Jan. 28, 1936. W. ERHARD 2,029,020

CONTAINER CLOSURE

Filed March 1, 1933

FIG.1.

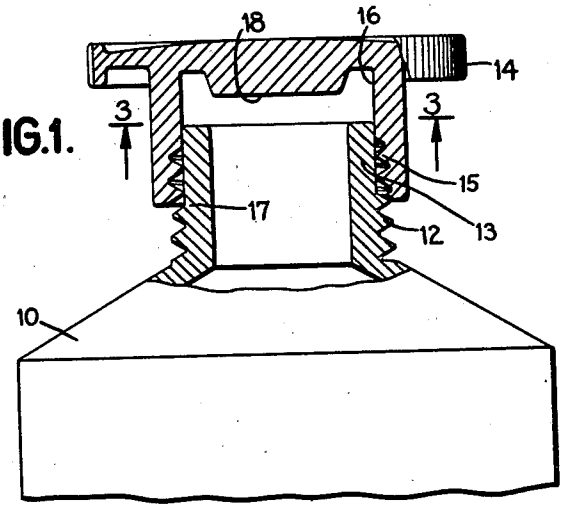


FIG.2.

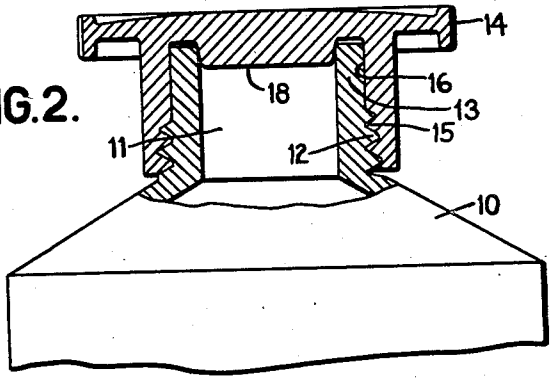
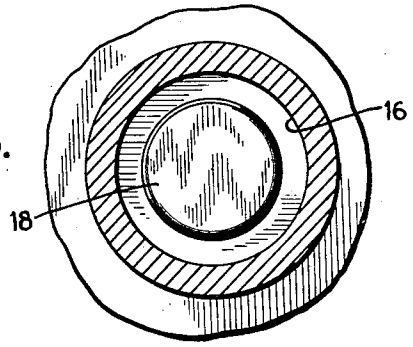


FIG.3.



INVENTOR-
WILLIAM ERHARD

BY Cooper, Kerr & Dunham
ATTORNEY-

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CONTAINER CLOSURE

William Erhard, North Bergen, N. J., assignor to Globe Collapsible Tube Corporation, Brooklyn, N. Y., a corporation of New York

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2 Claims. (Cl. 221—60)

This invention relates to closures for containers and has particular reference to closures for containers of the screw-on type. The invention is shown and described herein as applied to collapsible tubes for containing tooth paste and similar materials, but as will be apparent later on, the invention is capable of application to containers for other purposes.

One cause of dissatisfaction with screw closures is the difficulty in engaging the threads in the closure with the threads around the container mouth in such a way that they will take hold and engage properly in screwing the closure into position. This is due mainly to the necessity of having the closure and the threaded part of the container in axial alignment in order to engage the threads properly. With prior devices there is no way of insuring this alignment and, as a result, it is often necessary to make several attempts before the screws are properly engaged and quite often the threads are damaged because of improper engagement. This creates a tendency not to apply the closure and as a result contamination and deterioration of the container contents occur. Also, when first applying the cap when making and assembling a collapsible tube the lack of proper alignment may damage a tube or a cap so that either or both has to be scrapped.

One object of this invention is to provide a screw closure which is so constructed as to do away with this cause of trouble and expense. This is accomplished by so constructing the closure and cooperating portions of the container that the closure and the neck or mouth of the container will have been aligned axially before the cooperating threads engage when screwing the closure into position.

Another object is to provide a seal for the passageway through which the material leaves or is removed from the container which will, for a great many container contents, make unnecessary the usual insert of cork or similar material.

With the foregoing and other objects and advantages in view, the invention consists in a novel construction and relation of parts, the novel features of which are pointed out in the claims, and one embodiment of which is shown in the drawing accompanying and forming a part of this specification.

In said drawing:

Figure 1 is a section through the neck of a collapsible tube and a screw cap for the tube showing the parts in the relations they assume when the cap is applied to the neck and just before the screw threads engage.

Fig. 2 is a section corresponding to Fig. 1 except that it shows the cap screwed into sealing position.

Fig. 3 is a section on the line 3—3 of Fig. 1.

In the accompanying drawing the various features of the invention are shown in the form they would take when applied to a container of the collapsible tube type. The container 10 is provided with a neck containing the passageway 11 through which the contents of the tube may be forced. The neck is provided with a thread 12 around its base, and above the thread is an unthreaded portion 13 forming part of the aligning feature above referred to. The cap 14 may be of any external shape and is provided on its interior with threads 15 to engage the threads 12, and an unthreaded portion 16 above the threads 15 to cooperate with the unthreaded portion 13 on the neck. When the cap is first placed on the neck the unthreaded portions 13 and 16 will engage for a sufficient part of their lengths to center the cap on the tube neck. This engagement of the unthreaded portions is telescopic, although the fit is not a close one. The purpose is served by having the unthreaded portions engage for sufficient parts of their lengths, and closely enough, to center the cap on the tube.

After the unthreaded portions have engaged to align the two elements, the threads are screwed together in the usual way, the unthreaded portions remaining in telescopic engagement until the cap is screwed home.

The axial alignment of the cap and neck may be facilitated to a certain extent by having the line 17 forming the base of the unthreaded portion of the neck extend in a circumferential plane at a right angle to the axis of the neck and intersecting the thread for a major portion of the top turn of the thread. This will give a circumferential base for engagement by the lower end of the thread of the cap as distinguished from a helical base if the thread on the neck is not so intersected. This feature is not an essential one, however, as the improved parts will align quite satisfactorily without it.

The interior of the cap is provided with a circular boss 18 having its sides tapered or inclined in such a way that when the cap is screwed fully home the inclined sides will engage the interior edge of the mouth or opening and effect a seal. Where the material of the neck is a soft or yielding material the inclined or tapered side of the

boss will engage the inner edge of the passageway 11 and form a very tight seal. If, as is usual with collapsible tubes, the material of the neck is a relatively soft metal the inclined surface of the boss 18 will act upon the metal at the inner edge of the mouth to form a surface on the metal conforming to the engaged surface of the boss, thereby adding to the effectiveness of what already is a good seal, and, as an incident to this operation the neck will be expanded by the boss so as to cause the exterior of the neck to grip the interior 16 of the cap. This will hold the cap against accidental removal and will also contribute toward the forming of a good seal.

Where the passageway 11 is non-circular in form the boss 18 may be omitted and the usual insert of cork or similar material employed. The aligning feature, however, can be used with entire satisfaction in such a construction.

The unthreaded portion on the neck should obviously be greater in length than the threaded portion in the cap. While, as above stated, the cooperation of the unthreaded portions on the neck and in the cap is telescopic, this relation need not be maintained after the two threads are engaged. All that is necessary is to have such a telescopic and aligning relation of the parts effective until the two threads have at least started their engagement.

While the embodiment shown in the drawing is well adapted to attain the objects above stated, and that embodiment has therefore been described in detail, it is apparent that the various features of the invention are capable of other embodiments; and it is not the desire to be limited by the drawing or description except as such limitations may appear in the claims which follow.

What I claim is:

1. In a collapsible container of the screw closure type, a neck around the discharge opening having a screw thread on its exterior and an unthreaded guiding portion above the thread, a cap having a thread to cooperate with the thread and an unthreaded guiding portion to cooperate with the guiding portion on the neck, said guiding portions engaging telescopically and freely to align the closure and the neck axially before the two threads are engaged in screwing the closure on the neck, and a tapered portion within the top of the closure constructed to engage the interior edge of the discharge opening and seal said opening when the screw threads are fully engaged.

2. In a collapsible tube container of the screw cap closure type, a screw cap having on its interior a screw thread, and an unthreaded guiding portion adjacent the thread having an internal diameter the same as or less than the internal diameter at the top of the thread in the cap, a neck around the discharge opening of the tube having a screw thread to engage the thread in the cap and an unthreaded guiding portion constructed to engage slidingly with the unthreaded portion in the cap to align the neck and cap axially before the threads engage, and a tapered portion within the top of the cap constructed to engage the interior edge of the discharge opening and acting to expand the neck against the unthreaded interior of the cap when the cap is screwed home.

WILLIAM ERHARD.