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1,905,994

COLLAPSIBLE DISPENSER

Filed Dec. 21, 1931

Fig. 1

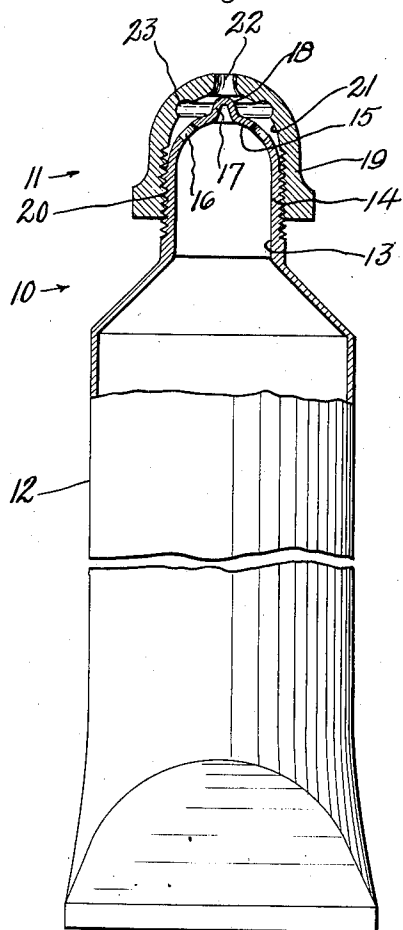


Fig. 2

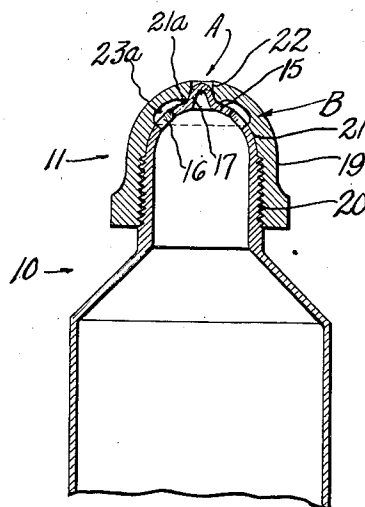


Fig. 4

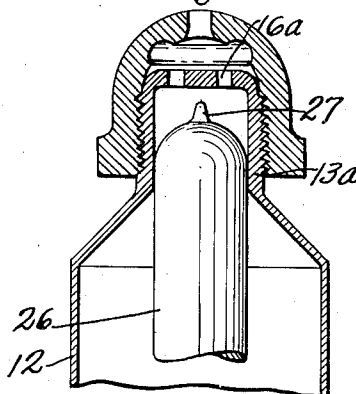
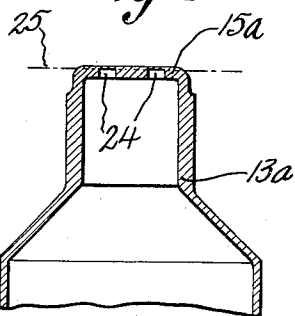


Fig. 3



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COLLAPSIBLE DISPENSER

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This invention relates to collapsible containers and closures therefor.

One object of this invention is to provide a device of the character described having improved means for effecting a positive and reliable closure either at one, but preferably at a plurality of points so as to assure a seal that may be utilized in the transportation of materials even though the construction include relatively light materials such as soft metals.

Another object of the invention is the provision of a closure means having a plurality of individual portions, both co-operating at the same time for closing and opening actions, and co-ordinated for simultaneous operation, with one of the valve portions having a yielding engagement so as to effect an automatic adjustment therebetween.

A further object is to provide a closure means of the type mentioned having relatively few and simple parts, and which is inexpensive to manufacture and assemble, and reliable and efficient in use.

Other objects and advantages of the invention will become apparent as the specification proceeds.

With the aforesaid objects in view, the invention consists in the novel combinations and arrangements of parts hereinafter described in their preferred embodiments, pointed out in the subjoined claims, and illustrated on the annexed drawing, wherein like parts are designated by the same reference characters throughout the several views.

In the drawing:

Figure 1 is a view in front elevation showing a device embodying the invention, and with the closure in open position and in section to show the structural details.

Fig. 2 is a fragmentary view showing a closed position of the device, in slightly modified form.

Fig. 3 is a fragmentary view showing a step in the manufacture of the device.

Fig. 4 is a similar view showing a subsequent step in the manufacture of the same.

Generally described, this invention relates to closures for devices such as containers, of the collapsible or any other type, and includes

a valve element of a plug type that is relatively movable into the opening of a second element such as a cap and affords a good closure which is particularly inexpensive to manufacture. While valves of this general type are known, yet this invention involves not only a new method of making the same, but also a new construction thereof. Thus the valve may be of a yielding character, so as to be readily adjustable or to seat itself in a proper snug fitting manner. This action is aided by making the valve or a coacting part thereof of a soft, ductile or resilient metal. The valve aforesaid may coact with a second valve means that may be of any suitable character provided that both valves operate together as a unit and are co-ordinated in an improved simplified construction. For instance, the second valve may be of a sliding type or may otherwise seat in closing position. Both valves co-operate for a simultaneous sealing operation, in series, and both valves may be carried by or embodied in a pair of suitable members, one of which may, for illustration, be in the nature of a cap and the other a hollow or tubular part journaled in the cap. By rendering one of the valves of a yielding character, tight simultaneous closing by both valves is assured. According to my improved method, the closure means may be made by stamping, pressing, or spinning, preferably the latter, causing a snug fit and construction of one or more of the valve elements in seating engagement with their corresponding parts.

The advantages of the invention as here outlined are best realized when all of its features and instrumentalities are combined in one and the same structure, but, useful devices may be produced embodying less than the whole.

It will be obvious to those skilled in the art to which this invention appertains, that the same may be incorporated in several different constructions. The accompanying drawing, therefore, is submitted merely as showing the preferred exemplification of the invention.

Referring in detail to the drawing, 10 denotes a device embodying the invention. The same may include a closure means 11 ap-

plied to a device such as a collapsible container 12. The latter may have a member or neck 13 which may be of hollow or tubular construction of different sizes or shapes. For instance, the neck 13 may have a cylindrical wall 14 and an end or transverse wall 15. The latter may be of any desired form, curved or hemispherical in shape, and may have one or more outlet openings 16 spaced from the axis of the neck. At the center of the wall 15 and extending outwardly along the axis neck, there may be a valve element 17 which may be in the nature of a hollow projection, that is preferably closed ended at 18. This valve element may be variously constructed and may be integral with the neck, and may form a continuation of the wall thereof. The valve element 17 may be conical or otherwise formed for seating with a gradually increasing pressure on its seat as hereinafter described.

Co-operating with the member 13 is a second member 19, such as a cap, that is relatively movable in any desired manner. For example, the cap may be sleeved or journaled on the neck and may be movable both axially and rotatably, as by a thread 20 between these parts. The cap may have an internal surface 21 of any shape for adapting it to seat uniformly on the member 13 and particularly the end wall 15. Provided centrally in the cap, is an opening 22 for receiving the valve element 17. This opening may be of a suitable shape to effect a conical or similar seating engagement. Spaced from the opening 22, there may be an annular groove 23 with which the openings 16 are adapted to register in the closed and closing positions of the device. In Fig. 2, the seat 21 may be modified as at 21a to form a limited or sharp seating surface for quick cut off, and the groove 23a being correspondingly larger to retain or return the material upon closing the cap.

While the various parts of the device may be made of many different materials, it is preferred that one of the elements of the closure shall be made of a comparatively rigid material and the other of a yielding or resilient material. Thus the member 19 may be made of bakelite and the member 13 of a soft or ductile metal of suitable composition.

In operation, it will be noted that when the closure is open as shown in Fig. 1, a flow of a plastic or any other material may readily occur, as by squeezing the tube 12. The path of flow is through the openings 16 and thence through the opening 22. The members 13 and 19 are retained in alinement by the thread 20, and the outflow may be easily regulated by turning the cap. When the cap is turned to close the device, the member 17 enters and closes the opening 22, while the openings 16 are closed by the snug seating on the surface 21. Hence a double seal is provided, there

being one valve at A and the other at B. The seal at B also aids to prevent the occurrence of any leakage at the thread 20. As the cap is screwed to close, a certain amount of material between the walls 15 and 21 is pressed partially out of the opening 22 and in part returned along the groove 23 and through the openings 16 back into the container. Very little material will pass out through the opening 22, since the latter will be quickly closed by the projecting valve 17, and hence most of the material will be returned to the container. By reason of the yielding character of the valve 17, the same will readily adjust itself to the outlet 22 and will constantly fit itself more snugly thereto. It will be appreciated that the element 17 may be of sufficient size to prevent snug seating of the members at 21, so that the closure at B may be in the nature of a frictional retarding arrangement for the plastic material in the container. Hence the element 17 will gradually wedge closely into the opening 22.

A preferred method of constructing the device is as follows: As shown in Fig. 3 the neck 13a may have an end wall 15a formed integrally therewith, and into the latter may be pressed internal recesses 24, in any suitable manner. Then the outside portion of the wall 15a is cut or shaved off, as along a plane 25 to leave through openings 16a. Finally, the neck 13a may be inserted in a form and spun, as hereinafter described, or it may be threaded and a cap such as 19 screwed thereon, and then a pressure or spinning tool such as 26 internally applied. This tool may snugly fit in the neck and may have a central projection 27 which forms the valve element 17, and rounds the end wall 15a to conform to and fit the wall 21 of the cap. Hence an individual fit and seating is obtained for each closure means. While the openings 16a may become somewhat distorted, this factor is immaterial.

Within the general principles of the invention, the closure means may include parts reversed in order, and differently movable and constructed in various other ways, while the steps of the method may be practised in different orders and combinations.

It will be appreciated that various changes and modifications may be made in the device as shown in the drawing, and that the same is submitted in an illustrative and not in a limiting sense, the scope of the invention being defined in the following claims.

I claim:

1. A closure means for collapsible containers, including a neck having a thin wall of ductile metal, a cap threaded on the neck and having a central outlet opening, said neck having an opening laterally disposed with respect to the cap outlet, and a hollow projecting conical valve closure for the cap

outlet, said valve closure being integral with the wall of the neck and being adapted to extend into the cap outlet, the valve closure having a thin soft wall for fitting itself to the cap outlet by exertion of pressure by the cap.

2. A closure means including a plurality of coaxial elements movable relatively to each other in the general direction of the axis thereof, one of said elements having an opening, the other element having a tubular closed ended projecting valve portion adapted to seat in said opening, the opening and the valve portion having conical wedge engagement and the valve portion having a thin yielding wall for fitting the said opening.

3. A closure means including a neck member terminating in a substantially hemispherical end portion, the neck having a side wall provided with an engagement means, a cap journaled on said neck member and having an end wall seated on said end portion, said cap being movably engageable with said engagement means so as to be movable lengthwise of the neck member, the neck member having an opening in the end portion, said opening being spaced laterally from the axis of the member, the cap having a central outlet in said end wall, the neck member having a hollow tubular closed end projection adapted to extend into said central outlet for closing the same.

4. A closure means including a neck member terminating in a substantially hemispherical end portion, the neck having a side wall provided with an engagement means, a cap journaled on said neck member and having an end wall seated on said end portion, said cap being movably engageable with said engagement means so as to be movable lengthwise of the neck member, the neck member having a plurality of openings in the end portion, said openings being spaced laterally from the axis of the member, the cap having a central outlet in said end wall and a groove spaced from said outlet and adapted to communicate with the openings in the neck member, the neck member having a hollow tubular projection having tapered engagement in the central outlet of the cap for closing said outlet, with the end wall of the cap snugly seated on the end portion of the neck member to close the openings in the latter.

5. A closure means including a neck member terminating in a substantially hemispherical end portion, the neck having a side wall provided with an engagement means, a cap journaled on said neck member and having an end wall seated on said end portion, said cap being movably engageable with said engagement means so as to be movable lengthwise of the neck member, the neck member having a plurality of openings in the end portion, said openings being spaced laterally

from the axis of the member, the cap having a central outlet in said end wall and a groove spaced from said outlet and adapted to communicate with the openings in the neck member, the neck member having a hollow closed ended projection having tapered engagement in the central outlet of the cap for closing said outlet, with the end wall of the cap snugly seated on the end portion of the neck member to close the openings in the latter.

In testimony whereof I affix my signature.

JAMES P. BURKE.

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