

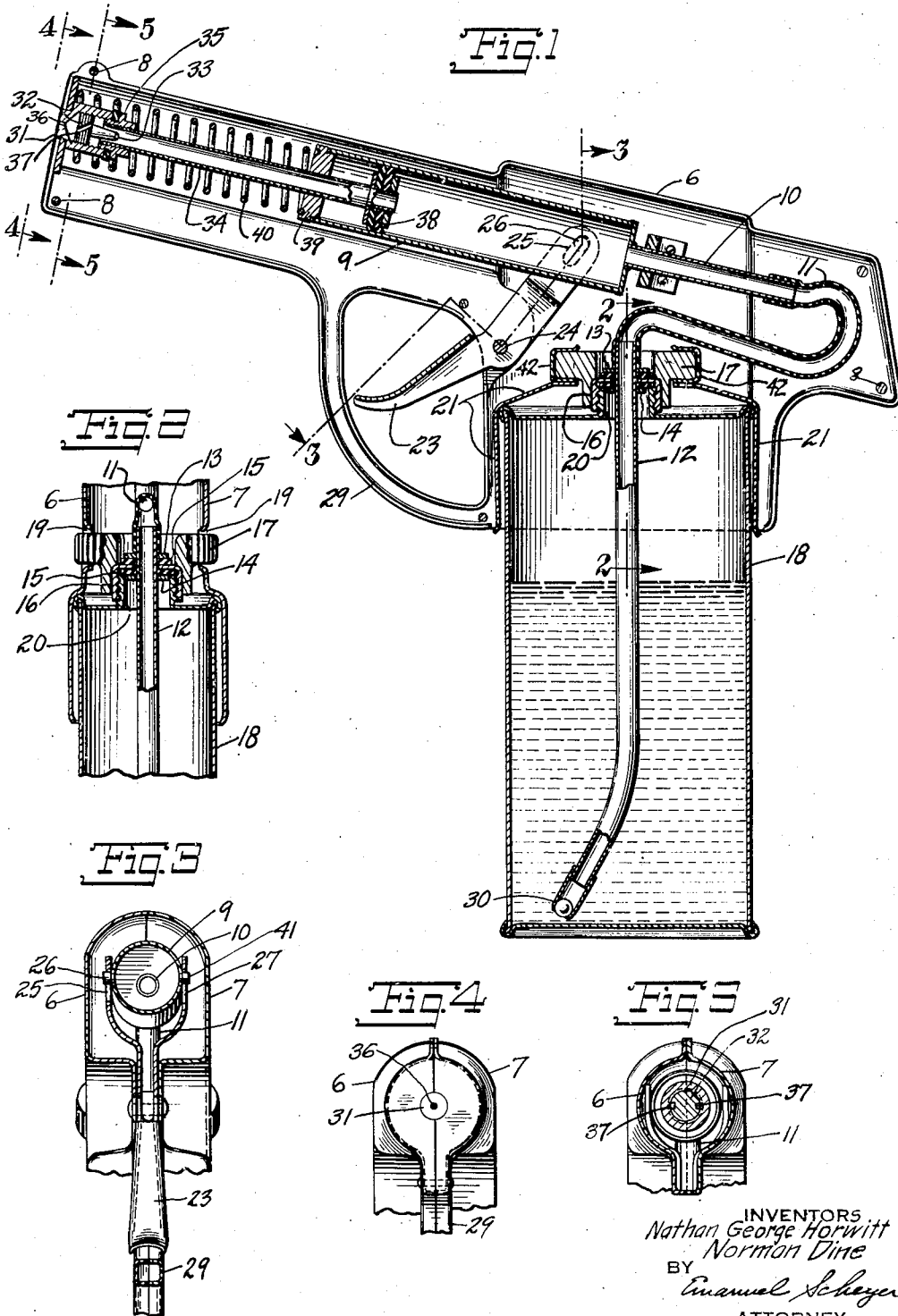
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LIQUID PISTOL

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## LIQUID PISTOL

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11 Claims. (Cl. 221—31.5)

This invention relates to a liquid pistol for use in spraying insecticide or other desired liquid.

An object of the present invention is to provide a pistol where the stock of the pistol is the original liquid container itself in which the liquid is sold, instead of being a more or less fixed magazine which must be filled with the liquid from such containers when the liquid is used up. The container, in accordance with the present invention is readily attached to form the stock of the pistol and readily removable, so that when it is empty, it can be replaced with a full container, instead of having to bother to fill a fixed magazine as has been the practice heretofore. Such filling is usually accompanied by unwanted spilling and the danger of fire involved where inflammable liquid is poured. The casing of the pistol is provided with a special socket for firmly fitting over the container which is fastened into place by means of a thumb nut loosely mounted for rotation on the casing. A part of the thumb nut is a screw cap which is adapted to be screwed on the screw neck usually provided on such containers.

The construction disclosed provides a compact device of pleasing appearance and low cost. It is operable with one hand making it quick and easy to operate, enabling it to be brought nearer the object to be sprayed and with better control and aim than devices requiring two hands.

Other objects and advantages will become apparent upon a further study of the specification and drawing, in which:—

Fig. 1 is a vertical longitudinal section through the spray gun.

Fig. 2 is a partial cross section taken along the line 2—2 of Fig. 1.

Fig. 3 is a cross section taken along the broken line 3—3 of Fig. 1.

Fig. 4 is an end elevation looking along the line 4—4 of Fig. 1, and

Fig. 5 is a cross section taken along the line 5—5 of Fig. 1.

The casing of the gun is made up of halves 6 and 7, held together by a number of rivets such as those shown at 8.

Inside of casing 6 and 7 is mounted a chamber or cylinder 9. From an opening at the rear of cylinder 9 a tube 10 extends into the heel of the gun. The rear of tube 10 is connected by a piece of flexible tubing 11, with the top of a substantially vertical tube 12. An upper flange 13 and a lower flange 14 are mounted with a forced fit in spaced relation near the upper end

of tube 12. Just inside of each flange and around tube 12 is a flexible gasket 15. A screw cap 16 is loosely mounted on tube 12 between gaskets 15. Screw cap 16 is of sheet metal in the usual form of caps used to close metal containers containing liquids such as insecticides. Tightly fitting over cap 16 is a knurled member 17. Member 17 and cap 16 together constitute a thumb nut for fastening the liquid container 18 into position to serve as the stock of the pistol. Casing halves 6 and 7 are provided with openings 19 through which the knurled sides of member 17 project adapting them to be gripped by the fingers for screwing cap 16 upon the usual screw neck 20 provided on liquid containers. Axial motion of tube 12 and the thumb nut comprising member 17 and cap 16 is prevented by fixed channels 42, Fig. 1, provided in the interior of the casing.

Casing halves 6 and 7 are so formed below member 17 that a socket 21, in the form of an inverted elliptical cup is provided for receiving the upper portion of a container 18, said containers being usually of an elliptical cross-section.

A trigger 23 is pivotally mounted in the casing by means of a rivet pin 24 extending between casing halves 6 and 7. The upper portion of trigger 23 is forked into two branches, one branch engaging at a slot 25 therein, a pin 26 projecting from one side of cylinder 9, and the other branch engaging at a slot 27, a pin 41 projecting from the opposite side of cylinder 9. A trigger guard 29 protects the lower end of trigger 23.

The lower end of tube 12 is inclined toward the forward end of the pistol, so that when the latter is pointed downward, the last portion of liquid in container 18 can be removed. A ball valve 30 is provided at the bottom of tube 12, said valve only allowing liquid to be sucked into the tube but not discharged therefrom at the bottom.

A nozzle 31 is provided at the forward end or muzzle of the pistol. Said nozzle is substantially a hollow cylinder, threaded on its interior for receiving a plug 32. A conical valve needle 33 projects rearwardly from plug 32 into the mouth of tube 34. The forward end of nozzle 31 is fixed to the front of casing halves 6 and 7. A sleeve 35 is threaded into the rear of nozzle 31 and provides the forward support of tube 34. A port 36 is provided in the front end of nozzle 31. Inclined ports 37 are provided through plug 32. The rear of tube 34 has fixed to it a piston 38 slidably mounted in cylinder 9. Cylinder head

39 closes off the front of cylinder 9 and is slidably mounted on tube 34. A coil spring 40 is mounted on tube 34 and extends from the muzzle of the pistol to cylinder head 38, normally holding cylinder 9 in its rearward position.

When trigger 23 is pulled against the pressure of spring 40, cylinder 9 is moved toward the muzzle of the pistol, piston 38 remaining stationary. This causes any liquid in cylinder 9 to be forced through tube 34 past valve needle 33, through ports 37 in plug 32 and out through port 36 in the front end of nozzle 31. In passing valve needle 33 and through said ports, the liquid is vaporized. The pressure created in cylinder 9 when the trigger is pulled cannot force the liquid in said cylinder back into container 18, because ball valve 30 does not permit of an outward flow of liquid from tube 12.

When trigger 23 is released, the pressure is very much reduced in cylinder 9 as it returns to its normal position toward the heel of the pistol. Because of the smallness of ports 36 and 37, and the space around valve needle 33, there is very little leakage of air taking place through the nozzle into cylinder 9 when the latter moves back under the pressure of spring 40. The reduced pressure in cylinder 9 causes the liquid in container 18 to rise in tube 12 passing through flexible tubing 11 and tube 10 into cylinder 9. There is sufficient leakage of air past cap 16, to maintain the pressure of the air above the liquid in container 18 substantially at atmospheric pressure.

When container 18 is emptied, it is readily removed by turning member 17 and cap 16 which are loosely mounted for rotation on tube 12. A new container can then be inserted into socket 21 and cap 16 screwed on until the shoulder of the container is brought to a tight bearing in socket 21. This provides a firm stock for the pistol.

We claim:—

1. In a liquid pistol, the combination of a casing, a discharge nozzle at the forward end of said casing, a chamber in said casing liquid-connected to said nozzle, a piston in said chamber, said chamber and piston being mounted in said casing for relative motion with respect to each other, a trigger pivotally mounted on the casing for effecting said relative motion, said casing having a socket open at the bottom formed therein behind the trigger, a screw cap rotatably mounted in said casing above the socket, a container, having a screw neck, removably fastened in said socket by the engagement of the cap and neck, and means affording liquid communication between the chamber and the liquid in the container, said means passing through the cap.

2. A liquid pistol comprising a casing in the form of a pistol except for the omission of the stock, a trigger pivotally mounted upon said casing, said casing being formed with a socket in its lower portion behind the trigger, said socket being open at the bottom, mechanism carried by said casing, actuated by the trigger for discharging liquid from the muzzle of the pistol, a screw cap member rotatably mounted in said casing above the socket, said member extending beyond the casing adapting it to be gripped by the fingers for manual rotation, a container for holding liquid having a screw neck, said container being removably fastened in said socket by screwing the cap member on said neck, and means affording liquid communication between the muzzle and the liquid in the container, said means passing through the cap member.

3. A liquid pistol comprising a casing in the form of a pistol except for the omission of the stock, a trigger, mechanism carried by said casing, actuated by the trigger for discharging liquid from the muzzle of the pistol, screw means rotatably mounted upon the casing behind the trigger for engaging the screw spout of a container in which the liquid to be discharged is sold, said screw means holding the container upon the casing in position to act as stock of the pistol, and means passing through the screw means for affording liquid communication between liquid in the container and the muzzle.

4. A liquid pistol comprising a casing in the form of a pistol except for the omission of the stock, a trigger and discharge mechanism supported by said casing, said mechanism being actuated by the trigger for discharging liquid from the muzzle of the pistol, the bottom of the casing behind the trigger being formed to engage the upper portion of a container in which the liquid to be discharged is sold, said container having a screw discharge spout projecting upward from its top substantially less in cross sectional area than the cross sectional area of the container at its top, said engagement preventing rotation of the container with respect to the casing, rotatably mounted screw means for threaded engagement with said screw spout, said screw means when screwed into engagement with the spout drawing the top of the container tight up against the casing, and means passing through the screw means for affording liquid communication between liquid in the container and the muzzle.

5. A liquid pistol comprising a casing in the form of a pistol except for the omission of the stock, a trigger and discharge mechanism supported by said casing, said mechanism being actuated by the trigger for discharging liquid from the muzzle of the pistol, means upon the casing behind the trigger adapted to engage the upper portion of a container in which the liquid to be discharged is sold, said container having a screw neck projecting up from its top, a screw cap adapted to be screwed upon said neck, said cap being rotatably mounted upon said pistol, said means and the screw cap being adapted to hold said container upon the casing in position to act as the stock of the pistol, and a tube in liquid communication with the discharge mechanism passing through said screw cap and extending a substantial distance below.

6. A liquid pistol comprising a casing in the form of a pistol except for the omission of the stock, a trigger and discharge mechanism within said casing, said mechanism being actuated by the trigger for discharging liquid from the muzzle of the pistol, a screw cap adapted to be screwed upon the screw neck of a container in which the liquid to be discharged is sold for holding the container in position to act as stock of the pistol, and a tube in liquid communication with the discharge mechanism passing through said screw cap and extending a substantial distance below, said cap being rotatably mounted on said tube in liquid-tight contact therewith, relatively rotatable with respect to said casing and restrained against axial motion with respect to said tube and said casing.

7. A liquid pistol as claimed in claim 6, in which means are provided on the casing for engaging the upper portion of a container when said screw cap is screwed down on the neck of the container, said means preventing relative ro-

tation of the container with respect to the casing and providing substantial leverage between the container and the casing.

5 8. A liquid pistol comprising a casing in the form of a pistol except for the omission of the stock, a discharge nozzle at the forward end of the barrel portion of the casing, a chamber, liquid connected to said nozzle and slidably mounted in said barrel portion, a piston in said chamber fixed relatively to said casing, a trigger for sliding said chamber over the piston for effecting the discharge of liquid from said nozzle, means for fastening a container in which the liquid is sold upon the casing in such position to act as stock of the pistol, a tube passing through said means for insertion into the container, and a flexible tube connecting the chamber with the tube passing through said means.

20 9. A liquid pistol comprising a casing in the form of a pistol except for the omission of the stock, a discharge nozzle at the forward end of the barrel portion of the casing, a chamber slidably mounted in said barrel portion, a piston in said chamber, a hollow piston rod attached to said piston, fixed relatively to said casing and extending forward of said chamber affording liquid communication between said chamber and the nozzle, a trigger for sliding said chamber over the piston for effecting discharge of liquid from said nozzle, means for fastening a container in which the liquid is sold upon the casing in such position to act as stock of the pistol, a tube passing through said means for insertion into the container, and a flexible tube connecting the chamber with the tube passing through said means.

10. A liquid pistol comprising a casing substantially in the form of a pistol except for the omission of the stock, a trigger, mechanism actuated by the trigger for discharging liquid from the muzzle of the pistol, means rotatably mounted upon the casing for removably engaging the usual discharge spout extending upward from a container in which the liquid to be discharged is sold, means upon the casing for engaging the upper portion of the container beyond its spout, both of said means holding the container upon the casing with sufficient leverage to act as the stock of the pistol, and means passing through the means for engaging the spout, for affording liquid communication between liquid in the container and said muzzle.

11. A liquid pistol comprising a casing substantially in the form of a pistol except for the omission of the stock, a trigger, mechanism actuated by the trigger for discharging liquid from the muzzle of the pistol, said casing having a socket open at the bottom behind the trigger, screw means rotatably mounted upon the casing behind the trigger for engaging the screw spout of a container in which the liquid to be discharged is sold, said screw means when screwed upon said spout holding the upper part of said container up in said socket, and means passing through the screw means for affording liquid communication between liquid in the container and said muzzle.

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