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(54) Heat sealed package and apparatus and method for making same

(57) Goods, e.g. a plurality of cans (16) or plurality of bottles in a compartmented box, are wrapped in heat-sealable, heat-shrinkable plastics film (7,10) so that access to the goods, e.g. for removal or labelling, can be obtained through openings (15) provided between bonds (12) which hold the goods in the package. The openings may comprise slots (15), as shown, or slits and may be produced by longitudinally slitting a web with optional spacing of the bonds so formed or by the use of bonds from separate supply rolls. The goods are wrapped in the film by moving the goods into a curtain of the film with subsequent sealing of the film behind them.

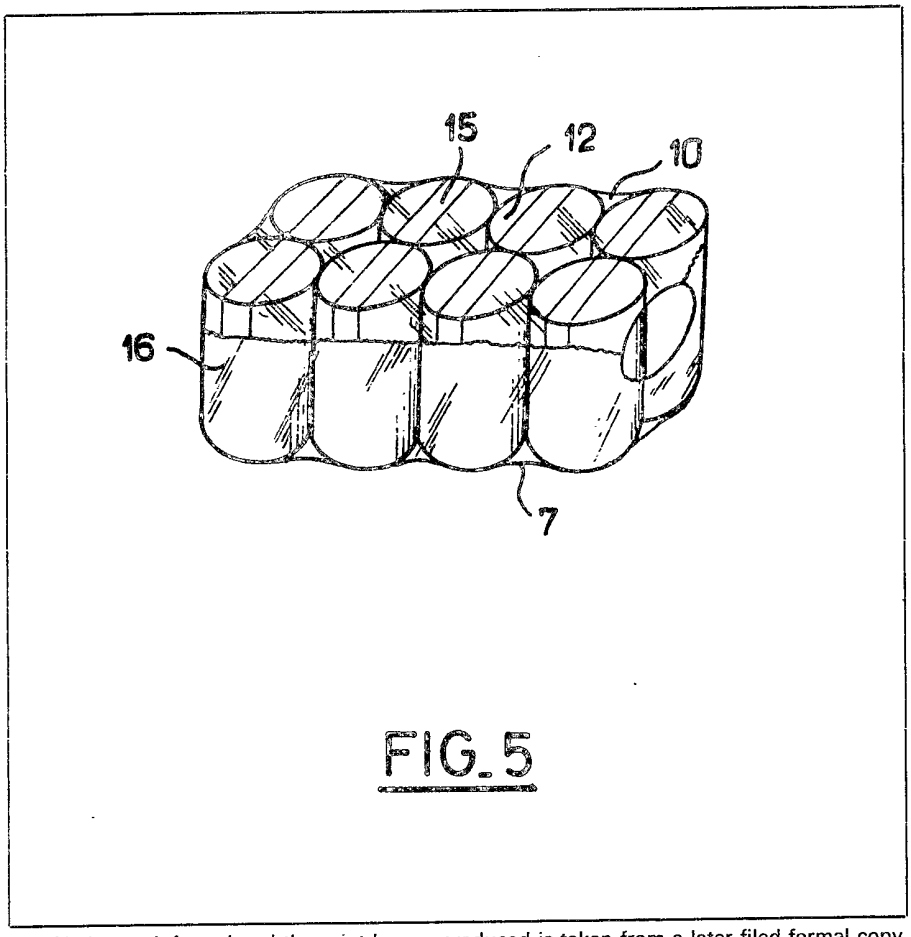

FIG.5

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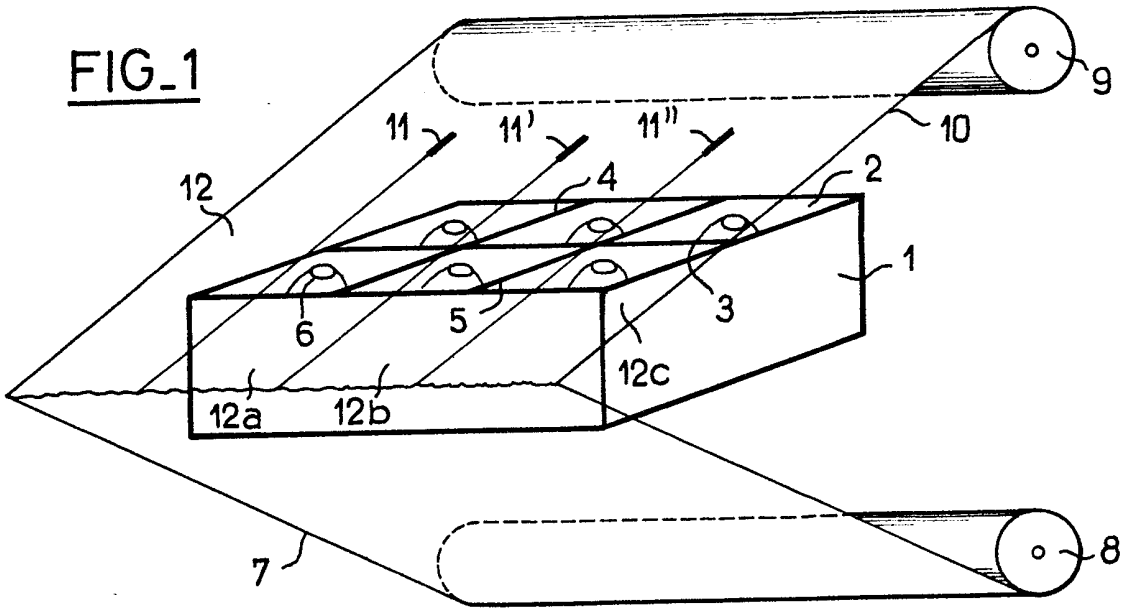
FIG_1



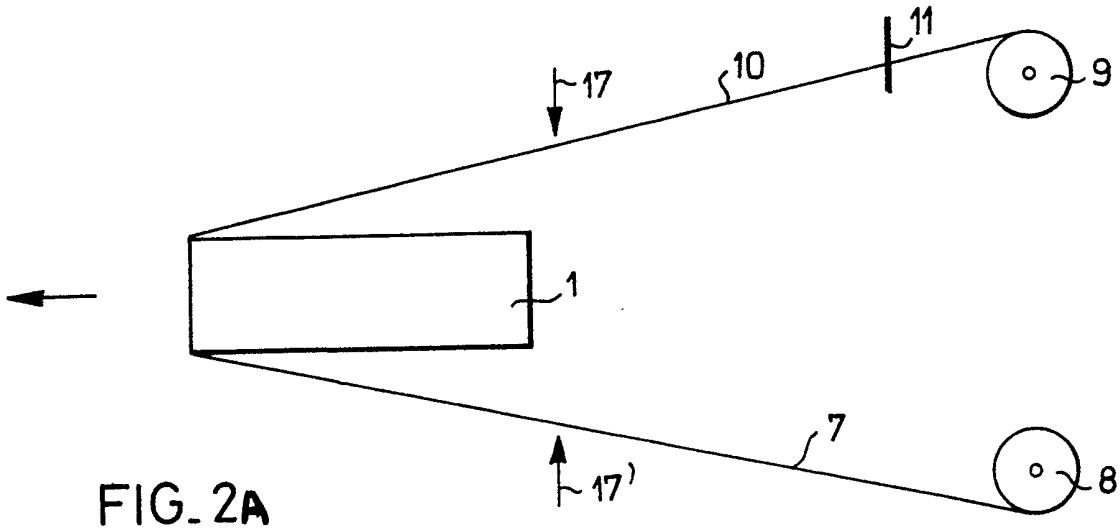


FIG_2A

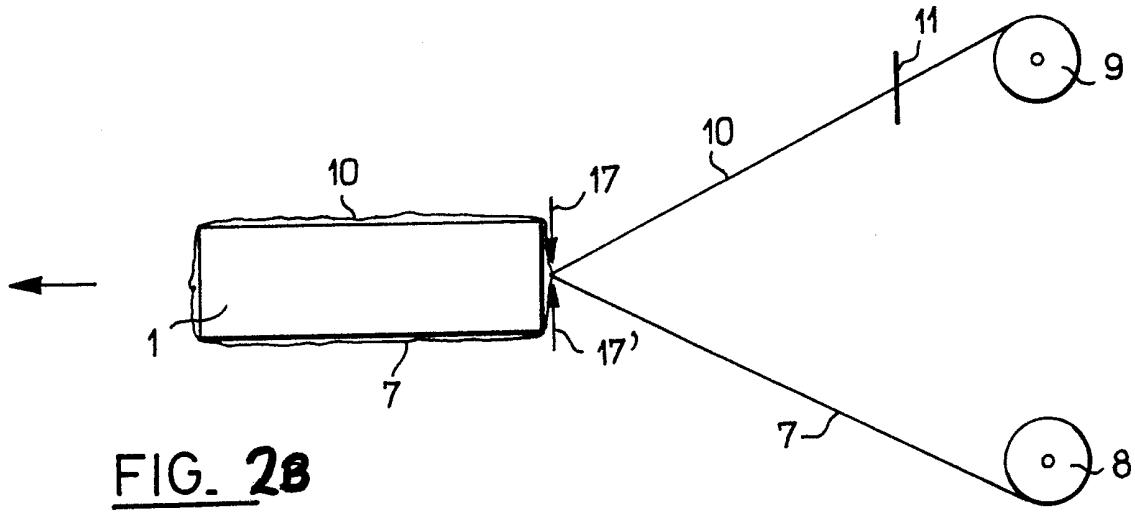


FIG_2B

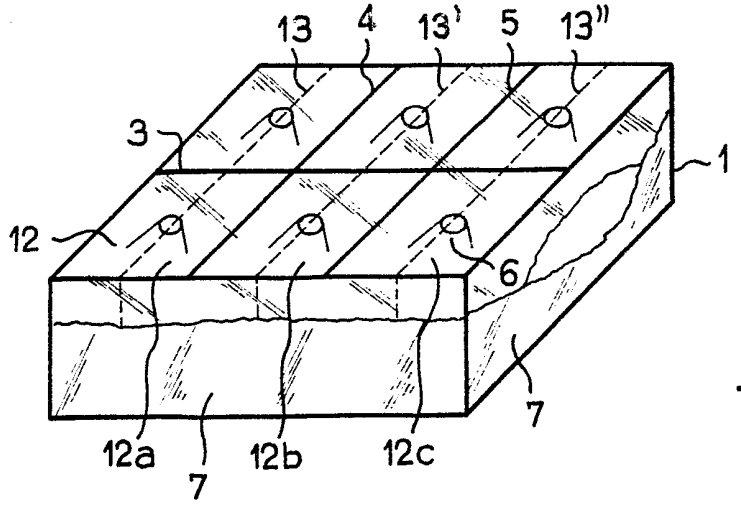


FIG_3

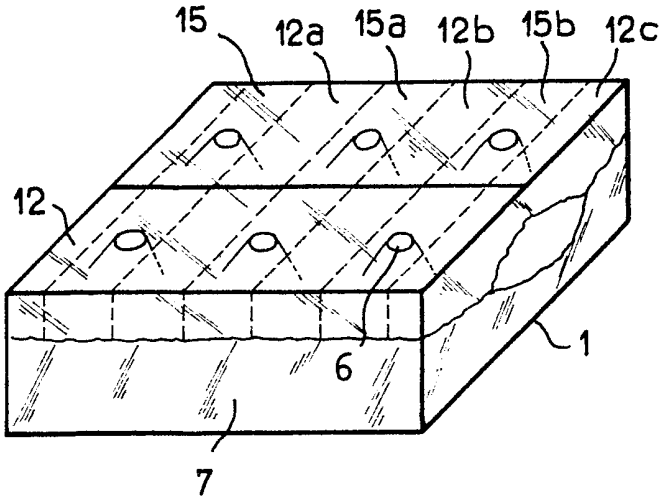


FIG_4

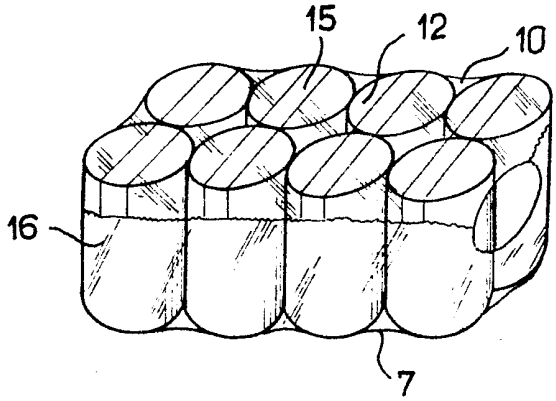


FIG_5

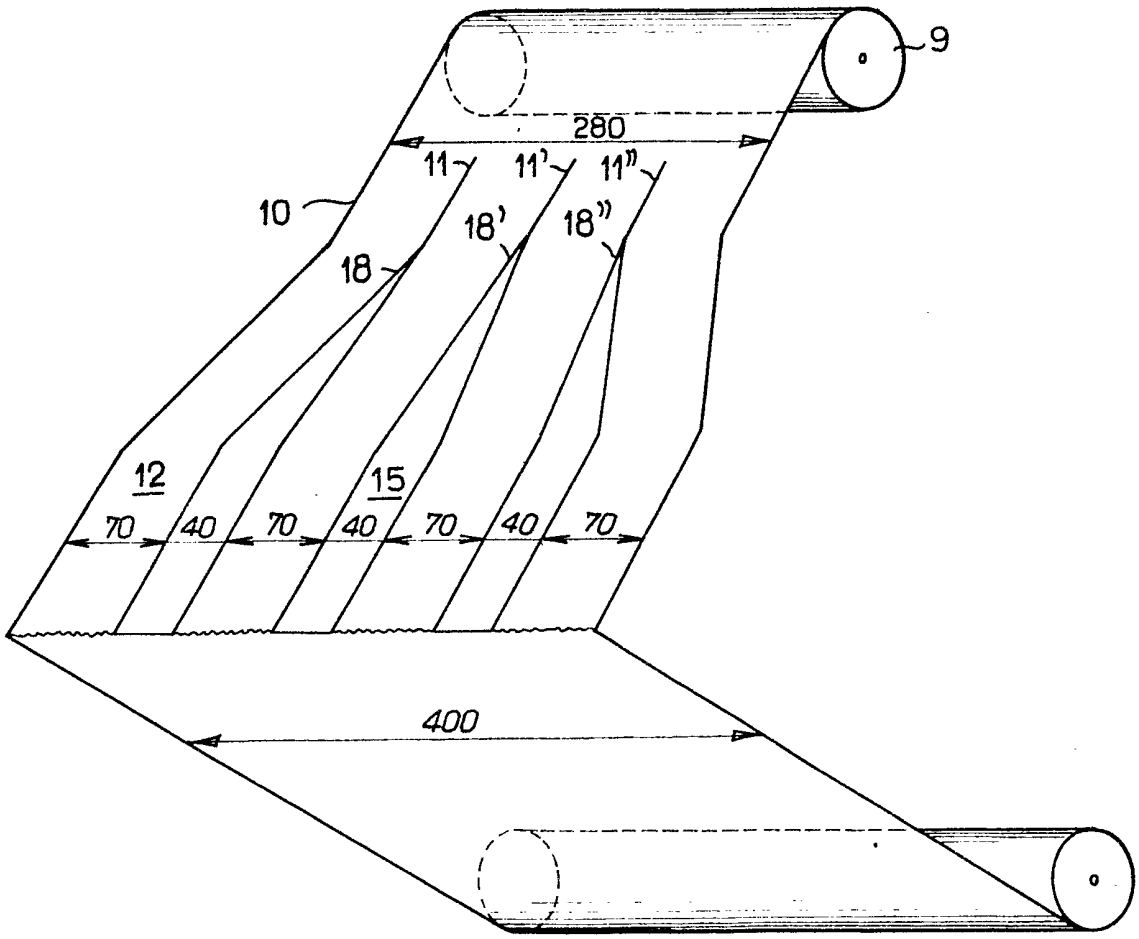


FIG_6

SPECIFICATION

The packaging of articles using heat-sealed plastics film material

DESCRIPTION

The present invention relates to a novel method of packaging various articles by means of one or more films of plastics material. It relates particularly to packaging where the film or films are heat-sealed and shrunk on to the packaged articles.

Packaging in heat-sealed plastics film is a technique which is well-known and widely employed at the present time. It is used particularly for individual articles and sets of articles, packets, boxes cases and other containers in which are put various articles to be packaged. As the plastics film surrounds the whole, it is necessary to remove it when it is desired to remove even only a single article from the packaged container. For example, if four bottles are packaged in this manner, it is necessary to remove the plastics film, in order to withdraw a single one of these bottles. After this operation, the three other bottles are no longer held securely, even though they may not be needed until later. In other words, in cases where packaging with plastics film is used for multiple articles, the security of the package ceases at the moment when one of the packaged articles is withdrawn.

The present invention provides a new way of packaging multiple articles, in which it is possible to withdraw one or more of these articles successively, without the others ceasing to be held securely, as before, by the plastics material. The advantages of this new concept are evident: an "opened" package, from which some of the articles have been withdrawn, can still be transported safely, the remaining articles being held in place as before. Another advantage is that the invention allows a label to be affixed or information to be printed directly on the articles, even though they are still packaged. On the other hand, as will appear from the description which follows, withdrawal of the packaged articles is easier and does not compromise the security of the heat-sealed plastics sheet assembly.

The new packaging process, in which a container holds several articles and is enveloped by a heat-sealed plastics film, is characterised in that interruptions, apertures or slits in the film are located adjacent some or all of the packaged articles. These interruptions or apertures have such dimensions and shapes that they do not allow the packaged articles to escape, while permitting them to be reached by hand. Because of the plasticity of the film, it will be understood that this can be moved apart, adjacent the articles, in order to withdraw them.

The packaging process according to the invention is generally similar to the standard method, which consists in surrounding the container with one or several films of plastics material and then closing up the whole by heat-sealing the films, but instead of employing only a continuous film of plastics material, at least one film containing interruptions, apertures or slits is utilized and these become located adjacent each or some of the articles placed in the container.

Depending upon the nature of the container and the articles which are placed in it, the interruptions or apertures in the packaging sheet vary in dimensions and in shape. In a particular practical embodiment, the interruptions in the film are obtained by longitudinal cutting of it, with or without increasing the width appropriately between the lines of the cuts.

The invention is illustrated by the non-limitative example of a box containing six compartments in which bottles are placed, as well as a package of eight cans without a box.

Figure 1 shows diagrammatically in perspective a box with its bottles, during the stage of envelopment with the sheets of plastics material;

Figure 2A is a view in lateral elevation corresponding to Fig. 1;

Figure 2B is smaller to Fig. 2A, but corresponds to the heat-sealing phase and severing of the sheet which has wrapped the package;

Figure 3 is a perspective view of a package containing six bottles, made according to the invention;

Figure 4 also represents in perspective a package similar to that of Fig. 3, but according to another embodiment of the invention;

Figure 5 shows an assembly of eight cans packaged directly in plastics film according to the invention;

Figure 6 is a perspective view of a packaging film cut according to one of the embodiments of the invention.

In the first example, the box 1 contains six compartments 2 formed by dividers 3, 4 and 5 in known manner. Each compartment 2 contains a bottle 6.

The lower part and the lateral walls of the box 1 are enveloped in a plastics film 7 taken from a roll 8. This envelopment is produced in known manner by advancing the box so that it pushes the film 7 towards the front of the drawing (as seen in Fig. 2A). Above the assembly, a second roll 9 is placed from which a second plastics film 10 is unrolled in the same manner as the first. Meanwhile, cutters 11, 11′ and 11″ fixed to a support, not shown, on movement of the film 10, separate it into four bands 12, 12a, 12b, and 12c. The result is that the upper open face of the box 1 receives the bands 12 to 12c, which overlay the end portions of the box and the ends of the dividers 4 and 5.

As in the customary packaging methods,

the forward end of the sheet 10 is heat-sealed to that of the sheet 7, by known means 17, 17' (Figs. 2A and 2B). After removing the container so packaged, in known manner, the package shown in Fig. 3 is obtained. Thus, as shown in this Fig. 3, after shrinkage of the plastics material, the lower part and the lateral walls of the box 1 are covered by the sheet 7, while the sheet 10 covers the upper parts of the package. The sheet 10 contains slits 13, 13' and 13'' and thus comprises 4 bands 12, 12a, 12b and 12c. The slits 13 to 13'' are located over the bottles 6 and permit withdrawal of each of them, without removal of the entire plastics sheet.

The cutter means or cutters 11, 11' 11'' can be regulated in a manner so as to produce the slits 13 to 13'', not continuously, but only to a certain length calculated in a manner so as to overlay the bottles 6. In this case, the parts of the sheet 10 which become located over the divider 3 are not slit, which increases the cohesion of the assembly.

In the example given above, the slits 13 to 13'' in practice do not form any free passages between the exterior and the interior of the package. However, in accordance with the invention, the sheet 10 can be cut in such a fashion as to obtain a certain width between the bands 12 to 12c, as shown in Fig. 4. In this drawing, areas 15, 15a and 15b are shown, which constitute apertures through which the bottles 6 can be withdrawn, if required, By way of these apertures, labels can be stuck on or inscriptions can be applied to the bottles. This embodiment is particularly suitable for articles 6 which are too large to escape accidentally from the package, the bands 12 to 12c sufficiently retaining the lateral walls of these articles 6.

It will be understood that, in place of a single sheet 10, it is possible according to the invention to employ a series of sheets, each of which forms a band 12, 12a, 12b and 12c of desired width. Each of these bands can be taken from a separate roll.

In the example of Figs. 1 to 4, the sheet 7 with interruptions is located above the package 1, but the invention also applies to the case where this sheet is applied to the base and/or to the lateral walls.

The second example, represented by Fig. 5, relates to a package having eight cylindrical cans 16 wrapped directly together in films 7 and 10. The film 10 is cut as in Fig. 4 into five bands 12, between which slots 15 are left. The latter permit direct access to the top of each can 16. It is thus possible to stick a label or print an inscription individually on to each can, after packaging them in the films 7 and 10.

Fig. 6 shows in detail the film 10 in which, during packaging the cut-out parts 15 have been produced. The device utilized for this comprises the cutter blades 11, 11', 11'', as well as means 18, 18', 18'' for separating out the bands 12 obtained and then redirecting them so as to be parallel and in the same plane, after producing the cut-outs 15 between them. By way of non-limitative example, the widths of the films and the bands formed are indicated in millimetres in Fig. 6.

CLAIMS

1. A process for packaging a plurality of articles in heat-sealable plastics film, in which one or more sheets of the plastics film material are utilized, which contain, above at least some of the articles in the resultant package, apertures in the form of slots disposed only longitudinally in the sheet or sheets.

2. A process according to claim 1, wherein the one or more sheets are unrolled in order to package the articles and the slots are continued throughout the length of the sheet or sheets.

3. A process according to claim 1, wherein the one or more sheets are unrolled in order to package the articles and the slots are discontinuous along the length of the sheet or sheets.

4. A process according to any preceding claim, in which a cut-out is left between two bands formed by each slot in the sheet and this cut-out only comprises transverse cuts in the sheet and has a width less than the greatest width of the articles.

5. A process according to any preceding claim, in which the slots are produced in the sheet during packaging of the articles as the sheet is unrolled from a location upstream of the package being formed.

6. A process according to claim 1, substantially as described with reference to the accompanying drawings.

7. A package, when made by a process according to any preceding claim.

8. An apparatus for packaging articles in shrinkable heat-sealably plastics film material, comprising heat-seal means and means for producing cut-outs in the sheet in the form of cutters placed in the path of the sheet of film material located upstream of the package to be formed, between feed rolls for the sheet and the heat-sealed means.

9. Apparatus according to claim 8, in which the means for producing the cut-outs in the sheets are between the lines of slots in the sheets.

10. An apparatus according to claim 8, substantially as described with reference to the accompanying drawings.

11. A package obtained by packaging articles in heat-sealable plastics sheet material wherein, above the articles, the sheet contains parallel longitudinal slots forming a series of bands which are juxtaposed side-by-side, without transverse cutting.

12. A package according to claim 11, wherein the bands are parallel and spaced

from one another by a width less than the greatest width of the packaged articles.

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