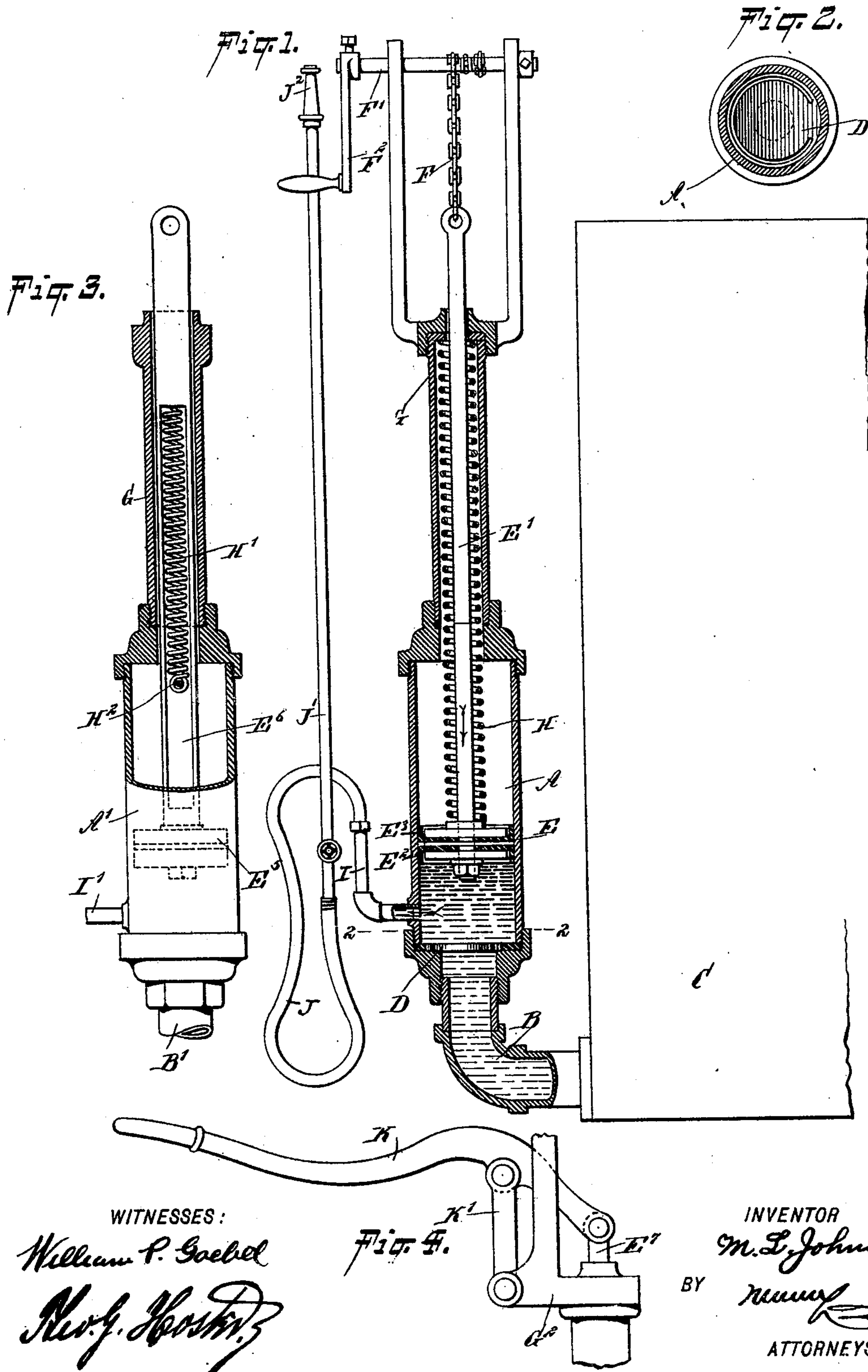


No. 630,713.

Patented Aug. 8, 1899.

M. L. JOHNSON.
SPRAYING APPARATUS.
(Application filed May 16, 1898.)

(No Model.)



WITNESSES:

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Fig. 4.

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MARION LORENZO JOHNSON, OF MEARS, MICHIGAN.

SPRAYING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 630,713, dated August 8, 1899.

Application filed May 16, 1898. Serial No. 680,819. (No model.)

To all whom it may concern:

Be it known that I, MARION LORENZO JOHNSON, of Mears, in the county of Oceana and State of Michigan, have invented a new and Improved Spraying Apparatus, of which the following is a full, clear, and exact description.

The invention relates to apparatus for spraying trees, shrubs, and the like with an insect-destroying liquid; and the object is to provide a new and improved spraying apparatus which is simple and durable in construction and very effective in operation.

The invention consists of novel features and parts and combinations of the same, as will be fully described hereinafter and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar characters of reference indicate corresponding parts in all the figures.

Figure 1 is a side elevation of the improvement with parts in section. Fig. 2 is a sectional plan view of the same on the line 2 2 of Fig. 1. Fig. 3 is a sectional side elevation of a modified form of improvement, and Fig. 4 is a side elevation of a modified form for raising the piston.

The improved spraying device is provided with a cylinder A, connected at its lower end by a large suction-pipe B with the bottom of a barrel C or similar supply vessel containing the liquid for destroying the insects. In the bottom of the cylinder A is arranged a suction-valve D, and in said cylinder is mounted to reciprocate a piston E, held on a piston-rod E', connected at its upper end with a device for moving the piston on its outward or suction stroke, said device being either in the form as shown in Fig. 1 or in that shown in Fig. 4.

The device for moving the piston on the suction-stroke, as shown in Fig. 1, consists of a chain F, winding on a shaft F', journaled in suitable bearings held on a bracket G, secured to the upper head of the cylinder A. A crank-arm F² is secured to the shaft F' and is under control of the operator to permit the latter to turn the shaft and wind up the chain F to draw the piston-rod E' upward and move the piston E on its suction-stroke—that is, draw in the liquid by way of the

suction-pipe B and valve D from the barrel C. A spring H is arranged in the cylinder A around the piston-rod E' for moving the piston on the inner or discharge stroke, said spring being arranged in such a manner that when the piston E moves outward it is compressed, and when the crank-arm F² is released the spring exerts its force and gradually moves the piston inward to force the liquid previously sucked into the cylinder out through a pipe I, connected by a hose J with a valved pipe J', having at its end the usual spraying-nozzle J².

Now it is evident that when the piston E is moved outward by the manually-operated device above described then the cylinder fills with the liquid from the supply vessel, and when the operator releases the crank-arm F² then the spring forces the piston inward and causes the piston to force the liquid through the pipe I into the hose J and the pipe J' to the nozzle if the valve in the pipe J is opened. The pipe J' serves for carrying the nozzle and for conveniently bringing the nozzle to the desired point to be sprayed. Now by this construction the operator can first move the piston E outward, then release the crank-arm F², then take hold of the pipe J' and carry it to the tree to be sprayed, and then open the valve in the pipe to allow the liquid to pass out of the nozzle upon the desired object to be sprayed. Thus the pipe I is comparatively small, while the cylinder A and its suction-pipe B are proportionately larger, so that the cylinder A contains a large quantity of liquid at the time the spraying takes place to allow the operator to readily manipulate the nozzle and spray one or a number of trees with perfect freedom, as the pump works automatically when discharging the liquid and the spraying is taking place. It is expressly understood that the pump requires no attention on the part of the operator while discharging the liquid, thereby allowing the operator to give his full attention to the spraying without reference to the pump.

The device for manually operating the piston and moving the same on the suction-stroke, as shown in Fig. 4, consists of a lever K, connected with a piston-rod E' and fulcrumed on a link K', pivoted on the bracket

G², carried by the cylinder. In this case the operator swings the free end of the lever K downward and moves the piston outward, the latter being moved after the release of the lever by a spring H into a discharge position.

As shown in Fig. 3, the cylinder A' contains a piston E⁵, held on a rod E⁶, pressed on by a spring H', secured at one end to the piston-rod E⁶ and at its other end to a pin H², secured in the cylinder and extending through a slot in the said piston-rod. This spring H' acts in the same manner as the spring H, previously mentioned, only that it pulls on the piston-rod instead of pressing on the cylinder.

The piston E, as shown in the drawings, is provided with two cups E² E³, made of leather or like suitable material and extending in opposite directions, so that when the piston is on its inward or discharge stroke the flanges of the cup E² are pressed in firm contact with the inner surface of the cylinder by the liquid to prevent leakage. When the piston E moves outward, then the flanges of the other cup E³ are pressed outward by the air in the upper end of the cylinder, so that the liquid flowing into the cylinder at the lower end is not liable to leak into the upper end containing the spring.

Having thus fully described my invention, I claim as new and desire to secure by Letters Patent—

1. A spraying apparatus comprising a cylinder arranged for connection with a supply-tank, a suction-valve for controlling the inflow of the liquid into the pump-cylinder, a minute discharge-pipe leading from the cylinder and connected with a spraying device, a piston operating in the cylinder, means carried by the cylinder for moving the piston outward on its suction-stroke to draw the liquid into the cylinder, and a spring for returning the piston on its inward or discharge stroke, to force the liquid through the dis-

charge-pipe, substantially as shown and described.

2. A spraying apparatus comprising a cylinder, a suction-pipe connected with said cylinder, a suction-valve for controlling the inflow of the liquid, a minute discharge-pipe provided with a valve and leading from the cylinder above said suction-valve, a piston operating in said cylinder and provided with two cup-shaped packings extending in opposite directions, manually-operated means carried by the cylinder for moving said piston on the outward or suction stroke, and a spring for moving the piston inward on the discharge stroke, substantially as shown and described.

3. A spraying apparatus, comprising a cylinder having a suction-pipe leading from its lower end for connection with a supply vessel, a suction-valve in the bottom of the cylinder, a piston in the cylinder, a spring acting upon the piston to force it downward, means carried by the cylinder and connected with the upper end of the piston-rod for raising the piston against the action of the spring, and a discharge-pipe leading from the lower end of the cylinder, substantially as described.

4. A spraying apparatus, consisting of a cylinder having a pipe at its lower end for connection with a supply-pipe, a suction-valve in the bottom of the cylinder, a discharge-pipe leading from the lower end of the cylinder, a piston in the cylinder, a spring acting on the piston to force it downward, means for lifting the piston against the action of the spring, comprising a shaft mounted in supports on the upper end of the cylinder and provided with a crank, and a chain secured to the shaft and to the piston-rod, substantially as herein shown and described.

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Witnesses:

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