May 1, 1962 S. HÅRDING 3,032,225

COMBINATION CLOSURE FOR BOTTLES AND SIMILAR CONTAINERS

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FIG. 1

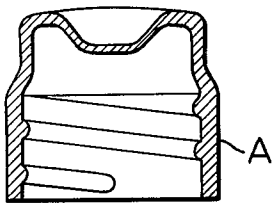


FIG. 1a



FIG. 1b

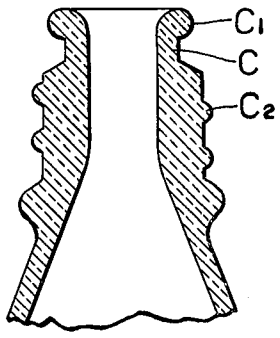


FIG. 3

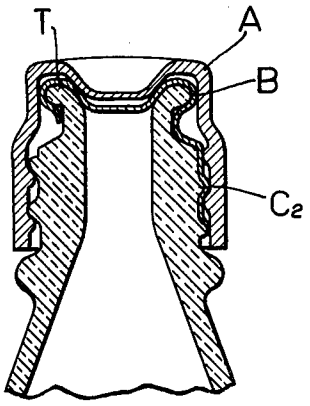
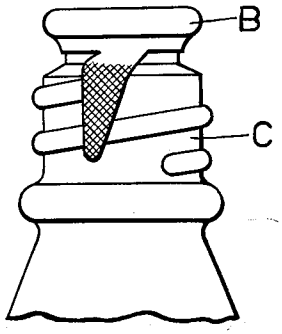


FIG. 2



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FIG.4

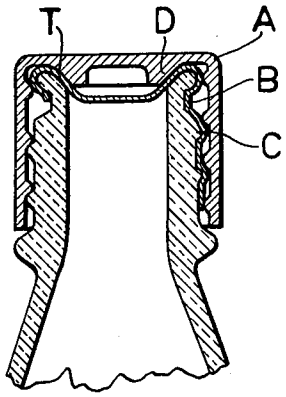


FIG.5

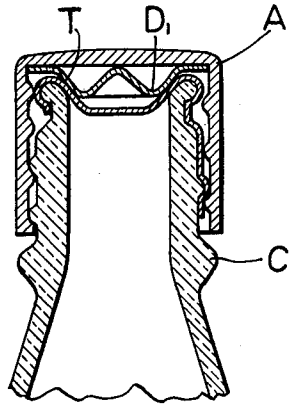
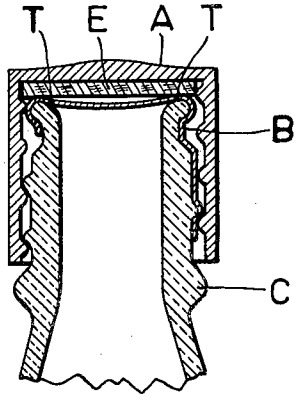


FIG.6



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COMBINATION CLOSURE FOR BOTTLES AND SIMILAR CONTAINERS

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3 Claims. (Cl. 215—31)

The problem of sealing a bottle or other container after filling with an original product has been solved in many different ways. In the special case in which the closure is a screw cap, the sealing has sometimes been made in such a way that a certain type of sealing has been applied to the outside of the cap in the form of a banderol, shrink sleeve of plastic material, thin-walled aluminium cap or the like. However, in the constructions hitherto made separate sealing inserts of cork, rubber or the like have been required. The present invention relates to a thin-walled sealing tear-off cap preferably of aluminium without separate sealing insert, in combination with a cap applied on the outside thereof, said cap being, by means of a thread or other simple device, adapted to be fixed to the mouth and serve as a re-closure. By suitable design of the mouth of the bottle, the sealing tear-off cap and the outer re-closing cap a very simple and rational closure with sealing may be obtained. The principle is that the thin-walled tear-off cap made of aluminium or other suitable material, is shaped to suit the container mouth either before or in connection with the application in a manner to obtain a close fit and contact with the inner and outer sealing surfaces and thus an effective sealing. The outer cap shall then be designed so as to effect an outer pressure on the inner cap where the latter is to seal against the mouth of the bottle, a tight and safe closure being thereby insured. The advantages of this construction as compared with earlier known constructions are that the demands for hygiene, simplicity, low cost, reliability and rational work at the closuring operation have been done full justice to. By working without separate sealing inserts especially in the tear-off cap the latter can easily be made sterile, for instance by heating or washing. It can be produced from aluminium which is covered by lacquer, laminated or treated in some other way, giving an excellent corrosion resistance and hygiene. These points of view are conspicuous when closuring containers holding medicines especially in liquid state. Also the outer cap may be designed without a separate sealing insert by being made of resilient material, for instance certain plastics, such as polyethylene, polyamide and so on. By this a high degree of simplicity as to manufacture and use is reached, thus making the closure inexpensive and practical. A thin-wall tear-off cap without sealing insert combined with an external screw cap of stiff material and with a resilient sealing insert of cork, rubber or plastic, for example, which is pressed against the sealing surface on the outside of the thin-walled tear-off cap, is also covered by the invention.

Some embodiments of the invention are shown in FIGS. 1–6 in the accompanying drawings.

FIG. 1 discloses a longitudinal section of a screw cap A with countersunk conical center part made of resilient material. FIG. 1*a* shows a lateral elevation of a thin-walled, sealing tear-off cap B with a tear-off tongue of ordinary design, and FIG. 1*b* a bottle top C in longitudinal section, formed with a neck ring C_1 to receive the inner, i.e. tear-off cap, and with a thread C_2 for the screw cap.

FIG. 2 shows the bottle mouth with applied tear-off

cap, viewed from the side. Upon comparison with FIG. 1*b* it will be clearly seen how the sealing cap snugly lies against the bottle top C, by which the sealing surface is considerably increased. The tear-off cap is according to the invention considerably enlarged, by which it becomes of importance as a locking device for the screw cap, extending down between the threads of the container top and those of the screw cap.

FIG. 3 shows, in longitudinal section, the three parts assembled. The sealing pressure will here be applied at T against the bottle mouth.

FIGS. 4, 5 and 6 show other embodiments, all in longitudinal section.

In FIG. 4 the screw cap is made of resilient material, in which the central bottom portion is formed as a conical pulled-down ring D, the outer conical side of which effects the pressure against the sealing surface T.

In FIG. 5 the screw cap is formed of stiff material with a resilient insert D designed to effect sealing pressure at T against the inner cap pulled down into the bottle mouth. In FIG. 6 the screw cap is made of stiff material with a resilient plane insert E of cork, for example. At the fixing of the screw cap the sealing pressure is applied against the bottle mouth at T.

Essential advantages may be obtained by using a closure of this kind. It is, for instance, possible to sterilize the filled bottle with applied sealing tear-off cap, which gives a sealing sufficient to maintain the sterility during the limited time which is required before the screw cap can be applied. The clean thin aluminium cap guarantees sterility in the closure. The subsequent application of a screw cap gives a closure guaranteeing a safe transport of the container.

Furthermore, the importance of the tear-off tongue as a locking means for the screw cap is pointed out, the screw cap being, due to said tongue, prevented from being screwed off from the container during transport. It is also pointed out that the sealing surface between the bottle mouth and the tear-off cap is not limited to the contact surface T of the cap only. The thin aluminium cap is, of course, at the closure formed to fit the outer contour of the bottle mouth, and produces here a certain sealing effect. This sealing effect is increased at the mounting of the screw cap due to the fact that the application pressure from the screw cap is applied at T, and also by a certain tightening of the contact pressure of the thin-walled aluminium cap around the mouth. This is at least the case when the screw cap produces a contact pressure on the inner mouth of the bottle.

What I claim is:

1. A closure for a container having a threaded neck with flaring open end and a bead at said open end, comprising in combination a sealing cap and a threaded screw cap, said sealing cap being formed of thin, frangible metal sterilizable at elevated temperatures, said sealing cap being secured independently of said screw cap upon said neck, said sealing cap having a skirt engaging and extending below said bead and having a countersunk recessed downwardly and inwardly tapered central portion extending into said open end of the neck sealing the same, said sealing cap having a corrugated tongue extending below said skirt and engaging the threads of said neck, said screw cap having its threads extending below said skirt and engaging the threads of said neck with said tongue disposed therebetween, a central top portion of said screw cap being formed with a downwardly and inwardly tapered projection extending into the countersunk portion of the sealing cap to apply pressure thereon against said open end of the neck.

2. A closure according to claim 1, wherein said projec-

tion is downwardly and inwardly tapered to seal said flaring open end of said neck when said sealing cap is removed therefrom.

3. A closure according to claim 1, wherein said projection is a resilient insert having an annular rim and a downwardly and inwardly tapered central portion, said screw cap being formed of rigid material and having a substantially flat underside bearing down on said annular rim and open end of the neck while said downwardly and inwardly tapered central portion of said inserts fits into the countersunk portion of the sealing cap.

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