

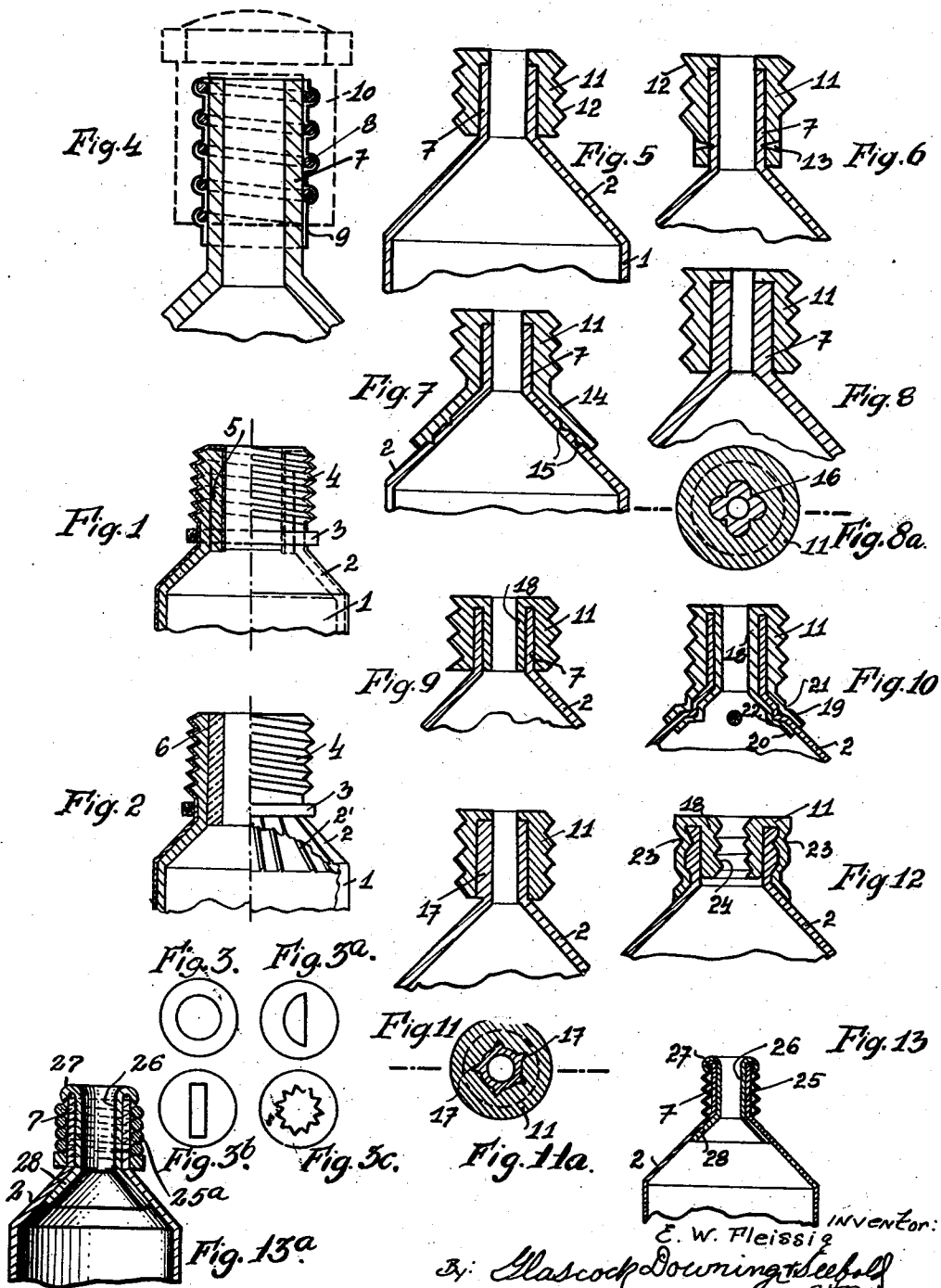
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CONTAINER

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CONTAINER

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This invention relates to containers made from paper, millboard, and the like, and more particularly collapsible tubes, for liquid or pasty masses. The hitherto known tubes and other containers for liquid or pasty substances, made from paper, millboard, "Cellophane," and the like materials consist as a rule of a plurality of parts, since the tapering in of the body or skirt portion of the tube or bottle to form a neck can hardly be produced without the use of special transition or neck pieces. Such superposed or fitted-on transition elements not only add to the cost of manufacturing the container but are also apt to become dislodged, more particularly in the case of collapsible tubes from which pasty substances are extruded, and thus render the container useless. Hence the attempt has been made to produce tubes and similar containers for liquid and pasty masses, together with the neck portion from a single piece of paper, millboard, or the like, by compressing the material spirally to form the neck, so that fan-shaped pleats are formed which may then be stuck together so that they lie flat. The pressure exerted in extruding pasty substances from such containers tends, however, to tear the shell of the container at these folds or pleats, with the result that the container becomes useless.

In accordance with the invention, collapsible tubes and other containers for liquid and pasty masses made from paper, millboard, and the like materials having a neck formed in one piece with the body or skirt of the container are manufactured without twisting, by tapering in the body of the container, in a manner which ensures that the finished container will withstand any ordinary strain, the essential feature being that the tapered-in neck is provided with a ring which holds the latter in shape. This ring thus holds together the contracted portion at the transition from the body or skirt of the container to the neck proper and also this neck itself, so that only radially disposed folds or pleats become formed, and these are prevented by the ring from becoming opened however high the pressure exerted for the purpose of extruding the contents. This ring, which may be made from any suitable resistant material such as metal, artificial horn, synthetic resin, cardboard, or the like, may also at the same time serve as a packing for the closure cap to be applied to the outer end of the neck. In this manner hardening of any of the contents of the tube which may find its way into the screw threads between the neck of the tube and the closure cap is effectually

prevented, and with it the objectionable sticking together of these two parts which is otherwise apt to occur. The tube shell, that is to say the skirt portion and the neck portion, are formed in any desired manner, for example by wrapping paper, "Cellophane," millboard, or the like strips or plies, and if desired rendered gas- or liquid-tight by coating with varnish, fabric, "Cellophane," metal foil, or the like. The shell is stuck with the aid of water- or oil-proof adhesive. Screw-threading or any other suitable closure element is fitted in any desired manner to the neck of the tube, or pressed or cut in the material of the tube neck itself. It is also possible to provide a thread for a screw closure cap on the smooth tube or container neck made from any desired material, by helically winding wire around the neck and securing it in position by overlaying it with a covering which is fluid-tight and capable of adapting itself to the wire helix.

In further development of the invention it is also possible to fit on to the neck a cap carrying the screw thread or other securing means for the closure element. In this case the cap may take the place of the ring for holding the reduced and neck portions of the tube together or be employed in conjunction with this ring; the cap and ring may also be made as a single unit from the same material. The cap carrying a closure element may also be secured to the body of the container by means of indentations, recesses, ribs, or in any other suitable manner, and if desired, for the purpose of still further improving the adhesion, these parts may be stuck together, for example by means of a resin solution. To obtain still greater security of attachment the cap may also be provided with a collar portion which overlaps the upper or shoulder portion of the container, and which is likewise secured to the body of the container by means of an adhesive or of suitable interlocking elements such as ribs, projections like the teeth of a grater or the like. The cap may also be provided with an extension which re-enters and lines the neck of the container, an arrangement which not only ensures very reliable attachment of the cap to the body of the container but also at the same time provides a particularly neat and smooth outlet for the contents of the container or tube. Indentations or the like may be provided in this case also for the purpose of still further securing the cap in position and preventing the same from turning. The re-entrant extension on the neck of the con-

tainer may also be of greater length than the neck itself, the additional length being divided up into flaps which may be expanded, with the aid of a suitable instrument, so that they fit against the inside surface of the shouldered portion of the body of the container and thus lock the closure in place, so that it can not be torn away from the container body. At the same time, in order still further to increase the security of attachment, the cap may again be provided with a collar portion fitting over the outside of the shouldered portion of the body of the container, so that the cap grips the said shouldered portion from both sides. The collar portion and the inside flaps of the cap may then be provided with corresponding indentations or prominences engaging similar elements on the wall of the container.

Instead of providing the cap with external screw-threading it is also possible to provide female threading on the re-entrant extension lining the neck of the container, for the reception of a screw stopper as closure member. In many cases it may be desirable to make the cap of an outer and an inner portion, and to secure these two parts to the neck of the container in any desired manner, for instance by providing a screw thread on the part lining the neck, for engagement by threading provided on the outer part.

The two parts of the cap may also be fashioned after the manner of the known two-part eyelets which are connected together by inter-engagement and rolling or turning-over of the one part. This form of attachment is mainly suitable for collapsible tubes which are so designed that it is possible to get at both sides of the neck portion with the tools required for fitting and spreading these eyelet-like parts.

Instead of making the closure caps, which may consist of metal or other suitable material such as for example synthetic resin or the like, separately and independently, and subsequently fitting them to the neck of the container, these parts may also be formed in situ on the neck of the container from plastic setting masses, such as for example synthetic resin or the like. Instead of plastic masses or compositions there may also be employed for this purpose metal alloys of low melting point. The application of the plastic or molten masses to the neck of the container may be effected by molding, casting, spraying, or in any other suitable or convenient manner.

The closure for containers, and more particularly for collapsible tubes, in accordance with the invention, may also be produced by pressing on to the neck of the container a ring of metal or other material for the formation of the cap. Simultaneously with the pressing on of this ring there may also be formed the screw threading, and if desired also the beading which overlaps the end of the neck.

In the case of the forms of construction in which the neck is clasped from both sides by the cap, or in which a collar portion is provided for the attachment of the cap to the body of the container, the neck portion may also be suitably shortened or even dispensed with altogether.

Several forms of construction, and modifications thereof, embodying the principle of the invention, are shown by way of example in the accompanying drawing in which like parts are designated by like reference numerals throughout, and in which:

Fig. 1 shows, in longitudinal section, the neck

end portion of a collapsible tube constructed in accordance with the invention.

Fig. 2 is a modification of the invention as illustrated in Fig. 1.

Figs. 3, 3a, 3b and 3c show diagrammatically several cross-sectional shapes for the outlet aperture of the tube.

Fig. 4 shows in transverse section, a further modification of the neck of the collapsible tube in accordance with the invention.

Figs. 5, 6, 7, 8 and 8a illustrate various forms of construction of the invention in which the cap embraces the neck of the tube from the outside.

Figs. 9 and 10 illustrate various forms of construction of the invention in which the neck of the tube is lined on the inside.

Figs. 11 and 11a show a further modification of the invention as illustrated in Figs. 5, 6, 7, 8 and 8a.

Figs. 12, 13 and 13a show further forms of the invention as illustrated in Figs. 9 and 10.

Referring to Fig. 1 of the drawing, 1 denotes the body of the container made from paper, millboard, or the like, which may or may not be coated with metal foil or be made from painted or otherwise coated and pressed material. The transition from the skirt of the tube to the neck of reduced section is formed by the conical portion 2 having radial inwardly projecting ribs 2'. The spreading of the tapered-in neck of the tube is prevented by the provision of a ring 3 made from wood, metal, galalith, millboard, paper, or the like. 4 denotes an impressed or cut-in screw-thread. This thread may be molded simultaneously with the manufacturing of the tube, and then coated or impregnated with a mass or composition which sets or hardens. For the purpose of increasing the strength of the neck and thread there is provided a re-entrant portion 5 (Fig. 1). Instead of this re-entrant portion 5 there may also be glued, clamped, or molded in, as shown in Fig. 2, a liner 6 made from wood, millboard, paper, metal, galalith, or the like, having various profiles, as shown in Figs. 3, 3a, 3b and 3c to determine the cross-sectional shape of the column of material extruded from the tube when in use.

Fig. 4 shows, in section, the neck of a bottle or tube to the smooth neck portion 7 of which, made from any desired material, there is applied a wire helix 8 which is held in place by a covering of any material which adapts itself to the turns of the wire and adheres to the smooth neck 7, for instance paper impregnated to resist the material contained in the tube. The closure cap 10 is provided with the female thread for engagement by the wire helix 8.

Figs. 5-13 show closures with caps mounted on the tube or container neck as carriers for the screw threading or other closure elements.

Figs. 5, 6, 7, 8, 8a, 11 and 11a show forms of construction in which the cap embraces the neck from the outside, while Figs. 9, 10, 12, and 13 show forms of construction in which the neck is lined on the inside also by an extension on the cap. All these figures show the head portion of a container or tube in section, and the same parts are denoted by the same reference numerals throughout.

The tube or container body 1 (Fig. 5), made for example by winding from a plurality of layers of paper, is suitably conically tapered at the upper end where it merges in the neck 7. On to this neck 7 there is fitted a cap 11 of metal, synthetic resin, or the like material, which is provided with screw-threading 12 for engagement

with the female threading on a closure cap which is not shown in the drawing. The cap or ring 11 is secured in position on the neck 7 either by being merely pressed on or by being stuck thereto with the aid of a suitable adhesive.

In the form of construction shown in Fig. 6 the flared portion of the cap or ring 11 is provided with snags 13 which penetrate into the material of the body of the tube and thus anchor the ring in position and prevent it from becoming rotated relatively to the body of the tube.

A further modification is shown in Fig. 7, in which the cap or ring 11 is provided with a collar portion 14 bearing against the tapered portion of the tube. Ribs or indentations 15 again serve to clinch these parts together.

Figs. 8 and 8a show a further modification in which the cap, as can be seen from the cross-sectional view given, is provided with longitudinal ribs or indentations 16.

Similar ribs are employed in the form of construction shown in longitudinal and in transverse sections in Figs. 11 and 11a, respectively, in which the inwardly extended cap or ring 11 is provided with inwardly extended grooves 17.

Fig. 9 shows a form of cap or ring 11 which is provided with an extension 18 lining the interior of the neck 7. This form may also if desired be provided with a collar portion 14.

A similar form of construction is shown in Fig. 10, in which the cap or ring 11 is provided with an external collar portion 19, while the extension 18 is provided with flaps 20 which bear against the inside of the wall 2 of the container. Corresponding indentations 21 and prominences 22 on the collar portion 19 and flaps 20 serve to clinch the ring member on to the body of the container, so that the neck 7 may be shortened or even dispensed with altogether.

Fig. 12 shows a further modification, in which the cap or ring member 11 is provided with any desired form of clinching projections instead of with screw-threading, while the extension 18 is provided with female screw threading 24 for the reception of a screw stopper as closure member proper. The clinching projections are denoted by 23.

Fig. 13 shows a further form of construction in which the closure is formed of two separate parts, namely a cylindrical threaded part 25 and an inner likewise cylindrical part 26, which parts are fitted one within the other in the manner of two-part eyelets and united together at 27 by rolling or beading. Provided the flared extension 28 on the part 26 be of suitable size the neck 7 of the tube may be partly or entirely dispensed with in this form of construction also. Instead of the threaded sleeve 25 there may also be em-

ployed a wire helix 25a, (see Fig. 13a), the latter being supported against the conically tapered portion of the tube or against a collar piece fitted thereto.

I claim:

1. In a container made from material of the nature of paper, millboard, and the like of the type having a neck formed in one piece with the body, at least two annular members fitted over the said neck cooperating with each other and with the neck to keep the neck and the upper part of the body of the container in shape, one of said annular members serving as a packing for a closure member.

2. A container as claimed in claim 1, in which one of said annular members consists of a helix of wire applied to the smooth exterior of the said neck and secured thereto by means of a covering of deformable fluid-tight material.

3. A container as claimed in claim 1, in which the said annular members consist of an outer wire helix and an inner liner, the said helix and liner being fastened together and to the neck of the container by inter-engagement.

4. A container as claimed in claim 1, in which the said annular members consist of an outer threaded sleeve and an inner liner, the said sleeve and liner being fastened together and to the neck of the container by inter-engagement.

5. In a container made from material of the nature of paper and the like, having a neck formed integral with the body, a reentrant extension formed integral with said neck, an annular member fitted over said neck and adapted to retain the neck and the upper part of the body of the container in shape, and said member being formed to serve as a packing for a closure member.

6. A container as claimed in claim 1, in which the annular members consist of an outer helically shaped member and an inner liner, said helically shaped member and liner being secured together and to the neck of the container by a rolled over extension formed on said liner and adapted to securely engage said annular members.

7. A container as claimed in claim 1, in which one said annular member consists of a helix of wire secured to the exterior of said neck.

8. A dispensing tube made from material of the nature of paper, millboard and the like comprising a neck and shoulder integral with the tube body and formed of radially pressed folds of said material, and an annular member fitted over the said neck and adapted to keep the neck and the upper part of the body of the container in shape, and at the same time to serve as a packing for a closure member.

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