve within said valve-case and a push-rod extending slidably through said stuffing-box and carrying said valve, brackets mounted upon said commingler pipe and slidably carrying said push rod means located exteriorly of the valve-case for yieldingly maintaining the valve in position closing said outlet said last-mentioned means consisting of a collar located in fixed position upon said push-rod, and a helical spring encircling the latter and bearing between said collar and one of said brackets.

16. In a sprayer the combination with a commingler pipe having a pressure connection and suction connection at one end; of an atomizer upon the opposite end thereof consisting of a fitting comprising an elbow one end of which is connected to said pipe and a hollow cylindrical valve-case upon the discharge end of said elbow and disposed parallel to said pipe one end of said valve-case being constituted by a removable cap screwed thereon and containing a discharge outlet and the other end being closed by a stuffing box, valvular means controlling said outlet and consisting of a valve within said valve-case and a push-rod extending slidably through said stuffing-box and carrying said valve, brackets mounted upon said commingler pipe and slidably carrying said push-rod, means located exteriorly of the valve-case for yieldingly maintaining the valve in position closing said outlet said last-mentioned means consisting of a collar located in fixed position upon said push-rod, a helical spring encircling the latter and bearing between said collar and one of said brackets, means for maintaining the valve in open position said means consisting of a projection upon said push-rod adapted to be positioned in engagement with one of said brackets when the push-rod is withdrawn.

17. In a sprayer the combination with a commingler pipe having a pressure connection and suction connection at one end; of an atomizer upon the opposite end thereof consisting of a fitting comprising an elbow one end of which is connected to said pipe and a hollow cylindrical valve-case upon the discharge end of said elbow and disposed parallel to said pipe one end of said valve-case being constituted by a removable cap screwed thereon and containing a discharge outlet and the other end being closed by a stuffing-box, valvular means controlling said outlet and consisting of a valve within said valve-case and a push-rod extending slidably through said stuffing-box and carrying said valve, brackets mounted upon said commingler pipe and slidably carrying said

push-rod, means located exteriorly of the valve-case for yieldingly maintaining the valve in position closing said outlet said last-mentioned means consisting of a collar located in fixed position upon said push-rod, a helical spring encircling the latter and bearing between said collar and one of said brackets, and adjustable means for limiting the closing movement of the valve.

18. In a sprayer the combination with a commingler pipe having a pressure connection and suction connection at one end; of an atomizer upon the opposite end thereof consisting of a fitting comprising an elbow one end of which is connected to said pipe and a hollow cylindrical valve-case upon the discharge end of said elbow and disposed parallel to said pipe one end of said valve-case being constituted by a removable cap screwed thereon and containing a discharge outlet and the other end being closed by a stuffing-box, valvular means controlling said outlet and consisting of a valve within said valve-case and a push-rod extending slidably through said stuffing-box and carrying said valve, brackets mounted upon said commingler pipe and slidably carrying said push-rod, means located exteriorly of the valve-case for yieldingly maintaining the valve in position closing said outlet said last-mentioned means consisting of a collar located in fixed position upon said push-rod, a helical spring encircling the latter and bearing between said collar and one of said brackets and adjustable means for limiting the closing movement of the valve, said last-mentioned means consisting of a nut screwed upon the free end of said push-rod and adapted to bear against one of said brackets.

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

WILLIAM A. PITT.

Witnesses:
GORDON G. COOKE,
WILLIAM J. C. HEWETSON.