

July 19, 1932.

F. I. JADEN
LIQUID DISPENSING GUN
Filed March 14, 1931

1,868,235

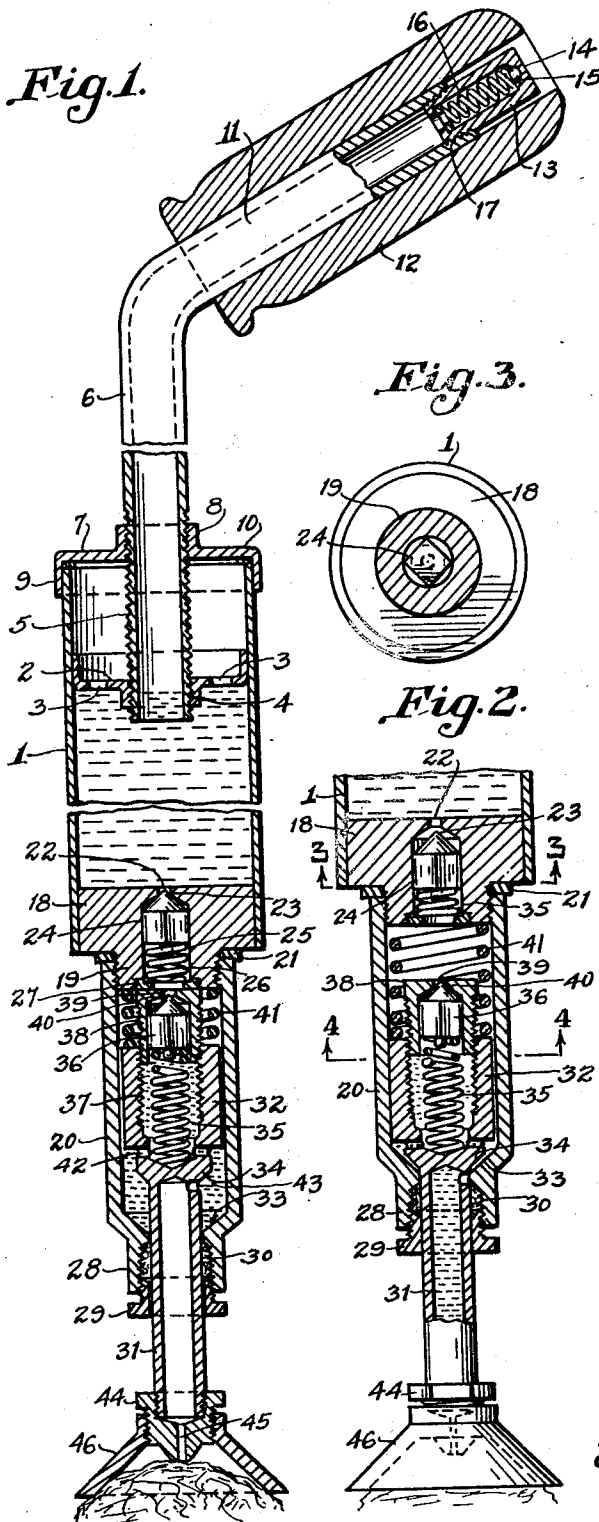


Fig. 3.

Fig. 2.

Fig. 6

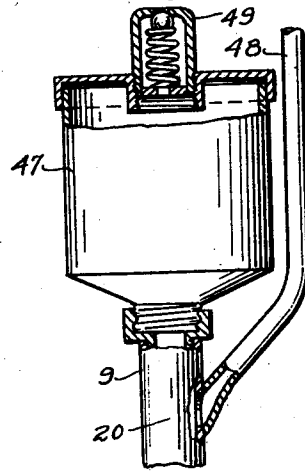


Fig. 4.

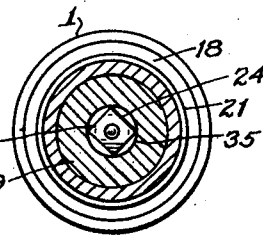
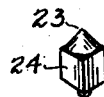


Fig. 5



Inventor

Fred I. Jaden

By *Mason F. Wickham*
Attorney

UNITED STATES PATENT OFFICE

FRED I. JADEN, OF HASTINGS, NEBRASKA

LIQUID DISPENSING GUN

Application filed March 14, 1931. Serial No. 522,621.

The invention forming the subject matter of this application is an improvement on the gun for applying liquid to dandelions, disclosed in my copending application Serial No. 486,484, filed October 10, 1930.

The main object of the present invention is to simplify the instrument described in the said application by reducing the number of parts and designing the assembly so as to make such parts more readily accessible for assembly and repair.

Other objects of the invention will become apparent as the detailed description thereof proceeds.

In the drawing:

Figure 1 is a central vertical section, lengthwise of the instrument;

Figure 2 is a fragmentary section showing some of the parts of Figure 1 in a different position;

Figure 3 is a horizontal section taken on the line 3—3 of Figure 2;

Figure 4 is a horizontal section taken on the line 4—4 of Figure 2;

Figure 5 is a perspective view of a valve forming part of this invention; and

Figure 6 is a fragmentary elevation, with parts shown in section, of a modified form of the invention.

As shown in the drawing, the preferred form of the invention comprises a cylindrical container 1, having a flanged diaphragm 2, suitably secured therein and near the upper end thereof. The diaphragm 2 is provided with apertures 3 to permit liquid to flow to the lower side thereof when introduced at the top of the container 1. The center part of the diaphragm 3 is provided with a downturned hub 4 which is internally screwthreaded to receive the external threaded part 5 of a hollow handle 6, which extends upwardly and axially of the container 1.

The screwthreaded part 5 has a cap 7 secured thereto by means of an internally screwthreaded flange 8; and this cap is provided with a downturned flange 9 fitting snugly around the upper end of the container 1, a gasket 10 being interposed between the upper end of the container 1 and

the lower face of cap 7 to make a liquid-tight joint between the cap and container. It will be obvious from Figure 1 that when the cap 7 is screwed onto the part 5 at the upper part thereof, it will be positioned on the end of the container 1 by turning the handle 6 so that the screwthreads of the part 5 and the hub 4 pull the cap down tightly on the upper end of the container 1.

The upper end of the handle 6 is bent to form a part 11, to which is suitably secured a handgrip 12. The upper end of the bent part 11 is screwthreaded to receive a small valve casing 13, having an aperture 14 at one end thereof and shaped to form a seat for a small ball valve 15.

The ball valve 15 is normally held in aperture closing position by means of a weak coil spring 16, having one end thereof engaging the ball 15, while the other end abuts against an annular nut screwthreaded on the inner end of the valve casing 13. This annular nut is designated in Figure 1 by the reference numeral 17.

The lower end of the container 1 is closed by a cylindrical nut 18, which is welded or otherwise suitably secured to the said lower end. A boss 19 is formed centrally on the lower part of the nut 18 and is externally screwthreaded to receive the internally screwthreaded upper end of the cylinder 20, a gasket 21 being interposed between the upper end of the cylinder 20 and the lower face of the nut 18. The nut 18 is axially bored to form an aperture 22 adapted to receive a valve pin 23, formed at the upper end of a valve plug 24, which is square in cross section.

Coaxially with the aperture 22 the nut 18 is provided with a large bore 25 in which the square part of the plug 24 fits snugly, but slidably. The bore 25 is longer than the plug 24 and has a compression spring 26 seated therein, with one end against the bottom of the plug 24 and the other end supported by an annular nut 27 screwthreaded into the boss 19 concentrically with the bore 25.

The lower end of the cylinder 20 is reduced to form a part 28, which is internally screwthreaded to receive a packing nut 29,

adapted to compress packing 30 in order to provide a fluid-tight joint for the lower tubular part 31 of a piston 32, which is slidably mounted in the wider part of the cylinder 20.

5 The lower part of the cylinder 20 is splayed to form a conical seat 33 for a correspondingly shaped valve member 34, formed on the lower end of the piston 32.

The piston 32 is centrally bored to receive a compression spring 35, which is supported at its lower end by the part 34, and at its upper end contacts with a valve plug 36, which is similar in every respect to the valve shown in Figure 5. The central bore 37 of the piston 32, is internally screwthreaded to receive the external screwthreads of a small cylinder 38 which is centrally bored to receive slidably the valve plug 36.

The upper end of the cylinder 38 extends across the top of the valve plug 36 and is provided with a central aperture 39 to receive the valve pin 40 formed on the upper end of the valve plug 36. A coil spring 41 surrounds the cylinder 38, and has its opposite ends abutted against the lower face of the boss 19, and the upper end of the piston 32 to force the valve member 34 normally against the splayed seat 33, formed at the lower end of the cylinder 20.

The lower end of the piston 32, where it joins the member 34, is provided with discharge apertures 42; and the tubular part 31 is provided at its upper end immediately below the member 34, with a discharge aperture 43. The lower end of the tubular part 31 is externally screwthreaded to receive a flanged nut 44, which is provided with a central bore 45 to form a nozzle for the gun.

The nozzle nut 44 is screwthreaded to receive a conical bonnet 46 which is adapted to be placed over a dandelion or other plant intended to receive a discharge of poisonous liquid in order to kill the plant and destroy its pollination or other reproductive medium which is usually located in the heart of the plant.

The form of the invention shown in Figures 1 and 2 is the preferred form; and the arrangement of the handle at the upper end makes it a very convenient instrument for the purpose described. However, where it is desired to use a larger container, a larger cylinder 47 may be substituted for the container 1. In this case, a handle 48 may be secured to the side of the cylinder 20, and the cylinder 47 may be provided with a check valve 49 to control the admission of air to the dispensing part of the apparatus. While not shown in this figure, it must be understood that the piston discharge mechanism of the cylinder 20 is the same as that shown in Figures 1 and 2.

When the instrument is not in use, the valve plugs 24 and 36 are both in closed position on the valve seats. Assuming now that

the container 1 is filled with liquid, and that the bonnet 46 has been applied to a plant for the purpose of spraying into it liquid from the container 1, it will be obvious that as the piston 32 is moved toward the container 1 against the compression of the spring 41 the liquid surrounding the spring 41 will cause the upper valve plug 24 to close the aperture 22, and will force the valve plug 36 into open position as shown in Figure 1. This movement forces liquid from the upper part of the cylinder 20 above the piston 32 out through the aperture 42 into the lower part of the cylinder 20 and around the tubular part 31.

The upper movement of the piston 32 is stopped by contact between the upper end of the cylinder 38 and the lower end of the boss 19. Just as soon as pressure is released on the bonnet 46, the coil spring 41 forces the piston 32 toward the discharge end of the cylinder 20, and until the valve part 34 contacts with the splayed seat 33. While moving from the innermost position to the stop position against the splayed seat 33, the liquid becomes discharged through the aperture 43 into the tubular part 31, and out of the spray nozzle 45 onto the plant. The operation of the mechanism will be obvious from inspection of Figures 1 and 2, in which the check valves are shown in the different positions depending upon the filling and discharge movement of the nozzle 45.

The handle 6, with the cap secured thereto, forms a very convenient means for closing the upper end of the container and renders the gun capable of use without a person having to use both hands for this purpose. The diaphragm 2, in conjunction with the cap 7, forms a very strong brace for the handle 6 and makes a very rigid connection between the said handle and the container 1. The apertures 3 are, of course, provided to permit the passage of the poisonous liquid which may be admitted to the container 1 by removal of the cap 7.

The small cylinder 38 is screwthreaded into the plug 32 so as to provide for adjustment of the quantities which may be discharged at each operation from the container 1. Obviously, the movement of this cylinder 38 into or out of the plug 32, will regulate the upward movement of the plug 32 and will cause the corresponding variation in the quantity of liquid being discharged.

What I claim is:

1. A dispensing gun comprising a cylindrical container, a tubular handle having a cap secured thereto to close one end of said container, a check valve at the outer end of said handle, a cylinder connected to the other end of said container, and check valve mechanism in said cylinder to control the discharge of liquid from said container in predetermined quantities.

2. A dispensing gun comprising a container, a cylinder detachably connected to one end of said container, a piston slidably mounted in said cylinder and having a tubular discharge member projecting axially therefrom, a packing gland on the lower end of said cylinder for said member, and oppositely acting check valves one in said container and the other in said cylinder to control the discharge of liquid from said container through said member.

3. A dispensing gun comprising a container, a tubular handle extending from the upper end of said container and having a check valve at the other end thereof, a cylinder connected to the other end of said container, valve mechanism slidably mounted in said cylinder, and having a part projecting to one end of said cylinder, and a conical bonnet secured to the discharge end of said mechanism.

4. A dispensing gun comprising a container having a diaphragm secured thereto and between the ends thereof, a handle detachably connected to said diaphragm and having a cap secured thereto to close one end of said container, a cylinder detachably secured to the other end of said container, a piston slidably mounted in said cylinder, and having a tubular member extending coaxially therefrom and projecting from one end of said cylinder, a valve seat being formed on the lower end of said cylinder, a valve formed on the upper end of said tubular member to correspond with said seat, and yielding mechanism in said cylinder and one end of said container for controlling the discharge of liquid from the container through said tubular member.

5. A dispensing gun comprising a container, a tubular handle extending from one end of said container and having an air control check valve at the outer end thereof, mechanism controlling the discharge of liquid from said container, and including a tube mounted to slide relative to said container, a discharge nozzle detachably connected to one end of said tube and a conical outwardly splayed bonnet detachably connected to said nozzle.

In testimony whereof I affix my signature.
FRED I. JADEN.