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SELECTIVELY METERING OR CONTINUOUSLY DISCHARGING VALVE FOR AEROSOLS

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Fig. 1.

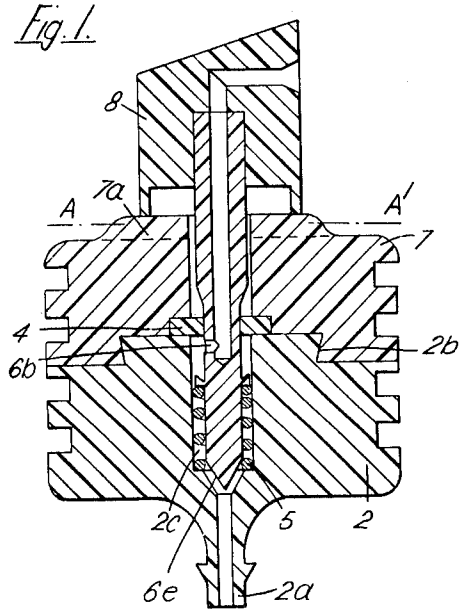


Fig. 2.

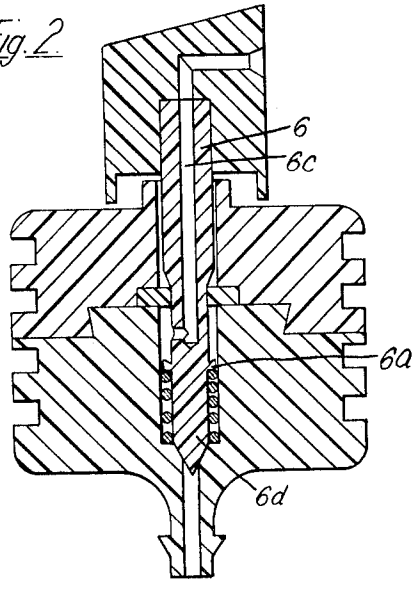
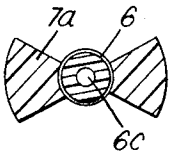


Fig. 3.



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SELECTIVELY METERING OR CONTINUOUSLY DISCHARGING VALVE FOR AEROSOLS

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Original application Nov. 29, 1963, Ser. No. 327,138. Divided and this application Nov. 20, 1964, Ser. No. 412,777

Claims priority, application France, Aug. 30, 1963, 946,189

4 Claims. (Cl. 222—263)

This application is a divisional of our copending application Serial No. 327,138, filed November 29, 1963.

The present invention relates to valves for containers of fluids under pressure e.g. valves for aerosol containers.

According to the present invention there is provided a valve for controlling the discharge of fluid from a container of fluid under pressure such valve comprising a base securable to said container, a nozzle axially movable relative to said base between a first, second and third position, effective when said base is mounted on a container, in said first position to prevent flow of fluid through said base, in said second position to permit the continuous discharge of fluid through said base from said container and in said third position to permit the discharge of a dosed quantity of fluid through said base from said container, manually operable means on said nozzle rotatable relative to said base between one rotational position and another and cooperating abutment means on said base and manually operable means effective to permit, in said one rotational position, movement of said nozzle from said first position to said second position only, and in the other rotational position, movement of said nozzle from said first position to said third position.

In order that the invention may more readily be understood the following description is given by way of example of one form of valve according to the invention.

In the drawing:

FIGURE 1 shows in section the valve of the invention in one position;

FIGURE 2 shows in section the valve of FIGURE 1 in a second position; and

FIGURE 3 is a fragmentary sectional view taken on the line A—A′ of FIGURE 1.

The valve illustrated comprises an annular base **2** in high density polythene provided with a spigot **2***a* for carrying a dipping tube. The base **2** has a series of peripheral ribs and a substantially cylindrical central well **2***c* for a stainless steel spring **5** operating at a compressive force of 500 gm. This well **2***c* connects with a channel of much smaller diameter and opening at the extremity of the spigot.

An annular cap **7** of high density polythene is secured to the base **2** and like the latter is furnished with peripheral ribs for securing it to the neck of a container. The base of cap **7** has an enlargement adapted to receive a seal **4** of suitable material.

The base and the cap furnished with their accessories are assembled and joined together, the portion **2***b* increasing the rigidity of the two pieces.

The nozzle **6** is constituted by a tube of nylon 66 provided with a blind bore **6***c* tapered in the vicinity of its closed end and carrying at this level a circular valve head **6***a*′ Behind the valve head the wall of the tube is pierced by a channel **6***b*.

The respective diameters of the valve head **6***a*, of the channel of the cap **7**, of the orifice for the seal **4** and of the spring chamber of the base **2** are such that the nozzle can be pushed down until the valve head **6***a* clears the seal **4** but cannot then be withdrawn under normal conditions. The top of the nozzle **6** is provided with a diffuser **8**.

The nozzle **6** is extended beyond its valve head **6***a* by portions **6***d* terminating in conical surface **6***e*. When one depresses the nozzle to introduce the passage **6***b* into the spring chamber **2***c* the conical surface **6***e* closes the conical surface at the lower opening of the chamber **2***c*. Conversely, when one releases the nozzle the spring **5** forces the nozzle **6** upwardly until the passage **6***b* leaves the chamber **2***c* while the conical surface **6***e* uncovers the lower orifice of the latter.

In the position illustrated in FIGURE 1 which is the position of continuous discharge, a protuberance **7***a* on the cap **7** stops the movement of the diffuser **8** before the tail of the nozzle has closed the lower orifice of the chamber **2***c*. Since the orifice **6***b* of the nozzle is disengaged a fluid under pressure passes directly to the diffuser, and will continue to do so until the diffuser is released.

The protuberance **7***a* shown in section on the line A—A in FIGURE 3 is formed by two opposed circular sectors, each less than 90°. The base of the diffuser carries cooperating protuberances. If one turns the container 90° relatively to the diffuser (FIGURE 2) each protuberance **7***a* can engage between the corresponding protuberances of the diffuser so that this can execute an increased movement. Then the tail of the nozzle can close the lower orifice of the chamber **2***c* so that only the dose of fluid initially present in the chamber can escape.

It is clear that one can use the same principle to block the diffuser in its closed position thereby guaranteeing security against accidental operation; it is only necessary to modify the height and if one desires the number of protuberances **7***a*.

We claim:

1. A valve for a container of fluid under pressure, said valve comprising a base having an interior face; a cap having an exterior face; means defining at least one through passage having a first enlargement thereto, said passage extending from said interior face to said exterior face; means for fixing a dip tube to said base to be in communication with said passage; a spring in said first enlargement; means defining a further and greater enlargement adjacent the first; an annular seal enclosed by said further enlargement; a tube having an open end and a closed end; a collar adjacent said closed end and forming a valve head, said valve head being positioned between said spring and seal with the tube extending through said seal; means defining a lateral passage in the wall of said tube in the vicinity of said valve head between the latter and said open end whereby depression of said tube brings said lateral passage into said first enlargement.

2. The valve specified in claim **1**, wherein a tail is provided at the closed end of said tube such tail being adapted to close said through passage when said lateral passage is positioned in said first enlargement, which thus functions as a dosing chamber.

3. The valve specified in claim **2** further comprising a first sector shaped protuberance positioned on said exterior surface; a member connected to said tube and abutting said protuberance, said member being movable along and about its axis from a first position, in which said valve head sealingly abuts said seal, to a second and third position; and a further protuberance on said member cooperating with said first protuberance so that when the protuberances are in abutting relation the member is in said second position so that the tail is clear of the passage and said lateral passage is within said dosing chamber and when the protuberances are in interlocking relation the member is in the third position in which the tail blocks said passage and said lateral passage is within said dosing chamber.

4. A valve for controlling the discharge of fluid from a container of fluid under pressure, said valve comprising a base securable to said container, a nozzle axially movable relative to said base between a first, second, and third position, effective when said base is mounted on a container, in said first position to prevent flow of fluid through said base, in said second position to permit the continuous discharge of fluid through said base from said container and in said third position to permit the discharge of a dosed quantity of fluid through said base from said container, manually operable means on said nozzle rotatable relative to said base between one rotational position and another and co-operating abutment means on said base and manually operable means including sector shaped protuberances on said base effective to permit, in said one rotational position, movement of said nozzle from said first position to said second position only, and in the other rotational position, movement of said nozzle from said first position to said third position.

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