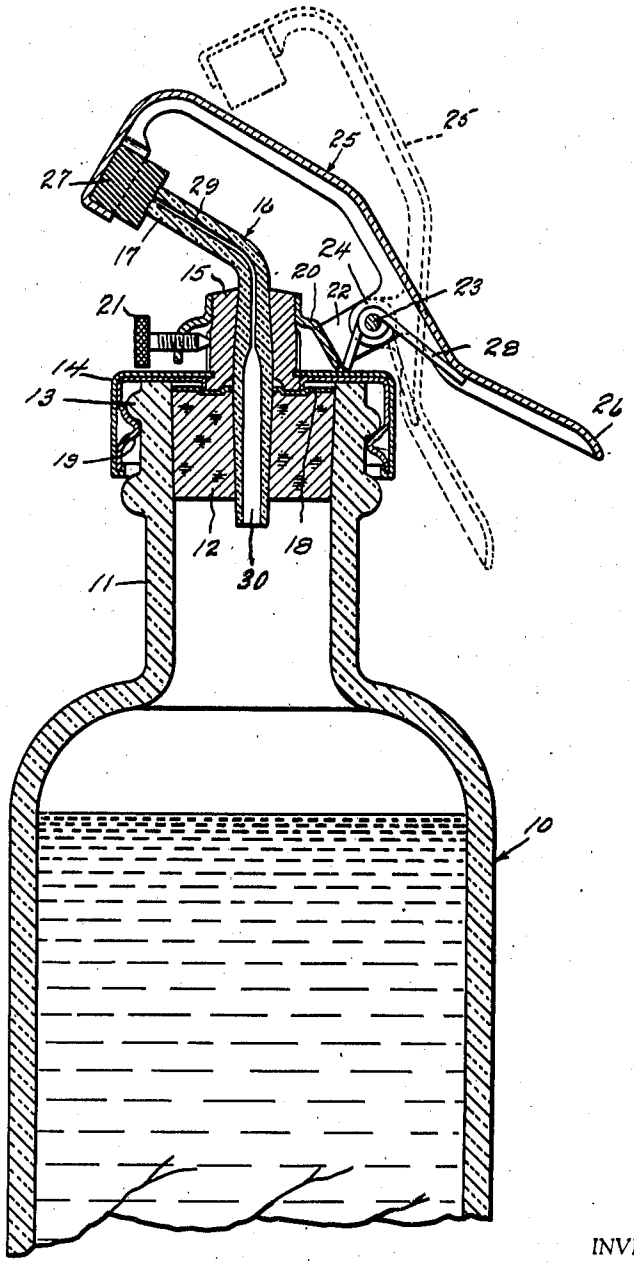
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DISPENSING APPARATUS

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DISPENSING APPARATUS

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4 Claims. (Cl. 221—147)

This invention relates to a predetermined bulk dispensing device and has particular application to the dispensing in predetermined quantity of a volatile liquid from a container in which it is confined, advantage being taken of the vapor pressure of the liquid for the purpose of ejecting the predetermined quantity of the liquid.

The principal object of the invention is to provide a structure capable of ejecting a predetermined quantity of a volatile liquid, employing the force of the vapor pressure of such liquid as the ejecting force.

With the foregoing and other objects in view which will be in part apparent and in part pointed out hereinafter, the invention consists in all the novel features of construction and combinations of parts and steps illustrated and/or described.

The figure is a central vertical section taken through a dispensing container embodying the invention.

The numeral 10 indicates a bottle which may be of ordinary construction having a neck 11 adapted to receive a stopper 12 and provided exteriorly with a thread 13 or other suitable means for holding a cap 14 in position thereon. The cap 14 is provided with an upstanding boss 15 which is tapered in such manner as to be of smaller diameter at the top than at the bottom. Received within the boss 15 is a nozzle 16 which may be composed of glass or other suitable material and which has a portion provided with a corresponding taper adapted to be received within the central opening in the boss 15 whereby upward motion is prevented. The nozzle 16 extends downwardly through the stopper 12 and may be provided with a slight taper whereby to resist downward motion. The nozzle 16 may be bent as indicated at 17 whereby to facilitate projection of a jet laterally from the bottle while the same is held in more or less vertical position, it being understood however that this feature is not absolutely essential.

The stopper 12 may be sealed to the bottle neck by suitable cement 18 and the boss 15 may have its lowermost portion of such construction as to abut the cement 18 and form a seal against possible escape of any fluid which might find its way between the stopper 12 and the nozzle 16 to a point above said seal. This is not regarded as being of great importance since it is extremely unlikely that any fluid will find its way between the nozzle and the stopper 12. The cap 14 is provided with a corresponding thread 19 adapted to cooperate with the thread 13 for holding the cap in position.

Threaded on the boss 15 is an annular element 20 provided with a set screw 21 adapted to lock the same against rotation and ears 22 adapted to receive a pin 23. Pivoted to the ears 22 by portions 24, receiving the pin 23 is a lever 25 which is provided at one end with a thumb piece 26 and at the other end with a closure element 27 which may be composed of rubber or other suitable compressible material adapted to close the outer end of the nozzle 16. A suitable spring 28 is interposed between the element 20 and the lever 25 and constantly urges such lever to the closed position indicated by full lines in the drawing. By suitable pressure on the thumb piece 26, the lever may be moved in a manner to remove the closure element 27 from nozzle closing position and to position the same outside of the path of a jet issuing from the nozzle.

It will be clear from the drawing that the nozzle 16 is provided with a portion having a central capillary passage 29 and a portion having a relatively larger passage 30, the two passages together forming a continuous passage from the interior of the bottle 10 to outside atmosphere when the closure element 27 is in the dotted line position. The passage portion 30 is of such size that when filled, such liquid will remain therein against the action of gravity so that when the closure 27 is removed, the vapor pressure of the liquid in the bottle will cause the charge of liquid in the portion 30 to be expelled through the capillary passage 29.

With the parts in the position shown in full lines, the bottle may be inverted whereupon liquid fills the passage portion 30 and the return to upright position or such position as will uncover the lower end of the nozzle 16, it is then ready for ejecting the predetermining charge of liquid by simply moving the lever 25 to the dotted line position. This device has been actually constructed and found to operate in the manner indicated. The device is well adapted for dispensing predetermined small quantities of substances dissolved in small quantities of volatile liquids, for example, perfume dissolved in ethyl chloride.

While we have illustrated and described the preferred embodiment of the invention, we are aware that the same may be carried out by the use of varying structures and we therefore do not wish to be limited except in accordance with the appended claims and the prior art.

Having thus described our invention, what we claim is:

1. A predetermined bulk dispensing device comprising, in combination, a receptacle, a nozzle sealed in communication with the interior of said receptacle and opening to the outside thereof, and means for opening and closing said nozzle, said nozzle being provided at its inner end with a depending skirt portion having a passage adapted to receive a charge of liquid to be dispensed and of a size to retain the same against the action of gravity when the nozzle is closed, said nozzle being provided also with communicating passage means whereby upon opening thereof, the charge contained in said first mentioned passage portion may be ejected under the vapor pressure of the liquid in such receptacle.

2. A predetermined bulk dispensing device comprising, in combination, a receptacle, a nozzle sealed in communication with the interior of said receptacle and opening to the outside thereof, and means for opening and closing said nozzle, said nozzle being provided at its inner end with a depending skirt portion having a passage adapted to receive a charge of liquid to be dispensed and of a size to retain the same against the action of gravity when the nozzle is closed, said nozzle being provided also with communicating passage means whereby upon opening thereof, the charge contained in said first mentioned passage portion may be ejected under the vapor pressure of the liquid in such receptacle, said second mentioned passage portion being of capillary size.

3. In a device for dispensing volatile liquid in predetermined quantity, receptacle means for containing such liquid, closure means for normally preventing escape of any fluid from said receptacle means, means for segregating adjacent said closure a predetermined quantity of liquid from the main body thereof in said receptacle means, and means for opening said closure whereby such segregated liquid may be ejected from said receptacle means under the force of the vapor pressure of such volatile liquid.

4. In a device for dispensing volatile liquid in predetermined quantity, a receptacle for containing such liquid, a closure for normally preventing escape of any liquid from said receptacle, means adjacent said closure responsive to inversion and righting of said receptacle for segregating a predetermined quantity of liquid from the main body thereof in said receptacle, and means for opening said closure whereby such segregated liquid may be ejected from said receptacle under the force of the vapor pressure of such volatile liquid.

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