Dec. 17, 1968 S. O. S. STARK ETAL 3,416,716

CONTAINER OPENING DEVICE COMPRISING A SLOT AND A STRIP PASSING THROUGH IT

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Fig.1

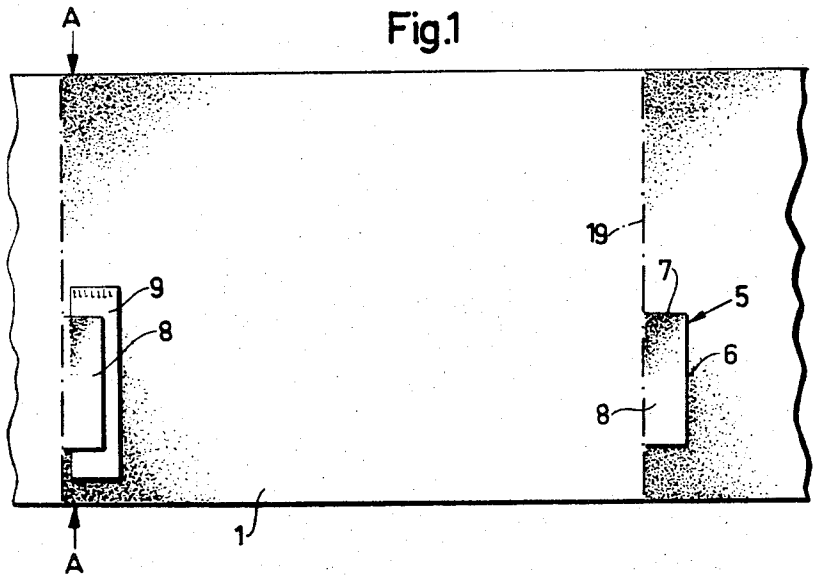
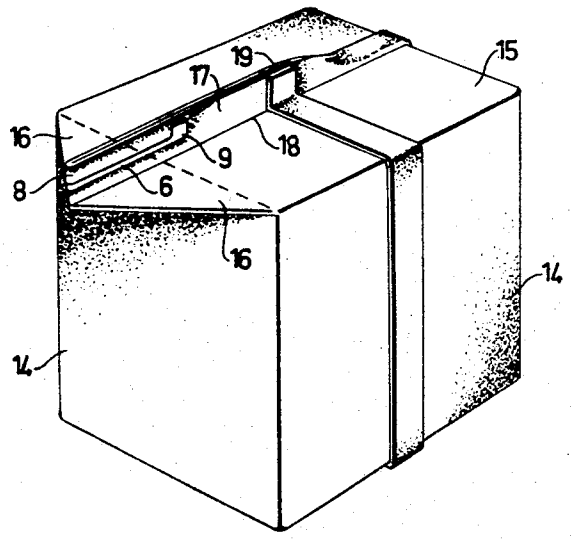


Fig.2



INVENTORS
HANS G.W. MELLE
THORSTEN L. LINDH
SVEN O. S. STARK
BY Earle R. Marden
ATTORNEY

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Fig.3

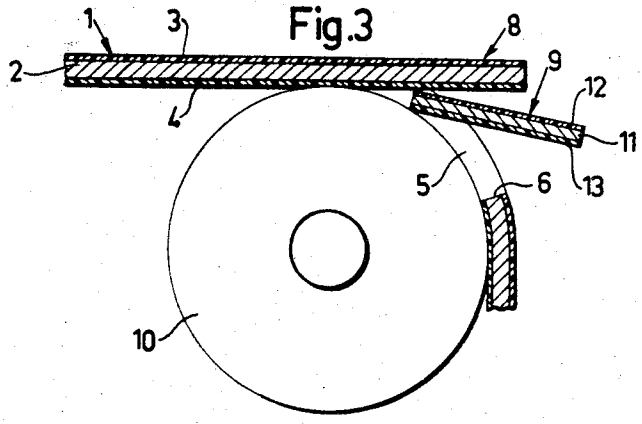


Fig.4

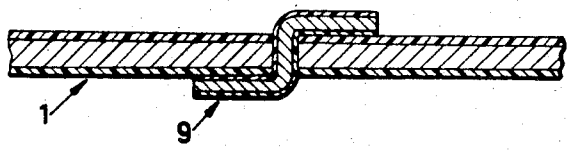


Fig.5

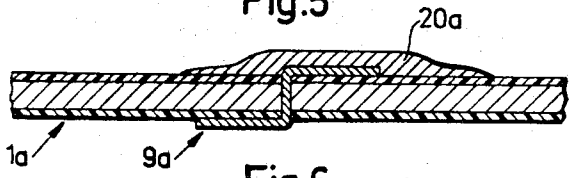
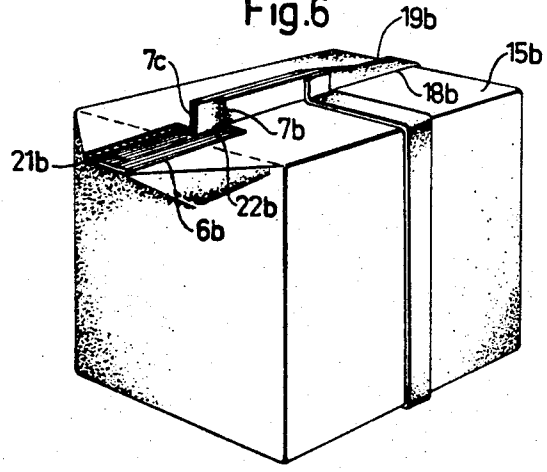


Fig.6



INVENTORS
HANS G. W. MELLE
THORSTEN L. LINDH
SVEN O. S. STARK
BY
Earle R Marden
ATTORNEY

United States Patent Office 3,416,716
Patented Dec. 17, 1968

3,416,716

CONTAINER OPENING DEVICE COMPRISING A SLOT AND A STRIP PASSING THROUGH IT

Sven Olof Soren Stark, Qvantenborgsvagen 53, Hans-Georg Wilhelm Melle, Sunnanvag 180, and Thorsten Lennartson Lindh, Ferievagen 10, all of Lund, Sweden

Filed July 1, 1966, Ser. No. 562,300
Claims priority, application Sweden, July 8, 1965, 9,000/65
6 Claims. (Cl. 229—7)

ABSTRACT OF THE DISCLOSURE

A container formed of sheet material having an opening means. The opening means comprises a U-shaped slot forming a tongue in the sheet material and a separate strip passing through the slot and being secured to one side of the tongue and to the opposite side of the sheet.

The present invention relates to an opening device for packages or the like and comprising a slot passing through the packaging material, the characteristic feature of the invention being a strip passing through the slot and being attached to either side of the packaging material.

This strip is in the first place meant to have two functions, viz. to seal the said slot and in particular its cut surfaces, and to facilitate the opening of the package by acting as a pulling flap.

Preferably, the opening device according to the invention is meant to be used in connection with packages of the kind manufactured by pressing a tube flat and sealing it transversely and possibly by shaping it thereafter to for instance parallelepipedic form. This is achieved by giving a U-shape to the slot, whereby there is formed a tongue beneath which the strip is inserted in such a way that its ends will project through the respective legs of the U. The U-shaped slot is placed in such a relation to the lines along which the transverse sealing and the separation of the packages take place that the bottom of the slot will lie parallel to the said lines, which are preferably caused to extend across or adjacent the free ends of the legs of the U.

Preferably, both the packaging material and the strip have heat-sealable plastic on both sides, whereby the strip can be attached to either side of the slot by heat-sealing between two heating jaws, which may e.g. be covered with Teflon. The result is that the strip will seal the cut surfaces of the packaging material, whose carrying interior intermediate layer normally consists of a fibrous material which will easily absorb liquid. However, the carrying material of the strip is a material which does not absorb liquid, e.g. regenerated cellulose or the like. Alternatively, on that portion which is located inside the package the strip may be covered with a plastic layer or the like, which together with a corresponding interior layer of the package is allowed to form an inner lining which is completely impervious to liquids. In the latter case, the material for the strip may be selected irrespectively of the sealing function.

When the slot is U-shaped the insertion of the strip may be facilitated if the packaging material while still in the nature of a web, i.e. prior to the tube forming operation proper, is laid in such a way over a roller that the tongue formed by the slot will project tangentially from the roller, at the same time as the legs of the U coincide with the periphery of the roller.

Further objects and advantages of the invention will be apparent from the accompanying drawings, which show a couple embodiments of the invention, chosen by way of example, and where:

FIGURE 1 shows part of a web of a packaging material prepared for the manufacturing of packages according to the invention;

FIGURE 2 shows, on a larger scale, a package made from the web shown in FIGURE 1;

FIGURE 3 shows, on a still larger scale, how the web according to FIGURE 1 can be laid over a roller for facilitating the insertion of a strip into the U-shaped slots;

FIGURE 4 shows a section through the web where the said strip has been attached to both sides of the slot by heat-sealing;

FIGURE 5 shows a section corresponding to that shown in FIGURE 4 in an alternative embodiment;

FIGURE 6, finally, shows an opened package differing somewhat from the closed package shown in FIGURE 2.

The web **1** shown in FIGURE 1 and consisting of a packaging material, consists, as is shown in greater detail in FIGURE 3, of a carrying material **2** of e.g. paper, which is coated on both sides with plastic layers **3** and **4**. In the web **1** there are punched U-shaped slots **5** whose bottoms are designated **6** and whose legs are designated **7**. Through these U-shaped slots **5** there are formed tongues **8** beneath which strips **9** are inserted, as shown at the top in FIGURE 1. The insertion of the strips **9** beneath the tongues **8** is preferably facilitated, as shown in FIGURE 3, by placing the web **1** around a roller **10**, whereby the strips **8** will project tangentially from the roller. The strips **9** preferably consist of a non-fibrous carrying layer **11**, e.g. regenerated cellulose, which is coated on both sides with layers **12** and **13** of heat-sealable plastic. Thereby the strip **9** can be attached to the web **1** on both sides of the slot by heat sealing between e.g. Teflon covered heating jaws, whereby the opening device will obtain the appearance shown in FIGURE 4. It should be observed, however, that the thickness of the strip **9** has been considerably enlarged in FIGURES 3 and 4 for the sake of better clarity. The same applies to the size of the slot **5** and the strip **9** in FIGURE 1.

From the web-shaped packaging material **1** shown in FIGURE 1 there are produced packages of the kind shown in FIGURE 2 by tube-shaping, transverse sealing and suitable after-shaping operations. The package shown in FIGURE 2 consists of a parallelepipedic body which is delimited by lateral surfaces **14** and end surfaces **15**, there being shaped, at the forming of the package, double-walled triangular flaps **16** projecting from the end surfaces **15** of the package. The said flaps are normally folded inward toward the lateral walls or the end walls. As will appear from FIGURE 2, there is formed at the transverse sealing operation a sealing fin **17** extending across the end surfaces **15** and beyond the flaps **16**. The U-shaped slot **5** and the tongue **8** formed thereby are disposed, in the embodiment shown in FIGURE 2, in such a way that the bottom line **6** of the U is located parallel to the base line **18** of the fin between the said line and the upper border line **19** of the fin. The latter line, which is designated in FIGURE 1 by means of dash and dot lines, extend in the shown embodiment across the free ends of the U legs **7**. If the transverse sealing is carried out along the line marked with the arrows A—A in FIGURE 1, there will be no sealing problems. Otherwise such problems may arise precisely with regard to the free ends of the U-shaped slot **5**.

FIGURE 5 shows how a strip **9*a*** passing through a packaging material **1*a*** can be sealed on the inside of the package by means of a coated layer **20*a***. This may be advisable where the strip **9*a*** does not consist of a completely liquid-repelling material or where it is desirable to achieve additional security against leakage, e.g. when the opening device is unsuitably located on the package.

Finally, FIGURE 6 shows a package which essentially agrees with the package shown in FIGURE 2. However,

it differs from the said package as a result of the bottom line **6***b* of the U-shaped slot having been placed on the end surface **15***b* proper, i.e. outside the base line **18***b* of the fin **19***b*. Furthermore, the legs **7***b* and **7***c* of the U-shaped slot have been displaced laterally in relation to each other, whereby the package has obtained an opening which can be said to be divided into two parts, viz the emptying opening **21***b* proper and a venting slot departing therefrom and facilitating the emptying operation.

O course, the invention is not restricted to the embodiment discussed above but may be varied within the scope of the claims. Thus, FIGURE 4 is meant to show a transverse section through the strip **9** but may instead be considered to show a longitudinal section through it. In that case, FIGURE 4 shows how a strip can be displaced with its free ends first through the slot. It has furthermore been assumed that the material used above is laminated with heat-sealable plastic. Alternatively, however, it is possible to apply the invention to uncoated materials, in which case the sealing can be achieved by means of adhesive or the like. In addition, the shape and position of the slot may, of course, be varied in dependence on the package to which the invention is to be applied. Finally, it has turned out to be advisable in certain cases with regard to the embodiment shown in FIGURE 6 to let the opening **21***b* and **22***b* occupy the opposite position on account of tensions in the fin **19***b*.

That which is claimed is:

1. Sheet material with an opening device therein comprising: a supply of sheet material having at least one thermoplastic side, a substantially U-shaped slot through said material thereby forming a tongue in said material and a separate strip of material having at least one thermoplastic side heat sealed to the thermoplastic side of said sheet material and located beneath said tongue and projecting outwardly therefrom, said strip of material also being sealed to the other side of said sheet material.

2. The structure of claim **1** wherein said other side of said sheet material and said strip material being thermoplastic and being heat sealed together.

3. A package formed from a sheet material having an opening device therein comprising: said package having a substantially U-shaped slot therethrough thereby forming a tongue, and a separate strip of material passing through said slot under said tongue and projecting outwardly therefrom, said strip of material being attached to both the inside and outside of said package, said package having at least one transverse seal on one end, said tongue being located at one end of said seal and extending around both sides thereof.

4. The structure of claim **3** wherein said package is parallelepipedic shaped, said slot having a portion of one side thereof substantially parallel to the top of said package.

5. A package formed from a sheet material having an opening device therein comprising: said package having a substantially U-shaped slot therethrough thereby forming a tongue, and a separate strip of material passing through said slot under said tongue and projecting outwardly therefrom, said strip of material being attached to both the inside and outside of said package, said package being parallelepipedic shaped, said package having at least one triangular shaped, double walled flap projecting from the end surface of the package, and the bottom of said U-shaped slot extends across said end surface and said flap.

6. The structure of claim **5** wherein said strip of material projects outwardly further from said tongue on one side thereof than from the other side of said tongue.

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DONALD F. NORTON, *Primary Examiner.*

U.S. Cl. X.R.

161—40, 114; 229—51