

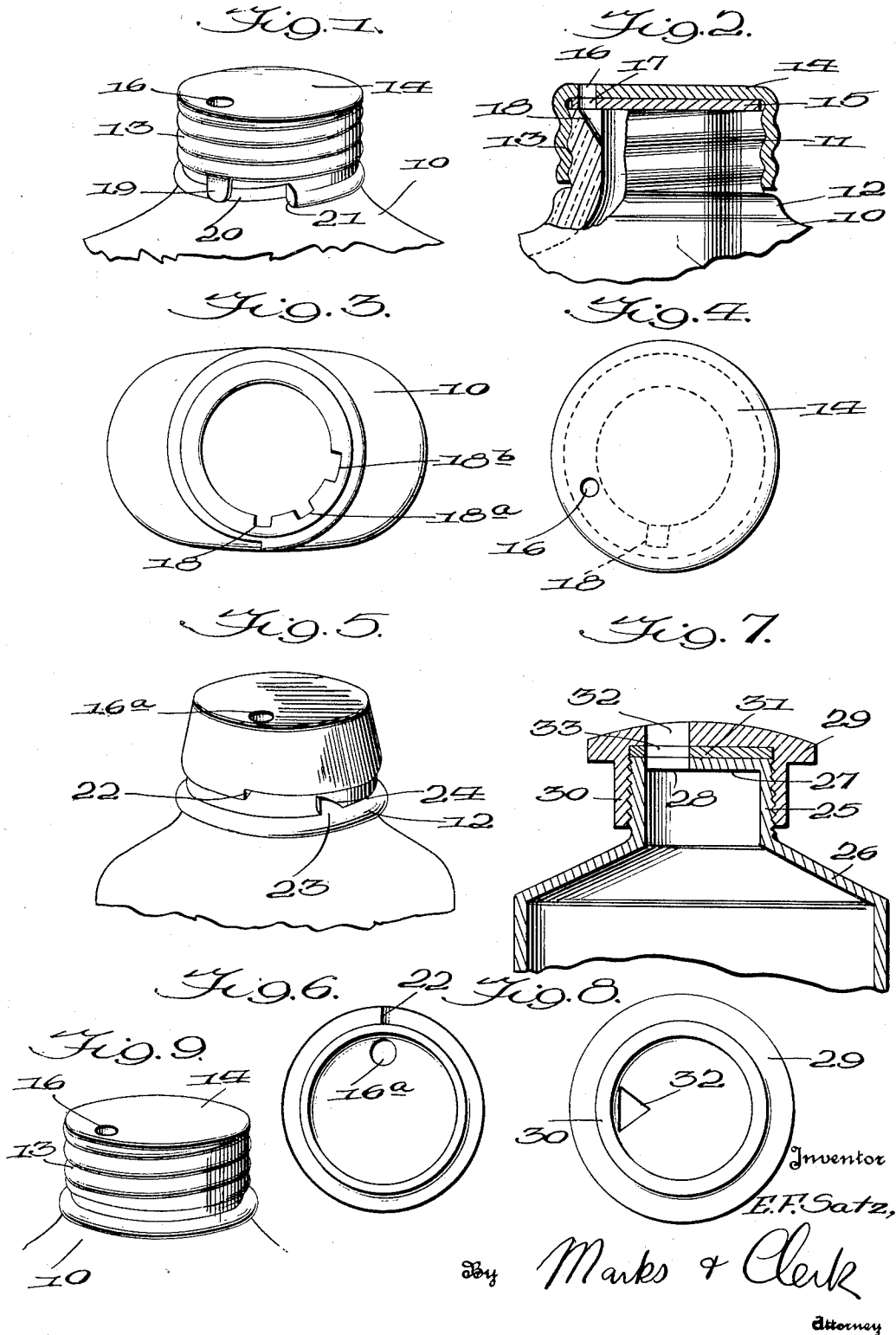
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DISPENSING CAP FOR CONTAINERS

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DISPENSING CAP FOR CONTAINERS

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1 Claim. (Cl. 215—76)

This invention relates to improvements in containers and has for its object to provide an improved closure which will permit of the dispensation of the contents of the container either by sprinkling, as in the case of liquids, or by the forcible ejection of the contents of the container as in the case of preparations of a semi-solid nature.

The invention has for its primary object to provide a closure for containers in the form of a cap which is rotatably fitted upon the neck of the container and, when rotated in one direction, hermetically closes the container and, when rotated in the opposite direction, uncovers a discharge orifice in the cap through which the contents of the container may be dispensed.

A further object of the invention is the provision of a dispensing cap in the form of the widely used "screw type" to which the invention is applied and by which the tightening of the cap on the container effectively closes the latter against leakage or loss of the contents, while by partial loosening of the cap the discharge orifice is uncovered to permit the discharge of the liquid and semi-liquid content of the container.

A further and more specific object of the invention is the provision of an arrangement by which the rotation of the cap in the direction to loosen the same is limited so as to ensure complete uncovering of the discharge orifice for the convenience of the user in dispensing the contents of the container.

With the foregoing and other objects in view the invention consists in a novel construction and arrangement of parts as hereinafter more fully described and illustrated in the accompanying drawing, in which:

Fig. 1 is a fragmentary perspective view of the upper part of a bottle or like container showing the invention applied thereto.

Fig. 2 is a fragmentary view, partly in section, of the upper part of a bottle showing the improved cap in cross section.

Fig. 3 is a top plan view of the bottle with the cap removed.

Fig. 4 is a top plan view of the cap, removed.

Fig. 5 is a fragmentary perspective view of a second form of bottle or container showing a modified form of the cap.

Fig. 6 is a bottom plan view of the modified cap, removed.

Fig. 7 is a fragmentary sectional view through a container of the collapsible tube type showing the invention applied thereto.

Fig. 8 is a bottom plan view of the cap shown in Fig. 7, removed.

Fig. 9 is a fragmentary perspective view of a modification of the form of invention illustrated in Fig. 1.

Referring to the drawing in detail, the numeral 10 indicates the body of a bottle or like container having a neck portion 11 and a shoulder 12. The neck part 11 is molded so as to present an external screw thread 11 in accordance with the usual practice in the modern manufacture of bottles provided with screw caps.

The form of the invention shown in Figs. 1-4 is intended for use in connection with bottle caps which are stamped from sheet metal and provided, during the stamping operation, with the threaded flange part 13 to fit the externally threaded neck 11 and the top or end part 14.

As usual, a leak-proof gasket 15 formed of fiber, cloth or other suitable and inexpensive material is fitted against the top 14 and within the threaded flange 13, and in the closed position of the cap the gasket 15 bearing against the edge of the neck 11 effectively closes and seals the latter. The top parts of the cap and the gasket 15 are provided with discharge orifices 16 and 17, respectively, which are located in those portions of the cap and gasket which overlie the edge of the bottle neck 11 so that when the cap is tightly screwed in position the orifice 17 is closed and the material of the gasket being compressed, leakage of the contents of the bottle is effectively prevented.

The neck of the bottle is reduced in thickness at least at one point to provide a channel, and in the embodiment of the invention illustrated, the inner surface of the neck of the bottle is formed with a longitudinal groove 18 which extends from the outer edge of the neck a distance inwardly thereof and is so disposed with respect to the screw threads on the neck that, when the cap is partially loosened, the discharge orifices 16 and 17 are brought into registration with the groove 18 and by inverting the bottle the liquid contents thereof may be dispensed.

However, when the cap is again turned so as to tighten it on the bottle neck the discharge orifices in the cap and gasket are moved out of registration with the groove 18 and being tightly pressed against the bottle neck, possibility of leakage is entirely prevented and the bottle is sealed.

In the preferred embodiment of the invention the edge of the flange part 13 of the cap is preferably provided with an extension or tongue 19

which may be conveniently and inexpensively formed at the time of stamping out the cap. The shoulder or rib 12 of the bottle is partially cut away to provide a recess 20 in which the tongue 19 is accommodated, and due to the resiliency of the material from which the cap is formed, the latter may be initially applied to the bottle neck, and in so doing the tongue 19 slides over the shoulder 12 but springs into the recess 20 as the cap is turned to its closed position. The recess 20 presents a radial shoulder 21 which forms a stop for the tongue 19 during the loosening movement of the cap, and the shoulder is so disposed that when it is engaged by the tongue 19 the discharge orifices 16 and 17 are in exact registration with the groove 18 and the contents of the bottle may be conveniently dispensed.

The tongue 19 in conjunction with the recess 20 may or may not be used, as desired, but its provision is preferable as it increases the convenience of the dispensing cap by providing means by which the user may instantly adjust the cap to dispensing position.

It will also be understood that more than one groove 18 may be provided. Such a construction is suggested in Fig. 3 wherein three grooves 18, 18a and 18b are provided, the width of the grooves increasing from the groove 18 to the groove 18b so that the rate of discharge of the contents of the container may be varied at the will of the user according to the qualities of flow of the liquid.

The invention is shown in Figs. 5 and 6 as applied to caps formed from "bakelite" and like substances in which the internal screw threads fitting the neck 11 of the bottle are molded. As in the case of the form shown in Figs. 1-4 the cap of the type shown in Figs. 5 and 6 is provided with a discharge orifice 16a the sealing of which is accomplished in the same manner as by the use of a compressible gasket.

In Figs. 5 and 6, however, the cap is molded with a shoulder 22 located at the edge of the cap flange and engageable with a stop lug 23 provided on the shoulder 12 of the bottle. The shoulder 22 is arranged to engage the lug or stop 23 during rotary movement of the cap in the direction to loosen the latter and arrests the movement of said cap when the discharge orifice 16a is in registration with the groove 18 in the bottle neck. The face of the projection 23 opposite the shoulder 22 is inclined as indicated at 24 so that in screwing the cap in position on the bottle neck the shoulder 22 is guided over the top of the projection 23 to the position shown in Fig. 5.

The modification of the invention shown in Figs. 7 and 8 is primarily intended for use in connection with containers of the collapsible tube type, and in this case the neck 25 of the tube body 26 is formed in the course of manufacture with an end wall 27 in which a discharge orifice 28 is formed and which is located eccentrically of the neck portion 25. The cap 29 provided with the internally threaded flange 30 is fitted

on the threaded neck 25 and is provided with a gasket 31, the body of the cap and the gasket being provided with permanently registering discharge orifices 32 and 33.

The orifice 28 is so located with respect to the discharge orifices 32 and 33 that, when the cap 29 is tightly secured in closed position, the aperture 28 is out of registration with the apertures 32 and 33. However, upon partially turning the cap the several apertures are moved into complete registration, as shown in Fig. 7, and the contents of the tube may be conveniently dispensed in the usual manner and by collapsing the side walls of the tube. The orifices 28, 32 and 33 may be formed in any desired shape, and in Fig. 8 they are shown as being of triangular form.

From the foregoing it is clearly evident that the invention may be applied to bottles and like containers having caps either stamped from sheet metal or molded from plastic material, and the arrangement provides extremely simple and inexpensive means of conveniently dispensing the contents of such containers without the necessity of removing the cap and the possibility of misplacement and loss of the latter. The invention may be applied with equal facility to containers of the collapsible tube type in which case the same advantage afforded by the application of the invention to bottles are derived.

It is further evident that the invention in use is of value in the packaging of medicinal and like preparations in avoiding contamination of the contents of the container by objects which may contact therewith, and even in the case of air, which, when the cap is closed is entirely excluded thereby preventing deterioration or any such other chemical change in the contents of the container as may occur by exposure to air.

In the embodiment of the invention shown in Fig. 9 a cap constructed identically with that shown in Fig. 1 is disclosed with the exception that the tongue 19, as well as the corresponding recess 20 in the flange of the container, is omitted. This embodiment is even simpler than the form previously described, but it is advisable in the adoption of this construction to increase the width of the groove 18 in the bottle neck for the convenience of the user in making such adjustment of the cap as to permit dispensation of the contents of the container.

What I claim is:

In combination, a bottle having a threaded neck, a threaded cap fitted on said neck having a discharge opening in the portion thereof overlying the end of said neck whereby when the cap is tightly screwed in position said discharge orifice is closed by the end of the bottle neck, said neck having a plurality of different sized grooves arranged to register with the discharge opening when the cap is partially unscrewed to permit the outflow of the contents of the bottle.

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