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SPRAYER.

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916,808.

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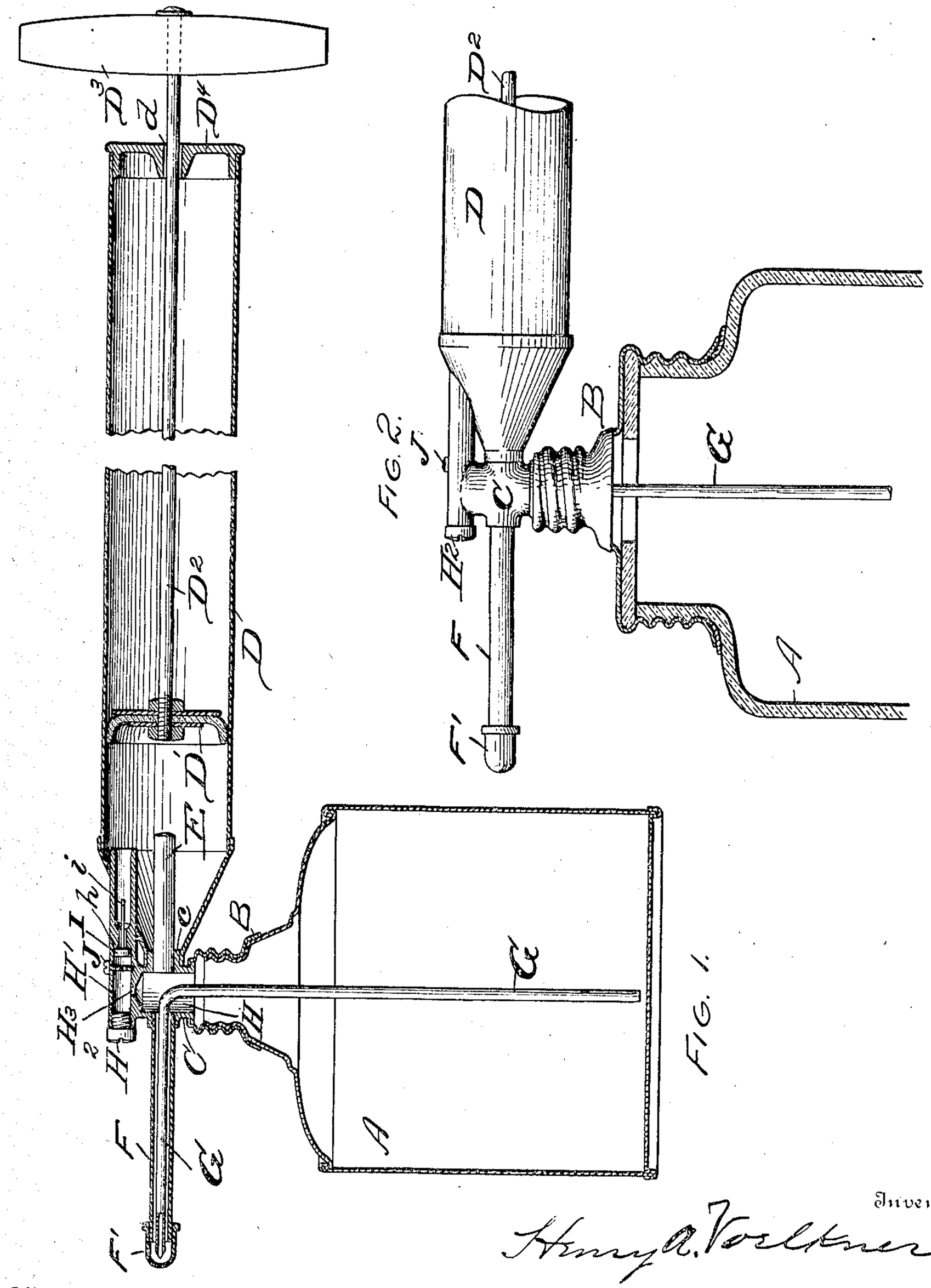

FIG. 1.

FIG. 2.

Witnesses

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SPRAYER.

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To all whom it may concern:

Be it known that I, HENRY A. VOELKNER, citizen of the United States, residing at Detroit, county of Wayne, State of Michigan, have invented a certain new and useful Improvement in Sprayers, and declare the following to be a full, clear, and exact description of the same, such as will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

My invention relates to an improvement in a manually operated appliance for atomizing or spraying liquid disinfectants or insecticides.

The object of this invention is to place upon the market a device simple and inexpensive in construction and one which may be readily cleaned or repaired. The invention also relates to certain details of construction described in the following specification and claims and shown in the accompanying drawings in which:—

Figure 1 is a vertical central section through the device with parts broken away. Fig. 2 is a fragmentary view in elevation and section showing the invention mounted on a glass canning jar.

Referring now to the letters of reference placed upon the drawings: A denotes a closed receptacle provided with an opening fitted with a threaded collar or cap B.

C is a chambered casting mounted upon and secured to the cap B.

D is an air pump cylinder its forward tapering end secured to a boss *c* formed in the casting C.

D′ is the pump plunger, D^2 the plunger rod, and D^3 its operating handle.

D^4 is a cap closing the rear end of the pump cylinder, the opening *d* for the passage of the plunger rod being of sufficient diameter to admit air into the cylinder.

E is a projecting pin set in the boss *c* to limit the forward movement of the plunger D′.

F is a spray tube secured at one end to the casting C and provided at its forward end with a removable perforated cap or nozzle F.

G is an L-shaped delivery tube supported within the spray tube,—extending from the bottom portion of the receptacle A to a point near the end of the spray tube.

H is a chamber in the casting C opening into the body of the receptacle A and affording communication between the latter and the spray tube F. The casting C is also formed with a cylinder H′, closed at its forward end by a screw H^2, but at its rear end opening directly into the pump cylinder D, through which wall it projects.

H^3 is a port for the passage of air from the cylinder H′ to the chamber H.

I is a check valve located in the cylinder H′, and seating against its contracted portion *h*:—the relatively long stem *i* of the valve acting in conjunction with the contracted portion of the cylinder to guide the valve to its seat.

J is a screw supported in the wall of the cylinder H′ its inwardly projecting end serving to limit the movement of the valve I.

Having indicated the several parts by reference letters, the operation of the appliance will be readily understood. The cap with its connecting parts is first unscrewed from the receptacle A, the can is then charged with the required liquid disinfectant or insecticide and the parts replaced as before. The pump plunger is now driven forward by means of its operating handle, forcing the air admitted through the opening *d* past the check valve I through the port H^3 into the receptacle A putting the liquid therein under pressure. Upon the return stroke of the plunger the check valve I is forced to its seat due to the air pressure in the receptacle and the partial vacuum created on the opposite side of the valve by the movement of the pump plunger. The air in the chamber A having been put under sufficient pressure by the action of the pump, the liquid is forced out through the delivery tube G where it is met and atomized by the blast of compressed air seeking to escape through the spray tube F. In order to provide for projecting the spray in any desired direction the removable cap or nozzle F′ is mounted on the end of the spray tube, the openings in the cap being such as will direct the spray in any direction required. It will be seen that by providing a pump of sufficient capacity the air in the receptacle may be kept under sufficient pressure so that the discharge of the disinfectant or insecticide will be continuous, irrespective of the direction in which the pump plunger may at the moment be moving.

I desire to draw particular attention to the fact that the check valve employed to control the air in the chamber may be readily removed either for cleaning, repairs or replac-

ing with a new valve as required,—it being only necessary to remove the screws H^2 and J to effect this result. In fact it will be noted that all the parts are easily accessible either for cleaning or repairs.

In Fig. 2. of the drawings I have shown the device applied to an ordinary canning jar of the "Mason" type,—when used in this connection a cover adapted to fit this style of jar is provided to which the parts are secured.

Having thus described my invention, what I claim is:—

1. In an appliance of the class described, a receptacle for liquids, a chambered fitting removably connected to said receptacle and communicating therewith, said fitting having an outwardly projecting boss, a pump cylinder having a tapering inner end secured to said boss, the tapering end of the cylinder having an opening, a second cylinder communicating with said chambered fitting and extending through the opening in the tapering end of the first mentioned cylinder for communication with the latter, a check valve in said second cylinder, a plunger mounted in the first cylinder for reciprocation therein, a pin fitted in the aforesaid boss and projecting into the first mentioned cylinder to limit the movement of the plunger in one direction, a projecting spray tube connected to said fitting and having communication through said fitting with said receptacle, and a liquid delivering tube partially inclosed by the spray tube and projecting into said receptacle.

2. In an appliance of the class described, a receptacle for liquids, a chambered fitting communicating with said receptacle and having an outwardly projecting boss, a pump cylinder having a tapering inner end secured to said boss with the tapering portion of said cylinder provided with an opening, a second cylinder arranged for communication with said chambered fitting and projecting into the pump cylinder through the aforesaid opening in the latter, said second cylinder having a closed outer end and an open inner end to establish communication between both cylinders, said second cylinder having a contracted portion intermediate its ends, a check valve mounted in said second cylinder and having its stem disposed in said contracted portion, a spray tube secured to said fitting, a delivering tube fitted in said receptacle and said spray tube, a plunger in the pump cylinder, and a pin mounted in the aforesaid boss for engagement by the plunger to limit the movement of the latter in one direction.

3. In an appliance of the class described, a receptacle for liquids, a chambered fitting secured to said receptacle and communicating therewith and provided with an outwardly directed boss, a pump cylinder having a tapering inner end secured to said boss and also provided with an opening, a second cylinder having communication with said fitting, the second cylinder having a removable closure at its outer end with its inner end open and projecting into said pump cylinder through the opening in the latter, and, intermediate its ends having a contracted portion, a check valve fitted in said second cylinder and having its stem mounted in the contracted portion of the latter, whereby the check valve may be limited in movement in one direction by said contracted portion, a removable element projecting into the second cylinder to limit the movement of the check valve in the opposite direction, a spray tube having connection with said fitting, a nozzle mounted upon the outer end of said spray tube, a delivering tube fitted in the spray tube and said receptacle, a plunger in the pump cylinder, and a pin mounted in the aforesaid boss for projection into the pump cylinder to limit the movement of the plunger in one direction.

4. In an appliance of the class described, a receptacle for liquids, a chambered fitting having removable connection with the receptacle and also provided with an outwardly directed boss, a pump cylinder having connection with said boss, a second cylinder having communication with said fitting and also with said pump cylinder, a check valve mounted in the second cylinder, a spray tube having connection with said fitting, a delivering tube mounted in the receptacle and also in the spray tube, a plunger mounted for reciprocation in the pump cylinder, and means projecting from said boss into the pump cylinder to limit the movement of the plunger in one direction.

5. In an appliance of the class described, a receptacle for liquids, a chambered fitting removably connected to the receptacle, a pump cylinder connected to the fitting, a second cylinder communicating with one of the chambers of the fitting and projecting into the pump cylinder and having communication with the latter, a check valve in the second chamber, a spray tube, a delivering tube, a plunger in the pump cylinder, and a pin projecting from the fitting into the pump cylinder for engagement by the plunger to limit the movement of the latter in one direction.

6. In an appliance of the class described, a receptacle for liquids, a chambered fitting connected to the receptacle, a pump cylinder connected to the fitting, a second cylinder formed with said chambered fitting and projecting into the pump cylinder and having communication with the latter, a check valve in the second cylinder, a spray tube having connection with said fitting, a delivering tube mounted in the spray tube and the receptacle, and a plunger mounted for reciprocation in the pump cylinder.

7. In an appliance of the class described, a receptacle for liquids, a chambered fitting connected to the receptacle, a pump cylinder connected to the fitting, a second cylinder formed with said chambered fitting and projecting into the pump cylinder and having communication with the latter, a check valve in the second cylinder, a spray tube having connection with said fitting, a delivering tube mounted in the spray tube and the receptacle, a plunger mounted for reciprocation in the pump cylinder, and a pin projecting from said fitting into the pump cylinder for engagement by the plunger to limit the movement of the plunger in one direction.

8. In an appliance of the class described, a receptacle for liquids, a chambered fitting for connection with the receptacle and provided with an outwardly directed boss, a pump cylinder having a tapering inner end detachably secured to said boss, a second cylinder having communication with the chambered fitting and projecting into the pump cylinder for communication with the latter, a check valve in the second cylinder, a spray tube, a delivering tube mounted in the spray tube and the receptacle and terminating at its inner end near the bottom of the latter, a plunger mounted in the pump cylinder for reciprocation therein, and an element mounted in said boss and projecting into the pump cylinder for engagement by the plunger to limit the movement of the latter in one direction.

9. In an appliance of the class described, a receptacle for liquids, a chambered fitting having communication with the receptacle, a pump cylinder connected to said fitting, a second cylinder having communication with the fitting, a check valve in the second cylinder a removable closure for the outer end of the second cylinder, the inner end of the second cylinder being open and projecting into the pump cylinder, an element projecting into the second cylinder to limit movement of the check valve in one direction, a spray tube, a delivering tube mounted in the spray tube and the receptacle, and a reciprocating plunger mounted in the pump cylinder.

10. In an appliance of the class described, a receptacle for liquids, a chambered fitting having communication with the receptacle, a pump cylinder connected to said fitting, a second cylinder having communication with the fitting, a check valve in the second cylinder a removable closure for the outer end of the second cylinder, the inner end of the second cylinder being open and projecting into the pump cylinder, an element projecting into the second cylinder to limit movement of the check valve in one direction, a spray tube, a delivering tube mounted in the spray tube and the receptacle, a reciprocating plunger mounted in the pump cylinder, means for limiting the movement of the plunger in one direction, and a nozzle removably fitted upon the spray tube.

11. In an appliance of the class described, a receptacle for liquids, a chambered fitting having communication with the receptacle, a pump cylinder connected to said fitting, a second cylinder having communication with the fitting, a removable closure for the outer end of the second cylinder, the inner end of the second cylinder being open and projecting into the pump cylinder, a spray tube, a delivering tube mounted in the spray tube and the receptacle, a plunger in the pump cylinder, and means for limiting the movement of the plunger in one direction.

12. In an appliance of the class described, a chambered fitting constructed for removable connection with a containing receptacle, a pump cylinder having connection with said fitting, a second cylinder formed with and having communication with said fitting, and projecting into the pump cylinder, a check valve in the second cylinder, a spray tube, a delivering tube, a reciprocating plunger disposed in the pump cylinder, and an element projecting from the fitting into the pump cylinder to limit the movement of the plunger in one direction.

In testimony whereof, I sign this specification in the presence of two witnesses.

HENRY A. VOELKNER.

Witnesses:

GRACE E. WYNKOOP,

SAMUEL E. THOMAS.