No. 715,982. Patented Dec. 16, 1902.

R. E. CHAPIN.

SPRAYING DEVICE.

(Application filed Aug. 15, 1901.)

(No Model.) 2 Sheets—Sheet 1.

Fig. 1.

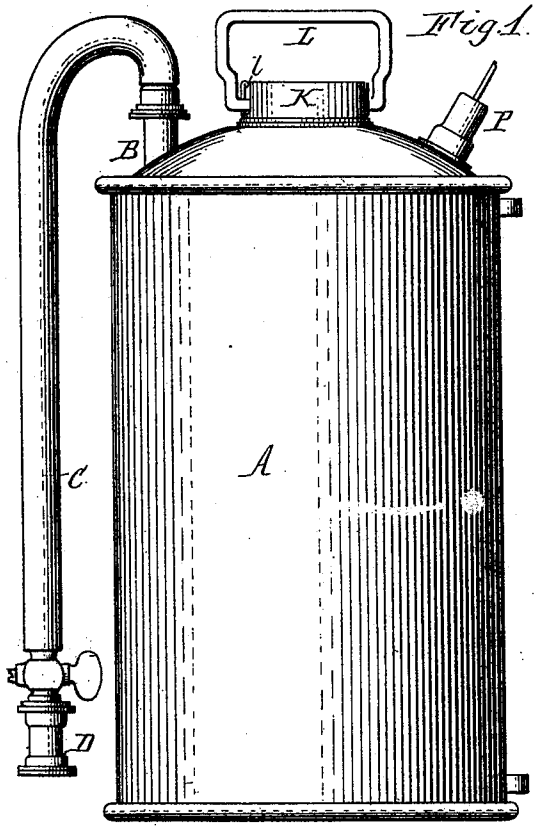


Fig. 3.

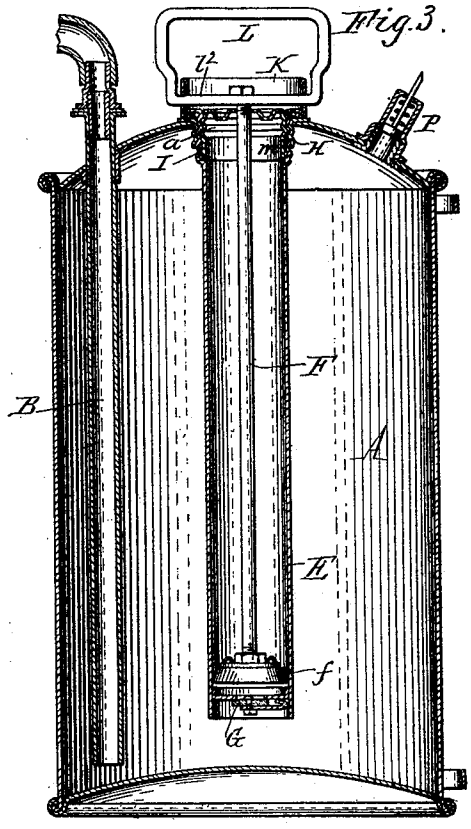


Fig. 2.

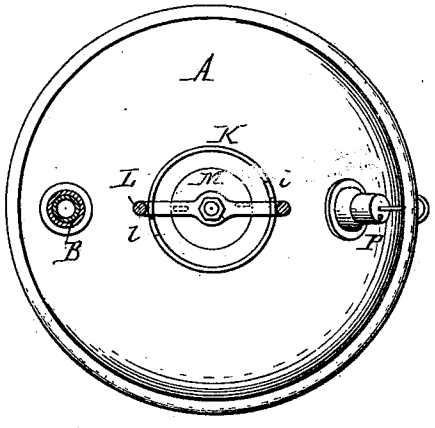
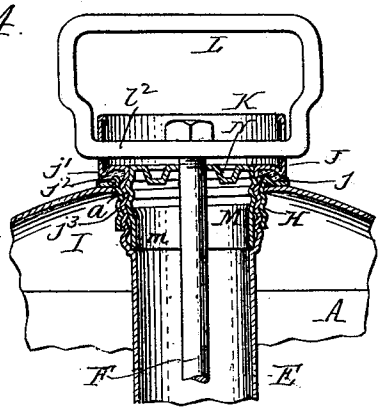


Fig. 4.



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715,982.

Patented Dec. 16, 1902.

R. E. CHAPIN.

SPRAYING DEVICE.

(Application filed Aug. 15, 1901.)

(No Model.)

2 Sheets—Sheet 2.

Fig. 5.

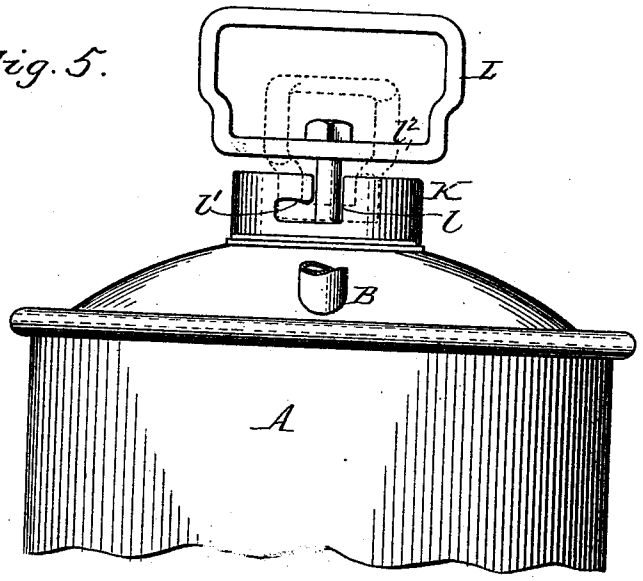


Fig. 7.

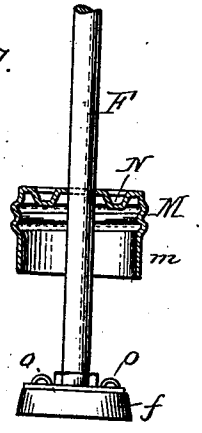


Fig. 6.

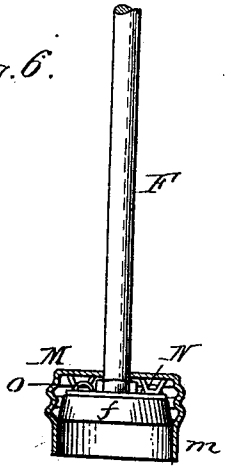
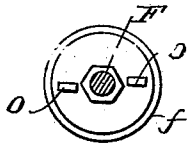


Fig. 8.



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UNITED STATES PATENT OFFICE.

RALPH E. CHAPIN, OF BATAVIA, NEW YORK.

SPRAYING DEVICE.

SPECIFICATION forming part of Letters Patent No. 715,982, dated December 16, 1902.

Application filed August 15, 1901. Serial No. 72,140. (No model.)

To all whom it may concern:

Be it known that I, RALPH E. CHAPIN, a citizen of the United States, residing at Batavia, in the county of Genesee and State of New York, have invented new and useful Improvements in Spraying Devices, of which the following is a specification.

This invention relates more particularly to a spraying device of that kind in which a portable tank for containing the spraying liquid is provided with a delivery-nozzle and means, such as an air-pump, located in the tank for forcing air into the tank under pressure, which pressure is utilized to force the liquid out of the delivery-nozzle in a steady stream or spray in a well-known manner when the nozzle is opened.

The object of the present invention is to provide the tank with a hand-operated pump the cylinder or barrel of which is secured to the tank and the piston-rod of which is provided with means which can be readily connected or interlocked with the pump cylinder or barrel to serve as a tool or device for attaching and detaching the same from the tank and which when engaged with the cylinder or barrel serves as a handle for carrying the tank.

A further object is to provide means which will prevent an inexperienced person from inserting the pump-piston in the cylinder or barrel in an inoperative position.

A further object is to provide the pump cylinder or barrel with a removable head or cap, the latter and the piston having coöperating parts whereby the piston serves as a means for attaching and detaching the said cylinder head or cap.

In the accompanying drawings, consisting of two sheets, Figure 1 is an elevational view of a spraying device, illustrating my invention. Fig. 2 is a plan view thereof, partly in section. Fig. 3 is a vertical sectional view thereof. Fig. 4 is an enlarged fragmentary sectional view of the upper end of the pump-cylinder and tank. Fig. 5 is a fragmentary elevation of the upper part of the device, the handle being shown by full and dotted lines in different positions. Fig. 6 is a sectional view of the piston and cap removed. Fig. 7 is a similar view showing the cap slipped up on the piston-rod. Fig. 8 is a top plan view of the piston-head.

Like letters of reference refer to like parts in the several figures.

Referring to the drawings, A indicates a portable tank of any suitable construction provided with an opening *a* in the top, and B the delivery-pipe extending into the tank to a point near the bottom thereof and connected at its outer end with a flexible hose C, provided with a spraying or delivery nozzle D of any preferred form.

E indicates the barrel or cylinder of an air-pump which extends into the tank through the opening *a* in the top thereof, and F the piston-rod which is provided at its inner end with a suitable piston-head, preferably of that type provided with a flexible cup-valve or packing *f*, of leather or other suitable material.

G indicates a valve in the inner or lower end of the pump-cylinder or barrel, which may be of any desired form adapted to permit the exit of air from the pump-cylinder and prevent the entrance of the spraying liquid into the cylinder.

The pump-barrel has preferably a screw connection with the tank, for which purpose the tank is provided with an internally-screw-threaded nipple H, secured to the tank-top and projecting into the same through the opening *a*. The pump-barrel near its upper end is expanded or enlarged slightly in cross-section and provided with an external screw-thread I, which screws into said nipple, and above said screw-thread is provided with a lateral flange or shoulder J, at the outer edge of which is an upright circular wall or flange K. Between the lateral flange J and the upper end of the nipple H or the tank-top is a packing ring or gasket *j*, and for the purpose of preventing the displacement of the latter the flange J is provided with a downwardly-projecting retaining bead or rim *j'*.

j² indicates an upwardly-projecting bead formed around the mouth of the nipple H, between which and the bead *j'* the packing-ring *j* is compressed to make a tight joint between the pump-barrel and the nipple. The pump thus constitutes a closure for the nipple H, which is utilized for the filling-opening. In order to utilize the opening *a* for emptying the tank and insure a complete dis-

charge of the contents, the inwardly-projecting nipple is provided with a hole or holes j^3 at or near its juncture with the top of the tank.

L indicates an operating-handle for the pump-piston, rigidly secured to the upper end of the piston-rod. This handle also serves as the means for screwing the pump barrel or cylinder into and out of the nipple H. For this purpose the upright wall or flange K on the upper end of the pump-cylinder is provided with opposite bayonet-slots l, having downwardly-facing shoulders l'. When the handle L is moved inwardly into the bayonet-slots and given a partial turn, its lower bar l^2 is engaged under the downwardly-facing shoulders l', thus connecting the piston with the tank through the medium of the pump-barrel and affording a carrying-handle for the tank, as well as furnishing a desirable means for turning the pump cylinder or barrel to attach it to or detach it from the tank.

While the construction just described is preferable, other constructions will readily suggest themselves for locking the piston to the cylinder.

It is frequently necessary to remove the pump-piston from the cylinder or barrel for renewing the packing or for other reason. An inexperienced person is liable to attempt to replace the piston by forcing the same directly into the cylinder, which would cause the packing to be turned up or reversed and render it useless. In order to prevent this, I provide the pump cylinder or barrel with a removable cup-shaped or internally-flanged cap M, which is preferably connected to the cylinder or barrel by means of an external screw-thread on the upper end of the cylinder or barrel. This cap is located in the expanded or enlarged portion of the cylinder before referred to, and the inner face of its flange m therefore lies substantially flush with the inner face of the lower contracted portion of the cylinder or barrel, so that the piston-head and packing f can be moved up into the cap. The inner portion of the cap-flange m is preferably straight and extends into the cylinder sufficiently far to cover the internal threads thereof and prevent the packing f being caught thereby and injured when the same is forced down out of the cap into the cylinder. The cap and piston-head are provided with coöperating parts, such as projections N on the under or inner face of the cap, and projections O on the upper face of the piston-head, which are adapted to engage when the piston-head is moved up into the cap and enable the turning of the cap by the piston-rod to attach or detach the same from the cylinder or barrel. The cap has no other provision for turning it, so that it is impossible to attach or detach the cap except when the piston-head is moved therein and the packing protected thereby and held in its proper position. To remove the cap, the piston-rod is drawn up or outwardly until the piston-head engages the cap, when by turning the piston-rod the projections N and O engage and cause the cap to turn with the piston, when the piston and cap can be removed from the cylinder. To replace the parts, the cap is first moved down on the piston-rod over the cup-packing f, as shown in Fig. 6, and the cap inserted in the upper end of the cylinder. The cap is steadied with one hand while the piston-rod is drawn outward slightly to hold the projections N and O in engagement and turned with the other hand, thus turning the cap and screwing the same into the cylinder or barrel. The projections N are preferably formed by stamping inwardly parts of the cap-top, which thus form slits or openings at the sides of the projections providing for the inlet of air to the pump-cylinder.

P indicates a safety-vent valve of any desired form which is adapted to automatically open and relieve the pressure in the tank when the same has reached a predetermined point.

I claim as my invention—

1. The combination with a tank, of a pump-cylinder located in said tank and having a screw connection therewith and having a part projecting outside of the tank, a piston in said cylinder and an operating-handle for said piston having a bayonet connection with said projecting part of the cylinder, substantially as set forth.

2. The combination with a tank, of a pump-cylinder connected therewith, a piston in said cylinder, a cap detachably connected to said cylinder, and coöperating parts on said piston and cap whereby the former can be used to attach or detach the cap to or from the cylinder, substantially as set forth.

3. The combination with a tank, of a pump-cylinder connected therewith and having an enlarged end portion, a flanged cap secured in said enlarged portion of the cylinder, the internal diameter of the cap being substantially the same as the internal diameter of the body of the cylinder, and a piston adapted to be moved into said flanged cap, substantially as set forth.

4. The combination with a tank, of a pump-cylinder connected therewith, an end screw-cap for the cylinder having an inwardly-projecting annular flange, a piston adapted to be moved into said cap, and engaging parts carried by said cap and said piston, whereby the cap can be turned by the piston, substantially as set forth.

Witness my hand this 3d day of August, 1901.

RALPH E. CHAPIN.

Witnesses:
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