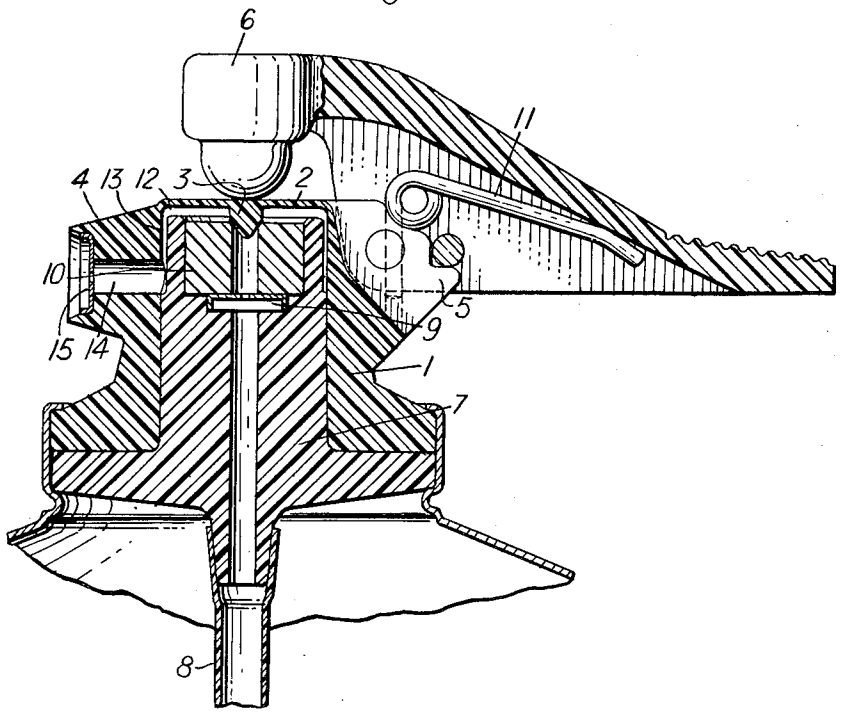
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ATOMISING DISCHARGE VALVES

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Fig. 1.



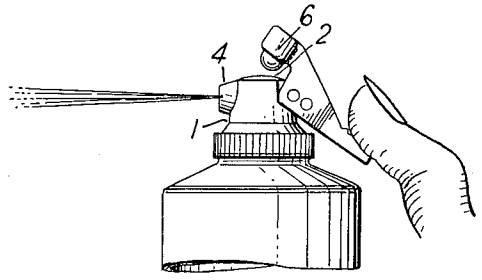


Fig. 2.

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ATOMISING DISCHARGE VALVES

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This invention concerns atomising valves for containers of pressurised liquids and has for its object the provision of a new or improved valve of this character which is of a simple and inexpensive construction and may be made entirely from plastics materials.

Accordingly to one aspect of this invention, there is provided for a container for liquid under pressure, an atomising discharge valve comprising a cap having a bore therein, a discharge nozzle on said cap and in communication with said bore, a valve seating located in axially fixed position within the bore of said cap and defining with the latter a chamber communicating with the said discharge nozzle, such seating having a bore which at one end emerges into said chamber and is, at the other end, adapted, in use of the valve, to be placed in communicating with the liquid in the container, a flexible membrane integral with the cap and defining the boundary of said chamber in the latter opposite to the position at which the bore in the valve seating emerges into the chamber, a valve head integral with said membrane and positioned within said chamber to be aligned with the valve seating bore, and a lever pivoted to the said cap externally thereof and biassed so as normally to apply pressure to the external surface of the membrane to press the valve head against the valve seating to close the bore therein, but capable of being pivoted against such biasing to release said pressure on the membrane.

According to a further aspect of this invention, there is provided a container for liquid under pressure including an atomising discharge valve mounted in the upper part of the container, such valve comprising a cap having a bore therein, a discharge nozzle on said cap and in communication with said bore, a valve seating located in axially fixed position within the bore of said cap and defining with the latter a chamber communicating with the said discharge nozzle, a tube extending downwardly into the container, such seating having a bore which at one end emerges into said chamber and is, at the other end, in communication with said tube, a flexible membrane integral with the cap and defining the boundary of said chamber in the latter opposite to the position at which the bore in the valve seating emerges into the chamber, a valve head carried integral with said membrane and positioned within said chamber to be aligned with the valve seating bore, and a lever pivoted to the said cap externally thereof and biased so as normally to apply pressure to the external surface of the membrane to press the valve head against the valve seating to close the bore therein, but capable of being pivoted against such biasing to release said pressure on the membrane.

It will be appreciated that, in the valve according to this invention, the valve head is normally held by the lever against the valve seating to close the bore therein, but, when the lever is pivoted away from the flexible membrane, the pressure of liquid in the bore of the seating will force the valve head off the seating and the liquid will be discharged as an aerosol through the discharge nozzle.

The said chamber defined between the valve seating and the bore of the cap will have a predetermined volume and, preferably, an apertured diaphragm formed of metal or a plastics material is associated with the valve seating so as to regulate the supply of liquid to the bore of the valve seating.

The aperture of the discharge nozzle will be of a size dependent on the liquid of the container on which the valve is to be used.

In order that the invention may more readily be understood, reference will now be made by way of example to the accompanying drawings in which:

FIGURE 1 is a longitudinal section through the upper part of an aerosol-producing liquid container incorporating a valve according to this invention; and

FIGURE 2 is a side elevation on a reduced scale of the upper part of the container and illustrating the operation of the valve.

As seen in FIGURE 1, the valve comprises a cap **1** sealed into the top of the container, which is conveniently a conventional cylindrical container as shown, but may be of any suitable desired shape, such cap including at its upper part a flexible membrane **2** furnished with an integral downwardly projecting valve head **3**. The cap **1** has at one side a laterally outwardly projecting discharge nozzle **4**, provided with a bore **14** and an atomising diaphragm **15** furnished with a restricted orifice, and at the opposite side a lug **5** on which is pivoted an operating lever **6** for opening and closing the valve. The lever **6** is normally held in a position in which it presses downwardly on the valve head **3** by a spring **11**.

The cap **1** is provided with a bore closed at its upper end by the membrane **2** and into this bore is tightly fitted a plug **7**. The upper part of the plug **7** is reduced and spaced from the membrane **2** so as to provide between such reduced part and the cap **1** a chamber of predetermined volume communicating with the bore **14** and formed by a space **13** and a space **12**. At its lower part, the plug **7** has a downwardly extending central spigot on which is fitted a tube **8** dipping into the liquid in the container and a central bore extends through the plug **7** in communication with the tube **8**.

Centrally in its upper part, the plug **7** has two recesses, one housing an apertured diaphragm **9** regulating the supply of liquid from the bore in the plug **7** and the other housing a valve seat **10** provided with a bore co-axially aligned with the bore in the plug **7**. The cap **1** and plug **7** are fixedly mounted together in the upper part of the container as shown in the drawings.

The functioning of the valve just described is as follows:

To open the valve, downward pressure is exerted on the lever **6** to pivot the latter against the spring **11**, as shown in FIGURE 2, and thereby pressure of the lever on the valve head **3** is released. The membrane **2**, and with it the valve head **3**, rises under the pressure of the liquid in the container and this liquid passes, via the tube **8**, the bore in the plug **7**, the chambers **12** and **13** and the bore **14** in the nozzle **4**, to the diaphragm **15** and emerges through the orifice therein as a fine spray.

To close the valve, the lever **6** is released and the spring **11** pivots the lever back to its original position in which it bears on the valve head **3** and urges this against the valve seat **10** to seal the bore on the plug **7**.

We claim:

1. An atomising discharge valve comprising:
   (*a*) a cap having a vertical bore therein,
   (*b*) an integral discharge nozzle projecting laterally inwardly from the side of the cap and communicating with said bore in the cap,
   (*c*) said nozzle having an apertured diaphragm for discharge therethrough of liquid in the form of a spray,

(*d*) a flexible membrane integral with the cap and forming the top of the latter,
(*e*) said membrane closing the upper end of the bore in the cap,
(*f*) a plug fitted fixedly in the lower end of said bore,
(*g*) said plug having centrally in its upper end two recesses, one below the other, and also having a vertical central bore extending completely through the plug,
(*h*) an apertured diaphragm housed in the lower of the two recesses in the plug,
(*i*) a valve seating housed in the upper of the two recesses in the plug and having a vertical through bore aligned with the bore in the plug,
(*j*) said seating defining with the cap a chamber communicating with the discharge nozzle,
(*k*) a valve head, integral with the said flexible membrane and carried by the latter within the said chamber at a position above and aligned with the upper end of the bore in the seating,
(*l*) a lug projecting outwardly from the side of the cap opposite to the discharge nozzle,
(*m*) a lever pivoted to the said lug at a position remote from said membrane,
(*n*) an end on said lever, and
(*o*) the lever being biased so that said end normally applies pressure to the external surface of the membrane to press the valve head against the valve seating to close the bore therein, but being capable of being pivoted against such biasing to move said end away from the membrane to release the pressure on the membrane.

2. A container for liquid under pressure, such container being of a generally cylindrical form and having its top defined by an atomising discharge valve comprising:
(*a*) a cap having a bore therein,
(*b*) a discharge nozzle on said cap and in communication with said bore,
(*c*) a flexible membrane integral with the said cap and closing one end of the said bore,
(*d*) a plug fitted fixedly in the other end of said bore,
(*e*) said plug having a through bore which at one end enlarges into a recess communicating with the said bore in the cap,
(*f*) a spigot on said plug remote from the recess therein,
(*g*) a tube fitted over said spigot and extending downwardly in the container,
(*h*) a valve seating located within the said recess in the plug and having a through bore aligned with the bore in the plug,
(*i*) said seating defining with the cap a chamber communicating with the discharge nozzle,
(*j*) a valve head integral with said membrane and positioned within said chamber to be aligned with the valve seating bore,
(*k*) the cap, membrane and valve head being a one piece moulding of a plastics material,
(*l*) a lever pivoted to the said cap externally thereof at a position remote from said membrane,
(*m*) an end on said lever, and
(*n*) the lever being biased so that said end normally applies pressure to the external surface of the membrane to press the valve head against the valve seating to close the bore therein, but being capable of being pivoted against such biasing to move said end away from the membrane to release the pressure on the membrane.

3. A container for liquid under pressure, such container having mounted at the top thereof an atomising discharge valve comprising:
(*a*) a cap having a vertical bore therein,
(*b*) an integral discharge nozzle projecting laterally outwardly from the side of the cap and communicating with said bore in the cap,
(*c*) said nozzle having an apertured diaphragm for discharge therethrough of liquid in the form of a spray,
(*d*) a flexible membrane integral with the cap and forming the top of the latter,
(*e*) said membrane closing the upper end of the bore in the cap,
(*f*) a plug fitted fixedly in the the lower end of said bore,
(*g*) said plug having centrally in its upper end two recesses, one below the other, and also having a vertical central bore extending completely through the plug,
(*h*) an integral spigot projecting centrally downwardly from the lower end of the plug,
(*i*) a tube fitted over said spigot and extending downwardly to a position adjacent the bottom of the container,
(*j*) an apertured diaphragm housed in the lower of the two recesses in the plug,
(*k*) a valve seating housed in the upper of the two recesses in the plug and having a vertical through bore aligned with the bore in the plug,
(*l*) said seating defining with the cap a chamber communicating with the discharge nozzle,
(*m*) a valve head, integral with the said flexible membrane and carried by the latter within the said chamber at a position above and aligned with the upper end of the bore in the seating,
(*n*) a lug projecting outwardly from the side of the cap opposite to the discharge nozzle,
(*o*) a lever pivoted to the said lug at a position remote from said membrane,
(*p*) an end on said lever, and
(*q*) the lever being biased so that said end normally applies pressure to the external surface of the membrane to press the valve head against the valve seating to close the bore therein, but being capable of being pivoted against such biasing to move said end away from the membrane to release the pressure on the membrane.

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