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Description

The present invention relates to a manually operated sprayer for liquids of the type for fixing on the opening of a container.

Sprayers of the abovementioned type are already known and used for various purposes, such as, for example, homogeneous moistening, spray painting, spraying plants with liquid pesticides etc.

Such sprays usually comprise a pump which draws liquid from a container and sends it to a nebulizer nozzle by means of an appropriate duct. When part of the liquid has been drawn from the container it is necessary to replenish the empty space in the container with air to allow the liquid to continue to come out; it is for this reason that provision is made for the sprayer to have an air duct, connected to the inner chamber of the container.

One problem connected with carrying out these sprayers is the possibility of an escape of liquid from the air duct when the container (with the sprayer incorporated) is put away in a position different from the one in figure 1.

US-A-3 897 006 describes a sprayer, whose main body is provided with an opening to allow air to enter, that is generally closed by an inside closing membrane acting as a valve and that is opened during the pumping operation by means of an L-shaped rod independent of and moved by the operating lever of the pump.

Such solution results to be rather complex due to the number of required components and to the carefulness with which said components must be realised to allow the coupling of the rod with the opening during the pumping operation.

The object of the present invention is to carry out a manual sprayer which is both efficient and durable, having an automatic closing means that can be easily carried out, to prevent the accidental escape of liquid from the container when the sprayer is at rest.

The above object has been achieved with a sprayer capable of being fixed on the opening of a container according to claim 1. This sprayer is provided with a channel extending from the said container to the surrounding air, the said channel having an external outlet which can be closed by a stopper integral with the operating lever of the pump.

Preferably the said stopper is positioned very close to the fulcrum of the lever.

Preferably the said fulcrum of the operating lever is positioned immediately below the stopper, which is positioned at the highest part of the sprayer when the latter is in the position for use.

Preferably the operating lever, subjected to the action of a spring located in a pumping chamber, is put into communication with the liquid in the tank by a valve means described in the Italian utility model no. 24282 B/84, corresponding to DE-U-85 35472.4.

When the lever is moved, its lower part comes close to the body and the upper projecting part with which the stopper is integral moves away from the channel outlet, thus allowing air to enter. When the lever is released, the stopper moves towards the said channel outlet, closing it.

The protective action against accidental escape of the liquid is preferably completed by a sealing strip between the neck of the container and the sprayer body.

One form of embodiment of a sprayer in accordance with the invention makes provision for a sealing strip in soft material at the vent channel outlet.

A preferred embodiment of a sprayer in accordance with the present invention is shown in the enclosed figures, in which:

Figure 1 shows a sectional side view of a sprayer at rest;
Figure 2 shows the sprayer in figure 1 in operational state;
Figure 3 shows a form of embodiment different from the one in figure 1.

The sprayer illustrated in figures 1 and 2 is of a manually operated type having a body 2 whose extremity 3 is substantially cylindrical and is surrounded by a threaded ring nut 4 for screwing it to the neck of a liquid container. A seal 5 covers a flange 6, provided on the extremity 3, which carries out the counterboring for the neck of the container.

The body 2 contains a jacket 7 which forms a pumping chamber 27, housing a piston 8 and a spring 9. The chamber 27 has at its entrance a notched hole 10. The said hole is provided with a rubber occlusion member 11 which forms a valve means described in utility model no. 24282 B/84. The chamber 27 is thus connected to a duct 12, extended by a suction pipe 13 which crosses the extremity 3 and is inserted into the container. The said chamber 27 is connected at its exit with a duct 14 ending in a nebulizer nozzle 15 of the type already known.

The body 2 also contains a vent channel 16 extending from the entry 18 provided inside the extremity 3 of the body 2 to the outlet 17 positioned near the fulcrum 20 of the operating lever 19. This fulcrum 20 is located in the upper part of the body 2 of the sprayer when the latter is in the operating position. The piston 8 which slides into the chamber 27 is operated by the said lever 19 by means of two coaxial pins. On a projecting part 22 of the lever 19, immediately above the fulcrum 20,
a stopper 23 is provided, which closes the outlet 17 of the channel 16 when the sprayer is at rest.

When the lower part of the lever 19 is pressed against the body 2 of the sprayer 1, to set the piston 8 pump in operation in the well-known manner, and therefore to draw the liquid from the container and then send it to the nebulizer nozzle 15, the upper projecting part 22 moves away from the outlet 17 allowing air to enter the container through the channel 16. When the lever 19 returns to its rest position, owing to the effect of the spring 9, the projecting part 22 moves close to the body 2 and the stopper 23 is inserted into outlet 17.

The presence of this stopper 23, which closes channel 16, acts as a sure prevention against an unwanted escape of the liquid when the sprayer 1 is at rest, no matter what position the container may be in.

The form of embodiment of the sprayer illustrated in figure 3 differs from the one previously described solely in having a strip 25 arranged as a lining inside and on the edge of the outlet 17 of the channel 16. This variant allows a perfectly sealed housing of the stopper 23 in the outlet 17.

Claims

1. A manually operated sprayer for liquids with means (3, 4) for connecting on the opening of a container, comprising a pump (8) which draws liquid from the container by means of appropriate ducts (12, 14) and communicates with a nebulizer nozzle (15), and means cooperating with the operating lever (19) of the pump (8) for venting of the container, characterized in that said means comprise a channel (16) extending from the connecting means (3, 4) to an outlet communicating with the surrounding air, said outlet (17) being able to be closed by a stopper (23), integral with said operating lever (19), which when at rest closes the external outlet (17) of said channel (16).

2. A sprayer according to claim 1, characterized in that said outlet (17) of said channel (16) is located close to the nebulizer nozzle (15).

3. A sprayer according to claim 1 or 2, characterized in that the stopper (23) is positioned very near to the fulcrum (20) of the lever (19).

4. A sprayer according to any one of the preceding claims, characterized in that the fulcrum (20) of the operating lever (19) is positioned immediately below the stopper (23), which is located at the highest part of the sprayer (1), when the latter is in the working position.

5. A sprayer according to any one of the foregoing claims, characterized in that the stopper (23) is shaped on a projecting part (22) of the lever (19).

6. A sprayer according to any one of the foregoing claims, characterized in that provision is made for a seal (5) between the neck of the container and the extremity (3) of the body (2) of the sprayer (1).

7. A sprayer according to any one of the foregoing claims, characterized in that a seal (25) is provided to carry out the sealing of the outlet (17) of the vent channel (16).

Patentansprüche

20. Manuell betätigerbarer Zerstäuber für Flüssigkeiten mit Mitteln (3, 4) zum Anbringen auf der Öffnung eines Behälters, einer Pumpe (8), welche Flüssigkeit aus dem Behälter durch geeignete Kanäle (12, 14) ansaugt und mit einer Zerstäubungsdüse (15) in Verbindung steht, und mit Mitteln, die zum Entlüften des Behälters mit dem Betätigungshebel (19) der Pumpe (8) zusammenwirken, dadurch gekennzeichnet, daß die Mittel einen Kanal (16) aufweisen, der sich von den Verbindungsmitteln (3, 4) bis zu einem Auslaß erstreckt, welcher mit der Außenluft in Verbindung steht, wobei der Auslaß (17) durch einen mit dem Betätigungshebel (19) einstöckigen Stopfen (23) geschlossen werden kann, der in Ruhestellung den äußeren Auslaß (17) des Kanals (16) schließt.

2. Zerstäuber nach Anspruch 1, dadurch gekennzeichnet, daß der Auslaß (17) des Kanals (16) nahe der Zerstäubungsdüse (15) angeordnet ist.


4. Zerstäuber nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, daß der Drehpunkt (20) des Betätigungshebels (19) unmittelbar unterhalb des Stopfens (23) angebracht ist, welcher sich am höchsten Abschnitt des Zerstäubers (1) befindet, wenn letzterer in Arbeitsposition ist.
5. Zerstäuber nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, daß der Stopfen (23) an einem auskragenden Teil (22) des Hebels (19) ausgebildet ist.

6. Zerstäuber nach einem der vorangehenden Ansprüche, dadurch gekennzeichnet, daß eine Dichtung (5) zwischen dem Behälterhals und dem Rand (3) des Gehäuses (2) des Zerstäubers (1) vorgesehen ist.


Reivendications

1. Pulverisateur pour liquides actionnable manuellement muni de moyens (3, 4) pour être relié à l'ouverture d'un récipient, comprenant une pompe (8) qui, à travers des conduits adéquats (12, 14) préleve le liquide du récipient et communique par une buse nébulisante (15), et des moyens coopérant avec le levier d'actionnement (19) de la pompe (8) pour permettre la réintégration de l'air dans le récipient, caractérisé en ce que lesdits moyens comprennent un canal (16) qui s'étend des moyens de liaison (3, 4) à une issue communiquant avec l'air ambiant, ladite issue (17) pouvant être fermée à l'aide d'un bouchon (23), solidaire dit levier d'actionnement (19) qui, au repos, ferme l'issue extérieure (17) dudit canal (16).

2. Pulverisateur selon la revendication 1, caractérisé en ce que ladite issue (17) dudit canal (16) est placée près de la buse nébulisante (15).

3. Pulverisateur selon la revendication 1 ou 2, caractérisé en ce que le bouchon (23) est placé tout près du point d'appui (20) du levier (19).

4. Pulverisateur selon n'importe laquelle des revendications précédentes, caractérisé en ce que le point d'appui (20) du levier d'actionnement (19) est placé juste sous le bouchon (23), qui se situe dans la partie la plus haute du pulverisateur (1), quand ce dernier est en position de fonctionnement.

5. Pulverisateur selon n'importe laquelle des revendications précédentes caractérisé en ce que le bouchon (23) est façonné dans une saillie (22) du levier (19).