June 15, 1937. F. A. BEACH 2,084,273

PROTECTIVE DEVICE FOR COLLAPSIBLE TUBES

Filed June 6, 1935

Fig. 1.

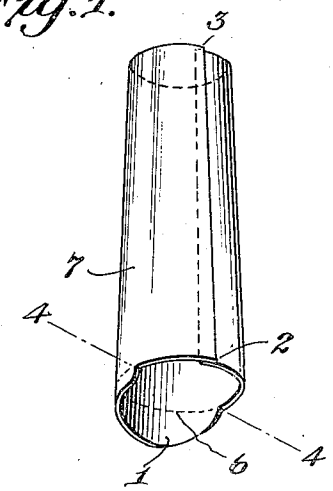


Fig. 2.

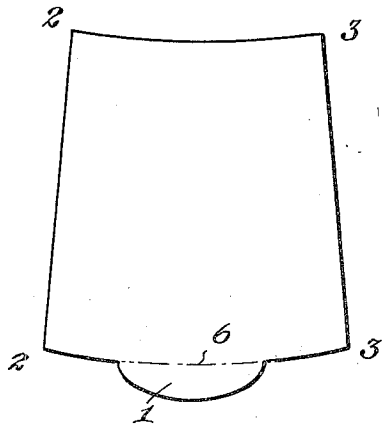


Fig. 3.

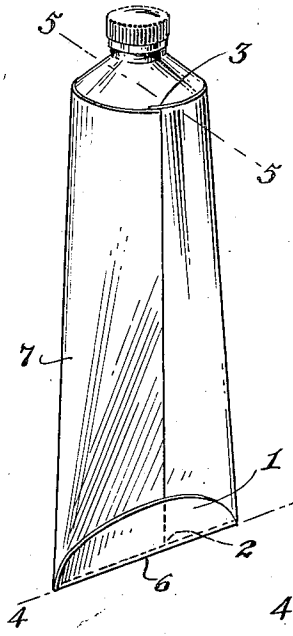


Fig. 4.

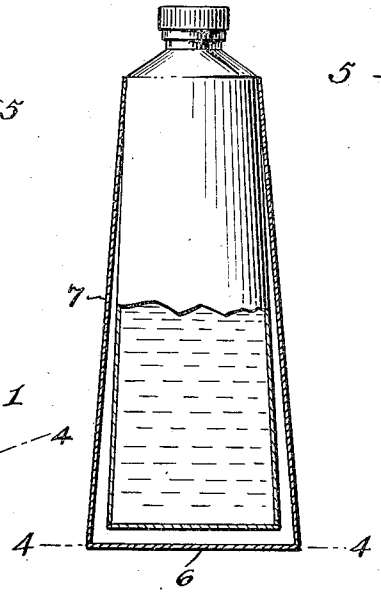
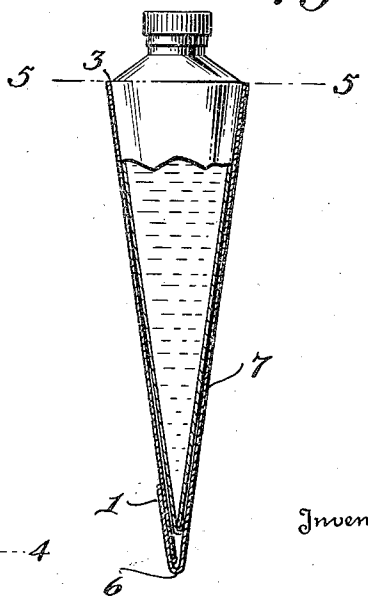


Fig. 5.



Inventor

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2,084,273

PROTECTIVE DEVICE FOR COLLAPSIBLE TUBES

Fred Arnold Beach, Washington, D. C.

Application June 6, 1935, Serial No. 25,256

2 Claims. (Cl. 221—60)

This invention relates generally to collapsible tube containers intended for pastes, semi-liquids and viscous liquids, such as creams, emulsions, ointments, salves, vaseline, paints, cements, and the like, and more particularly to a protective device therefor.

In packaging preparations in collapsible tubes it is customary to use decorated tubes of thin metal and to enclose the filled tubes in individual pasteboard cartons as a means of protection during shipment, storage and display. The consumer of the preparation discards the carton; consequently during use no protection is afforded the tube against accidental shocks. Furthermore, no provision is made to protect the tube during use against extreme localized pressure when its contents are periodically extruded, or against undue wrinkling as the result of careless handling. Consequently, the tubes frequently burst under excessive strain in use, or develop small holes as the result of wrinkling and from other causes. Besides giving rise to great waste of the contents such failures in the tube are a source of great annoyance to the consumer of preparations packaged in collapsible tubes.

A general object of my invention is to provide a compact, effective and economical protection for the entire collapsible body of collapsible tubes, which may be attached at the time the tube is filled and which will remain permanently attached thereon.

Another object of my invention is to provide a protective device of the type described which will eliminate the need for packaging the filled tubes in individual cartons.

Accordingly, my invention comprises an article of manufacture, and according to a preferred embodiment of it, I accomplish the foregoing objects and others ancillary thereto by surrounding the entire collapsible body of the collapsible tube with a permanently attached cover, or jacket, of a thin semi-rigid material, such as light-weight pasteboard or cardboard. Specifically, the inner wall of the jacket fits snugly against and firmly grips the outer wall of the collapsible body of the tube at its shoulder, and the tube is so positioned within the jacket that the edge of the latter is flush with the shoulder of the tube. At the other end, the edges of the jacket, which on account of a gradual tapering in the direction of the dispensing end of the tube is somewhat larger than the collapsible tube at this point, are brought together, thereby completely enclosing the sealed end of the tube, and attached in a suitable manner to give the package much the same appearance as the ordinary sealed collapsible tube. As the contents are used the jacket collapses with the tube and as a result of creasing at the sides remains in a flattened form as far up the tube as the contents have been removed.

The novel features that I consider characteristic of my invention are set forth in the appended claims. The invention itself, both as to its relations of elements and its method of operation, together with additional objects and advantages thereof, will be best understood from the following description of a specific embodiment when read in connection with the accompanying drawing, in which:

Figure 1 is a perspective view of the protective cover before it is placed on the tube.

Figure 2 is a plan view of a sheet of material from which the article shown in Fig. 1 is formed.

Figure 3 is a perspective view of a tube with protective cover attached.

Figure 4 is a view of longitudinal section in the plane of 4—4 and the axis of the tube, Fig. 3.

Figure 5 is a view of longitudinal section in the plane 5—5 and the axis of the tube, Fig. 3.

The collapsible tubes as shown in the drawing are well known in the art and form no part of the invention.

In order to accomplish in a satisfactory manner the useful and desirable purposes set forth herein, a protective cover for collapsible tubes must be produced from one or more layers of a semi-rigid material, such as cardboard, celluloid, and the like, which possesses sufficient rigidity to afford ample protection against such shocks and strains as commonly occur in transit and during use. On the other hand, the material must be sufficiently flexible to yield a smooth, neat and compact package that is free of edges, creases and folds.

According to a preferred embodiment of my invention I meet the foregoing requirements by means of a conical cardboard tube, or jacket (Fig. 1) generally designated as 7, open at both ends and having the shape of a right frustum of a cone with a portion of the wall extended at the larger end so as to form a tab (1, Fig. 1) extending approximately over the semi-circumference of the frustum opposite to the seam (2—3, Fig. 1). The jacket may be conveniently formed from a section of cardboard of the approximate size, having the shape shown in Fig. 2, by bending the sheet in such a manner that edges 2 and 3 touch, or preferably overlap, and attaching them together by means of glue or by other suitable means.

A substantially cylindrical jacket can be successfully used, but it is less desirable than the conical one herein described.

The dimensions of the jacket and, to a certain extent, the thickness of the material depend upon, and are determined by, the dimensions of the collapsible tube on which the jacket is to be applied. The diameter of the smaller end of the jacket must be such that the inner wall of the jacket fits snugly against and firmly grips the

outer wall of the collapsible body of the tube at or near its shoulder. The length of the jacket must be greater than the over-all length of the collapsible body of the tube. Considerable latitude is permissible in the choice of the diameter of the larger end of the conical jacket. However, when the jacket is closed by pressing together two opposite sides, the greatest width of the closed jacket should be at least slightly greater than the greatest width of the tube when sealed. Accordingly, the attached jacket for the most part stands away from the tube itself (Figs. 4 and 5), thereby giving greater protection to the tube for the resilient covering is capable of yielding and thereby absorbing a considerable shock without indenting the tube. Furthermore, the air space between the jacket and tube substantially surrounds the body of the tube and thus affords a means of insulating the contents of the tube from heat.

For the same degree of protection, large tubes require a jacket of somewhat heavier material than do small ones. Furthermore, the thickness or the ply of the jacket material may be varied within limits depending upon the degree of protection required during use.

The conical jacket may be applied to the tube before, or preferably, after the tube is sealed. The tube is inserted in the jacket along the longitudinal center axis of the jacket and positioned so that the edge of the smaller end of the jacket is flush with the shoulder of the tube, and the seam (line 2—3 in Fig. 1) of the jacket extends along a flat side of the tube, or along a side that will become flattened on sealing the tube. When thus positioned on the tube, two opposite sides (2 and 3, Fig. 1) of the large end of the jacket are brought together along a diameter, giving the package a gradual taper towards the bottom (Fig. 5) along the somewhat flattened side of the tube. The tab (4, Fig. 1) is then folded over the short edge of the closed jacket and securely fastened down by a suitable means.

Under certain conditions, as when the protective jacket is made from thick material, it is convenient to dispense with the tab. In this case the edges of the large end of the jacket may be conveniently secured together by means of a circular piece of paper folded along a diameter and attached so that a half circle falls on either side of the wedge-shaped end of the jacket, or by means of a clamp of the type used in sealing collapsible tubes, or by other means that will readily occur to one skilled in the art.

It is also desirable, though not necessary, to provide a means of permanent attachment between the jacket and the tube, so that the tube cannot be pulled out of its protective cover and thereby seriously deformed before or during use.

From the foregoing description of specific embodiments of the invention it is obvious that the application of the protector to a collapsible tube affords efficient protection to all sides of the collapsible body of the tube, during both transit and use, without presenting an unusual appearance to the package resulting thereby or any features discommodious to the consumer of the contents thereof. Moreover, by the use of the device the convenience of the consumer is greatly enhanced in that the waste and annoyance occasioned by broken or leaky tubes can be eliminated; and furthermore, the protection thereby afforded against the development of indentations and wrinkles in the tube through careless use insures a more uniform and complete emptying of the tube.

A few of the more important advantages of the invention not previously indicated herein may be briefly pointed out. The cost of production and application to the tube is not in excess of that entailed in packaging tubes in the manner heretofore customary. Furthermore, when the protector is used in combination with a tube, advertising matter need not be placed on the tube itself; accordingly decorated tubes can be dispensed with. The use of undecorated tubes, made possible thereby, is both economical and convenient, for tubes without decoration thereon can be purchased in many places and in any desired quantity for immediate delivery, whereas in purchasing the costlier decorated tubes large orders must be placed and immediate delivery is impossible.

Depending upon the purposes and wishes of the person dispensing products in collapsible tubes, advertising display can be placed directly on the flat cardboard blank (Fig. 2), or it can be placed on a label and the latter attached to the jacket before or after application to the tube. The use of both methods of applying advertising matter on the same tube is entirely feasible, and under many circumstances is greatly to be desired.

Another desirable feature of the protective device resides in the larger space available for advertising matter which, since the package does not become wrinkled in use and the emptied portion of the tube is not folded over, remains in full view, much to the enhancement of the advertising value thereof.

Although I have shown and described certain specific embodiments of my invention, I am fully aware that many modifications thereof are possible. It is understood, therefore, that my invention is not to be restricted except insofar as is necessitated by the prior art and the spirit of the appended claims.

Having described my invention, I claim:

1. A collapsible protective device for enclosing a collapsible dispensing tube, comprising a jacket of semi-rigid material, having an open top through which the end of a collapsible tube is adapted to fit tightly in suspension therefrom, sealed at its lower extremity, and of a size and shape to envelop the collapsible body portion of said tube and provide an insulating air space between the same and the outer protective casing.

2. A collapsible protective device for enclosing a collapsible dispensing tube, comprising a jacket of semi-rigid material, having an open top through which the end of a collapsible tube is adapted to fit tightly in suspension therefrom, of a size and shape to envelop the collapsible body portion of the tube, sealed at its lower extremity and attached at its upper extremity to the upper body portion of said tube, and providing a closed insulating air space surrounding said tube between the same and the outer protective casing, whereby the contents of said tube are afforded protection against heat.

F. ARNOLD BEACH.