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PACKAGING CONTAINER

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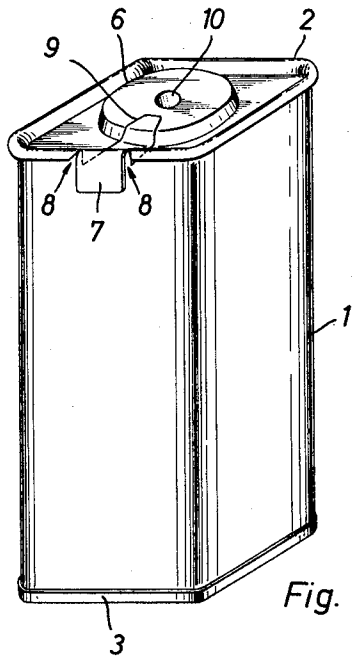


Fig. 1

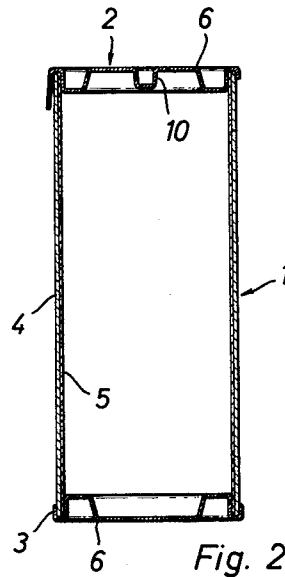


Fig. 2

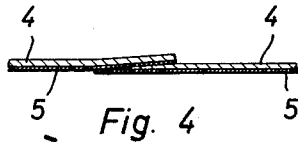


Fig. 4

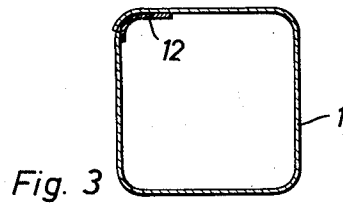


Fig. 3

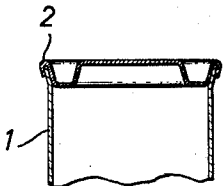


Fig. 5

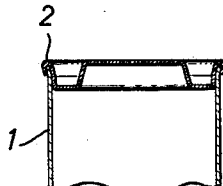


Fig. 6

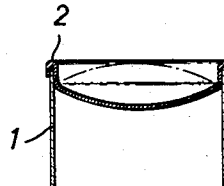


Fig. 7

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PACKAGING CONTAINER

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This invention is concerned with a packaging container comprising a tubular case having an overlap seam and top and bottom covers.

In known packaging containers of this type, the covers as well as the case are made of coated cardboard, the covers being inserted in the base by the formation of simple or U-shaped folds upstanding perpendicularly with respect to the plane of the covers and being heat sealed to the case. These containers are difficult to manufacture in an air- and liquid-tight condition, especially when the machine performing this production has to have a high rate of output.

The reason for this lies mainly in the manufacture of the covers which has hitherto been usual and which involves folding. In this case, folds are produced in the perpendicularly upstanding margins and corners of the covers from the material which is surplus at these points, these folds then forming fine permeable channels in the finished container.

A second reason lies mainly in the difficulty of heat sealing the corners of the folded margins of the covers to the case at a pressure which is uniform at all points. These corner joints may initially be tight in many cases on completion of the package, but often do not have the rigidity which is necessary, for example, to absorb vibration which occurs during transportation, without the package leaking.

The purpose of the invention, therefore, is to provide a cheap packaging container which is easy to manufacture and not only air- and liquid-tight, but is also easy to open and to empty.

The above specified package container, according to the basic feature of the invention, comprises a tubular body case made of a composite, heat-sealable material, for example cardboard laminated or coated with a synthetic material, and formed with an overlap seam, and top and bottom covers closing the ends of said case, these covers being made of thermoplastic sheet material, for example polyethylene, polystyrene, or polyvinylchloride, being shaped while in plastic condition, and each having a folded margin secured to the case by heat sealing.

According to a further feature of the invention, the folded margin of the or each cover is outwardly inclined at an angle to the main plane of the cover, to secure advantageous sealing at the parts where the case and covers are joined together.

Furthermore, to this end, according to yet a further feature of the invention, the folded margin is of U-shape in cross section with the limbs of the U spaced by substantially the thickness of the wall of the case with the outer limb of the U shorter than the inner limb, and with this inner limb applied against a heat sealable inner layer of the case. This allows for simpler sealing in a way which is to be described in more detail in the following.

The packaging containers of the type according to the invention may advantageously be equipped with means allowing them to be opened quickly. To this end, according to a further feature of the invention, the folded margin of one of said end covers is furnished with an outstanding tear-off flap for forming a tear opening in the cover. Preferably score lines are formed at the two sides

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of the flap at the junction between this flap and the folded margin, and these score lines are connected by a further score line, thereby determining the contour of the eventual tear opening.

Since the covers of the packaging container according to the invention may be made of thermoplastic sheet material and may be formed while these foils are in the plastic condition, other opening means can be very easily formed in the packaging container. Thus, for example, at least one of the container covers may have, either in addition to, or in place of, the above mentioned tear-off flap an indentation, which either projects inside the case or is outstanding from the cover and which is produced by deep drawing the cover wall, so that this indentation has a wall which is thin compared with the remaining wall of the cover and can, therefore, be easily pierced by means of any implement, for instance by a drinking straw, to allow the contents of the container to be extracted.

If the present packaging container is to be used for vacuum packaging, according to a further feature of the invention, the covers are of a form, for example each having a central portion of reduced thickness, which allows them to be bulged outwards. After filling and closing a packaging container provided with covers of this type, the wall of each cover is deformed on to the contents of the container on evacuation of the latter, so that the contents of the container are firmly enclosed and maintained by all the walls of the container in a sealed manner.

Further features, particularly as regards the construction and form of the tubular case of the container, are disclosed in the following description of examples of embodiment of the invention with reference to the accompanying diagrammatic drawings.

FIGURE 1 is a diagrammatic view of a first embodiment of a closed packaging container,

FIGURE 2 is a longitudinal section through the container according to FIGURE 1,

FIGURE 3 is a cross section through the case of the container of FIGURE 1,

FIGURE 4 is an enlarged section through the longitudinal overlap seam of the container case, and

FIGURES 5 to 7 are partial longitudinal sections of further forms of embodiment of covers secured to the case.

The chosen embodiments of the invention involve a packaging container which is to receive filling commodities of various types, particularly liquids. The container comprises a tubular case 1, a top cover 2 and a bottom cover 3, the packaging material used for the case 1 being a composite material, for example cardboard 4 laminated with polyethylene 5, and both covers 2 and 3 being made by hot shaping a synthetic material foil, for example polyethylene, polystyrene, polyvinylchloride or the like.

The case 1 can be formed either from a single blank which is pre-scored in the region of the longitudinal edge of the container or from a blank web by folding around a mandrel, the longitudinal seam being formed as an overlap. Preferably, to increase the stability and rigidity of the packaging container, the overlap seam is disposed in the region of one of the longitudinal corners (FIGURE 3).

In the case of containers which are to be filled with liquids, to prevent penetration of the liquid into the cardboard layer 4 at the inner edge of the overlap seam this seam is covered on the inner side with a strip 12 of polyethylene or the like, and the strip is heat sealed with the lamination 5 of the two edges of the blank at the overlap seam. On the other hand, as indicated in FIGURE 4 it is possible, without difficulty, to remove the carrier layer 4 of the composite material of the blank in the region of the inner marginal area of the overlap seam, for example by abrasion, so that the lamination 5 lies against the inner side of the opposite marginal area and is heat sealed

and adhered to this. In the present embodiment, the carrier layer 4 is completely ground off at the leading part of the said marginal area and is ground off, partially obliquely, at the adjoining part (FIGURE 4).

The bottom cover 3 is fastened to the lower end of the tubular case 1, and the top cover 2 to the upper end. Both covers 2, 3 are substantially the same. The contour shape of the covers 2 and 3, produced for example by hot shaping, corresponds to the cross section of the case 1 and, in the present embodiment, is a square with rounded corners.

The margins of the covers 2 and 3 are each in the form of a U-shaped fold standing perpendicularly or approximately perpendicularly to the plane of the cover, the limbs of each U being spaced from each other by an amount corresponding approximately to the thickness of the packaging material of the case 1. Preferably the outer limb of the U-shaped fold is shorter than the inner, so that, when the covers 2 and 3 have been placed on the case 1, the U-shaped folds thereof overlap the edge of the case 1, and heat sealing of the inner limb with the lamination 5 of the case 1 can be carried out by means of sealing jaws, without the latter coming into contact with the outer limb. This feature is of value particularly for covers of polyethylene, since this material melts throughout its full thickness during heat sealing, and parts thereof which remain adhered to the sealing jaws form a residue which does not permit a trouble-free sealing.

A plunger may be applied against the inner limb of the U-shaped fold to serve as a counter-support for the sealing jaws which engage the fold from the outside, the plunger being cooled so as to prevent adhesion of the inner limb of the fold thereto.

As opposed to the form of the covers 2 and 3 illustrated in FIGURE 2 in which both limbs of the U-shaped folds are perpendicular to the plane of the respective cover, that is parallel to the straight wall of the case 1, in the form of cover shown in FIGURE 5, the U-shaped fold is arranged with its inner and outer limbs outwardly inclined at an angle. In this case when the covers 2 and 3 are placed on the case 1 the outer marginal part of the latter is similarly outwardly deformed, and the inner sides of the case 1 are pressed against the U-shaped folds of the covers in such a way that the package is very well sealed.

In the embodiment according to FIGURE 6 only the upper part of each fold is outwardly inclined in the manner shown in FIGURE 5, while the lower part is arranged perpendicular to the cover as in FIGURE 2.

A projection 6 which may, for example, be of frusto-conical form is provided in each of the covers 2 and 3 to stiffen the latter (FIGURES 1, 2, 5 and 6).

In the embodiment illustrated in FIGURE 7 which is intended to be a vacuum package, the walls of the covers are assumed to be relatively thin compared with the previous embodiments, and the wall of the cover to be formed so as to be easily bulged upwards into the shape shown by the broken lines in FIGURE 7. Thus, by drawing off the air which remains in the container after filling thereof, the thin wall of the cover is resiliently pressed by the atmospheric air pressure on to the contents of the package.

The edge of the top cover 2 may be provided with a tear-off flap 7 or the like for opening the container (see FIGURE 1). Scored incisions 8 are preferably provided on both sides of this tear-off flap 7 at the edge of the cover and are joined by a scored line 9, which is for example formed by stamping, and thus outline the tear-off opening in the container. The cover 2 is torn along the scored line 9 when the tear-off flap 7 is pulled, thus forming an opening through which the filling commodity may be poured.

For containers with liquid contents, a discharge indentation 10 may be molded, for example by deep drawing, in the center of the cover 2. This indentation 10, which is for example of frusto-conical or cylindrical form, is drawn so deep that the wall thereof is sufficiently thin to be easily

pierced by a drinking straw. Naturally, the piercing can be performed by any other object if the container is flexible and is to be emptied by the application of pressure to the walls thereof. The discharge formation on the cover may instead stand out from the container, so that opening of the container can be performed by cutting it off with a pair of scissors or a knife.

We claim:

1. A container comprising a hollow case of determinable cross-sectional shape and having an open end, said case being constituted of a laminated structure including an outwardly facing base layer which is substantially unaffected by heat and an inwardly facing thermoplastic layer on said base layer, a cover for the open end of the case, said cover being constituted solely of a continuous single sheet of thermoplastic material shaped to correspond to the open end of the case and including a peripheral portion of inverted U-shape, said cover including legs of unequal size defining said peripheral portion, one of the legs being a longer leg and being inside said case and lying in face to face heat sealed relation with the inwardly facing thermoplastic layer of the case, the other of the legs being a substantially shorter leg and lying outside said container in face to face relation with the base layer, said longer leg being adapted for being heat sealed to said thermoplastic layer by the application of heat to said base layer in a zone below the shorter leg of the cover and next to the longer leg, said cover including a deformed central stiffening portion which projects to a level common with that of peripheral portion.

2. A container as claimed in claim 1 comprising a tear-off flap joined to said cover and projecting in part therefrom, said cover being provided with score lines adjacent the flap and scored incisions in the edge of the cover to permit opening of the cover along said score lines upon lifting of said flap to permit emptying the contents of the container.

3. A container as claimed in claim 1 wherein said cover is flexible and interiorly of said periphery is of a larger area than that of said open end so that said cover is invertible between an inwardly-bowed position and an outwardly-bowed position.

4. A container as claimed in claim 1 wherein said case has an abrupt outwardly flared mouth at said open end, said legs of said cover being inclined at least in part to accommodate said case at said outwardly flared mouth.

5. A container as claimed in claim 1 comprising a locally deep drawn indentation in said stiffening portion of said cover, said cover in said indentation being of reduced thickness whereby said indentation is locally weakened.

6. A container as claimed in claim 1 wherein said central stiffening portion is of circular extent, said cover extending in planar fashion from the stiffening portion to the longer of the legs.

7. A container as claimed in claim 6 wherein said stiffening portion is frusto conical.

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