May 9, 1950 J. DE SWART 2,507,248

DISPENSING CLOSURE FOR CONTAINERS

Filed Feb. 22, 1945

Fig. 1

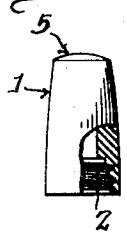


Fig. 7

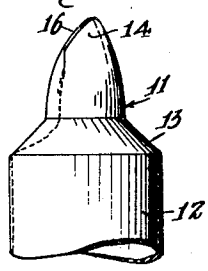


Fig. 8

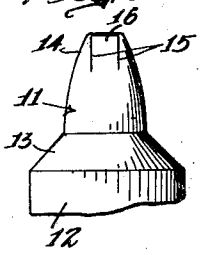


Fig. 9

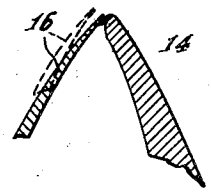


Fig. 2

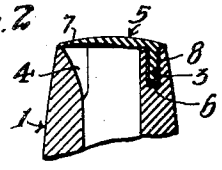


Fig. 10

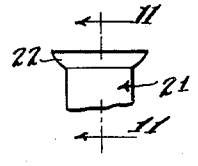


Fig. 11

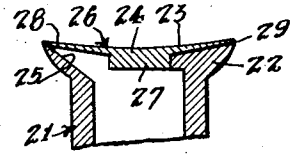


Fig. 3

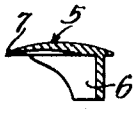


Fig. 4

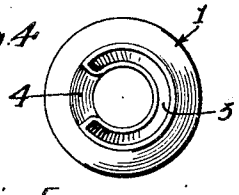


Fig. 12

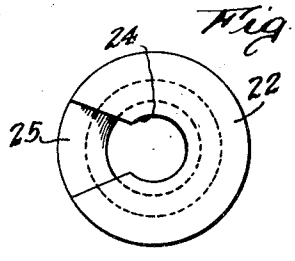


Fig. 5

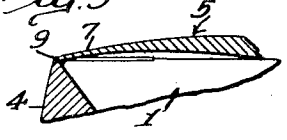


Fig. 14

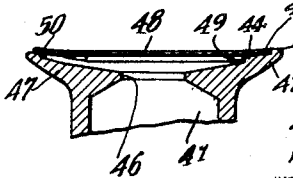


Fig. 6

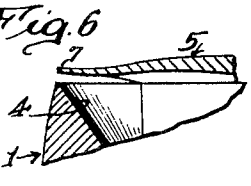
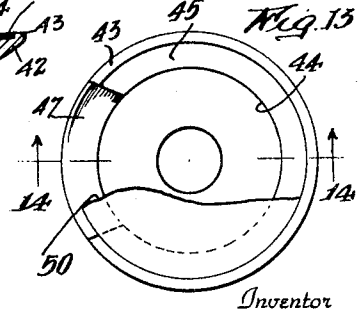


Fig. 13



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2,507,248

DISPENSING CLOSURE FOR CONTAINERS

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Application February 22, 1945, Serial No. 579,274

1 Claim. (Cl. 222—494)

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My invention relates to dispensers, more particularly to dispensers for collapsible tubes or similar containers for paste-like materials.

Among the objects of my invention are:

First, to provide a dispenser which may be made entirely of plastic material.

Second, to provide a dispenser which may be molded integrally with a collapsible container should the container itself be molded of plastic material.

Third, to provide a dispenser which incorporates a novel valve element initially sealed in such a manner that upon squeezing the container, internal pressure may be exerted sufficient to break the seal so that the contents may be forced out, the valve being so arranged that it automatically closes when pressure on the contents is relieved.

Fourth, which, although capable of construction in the form of a screw cap on conventional collapsible containers, entirely eliminates the need of a closure which must be removed and replaced each time the contents is used.

With the above and other objects in view as may appear hereinafter, reference is directed to the accompanying drawings in which:

Fig. 1 is a full size side view, partially in section, of one form of my dispenser.

Fig. 2 is an enlarged fragmentary vertical sectional view thereof of the structure shown in Fig. 1.

Fig. 3 is an enlarged sectional view of the closure cap before assembly.

Fig. 4 is an enlarged end view of the body member before assembly.

Figs. 5 and 6 are further enlarged fragmentary views showing particularly the valve elements in their initially sealed positions and their open positions, respectively.

Fig. 7 is a side elevational view of a modified form of my dispenser with an integral collapsible tube shown fragmentarily.

Fig. 8 is a fragmentary side view at right angles to Fig. 7.

Fig. 9 is an exaggerated sectional view of the valve elements taken through 9—9 of Fig. 8, showing by solid lines the initial closed and sealed position and by dotted lines the open position thereof.

Fig. 10 is a fragmentary elevational view of a further modified form of my dispenser.

Fig. 11 is an enlarged sectional view thereof through 11—11 of Fig. 10.

Fig. 12 is a plan view of the dispenser body shown in Figs. 10 and 11 before assembly.

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Fig. 13 is an enlarged plan view of a still further modification of my dispenser with a portion of the closure member broken away.

Fig. 14 is a fragmentary sectional view through 14—14 of Fig. 13.

With reference first to the construction shown in Figs. 1 through 6, my dispenser includes a tubular body 1 which, in this instance, is provided with screw threads 2 for attachment to a conventional collapsible container. The other or extended end of the body 1 is provided with an axially directed channel 3 surrounding the bore of the body 1. The channel 3 is interrupted by a lip portion 4.

A cap 5 is provided which is equipped with an arcuate or partial skirt 6 adapted to fit within the channel 3. The cap 5 between the peripheral extremities of the skirt 6 forms a flexible lip 7.

The cap 5 is adapted to be placed over the end of the body 1 with its skirt 6 extending into the channel 3 and its lip 7 mating with the lip portion 4 of the body.

The body 1 and cap 5 are preferably molded of plastic material. A plasticizer 8, adhesive, or other material adapted to cause the cap 5 and body 1 to bond together, is applied to the skirt 6 and channel 3 as well as the margins of the cap, so that upon assembly the body and cap are permanently joined. The lips 4 and 7 engage in lineal or edge to edge contact so that a very thin and hence weak line of plasticizer or adhesive seals the two lips together as indicated by 9 in Fig. 5. The bond is such that internal pressure of the contents of the collapsible container and body 1 may be employed to break the seal 9 and permit the lips 4 and 7 to function as a valve which opens to permit discharge of the contents in ribbon form when the container is squeezed and closes when such pressure is relaxed.

Reference is now directed to the construction shown in Figs. 7, 8 and 9. In this form of my dispenser a body 11 is formed of plastic material. In this instance the body 11 is shown as constituting an integral part of a collapsible container 12, being joined to the container proper by a flange 13. The walls of the collapsible container are quite thin and flexible, whereas the walls of the body 11 are made relatively thick, therefore relatively stiff.

The body 1 may be essentially acorn-shaped, preferably with a blunt wedge-like tip 14. One side of the body 1 may be provided with a U-shaped slit 15, the cross portion of which borders the tip 14. The portion of the body embraced by the slit 15 forms a flexible lip 16, the thick-

ness of which is materially less than the remaining portion of the body 11.

Initially the margins of the lip 16 are sealed to the body 11. This may be accomplished by a plasticizer or adhesive as in the first described structure, or the body 1 may be so molded that the U-slit 15 is initially defined by a groove or channel molded in the body 1 and of such depth that the remaining web joining the lip 16 to the body is extremely thin. Such remaining web may be so thin that squeezing pressure on the collapsible container may be employed to open the U-shaped slit by forcing the lip 16 outwardly.

While the construction shown in Figs. 7, 8 and 9 is disclosed as being integral with a collapsible container, it should be observed that such construction may be arranged for a screwthread connection to a conventional collapsible container in the manner of the body 1 shown in Fig. 1. Conversely, the body 1 may be molded integrally with a collapsible container in the manner of the body 11.

Reference is now directed to the construction shown in Figs. 10, 11 and 12. In this construction a body 21 is provided, which may be arranged for a screwthread connection or may be integrally molded with a collapsible container, or otherwise bonded as by an adhesive or the like to a collapsible container. The body 21 is tubular and provided with an external flange 22. The outer surface of the flange 22 defines a slightly dished face 23 having a central hole 24 preferably of smaller diameter than the normal bore of the body 21. The face 23 of the flange 22 is interrupted by a radial channel which forms a mouth 25.

A cover plate 26 fits over the face 23 and is provided with a central boss 27 which fits in the hole 24. The rim of the cover plate surrounding the boss 27 is flexible, and that portion which extends over the mouth 25 forms a flexible lip 28. The cover plate 26 and body 21 are formed of plastic material and are bonded together by a plasticizer or adhesive, or the like 29. The bond between the rim of the cover plate 26 and the face 23 is permanent. The extremity of the flexible lip 28 is in edge to edge or lineal engagement with the radial extremity of the flange 22 across the mouth 25, so that the bond therebetween is limited in area, and therefore easily broken or ruptured by any suitable means. This may be conveniently accomplished by squeezing the tube to produce an internal pressure. In this case as in the first two arrangements, the contents of the collapsible tube is discharged in the form of a ribbon.

Reference is now directed to Figs. 13 and 14. The construction herein illustrated is similar to

the previously described construction, in that the body 41 is provided with a flange 42 and may be adapted for a screwthread connection or for integral connections to a collapsible container. The flange 42 is provided with a marginal rim 43 and radially inwardly of the rim 43 with a step 44. An annular sealing surface 45 is defined between the rim 43 and step 44. A central hole 46 communicates with the bore of the body 41. The sealing surface 45 is interrupted by a shallow radial channel which forms a mouth 47. A cover plate 48 fits within the flange 42 and seats against the sealing surface 45. A plasticizer 49 or the like bonds the cover plate 48 to the sealing surface 45. That portion of the cover plate which extends over the mouth 47 is in lineal contact therewith and forms a flexible lip 50. The bond between the lip 50 and mouth 47 being lineal, is readily ruptured by internal pressure.

Many other embodiments of the invention may be resorted to without departing from the spirit of the invention.

I claim:

In a container having a flexible body terminating in a relatively stiff neck portion, said neck portion being provided with an axial bore and having an axially directed channel surrounding said bore, said channel being interrupted to provide a lip portion having a relatively thin outer edge, a cap member of flexible plastic material having a depending skirt permanently secured in said channel, said skirt being interrupted at one side to provide a laterally directed lip portion for cooperation with said lip portion on said neck to form a dispensing passageway, the lip portion of said cap being relatively thin and extending in closing relation over said passageway, the thin edges of said container lip portion and said cap lip portion being initially joined in line contact by an adhesive which is readily rupturable upon applying pressure to the contents in the flexible body of the container.

JAN DE SWART.

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