July 29, 1924. 1,503,394

C. VACHER

SPRAYER

Filed Jan. 29, 1923 3 Sheets-Sheet 1

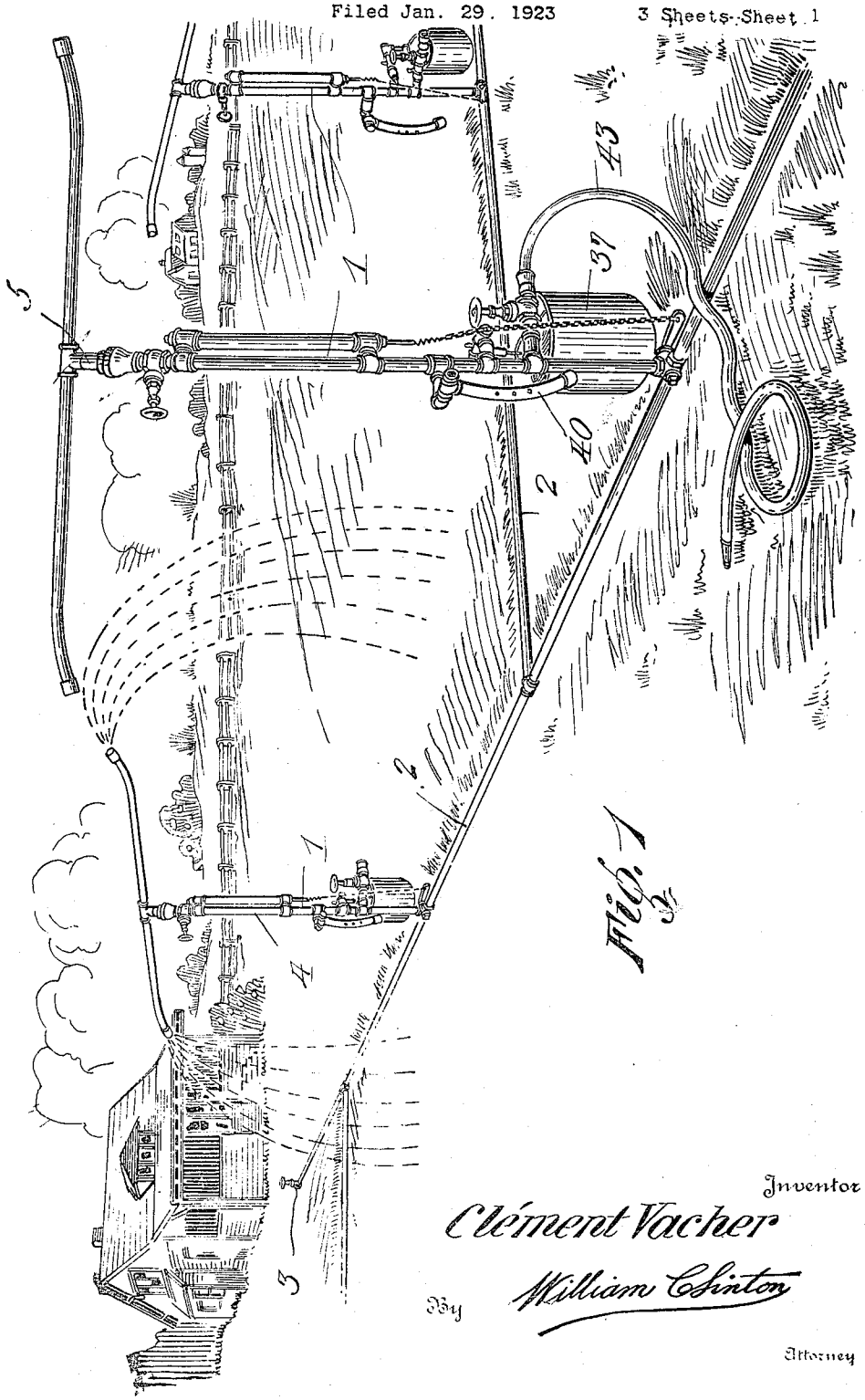


Fig. 1

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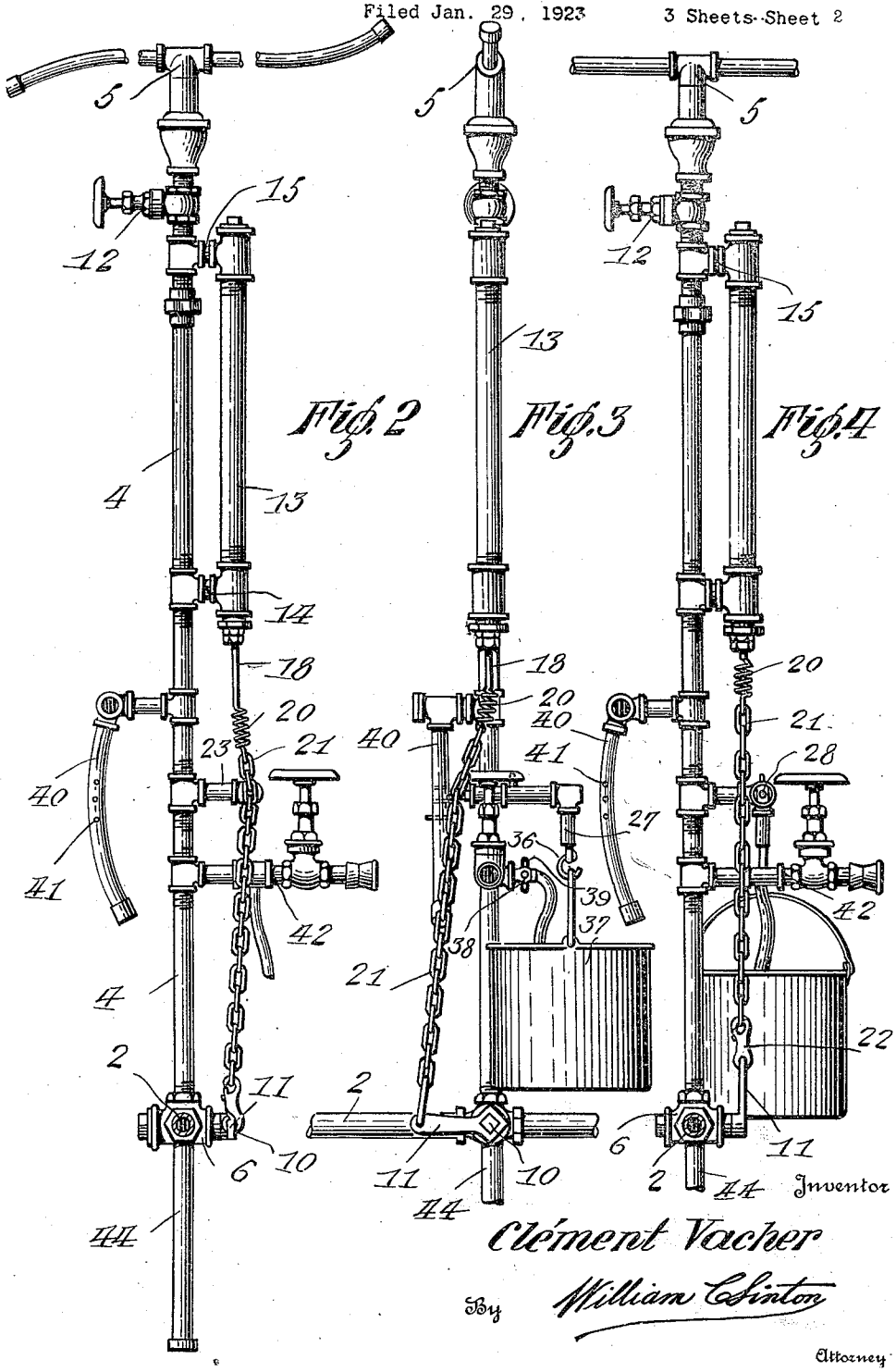


Fig. 2 Fig. 3 Fig. 4

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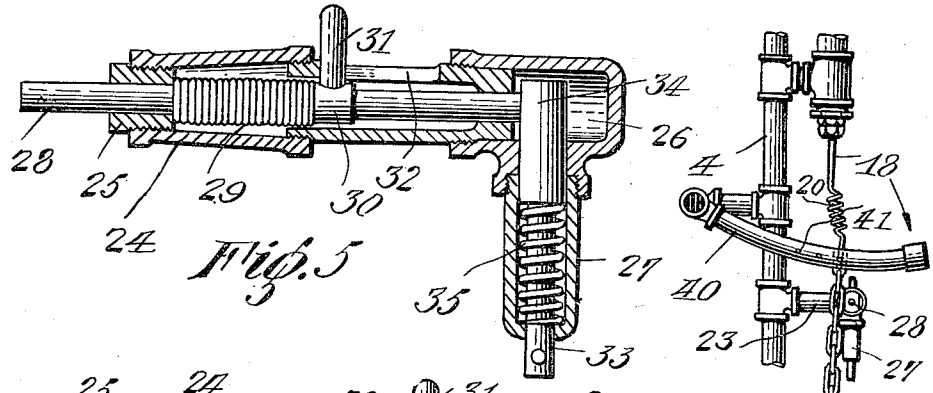


Fig. 5

Fig. 7

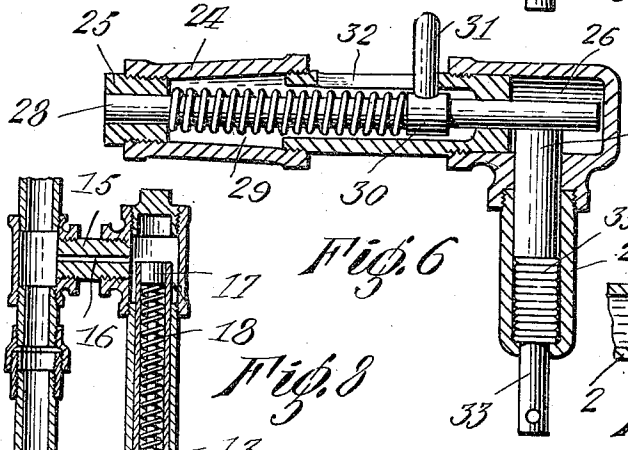


Fig. 6

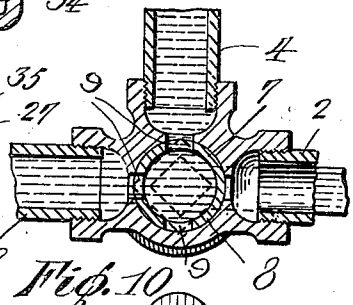


Fig. 10

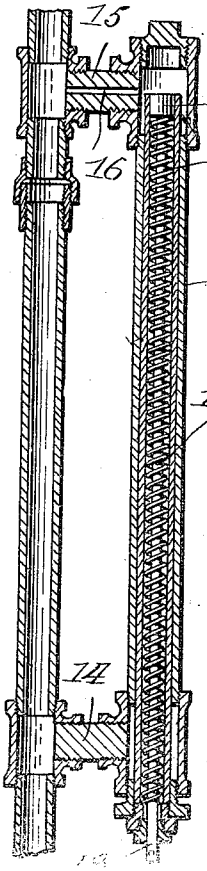


Fig. 8

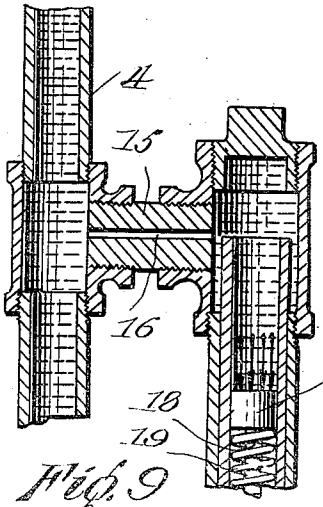


Fig. 9

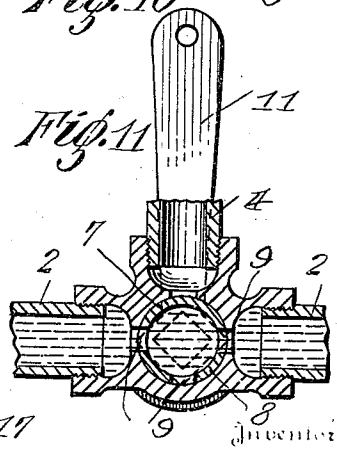


Fig. 11

Inventor

Clément Vacher

William Clinton

Patented July 29, 1924. 1,503,394

UNITED STATES PATENT OFFICE.

CLÉMENT VACHER, OF KELOWNA, BRITISH COLUMBIA, CANADA.

SPRAYER.

Application filed January 29, 1923. Serial No. 615,724.

To all whom it may concern:

Be it known that I, CLÉMENT VACHER, a subject of the King of Great Britain, residing at Kelowna, Province of British Columbia, 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 of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to new and useful improvements in sprayers and is directed especially to means for attaining an intermittent and successive operation throughout a series of such devices. In other words, the invention contemplates a plurality of sprayers arranged in communication with a sole source of fluid supply, and an arrangement associated with each unit whereby water flows to only one sprayer at a time, this intermittent operation continuing along the series.

In existing devices of this character, it has been found that when the operation of a given sprayer is to be terminated and the succeeding one commenced, the water is sharply shut off at the first unit and consequently enters the next unit with suddenness. Such abrupt entry of the water into the sprayer to be set in operation often causes bursting of the pipes and moreover renders the use of cheap rubber hose practically impossible.

The principal object of this invention is therefore the provision of fluid control means associated with the sprayer whereby the fluid cut-off above referred to will take place gradually rather than in an abrupt manner. As an incident to this feature, it becomes possible to employ rubber or other flexible hose as the fluid conducting means among the units.

The invention is fully disclosed in the following description and in the accompanying drawings in which,

Figure 1 is a perspective view of a system in operation;

Figure 2 is a side elevation of one of the units;

Figure 3 is an elevation taken at right angles to Figure 2;

Figure 4 is a side elevation similar to Figure 2, showing the position of parts when the valve is open;

Figure 5 is a section through the spring locking device in operative position;

Figure 6 is a similar view in inoperative position;

Figure 7 is a detail view of the spring distending device;

Figure 8 is a section through the cylinder and adjacent portion of the standard;

Figure 9 is a detail of Figure 8, showing the piston in lowered position;

Figure 10 is a section through the valve showing the same establishing communication with the standard; and,

Figure 11 is a similar view showing the standard cut off from the water supply.

In Figure 1 of the drawings, where the system is shown in perspective, a plurality of sprayers 1 are placed in communication with one another through the medium of piping 2 which is fed from the fluid supply 3.

Each sprayer comprises a fluid conveying standard 4 at the top of which is mounted a sprinkler head 5, such as a rotary sprayer, in any manner well known in the art. At the base of the standard is fitted a T-coupling 6 between said base and the piping 2, in which is fitted a two-way valve 7 (Figure 10) for controlling the flow through the standard. This valve comprises a rotatable sleeve 8 having three openings 9 to establish communication either between the inlet pipe and the standard or between the inlet pipe and the outlet pipe. The sleeve has formed therewith a stem 10 adapted to be received by an operating handle 11. Near the head of the standard is fitted a valve 12 for adjusting the flow to the sprayer element.

A cylinder 13 is supported in parallelism with the intermediate portion of the standard by means of a ratchet connection 14. The outer end of the cylinder is placed in fluid communication with the standard by means of a nipple 15 having a restricted opening 16 therethrough. A piston 17 provided with a piston rod 18 is adapted to actuate within the cylinder and is normally held in uppermost position by a strong expansion spring 19 surrounding the piston rod. At the lower end of the stem is connected an auxiliary spring 20 which is joined to an end of the handle 11 by means of a chain 21 and clasp 22. It will be apparent from the construction thus far

described that the spring 19 normally tends to raise the valve handle 11 and shut off the flow to the standard, as shown in Figure 11.

A supporting piece 23 is secured to the standard beneath the lower end of the cylinder and serves to carry a tube 24, one end of which is fitted with an apertured plug 25. The other end of this tube carries a T-shaped head 26 into which is fitted a casing 27. A pin 28 is adapted for reciprocation through the tube 24 and plug 25, and is normally urged towards the head by means of a spring 29 surrounding it and bearing against the plug 25 and a collar 30 formed on the pin. A stem 31 projects from the collar and is slidable into the slot 32 formed in the wall of the tube 24. Within the casing 27 is disposed a rod 33 for reciprocation therein. The upper end of this rod carries a head 34 adapted to abut an end of the pin 28 and retain the same in the position shown in Figure 5 against the action of the spring 29. The head 34 is nomally urged to its uppermost position by means of the expansion spring 35 surrounding the rod 33 and acting against the head 34 and end of the casing 27. The exposable end of the pin 28 is adapted for insertion into one of the links of the chain 21, so that the valve 7 may be retained in open position against the action of the strong spring 19 within the cylinder. The end of the rod 33 carries a hook 36 from which may be suspended a bucket 37. A drip cock 38 associated with the standard is adapted to discharge into the bucket, and the rate of flow is controllable by means of the handle 39, whereby the time required for a predetermined amount of water to enter the bucket may be graduated between one minute and ten hours.

In operation, the parts are arranged in the position shown in Figure 3, the valve 7 being held in open position by means of the pin 28, as already described. A regulated flow of water through the drip cock 38 is allowed into the bucket according to the period of operation desired for the sprayer. When the weight of the water within the bucket is sufficient to counteract the spring 35, the rod 33 is pulled downwardly, whereby the head 34 is disengaged from the pin 28 and the latter moves inwardly, thus releasing itself from the chain 21. The spring 19 is free to act, and therefore raises the valve handle 11 whereby the valve 7 is closed. At the moment the pin is released from the chain, the standard and the portion of the cylinder above the piston are filled with water. The rise of the piston 17 must force the water from the cylinder through the restricted opening 16, and since this action cannot take place instantly, the closing of the valve is retarded and takes place in a gradual manner. It will be understood that as the valve closes to the standard it simultaneously opens to the next sprayer, and that the supply of water is delivered to the latter sprayer in a gradual manner. It has been found that because of this resilient control of the valve 7, it is feasible to employ flexible tubing among the various units of the system.

In order to distend the spring 19 for again opening the valve 7, there is pivoted to the standard an operating lever 40 provided with a plurality of pins 41 adapted for engagement with the chain 21. The difficulty of lowering the chain is thereby decreased considerably. The standard may be provided with a valve controlled branch 42 for accommodating a hose 43 (Figure 1) if desired. The base of the standard is fitted with a foot 44 for insertion into the ground when the system is erected.

While a specific embodiment of the invention has been illustrated and described, it is to be understood that various alterations in the details of construction may be made without departing from the spirit of the invention as indicated by the appended claims.

Having thus fully described the invention, what I claim as new and desire to protect by Letters Patent is:—

1. In combination with a fluid conveying standard, a valve for controlling the flow to said standard, a cylinder in fluid communication with the standard, a spring pressed piston in said cylinder, an operative connection between said piston and valve, a pin adapted to engage said connection and retain it against the action of the spring pressed piston, a gravity operable device for maintaining said pin in locking position and adapted to support a receptacle, and a drip cock associated with the standard and adapted to discharge into said receptacle.

2. In combination with a fluid conveying standard, a valve for controlling the flow to said standard, a cylinder in fluid communication with the standard, a spring pressed piston in said cylinder, an operative connection between said piston and valve, a pin adapted to engage said connection and retain it against the action of the spring pressed piston, a gravity operable device for maintaining said pin in locking position and adapted to support a receptacle, a drip cock associated with the standard and adapted to discharge into said receptacle, and a sprinkler communicating with said valve.

3. In combination with a fluid conveying standard, a valve for controlling the flow through said standard, a cylinder disposed adjacent said standard, a restricted passage between said standard and cylinder, a piston movable within said cylinder, a spring acting on said piston and urging the same towards the restricted passage, an operative connection between said piston and valve, a

pin adapted to engage said connection and retain it against the action of the spring pressed piston, a gravity operable device for maintaining said pin in locking position and adapted to support a receptacle, and a drip cock associated with the standard and adapted to discharge into said receptacle.

In witness whereof I have hereunto set my hand.

CLÉMENT VACHER.

Witnesses:
MARY E. BURNE,
R. C. WEDDELL.