July 15, 1941. M. LASSMANN 2,249,478

LIQUID SPRAYING CONTAINER

Filed Nov. 30, 1939

Fig. 1.

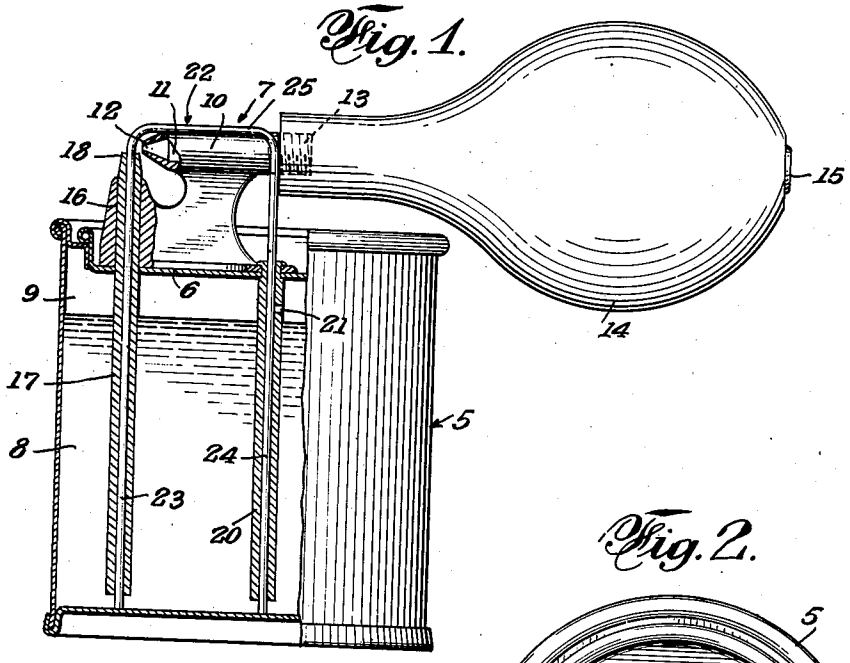


Fig. 2.

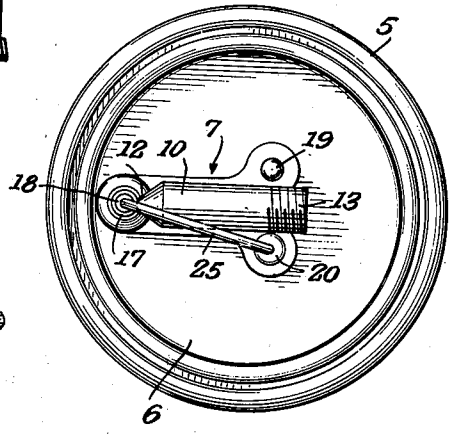
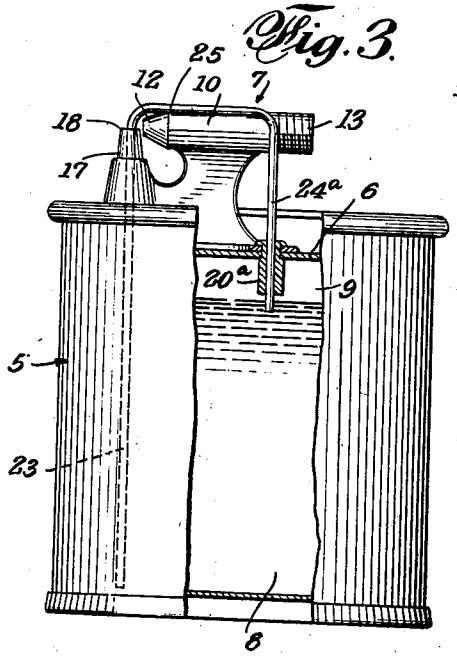


Fig. 3.



MAX LASSMANN
INVENTOR

BY Hyman Jackman
ATTORNEY

Patented July 15, 1941 2,249,478

UNITED STATES PATENT OFFICE

2,249,478

LIQUID SPRAYING CONTAINER

Max Lassmann, New York, N. Y.

Application November 30, 1939, Serial No. 306,775
In France June 10, 1939

6 Claims. (Cl. 299—88)

The present invention relates to containers with means for spraying the contents thereof, the invention being particularly adapted for the spraying of paint, enamel, lacquer or other such liquids.

In this invention, the spraying operation is preferably performed through the medium of a bulb which forces air by an orifice through which the liquid rises to be atomized and thus forms a spray comprising finely divided particles of liquid borne on the air forced from the bulb. This atomizing function is quite conventional and depends on its operation on the maintenance of atmospheric pressure within the container. In previous structures, particularly one patented by me in France on March 9, 1932, No. 732,874, at the start of the spraying operation it was necessary to invert the container in order to re-establish normal pressure within the container. This latter action, being an unnatural one, is therefore undesirable.

It is, therefore, an object of this invention to provide a structure of the indicated character which may be employed for atomizing and spraying liquids in a convenient and normal manner.

Because of the deleterious action of air upon the liquids contemplated to be sprayed, the invention also seeks to provide improved means for sealing the container contents against the influx of air when the device is out of use, said means also obviating inadvertent spilling of the contents of the container under all handling conditions.

The invention comprises a liquid container in the form of a can having an open top and fitted with a cover upon which is carried the spraying means. This cover also is provided with two tubes, one disposed within the liquid and the other either disposed within the liquid and provided with an opening above the liquid level or terminating above said level. The structure is provided with a length of wire so formed as to have a portion disposed within each of the mentioned tubes. The first of these tubes terminates, at its upper portion, at a point in front of the air nozzle of the spraying means, and the second of said tubes preferably terminates at a lower point, whereby upon removal of said wire from said tubes preparatory to spraying, said first tube remains sealed by the wire for a short time after the wire is free of the second tube. Thus air may seek ingress into the container through said second tube without the possibility of forcing liquid up and out of the top of the first tube. When the wire is completely removed, the device is ready for use.

Because of the manner of constructing the containers and covers therefor, the air above the liquid therein is compressed when said covers are put into place. Hence, it is desirable to relieve this excess pressure before spraying. The above outlined arrangement also serves to give this relief of pressure while the liquid nozzle is in sealed condition.

From the foregoing it may be seen that the improved contemplated structure seeks to normalize the use and operation of liquid spraying containers, in that preliminary inversion of the container is obviated; that loss of liquid at the start of the spraying operation is also obviated; that spraying may be continuously effected without the development of low pressures within the container; and that the container may be effectively sealed when out of use to obviate evaporation of the liquid therein.

With the foregoing and other contemplated features in mind, the invention may best be realized from the illustrated embodiments thereof as shown in exemplary form in the accompanying drawing which forms the basis of the following detailed specification.

In the drawing:

Fig. 1 is a side elevational view, partly in vertical section, of a liquid spraying container constructed in accordance with the present invention.

Fig. 2 is a plan view thereof with the air bulb omitted.

Fig. 3 is a side elevational view, partly in vertical section, of a spraying container of modified form.

In that embodiment of the invention illustrated in Figs. 1 and 2, the structure comprises a container 5 provided with a cover 6 upon which is carried a spray device generally designated 7. The container 5 is provided with liquid 8 in the form of paint, enamel, lacquer, etc., which preferably does not fill said container to provide the air space 9. The above is quite conventional, and it will be noted that the cover 6 when fitted to the container, will compress the air in the space 9 to exert a greater than atmospheric pressure upon the liquid 8.

The spray device 7 comprises essentially a fitting 10 formed with a horizontally disposed air passage 11 terminating in an air nozzle 12 at one end and provided with a preferably threaded opposite end 13 for connection with an air bulb 14. The latter is preferably provided with a

valve indicated at 15 which closes when the bulb is compressed to force air through the nozzle 12 and which opens to admit air into the bulb when pressure on said bulb is released.

Immediately forward of the nozzle 12 and transverse to the passage 11, the fitting 10 is formed with a bore 16 into which is fitted a tube 17. This tube has its upper end 18 terminating in line with the nozzle 12 and its lower end is disposed within the liquid 8 and terminates short of the bottom of the container 5.

The fitting 10 may be secured to the cover 6 as by means of rivets 19 as shown in Fig. 2. One of these rivets may be replaced in the present instance by the riveted end of a tube 20 which is thus carried by the cover 6 and extends to just short of the bottom of the liquid container. At a point above the level of the liquid 8 and in the air space 9, the tube 20 is preferably formed with an orifice 21 connecting the passage of said tube with said air space.

The form of the invention shown in Fig. 3 follows the above described construction with the exception that the tube 20 is replaced with a shorter tube 20a which terminates above the liquid level.

It is obvious that manipulation of the bulb 14 will generate a spray at the nozzle 12, said spray comprising air from the bulb and finely divided particles of the liquid 8 drawn by said air through the top 18 of the tube 17.

When the device is sold, it comes provided with a length of wire 22 formed in an inverted U-shape with one leg 23 disposed within the tube 17 and the other leg 24 within the tube 20. As shown in Fig. 1 these legs may be of equal length and rest upon the bottom of the container, the horizontal portion 25 of said wire serving as a handle by means of which the wire may be inserted into or extracted from said tubes 17 and 20.

The wire as above described, may be used in the form of the invention shown in Fig. 3, or, as illustrated, the leg 24 may be foreshortened to provide a shorter leg 24a.

It will be noted that the tube 24 terminates at its upper end below the upper end of the tube 17. Thus, when the wire 22 is being removed preparatory to using the device, the leg 24 of said wire will leave the tube 20 while the leg 23 is still disposed within the upper part of the tube 17. The previously mentioned high pressure of the air at 9 may thus be relieved through the orifice 21 so that liquid may not be forced out of the top end 18 of the tube 17 by this high pressure. This is also true of the structure of Fig. 3 where the short leg 24a leaves the short tube 20a long before the leg 23 is entirely removed from the tube 17. Now that atmospheric pressure in the air space 9 is maintained through the orifice 21 (Fig. 1) or through the bottom of the short tube 20a (Fig. 3), an efficient spraying operation may be performed.

When it is again desired to seal the liquid contents of the container, the wire 22 is replaced into the tubes 17 and 20 (Fig. 1) or 17 and 20a (Fig. 3) so that the liquid is effectively sealed against evaporation and further allows for agitation of said liquid for thorough mixing thereof by shaking said container.

It is apparent, that the mere provision of an air admitting orifice in the cover 6 for the purpose of maintaining the proper pressure in the container, would not suffice since this orifice would quickly become sealed by the hardening of a skin of said liquid thereover. Also, agitation of the liquid in the container would become difficult due to possible spillage through said orifice. The provision of the U-shaped wire member 22 employed in the above described manner, obviates these and the previously mentioned faults, particularly as related to liquids such as paints, enamels, lacquers, etc.

Should there be some leakage of air through the tube 20, the orifice 21 may become covered with a skin of paint, but inasmuch as the container may be vigorously shaken, this skin will be dissolved during this process and before the wire is extracted. These skin formations at the orifice 21 and within the tubes 17 and 20, effect a better seal against admission of air into the container, the skin formations within said tubes being disrupted upon removal of the wire.

The utility of the invention may be better realized when it is pointed out that upon depletion of the contents of the container, the cover 6 and the spraying device 7 carried thereby may be placed upon another full container which may be acquired at relatively low cost.

While the invention is disclosed as employing a bulb for the generating of air for the spraying function, it is apparent that other means may be used for supplying air.

From the foregoing it is clear that an efficient and quite simple device for spraying paints and the like has been disclosed. However, it is not intended that the scope of the invention as claimed be limited by the specific details of this disclosure which may be modified in various ways by those skilled in this art and within the spirit of the invention.

What I claim as new and desire to secure by Letters Patent, is:

1. A device of the character described comprising a liquid container having a tightly fitted cover, means carried by said cover for spraying liquid from said container, said means including a tube for passing liquid from said container and an air tube for communicating the space within the container and above the liquid therein with atmosphere, the liquid passing tube terminating at a point above the top end of the air tube, and a removable member having a leg portion disposed within each tube to seal the same, the leg portion disposed within the air tube having a lesser coextensive contact with said air tube than the coextensive contact between the liquid passing tube and the leg portion disposed therein whereby upon removal of said member the air tube is opened to atmosphere before the liquid passing tube is so opened.

2. A device of the character described comprising a liquid container having a tightly fitted cover, means carried by said cover for spraying liquid from said container, said means including a tube for passing liquid from said container and an air tube for communicating the space within the container and above the liquid therein with atmosphere, the liquid passing tube terminating at a point above the top end of the air tube, and a member having portions arranged to seal both of said tubes, said member comprising a U-shaped piece of wire having leg portions disposed within said tubes.

3. The combination with a liquid spraying container having a liquid passing tube and an air tube for communicating the interior of the container with atmosphere, of a removable member having a leg portion disposed within each tube to seal the same, the leg portion disposed within

the air tube having a lesser coextensive contact with said air tube than the coextensive contact between the liquid passing tube and the leg portion disposed therein whereby upon removal of said member the air tube is opened to atmosphere before the liquid passing tube is so opened.

4. A device of the character described comprising a liquid container having a tightly fitted cover, means carried by said cover for spraying liquid from said container, said means including a tube for passing liquid from said container and an air tube for communicating the space within the container and above the liquid therein with atmosphere, and a removable member having a leg portion disposed within each tube to seal the same, the leg portion disposed within the air tube having a lesser coextensive contact with said air tube than the coextensive contact between the liquid passing tube and the leg disposed therein whereby upon removal of said member the air tube is opened to atmosphere before the liquid passing tube is so opened.

5. In a device of the character described, a liquid container, a tube for passing liquid from said container, an air tube for communicating the space within the container and above the liquid therein with atmosphere, the liquid passing tube terminating at a point above the air tube, and a removable member having a leg portion disposed within each tube to seal the same, the leg portion disposed within the air tube having a lesser coextensive contact with said air tube than the coextensive contact between the liquid passing tube and the leg portion disposed therein whereby upon removal of said member the air tube is opened to atmosphere before the liquid passing tube is so opened.

6. In a device of the character described, a liquid container, a tube for passing liquid from said container, an air tube for communicating the space within the container and above the liquid therein with atmosphere, and a removable member having a leg portion disposed within each tube to seal the same, the leg portion disposed within the air tube having a lesser coextensive contact with said air tube than the coextensive contact between the liquid passing tube and the leg portion disposed therein whereby upon removal of said member the air tube is opened to atmosphere before the liquid passing tube is so opened.

MAX LASSMANN.