

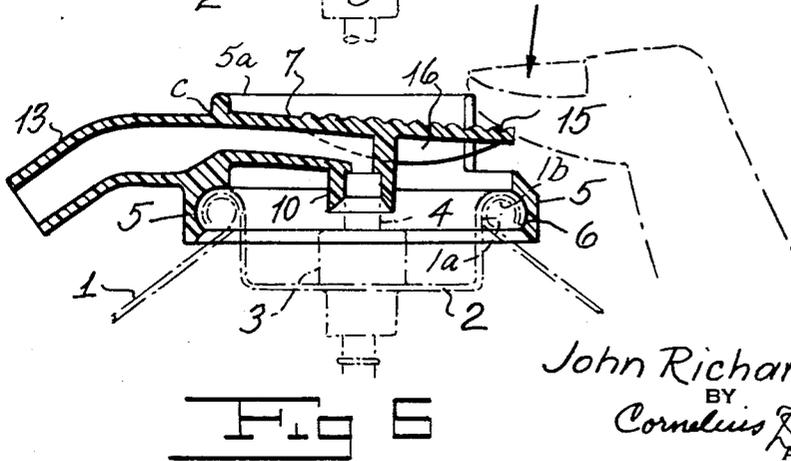
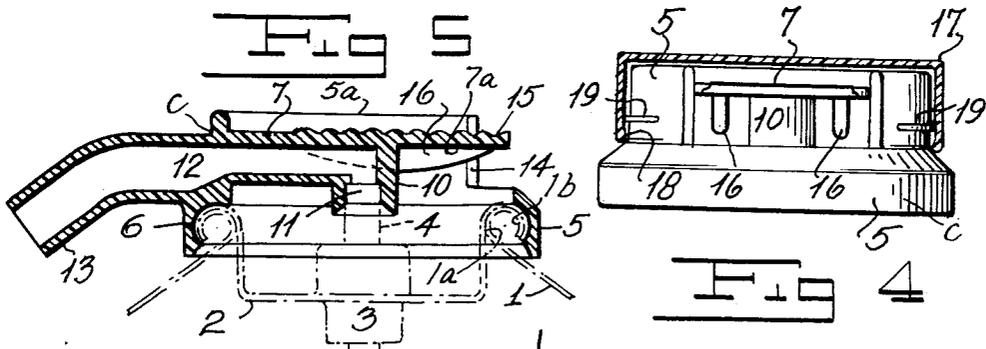
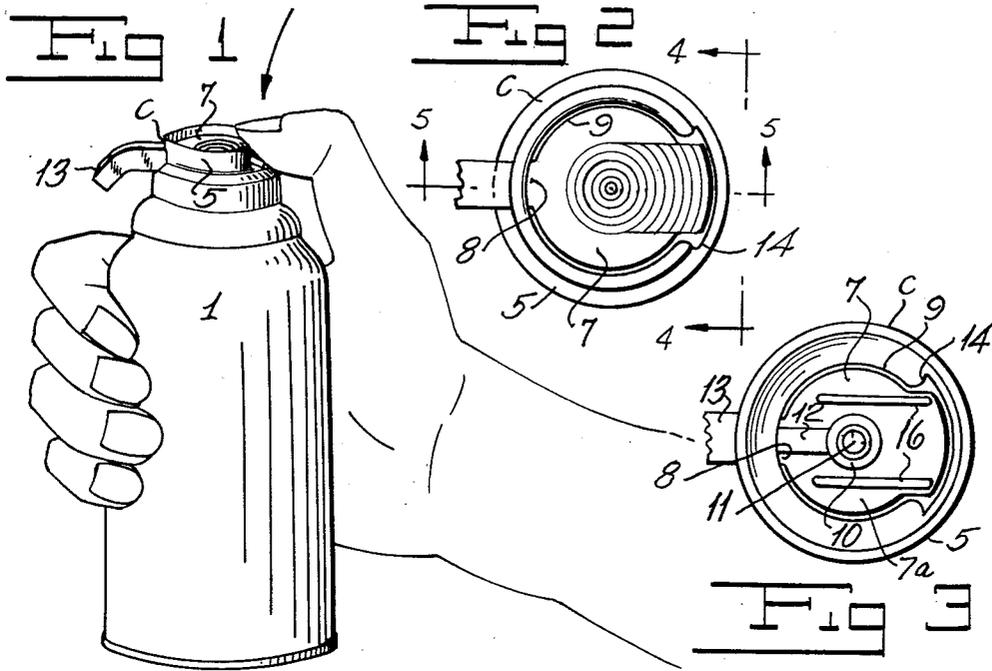
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2,921,722

DISPENSING CAP FOR PRESSURE PACKED MATERIALS

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2,921,722

DISPENSING CAP FOR PRESSURE PACKED MATERIALS

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1 Claim. (Cl. 222—394)

This invention is a dispensing cap for aerosol and other pressure packed materials and is adapted to be used on any pressure packed container provided in its upper portion with a peripheral bead and having a discharge valve provided with a tubular valve stem through which the pressurized material within the container is discharged when the valve stem is depressed.

The cap of this invention may be employed with a wide variety of pressurized containers of this character, one example of which is that shown and described in Patent No. 2,631,814, issued March 17, 1953, to Robert H. Abplanalp.

The dispensing cap of the present invention is primarily directed to improvements relative to the cap described and claimed in Patent No. 2,819,116, granted to Robert H. Abplanalp on January 7, 1958, which patent is herein incorporated by reference. That patent discloses a cap having an upstanding peripheral wall across the interior of which extends a valve operating tab attached for only a short distance at its periphery to said wall to form a hinge portion therewith and otherwise unattached to the peripheral wall. The under side of that tab is provided with a chambered hub adapted to receive the tubular valve stem of the container with which the cap is associated, and from the chamber of that hub, a walled passage extends to the exterior of the cap and terminates in a spout through which the material discharged from the valve stem is delivered.

In the cap disclosed in said Patent No. 2,819,116, the peripheral wall of the cap extends entirely about the periphery of the cap and the tab is wholly contained within the confines of said wall. With such a construction, one desiring to operate the valve has to press downwardly upon the central portion of the tab, substantially coaxially of the valve stem with which it is associated. In cases where the spring, normally associated with the valve of the container, is relatively strong, some persons with weak hands experience undesirable strain on the finger in depressing the valve stem through this type of operation. The cap structure of said patent is found in practice to operate with high efficiency for its intended purposes, but it is the object of this invention to provide a cap of the same general character which will permit the valve to be operated through the application of much less pressure and in a more convenient manner.

Generally speaking, the cap of this invention is in many respects the same as that of the last mentioned Abplanalp patent, but differs therefrom in that the side wall of the cap, opposite the hinge portion of the tab, is recessed to provide an opening and the tab is made sufficiently long to extend through said opening and into accessible position from that side of said wall. With this construction the pivoted tab becomes, in effect, a lever of the second class, wherein the power arm of the lever comprises the full length of the tab while the work arm of the lever is materially shorter and consists of that part of the tab intermediate the hinge portion thereof and

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the axis of the valve stem with which it is associated. Consequently an appreciable leverage is provided, permitting the valve to be unseated by the application of materially less pressure and with convenient access to the tab through the side opening to which I have referred.

Features of the invention, other than those adverted to, will be apparent from the hereinafter detailed description and appended claim, when read in conjunction with the accompanying drawing.

The accompanying drawing illustrates one practical embodiment of the invention, but the construction therein shown is to be understood as illustrative only, and not as defining the limits of the invention.

Fig. 1 shows in perspective a pressurized container equipped with a cap embodying the present invention and showing the manner in which the tab of said cap may be conveniently manipulated for the discharge of material from the container.

Fig. 2 is a top plan view of the cap shown in Fig. 1.

Fig. 3 is a bottom plan view of the cap.

Fig. 4 is an edge elevation of the cap looking from the direction of the line 4—4 of Fig. 2 and illustrating a stacking cover in section.

Fig. 5 is a section on the line 5—5 of Fig. 2 showing the cap with the parts in closed valve position.

Fig. 6 is a view similar to Fig. 5, but showing the tab in depressed position to permit discharge of material from the container.

The cap C of the present invention may be used with pressurized containers of various kinds, but I have shown, for the purpose of illustration, a container such as illustrated in the aforesaid Abplanalp Patent No. 2,631,814. That is to say, a container 1 has a top opening 1a closed by a cup 2 carrying a valve (not shown) within a valve housing 3 and which valve has an upstanding tubular valve stem 4. The periphery of the opening in the container 1 is beaded at 1b and the edge of the cap is pressed over the bead to mount the cup permanently in said opening. This structure, shown best in Figs. 5 and 6, is conventional to many containers and dispensing valves and is not necessarily peculiar to the construction of said Abplanalp patent.

The cap of the present invention has a side wall 5 of circular form and constituting, in effect, an upright tubular structure. This tubular structure is preferably made, along with the remaining integral portions of the cap, by conventional injection molding practice, utilizing thermoplastic material, as, for example, polyethylene or nylon. It therefore has sufficient elasticity and resiliency to properly function in the manner presently to be described.

The lower portion of the peripheral wall 5 is provided with an annular internal channel-like seat 6, so that the cap may be sprung downwardly over the bead of the cup 2 for the purpose of mounting the cap upon the container. A tab 7 is positioned mainly within the confines of the peripheral wall 5 and is entirely free from attachment to said peripheral wall except for a relatively narrow hinge connection 8 (Fig. 2) at one end of the tab. The remainder of the tab is spaced from the inner periphery of the peripheral wall 5 by an opening 9 so that said tab is in no sense a top closure for the top of the cap C. On the contrary the tab is perfectly free for bodily pivotal movement throughout its entire extent about the hinge portion 8.

The tab is provided at its under side 7a with a hub 10 having therein a socket 11 adapted to receive and closely fit the upper end of the valve stem 4 and with said socket communicates a walled outlet passage 12 which extends to the exterior of the cap and terminates in a spout 13 through which material, delivered to the socket

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11 from the interior of the container, may be discharged for its intended uses.

It will be noted that the peripheral wall 5 is provided, diametrically opposite the hinge portion 8, with an opening 14 and that the tab, instead of terminating within the confines of the peripheral wall, as in Abplanalp Patent No. 2,819,116, is extended, as at 15, to project through said opening 14 into accessible position from the lateral exterior of the wall 5. This permits a person to grasp the container 1, as shown in Fig. 1, and insert his or her finger or thumb through the opening 14, so that it rests upon the free end portion of the tab, whereupon downward pressure on that portion of the tab will depress the tab from the normal closed-valve position of Fig. 5 to the position of Fig. 6, to open the valve of the container and discharge all or part of the contents of the container as desired. When the tab 7 is released by relieving finger pressure thereon, it will spring back from the position of Fig. 6 to the position of Fig. 5 and the valve will close and remain closed until the tab is again operated.

The tab is preferably provided on its under side 7a with one or more reinforcing ribs 16, so that the major portion of the tab will not unduly bend during the dispensing operation. When thus reinforced, the tab may be made quite thin, so as to minimize weight and plastic required.

In practice the tab may be positioned below the upper edge 5a of the peripheral wall 5, as shown in the drawings, or it may be positioned flush with the upper edge 5a of said side wall 5. This is a matter of design and forms no part of the present invention. To protect the tab from inadvertent depression when a plurality of containers equipped with the invention are stacked one above the other, a protective stacking cover 17, shown in Fig. 4, may be employed. This cover, which may be of molded plastic, is preferably provided at its free edge with an internal bead 18 adapted to snap over an external bead 19 on the wall 5 of the cap, to detachably hold the cover in place. This cover may be slipped on and off as desired due to its inherent resiliency.

Experience with the cap of the present invention has shown that the tab may be pivotally moved in the man-

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ner described by the application of astonishing little pressure applied to its outer end, as distinguished from the materially greater pressure required to operate the tab of the Abplanalp Patent No. 2,819,116. Furthermore the ability of the operator to actuate the tab from the side of the container constitutes a marked improvement over the structure of said patent wherein the operator must reach in over the wall of the container and depress the tab by pressure applied substantially coaxially of the valve stem.

The foregoing detailed description sets forth the invention in its preferred practical forms, but the invention is to be understood as fully commensurate with the appended claim.

Having thus fully described the invention, what I claim as new and desire to secure by Letters Patent is:

A dispenser comprising: a container having a closure cup carrying a dispensing valve having an upstanding tubular valve stem, and a valve operating cap provided with a base portion engaging the cup and integral with a superimposed cylindrical portion having in its periphery a cut-out extending downwardly from the upper edge of the cylindrical portion, a valve operating tab below the upper edge of the cap and integral with and resiliently secured to the inner surface of said cylindrical portion at a point opposite to the cut-out in said cylindrical portion and extending across the interior of said cylindrical portion and through said cut-out, said tab being provided on its under side with a socket fitting over the valve stem, and a discharge spout connected with said socket and extending to the exterior of the cap.

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