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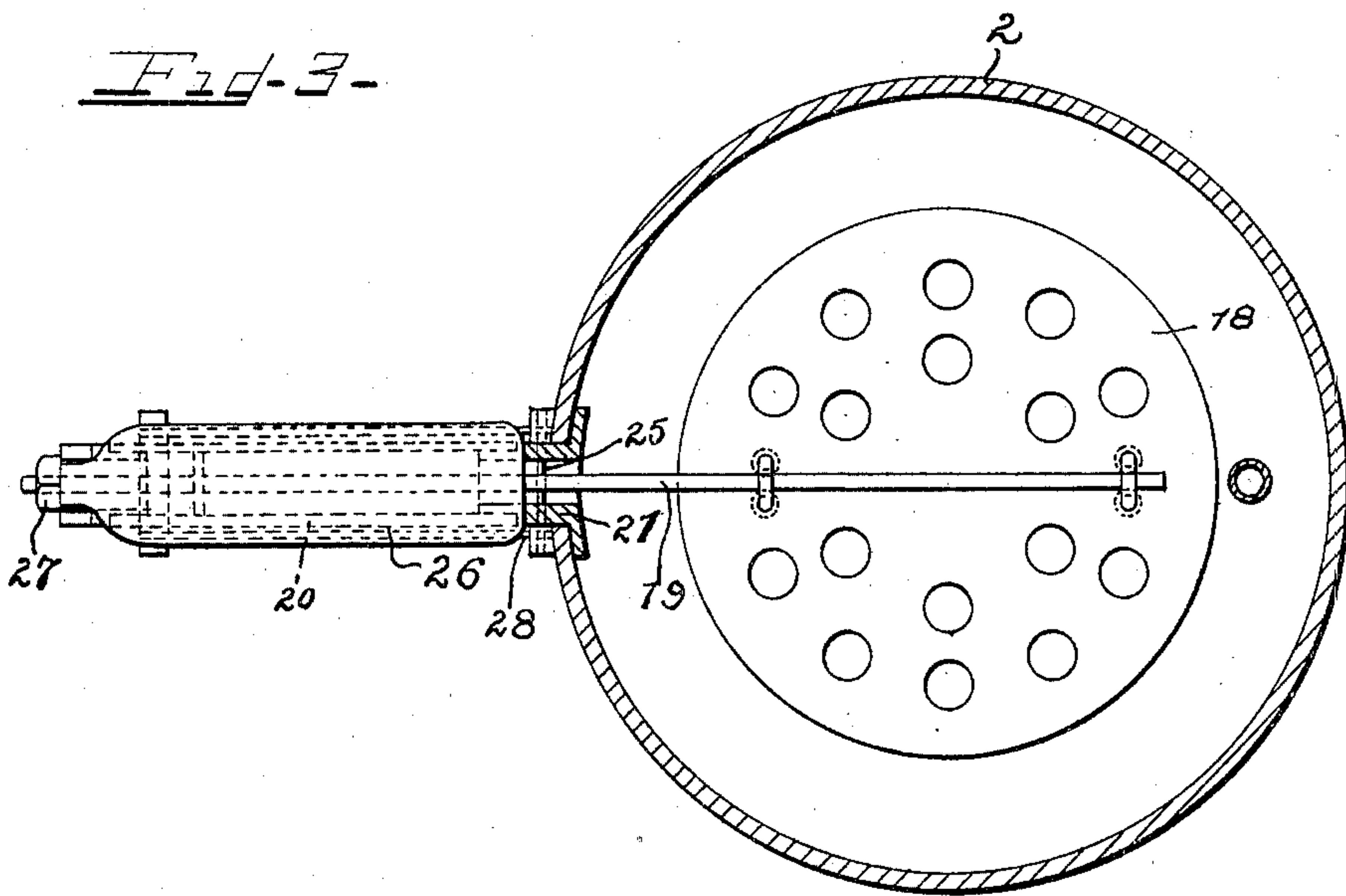
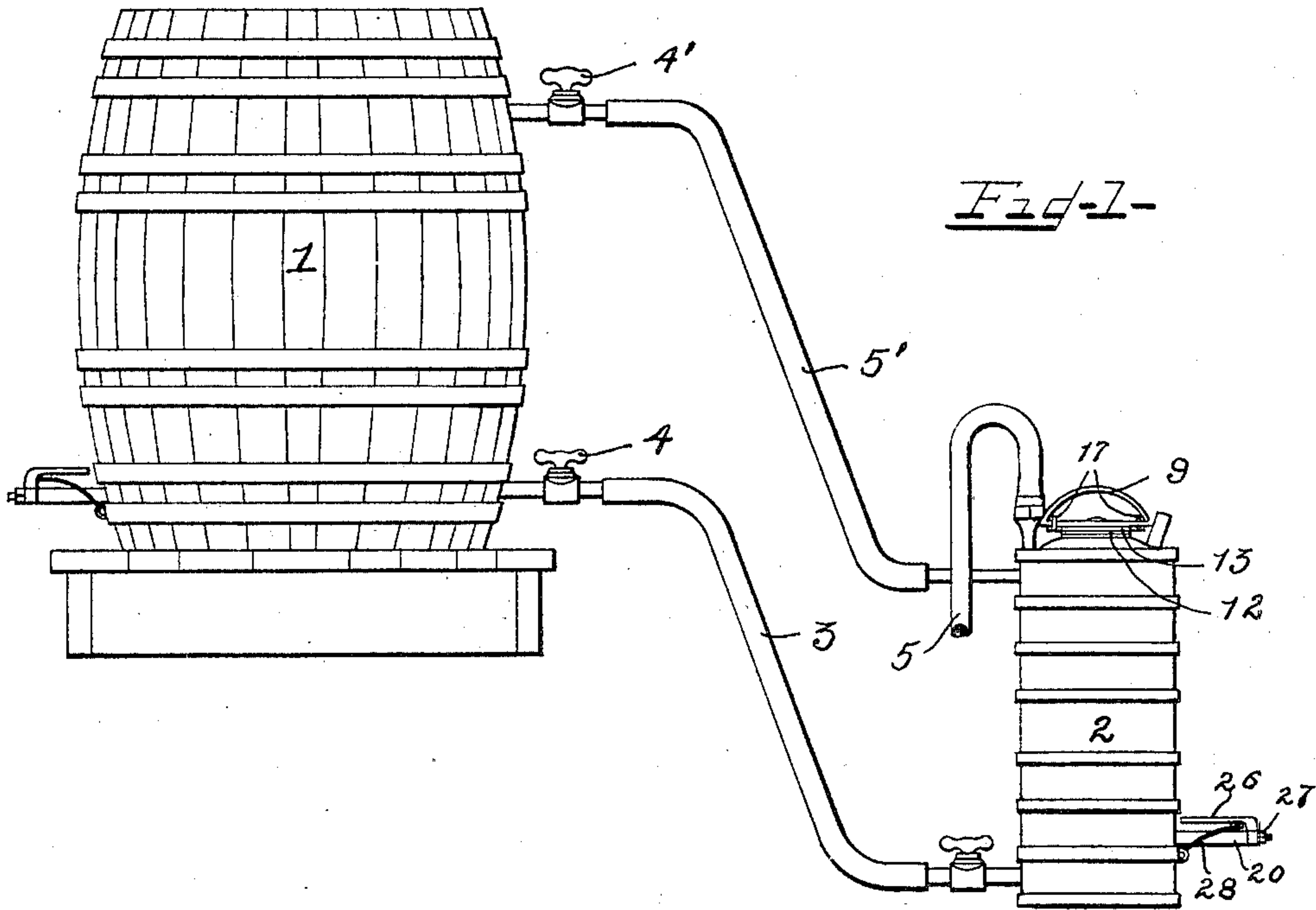
Patented Sept. 10, 1901.

E. C. BROWN.  
SPRAYER.

(Application filed Oct. 20, 1900.)

(No Model.)

3 Sheets—Sheet 1.



WITNESSES.  
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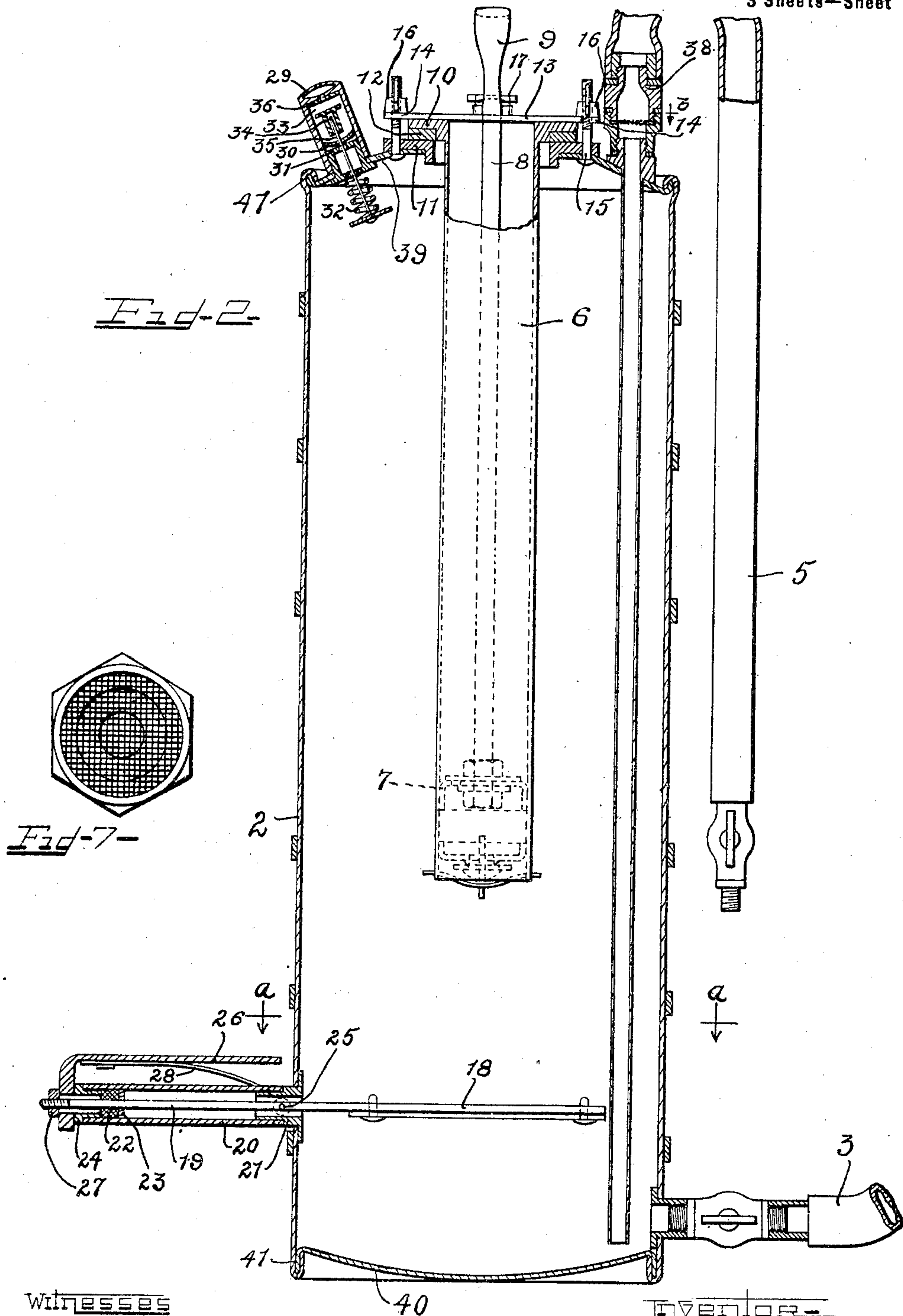
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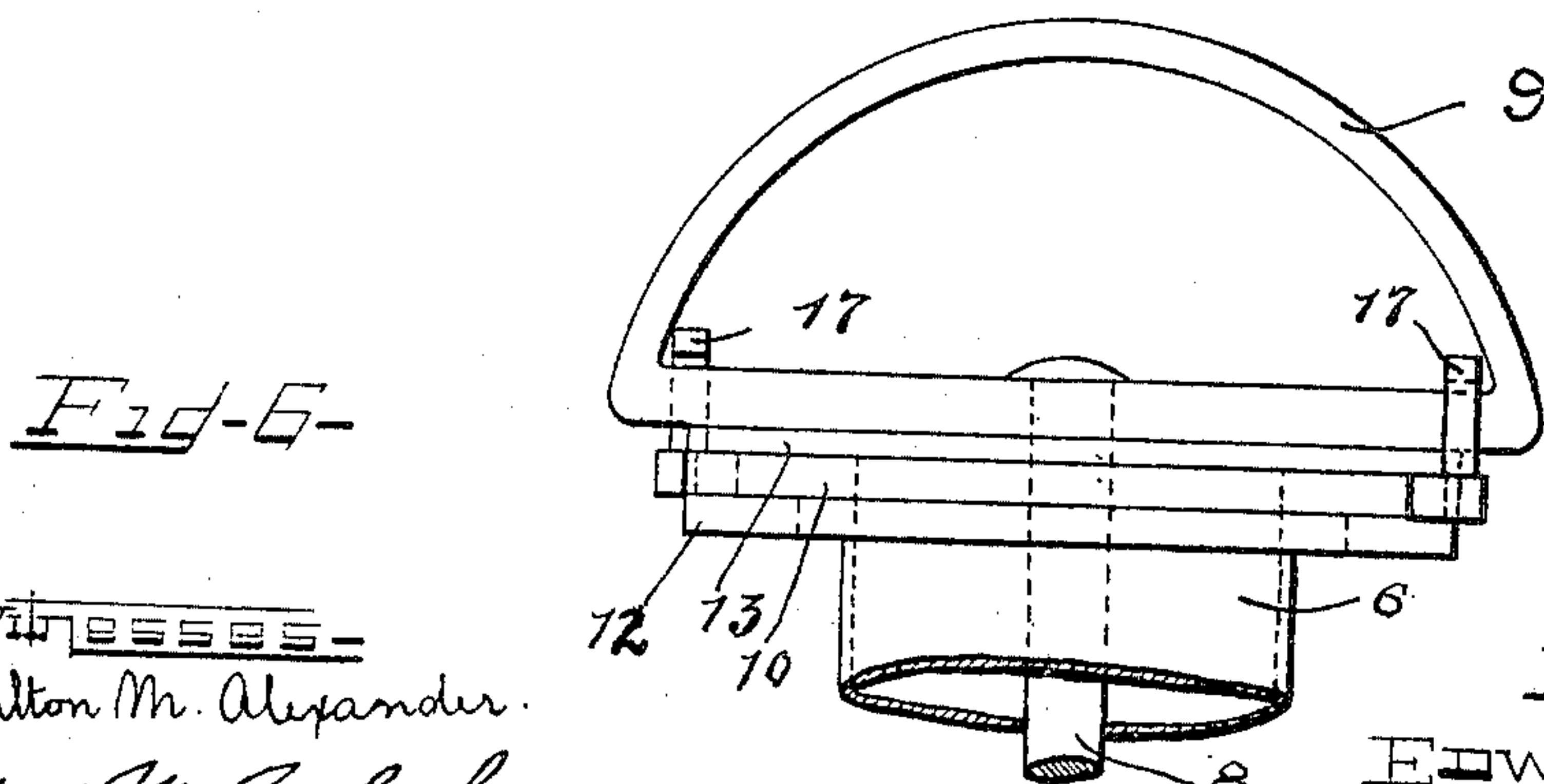
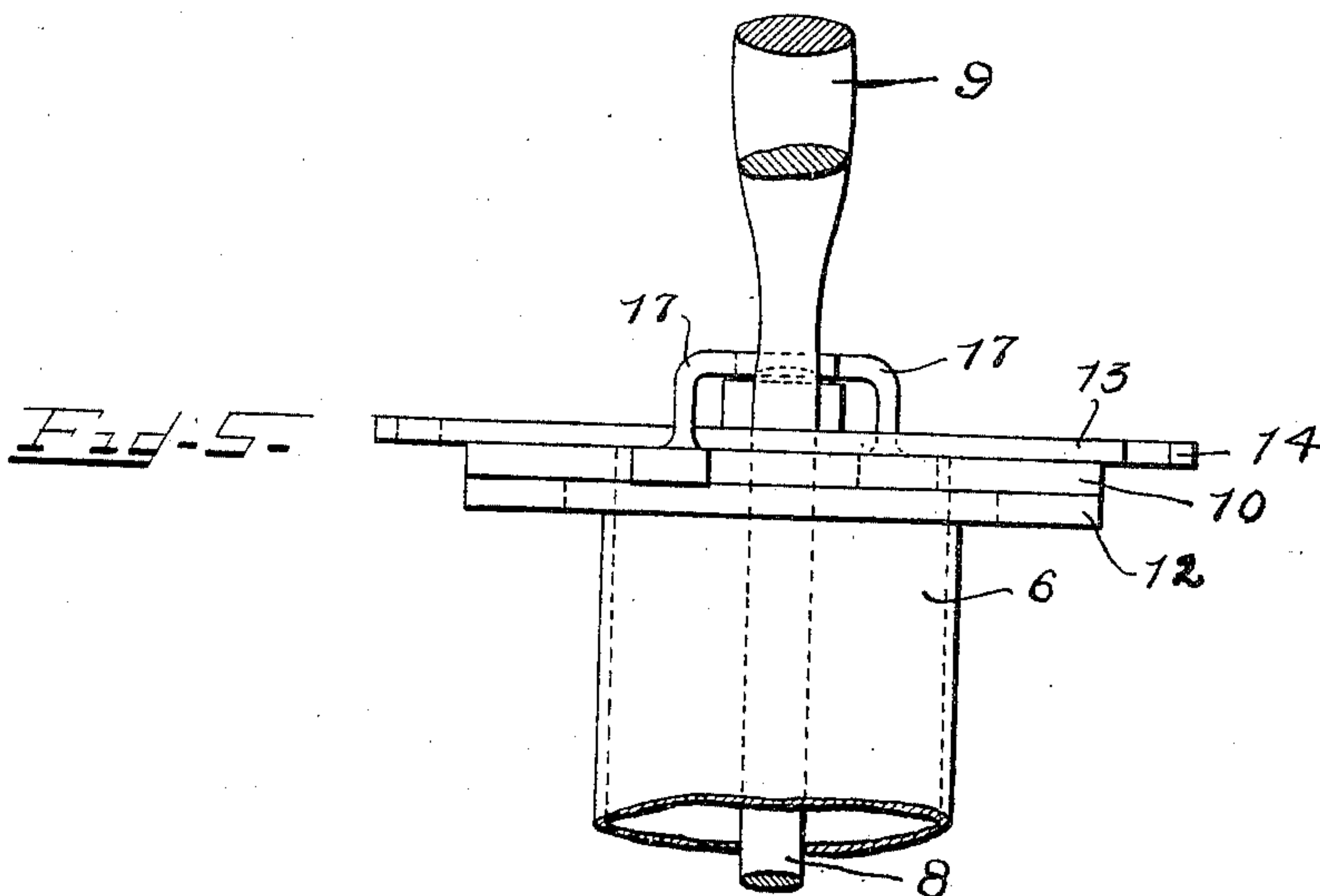
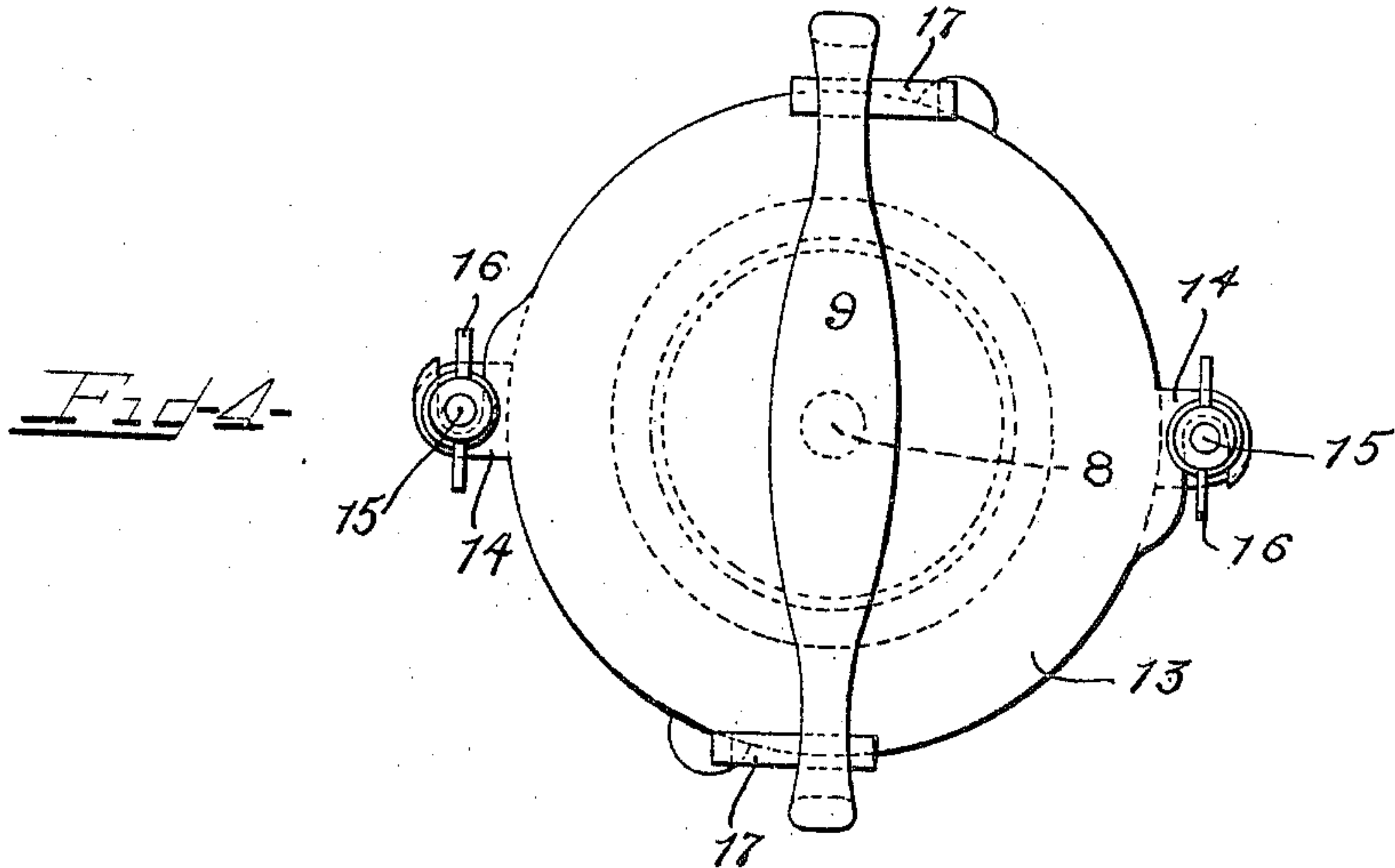
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# UNITED STATES PATENT OFFICE.

EDWARD C. BROWN, OF ROCHESTER, NEW YORK.

## SPRAYER.

SPECIFICATION forming part of Letters Patent No. 682,236, dated September 10, 1901.

Application filed October 20, 1900. Serial No. 33,798. (No model.)

*To all whom it may concern:*

Be it known that I, EDWARD C. BROWN, a citizen of the United States, residing at Rochester, in the county of Monroe and State of New York, have invented a certain new and useful Improvement in Sprayers, (Case No. 3,) of which the following is a full, clear, concise, and exact description, reference being had to the accompanying drawings, forming a part of this specification.

My invention relates to spraying apparatus, and has for one object the provision of improved apparatus of this kind which will be durable, efficient, and may be easily operated.

More particularly, my invention has for its object the provision of spraying apparatus which shall have a large capacity, so that the same may be operated for a considerable time without the necessity of frequent recharging.

A further feature of my invention consists in the provision of means associated with the spraying apparatus which are adapted to agitate the contents thereof, so that the undissolved portion of the spraying solution may be held in suspension and prevented from depositing sediment upon the bottom of the sprayer.

It is of advantage in spraying apparatus of this kind that means be provided which indicate whenever the right pressure has been attained in the sprayer, and it is a further object of my invention to supply indicating means of this character which will not waste the energy in the form of compressed air within the sprayer when actuating the indicator or signal.

Further objects of my invention are the provision of improved means for securing the various parts of the sprayer in position.

In accordance with my invention I preferably employ a reservoir filled with the spraying solution, which is preferably united with the sprayer by means of a flexible tube through which said spraying solution is conducted into said sprayer at intervals, from where it is forced in the form of spray through the agency of compressed air.

I will explain my invention in detail by reference to the accompanying drawings, illustrating the preferred embodiment thereof, in which—

Figure 1 is a side elevation of spraying ap-

paratus constructed in accordance with my invention. Fig. 2 is a sectional view of the sprayer. Fig. 3 is a sectional view on line *a a* of Fig. 1. Fig. 4 is a top view of the pumping mechanism employed in connection with my improved sprayer. Fig. 5 is an elevation of the upper end. Fig. 6 is a side view thereof. Fig. 7 is a sectional view on line *b* of Fig. 2.

Like characters of reference indicate like parts throughout the different views.

In the embodiment of this invention illustrated in the drawings I attain the object of a large capacity in my improved spraying apparatus through the use of an auxiliary reservoir or barrel 1, which is preferably filled with the insecticides and fungicides which it is desired to distribute in the form of spray. The capacity of the barrel is made large enough so that a recharging thereof need be necessary only at convenient intervals, so that no time need be wasted in this operation. The barrel 1 is in this instance united to a sprayer 2 of any suitable design, preferably by means of the flexible tube 3, through which the solution passes. A valve 4 is interposed at some point between the barrel 1 and the sprayer 2, so that the sprayer may be refilled at intervals from the solution contained in the said barrel 1, after which refilling the valve is closed and pressure supplied to the sprayer 2. The solution may then be forced out under pressure from the said sprayer through tube 5, at whose extremity any suitable nozzle may be provided.

In order to refill the sprayer when empty with solution from the barrel 1, I connect the said sprayer with the said barrel by means of an auxiliary tube 5', entering the barrel above the upper level of the solution. The tube conveys the surplus pressure of the sprayer to the barrel, and thus allows the solution to flow. A stop-cock 4' is interposed between the tube 5', so that the pressure within the sprayer may be raised when filled with solution without transferring the increased pressure to the barrel.

In order to introduce energy in the form of compressed air within the sprayer-tank 2, any suitable pumping means may be employed. This pumping mechanism comprises, preferably, a pump 6, which is placed within the sprayer-tank 2 and secured to the upper por-



tion or lid thereof. A piston 7 is reciprocated within the said pump by means of a piston-rod 8 and a handle 9. The pump-cylinder 6 ends in a collar 10, which is mounted on the sprayer-tank collar 11, which is fixedly secured to the upper end of the sprayer-tank 2, a rubber gasket or washer 12 being interposed between the two collars to secure a tight joint.

I have found it necessary in spraying apparatus of this kind to provide exceptionally strong and durable means for holding the pump in place, as the pressure employed is frequently quite high, and to effect this durable engagement I employ a lid 13, provided with slotted ears 14, which are adapted to engage bolts 15 15, mounted upon the sprayer-tank collar 11. Wing-nuts 16 serve to press the lid and pump-collar in place. In thus providing a separate piece to hold all the parts together I may construct the same of strong material, which is not so liable to be broken or worn out as the remaining portions of the apparatus. This arrangement of the parts obviates the necessity of fastening the lid-piece to the pump, and by not fastening the lid-piece to the pump I obviate the necessity of drilling, countersinking, and tapping several holes. This arrangement also permits of easy access to the interior of the pump-cylinder.

I prefer to hold the handle 9 rigid when the pump is not being used, and to this end I employ two angle-bars 17 17, which are integral with the pump-collar 10, which bars are in a position to engage the handle 9 when the said handle is rotated. The handle when so placed as to engage the angle-bar 17 cannot be reciprocated, and when it is desired to operate the pumping mechanism the handle must first be rotated a short distance, so that it may become disengaged from the angle-bar 17.

Spraying apparatus of this kind is generally stationarily employed until the contents of the reservoir have been exhausted, and I have found it necessary in such instances to provide means for agitating the contents thereof, preferably in both the supply-barrel and the sprayer-tank, so that the insecticides and fungicides may not accumulate at the bottom of either of the receptacles. I have shown the preferred means which I employ to accomplish this result.

A perforated circular dasher 18 within the receptacle is actuated from without in such manner as to thoroughly agitate the contents, so that no deposit will collect at the bottom of the receptacle. In order to actuate the dasher without causing a leak in the receptacle, I introduce a rocking bar 19 within the receptacle through a flexible tube 20, secured to a pipe 21, connecting with the interior of the said receptacle. Packing 22 is interposed between the rocking bar 19 and the tube 20, so as to make an air and water tight joint. The packing is held in place about the bar 19

by means of a plate 23 and the retaining-ring 24. The tube 20 also engages and is secured to the retaining-ring 24. The rocking bar 19 is preferably pivoted on a pin 25, secured to the pipe 21, so that no radial displacement thereof is possible. A pedal 26 is held in place against the retaining-ring 24 by means of a nut 27, screwed to the rocking bar 19, the agitator in this instance being adapted for operation by means of the foot engaging the pedal 26. To restore the pedal to its normal position when displaced, I prefer to employ a spring 28, secured at one extremity to the sprayer-tank and engaging at its other extremity the said pedal. Any suitable means, however, may of course be employed to actuate the dasher 18.

In order to guard against explosion or other mutilation of the sprayer-tank, due to the use of increased pressure in apparatus of this kind, I have provided improved signaling means operated when the pressure within this tank has reached its normal. I have in this instance shown my indicating or signaling means as employed in connection with a whistle which is adapted to operate when the normal pressure has been attained; but it is of course apparent that any suitable indicating or signaling means may be employed. The whistle 29, which is actuated when the pressure in the tank has reached its normal, is normally not in connection with the interior of the said sprayer-tank. A valve 30 rests against a valve-seat 31 and is held in place by a spring 32, the valve 30 closing the communication between the interior of the sprayer-tank 2 and the whistle. When the pressure in the tank has risen sufficiently, the valve 30 is forced from its seat 31 and air passes from within the sprayer-tank to a cylindrical chamber 33 between the valve 30 and the whistle 29. An increase in the amount of air within the cylindrical chamber 33 causes a flow through the whistle 29, whereby a sound is emitted to call the attention of the operator to the fact that the normal amount of pressure has been supplied to the tank. As is apparent, the whistle is a form of signal that is structurally distinct from the valve that controls its operation. In order to prevent a waste of air from the tank when operating the whistle, an auxiliary valve 34, in this instance guided upon a projecting rod 35 of the valve 30, is adapted to engage a valve-seat 36, provided on one side of the whistle, whereby the flow of air from the circular chamber 33 through the whistle is prevented, so that the whistle will only operate a very short time, simply sufficient to attract attention.

The insecticides and fungicides sometimes collect and form a solid mass, which, if allowed to pass within the tube 5, might close the opening through the nozzle provided at the extremity of said tube. I have found it advantageous to place a strainer 37, shown in this instance as a metallic sieve, within the



coupling 38, which affords communication between the pipe 5 and the tank 2. Any packing of the spraying material is thus effectively prevented.

5 I prefer to fasten both the convex top breast 39 as well as the convex lower breast 40 to the tank-cylinder 2 by lock-seams 41 41, this arrangement giving me an exceptionally strong construction, which is advantageous in apparatus of this kind where a high pressure is necessary. The convex breasts 39 and 40 are provided with rims that extend parallel with the sides of the pressure-tank and away from the middle thereof, while the cylindrical side 15 of the pressure-tank is provided at each of its ends with a rim that extends inwardly toward the middle of the tank and parallel with the cylindrical side, the said rims upon the breasts being engaged between the tank-wall 20 and the intumed rims thereof, by which construction a most effective measure is provided against warping and disruption of the metal at the seams. The pressure, particularly in the construction illustrated, where the tank 25 is a great deal longer than wide, is exerted lengthwise of the tank, and this force acting in this longitudinal direction is resisted by means of the rims of the breasts and the ends of the tank.

30 The operation of the device will be apparent. The spraying solution is introduced into the sprayer-tank from the reservoir or barrel 1 in sufficient quantity. The communication between the sprayer-tank and the barrel is then broken by means of cocks 4 4' and compressed air supplied to the tank 2 until the normal pressure has been attained, as indicated by my improved signaling device. The pump-handle is then locked in position, and 40 the sprayer is ready for operation. When the contents of the sprayer have been exhausted, communication is again effected between the sprayer and the reservoir and a fresh supply of spraying solution is introduced within the sprayer. The operation is thus continued until the solution has been exhausted from the supply-barrel. When thus stationarily employed, it is desirable to 45 agitate the contents of the sprayer to prevent a deposit of the sediment.

50 While I have herein shown and particularly described the preferred embodiment of my invention, I do not wish to limit myself to the precise construction and arrangement as herein shown and particularly described; but, 55 Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination with a sprayer for receiving and discharging spraying solution, of a supply tank or reservoir adapted to supply spraying solution to the said sprayer, a tube for conveying the solution from the reservoir to the said sprayer, a second tube connecting 60 the reservoir with the said sprayer for equalizing the pressure and effecting a flow of so-

lution, and valves provided in the said tubes, substantially as described.

2. The combination with a closed receptacle for receiving and discharging spraying material, of pumping mechanism associated with said receptacle for supplying pressure thereto, an indicator or signal operative when the required amount of pressure has been introduced within the receptacle, and means 70 structurally distinct from the signal for effecting its operation through the agency of predetermined pressure, substantially as described.

3. The combination with a closed receptacle for receiving and discharging spraying solution, of pumping mechanism associated with said receptacle for supplying pressure thereto, a signal normally disconnected from the said receptacle, and means structurally 80 distinct from the signal for effecting communication between the said signal and receptacle to operate the signal when the required amount of pressure has been introduced within the said receptacle, substantially as described. 90

4. The combination with a closed receptacle for receiving and discharging spraying solution, of pumping mechanism associated with said receptacle for supplying pressure thereto, a signal normally disconnected from the said receptacle, means for effecting communication between the said signal and receptacle to operate the signal when the required amount of pressure has been introduced within the said receptacle, and means 100 for preventing the continued operation of the said signal after actuation, substantially as described.

5. The combination with a closed receptacle for receiving and discharging spraying solution, of pumping mechanism associated with said receptacle for supplying pressure thereto, a whistle normally disconnected from the said receptacle, and a valve for effecting 110 communication between the said whistle and receptacle to operate the whistle when the required amount of pressure has been introduced within the said receptacle, substantially as described. 115

6. The combination with a closed receptacle for receiving and discharging spraying solution, of pumping mechanism associated with said receptacle for supplying pressure thereto, a whistle normally disconnected from the said receptacle, a valve for effecting communication between the said whistle and receptacle to operate the whistle when the required amount of pressure has been introduced within the said receptacle, and valv- 120 ing means for preventing the continued operation of the said whistle after actuation, substantially as described.

7. The combination with a closed receptacle adapted to receive and discharge fluids, 130 of a perforated dasher within the receptacle for agitating the contents thereof, means ex-



ternal to the said receptacle for actuating said dasher, and a flexible connection between the said receptacle and the said means, said flexible connection being closed at one extremity to prevent the flow therethrough of fluids, substantially as described.

8. The combination with a closed receptacle adapted to receive and discharge fluids, of a dasher within the receptacle for agitating the contents thereof, a pedal 26 external to the said receptacle for actuating the said dasher, a connecting-bar uniting the said pedal and the said dasher, and a flexible tube 20 through which the said connecting-bar is passed to prevent the leakage of fluids from the said closed receptacle, substantially as described.

9. The combination with a closed receptacle provided with a collar 11 at one extremity, of pumping mechanism comprising the pump 6 also provided with a collar 10, a lid 13 for securing the pump-collar to the tank-collar, a handle 9 for operating said pumping mechanism, and catches 17, 17, provided upon the said tank-collar which are adapted to prevent actuation to the said pump-handle when in engagement therewith, substantially as described.

10. The combination with a spraying-tank provided with an outlet through which fluid within the tank may be sprayed, of a pump adapted for insertion within the tank and communicating therewith to create pressure within the tank, an orifice provided in the wall of the tank for receiving the pump, a packing-gasket 12 located about the rim of the orifice, a collar 10 provided upon the pump-barrel and adapted for engagement with the said gasket, a fastening means 13, structurally distinct from the pump, and means whereby the said fastening means may

effect a clamping engagement between the gasket and the collar 10 upon one side and between the gasket and the contiguous portion of the tank, whereby the pump may be securely sealed in its place, substantially as described.

11. The combination with a spraying-tank provided with an orifice, of a pump adapted for communication with the said tank through the said orifice and having means for engaging it with the metal of the tank surrounding the orifice, a fastening device 13 structurally distinct from the pump, clamping means for engaging the said fastening means with the tank, whereby the pump may be separably secured to the tank, and packing means interposed between the pump structure and the tank, substantially as described.

12. The combination with a spraying-tank provided with an outlet through which fluid within the tank may be sprayed, of a pump adapted for communication with the tank to create pressure within the tank, an orifice provided in the wall of the tank for affording such communication, a packing-gasket 12 located about the rim of the orifice, a collar 10 provided upon the pump-barrel and adapted for engagement with the said gasket, a fastening means 13 structurally distinct from the pump and provided with slotted ears at its ends, and clamping-screws passing through the slots of the ears and engaging the said fastening means with the tank, substantially as described.

In witness whereof I hereunto subscribe my name this 21st day of September, A. D. 1900.

EDWD. C. BROWN.

Witnesses:

WILLIAM T. PLUMB,  
GEORGE S. McMILLAN.