United States Patent

Hausler et al.

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[54] **SLIDE BOX**

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[73] Assignee: **CP Conseiller en Packaging S.A.,** Fribourg, Switzerland

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[21] Appl. No.: **73,080**

[30] **Foreign Application Priority Data**

Dec. 3, 1969 Switzerland 17999/69

[52] **U.S. Cl.** **53/40,** 220/41

[51] **Int. Cl.** **B65b 7/28**

[58] **Field of Search** ..... 53/40, 14, 15, 18, 19, 41, 53/46, 133, 169, 366, 37, 289, 353, 373, 319, 329, 330; 229/43, 41, 51 TS, 51 TC

[56] **References Cited**

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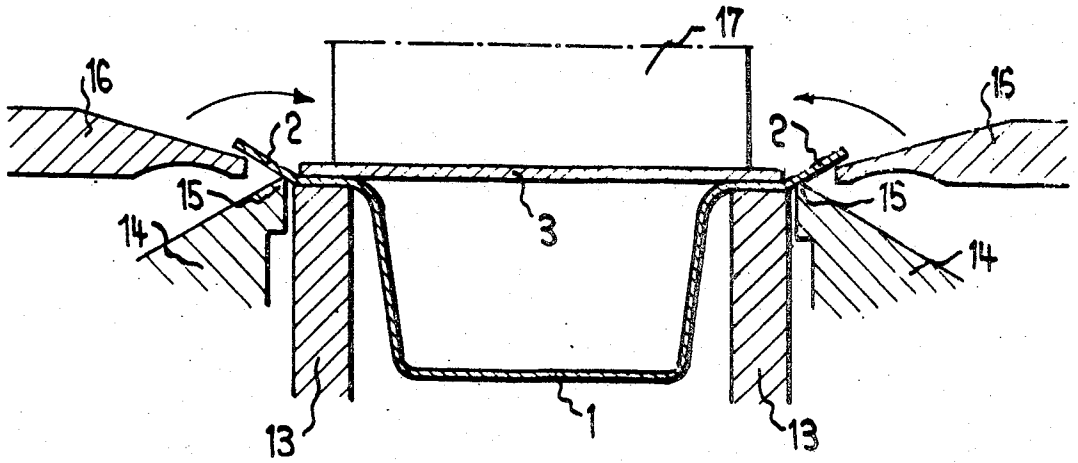
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[57] **ABSTRACT**

A slide box having a slide lid covering the opening of a container, said lid having disengageable locking means preventing removal of the lid, and a method and machine for manufacture of said slide box wherein the lid is applied onto flanges in the plane of the container opening whereafter such flanges are turned over round the edges of said lid.

2 Claims, 8 Drawing Figures



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SHEET 1 OF 2

FIG. 1

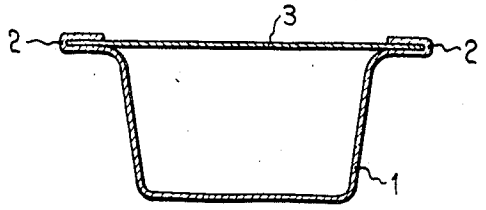


FIG. 2

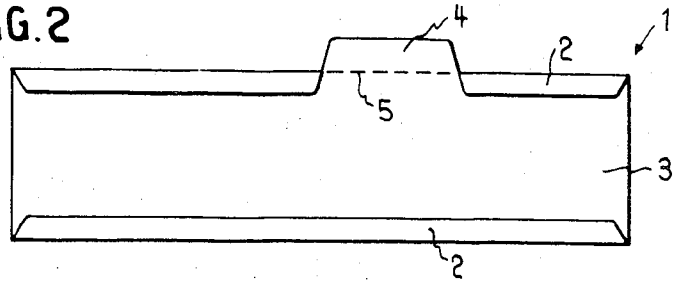


FIG. 3

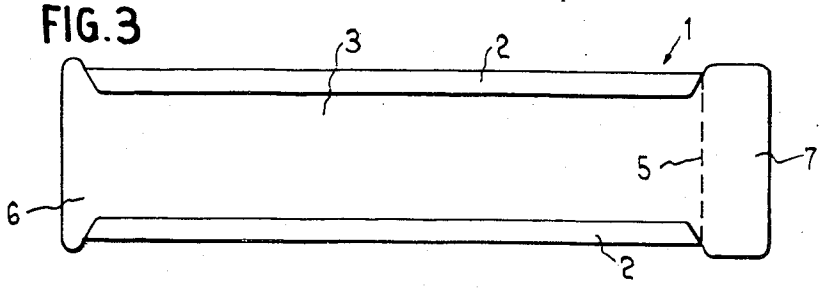


FIG. 4

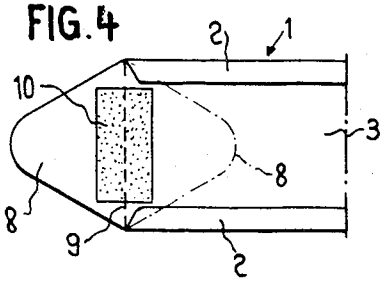
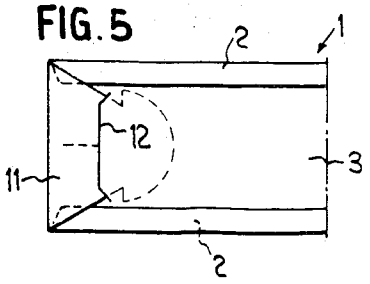


FIG. 5



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FIG. 6

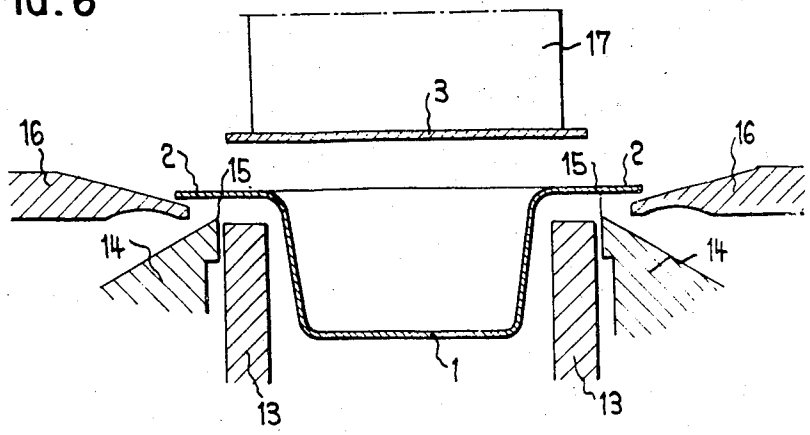


FIG. 7

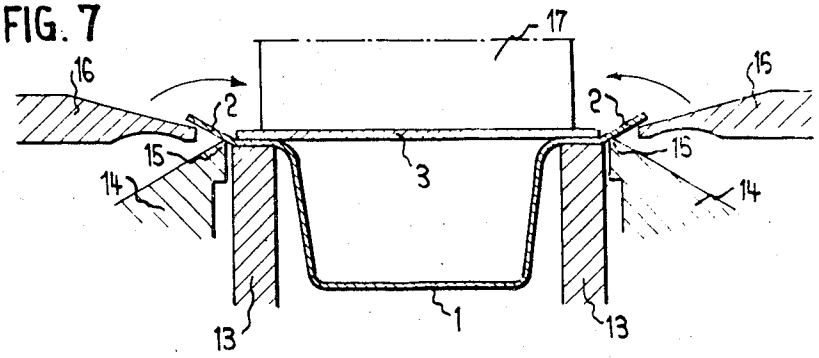
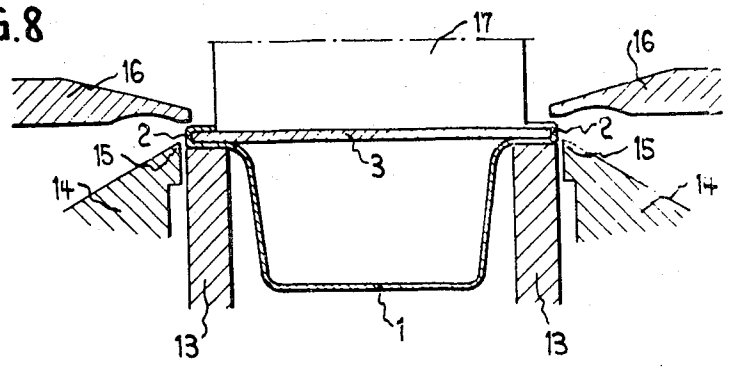


FIG. 8



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SLIDE BOX

BACKGROUND OF THE INVENTION

Sliding lid boxes or packages comprising a deep-drawn plastic container with opposed flanges turned over to form parallel guides, with a slide lid or cover, usually of cardboard, inserted in the guides as a closure of the container. The advantage of this kind of box is opposed by certain disadvantages relating to the method of manufacture and limitations in the use thereof.

At present, the boxes with turned-over flanges, and the slides, are made separately and the slides are inserted manually into the containers after said containers are filled. The manufacture of containers with accurately turned-over flanges involves certain difficulties. Moreover, the manual closure of the containers requires a good deal of operator's time and is thus comparatively expensive.

Such boxes are suitable only for certain purposes, because the manually inserted slides are held in the guides formed by the turned-over flanges by friction only and can therefore be extracted at any time and in certain circumstances can slide out accidentally. Therefore, such a box cannot be used if a guarantee is to be given that it cannot be opened by unauthorized persons before it is sold, as for example, in self-service establishments or supermarkets.

SUMMARY OF THE INVENTION

The slide box of the present invention is characterized by the feature that the slide is secured in its closed position by at least one locking member, said locking member being removable or disengageable. The slide is secured on the container by the locking member or by a plurality of locking members and cannot be removed without destroying one or more locking parts, thus obtaining a reliable guaranteed closure.

The method of manufacturing the slide box is such that a plastic container is prepared with flanges surrounding the opening, a slide having straight lateral edges is placed on the flanges and then the lateral outer parts of the flanges are turned over the edges of the slide. Due to the fact that the slide is deposited on the as yet unformed flat flanges and these flanges are only subsequently turned over to hold the slide, it is possible to fit the slide so that it cannot be accidentally displaced. The manufacture of the container part is simultaneously simplified, because the flanges of the container need not be accurately preformed. This type of manufacture also permits considerable automation of the box closure operations.

Apparatus according to the present invention, for carrying out the method, includes parallel supports for the lateral container flanges, a carrier for receiving the slides placed above the parallel supports, lateral heaters arranged externally of the parallel supports, and means for turning the outer parts of the lateral container flanges over the edges of a slide lid after it has been positioned over the container with its edge portions overlying the flanges.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a cross section through a slide box of conventional construction,

FIGS. 2 and 3 are respective plan views of an embodiment of a slide box according to the present invention,

FIGS. 4 and 5 are respective plan views of one end of other embodiments of the slide box of the present invention, and

FIGS. 6 – 8 show various stages in the manufacture of a slide box according to the invention.

The slide box of conventional construction, shown in FIG. 1, comprises a container 1 of deep drawn plastics material having an open top and a flange 2 extending round the entire container in the plane of the container opening. The flange 2 is turned over through 180° on two parallel opposing sides of the container and thus forms a narrow groove in which a slide 3 is inserted to close the container. The disadvantages of this construction are mentioned above.

FIG. 2 is a plan view of a slide box of the present invention, the cross section of which generally corresponds to that of the box of FIG. 1. The difference resides in the feature that the slide 3 has a locking tongue 4 projecting over one flange of the container. At this place the particular flange 2 has a gap of the same width as the tongue 4, so that the tongue and consequently the entire cardboard slide 3 is secured against longitudinal displacement. At the root of the tongue 4, a perforated line 5 is provided along which the tongue 4 can be torn off.

In the condition illustrated, in which the slide box is marketed with its contents, the slide 3 is firmly secured and cannot be removed until the tongue 4 has been torn off along the perforated line 5. Thus, the fact that the tongue 4 is still attached to the slide 3, is a guarantee that the package has not been opened since its closing.

FIG. 3 shows an embodiment in which the ends of the slide 3 are secured against longitudinal displacement by enlarged tongues 6 and 7 at the respective ends. A perforated line 5 is provided at the root of the tongue 7, along which the tongue 7 can be torn off. The slide can then be gripped by the tongue 6 and drawn out. In this case also, the attached tongue 7 is the guarantee that the package has not been opened.

In FIGS. 4 and 5 other possibilities of securing the slide 3 are shown. In FIG. 4 both ends of the slide are provided with a tongue 8 which is folded back along a fold line 9 at its root onto the slide 3 and is cemented thereto by an application of adhesive 10. In this case also, the slide 3 is secured against longitudinal displacement, i.e., against removal from the container so long as the cemented connection between the tongue 8 and the body of the slide is not broken and the tongue is folded outwardly.

According to FIG. 5 tongues 11, corresponding to the tongue 8 in FIG. 4, are folded inwardly and slipped into slots 12 in the slide 3 and locked therein. In this case also longitudinal displacement or removal of the slide 3 is impossible as long as one of the tongues 11 has not been released from its locked condition and has been folded outwardly.

The embodiments according to FIGS. 4 and 5 can be combined with the embodiment shown in FIG. 3 so that, for example, at one end of the slide there is a tongue 8 or 11, and at the other end a tongue 6.

The manufacture of the illustrated slide box is effected in a machine as shown in FIGS. 6 – 8. The device

has parallel supports 13, the spacing between which can be adjusted to the width of a given plastic container. The supports 13 are cooled during operation in order to avoid softening of the plastics material resting thereon. Disposed externally of each of the supports 13 is a heated tool 14 terminating at the top in a sharp edge 15. The machine also has two bending tools 16 which can be transferred from the resting position shown in FIGS. 6, by a circular translatory motion according to the arrows in FIG. 7 into the end position shown in FIG. 8. A ram 17 is disposed above the supports 13, the ram being provided on the underside with suction nozzles (not shown) for holding a slide 3. The ram 17 is interchangeable and in length and width is dimensioned so that in the lowered position as shown in FIGS. 7 and 8 it is disposed with its lower side edges in the region of the supports 13. The machine has an automatic feeding device (not shown) for slides 3, from which the ram 17 can pick up a slide 3 and locate it in the correct position.

To manufacture a slide box the deep-drawn plastic container 1 is placed by hand or automatically in the machine in the position shown in FIG. 6. The ram 17 is then lowered and locates the slide 3 on the flat lateral flanges 2 of the container 1. The flanges 2 and the edges of the slide 3 are then pressed down onto the supports 13 by the ram 17 so that the ram serves as a hold-down clamp and firmly retains the parts 1 and 3 together. Since the upper side of the supports 13 is somewhat lower than the uppermost edge 15 of the heaters and the bending tools, the flanges 2 of the container are bent slightly upward. The flanges 2 of the container are pressed along a line below the outer edge of the slide 3 with due pressure on to the edges 15 of the heating tools 14 so that the plastics material is softened at this point of engagement. The bending tools 16 then execute their bending movement and lay the outer parts of the flanges 2 round the outer edges of the slide 3, as in the position shown in FIG. 8. At the position of the locking tongue 4 of the slide 3, one bending tool 16 has a gap through which the tongue 4 can extend during the bending movement of the tool. At the same position, i.e., in the region of the tongue 4, the lower flange 2 is preferably provided with a cut-out so that its outer edge is flush with the outer edge of the slide 3.

Upon the conclusion of the bending process shown in FIG. 8, the parts 16 and 17 return to their starting positions, the ram 17 taking up another slide 3. The finished packing can now be expelled and another plastic container can be inserted.

As mentioned above, the insertion of the plastic container in the machine can be effected manually or automatically, whilst the remaining operations take place automatically. However, it is also possible to construct the device shown in FIGS. 6 – 8 merely as a part of a complete packing line in which the plastic container 1 is deep drawn, then filled and closed at a station according to FIGS. 6 – 8. The slide boxes shown in FIGS. 4 and 5 can be manufactured on such a packing line, the application of the glue 10 and/or the turning over of the tongues 8 or 11 being also effected automatically if desired.

Certain parts of the apparatus may be constructed differently from the embodiment shown in FIGS. 6 – 8. For example, instead of the bending tools 16, nozzles may be provided for producing a current of air which is directed against the flanges 2 of the container from below in order to locate the outer parts of the flange around the outer edge of the cardboard slide 3.

What we claim is:

1. A method of manufacturing a slide box comprising a plastic container defining a filling opening and slide guides and a slide lid covering said opening and engaging said slide guides, including the steps of providing a plastic container having an open top and planar flanges around its edges, placing a slide lid with opposite lateral edges over said open top with its opposite edge portions resting on said flanges with at least one portion of said lid projecting outwardly from said flanges, heating said flanges along said two opposite straight lateral edges, and lifting and turning over the lateral outer parts of said flanges around the edges of said slide for forming straight slide guides snugly but slidably engaging said slide edges, assembling of said slide lid with said container being effected with said projecting portion of said slide lid being brought into interlocking engagement with said container such that displacement of the slide lid along said slide guide is prevented.

2. A method of manufacturing a slide box comprising a plastic container defining a filling opening and slide guides and a slide lid covering said opening and engaging said slide guides, including the steps of preparing a plastic container with planar flanges around its edges, placing a slide lid with straight lateral edges and with at least one locking member projecting laterally outwardly from at least one of said straight edges onto said flanges with said locking member outside the reach of said flanges, heating said flanges along said straight lateral edges and lifting and turning over the lateral outer parts of said flanges around the edges of said slide for forming said slide guides engaging said slide lid but allowing sliding of said straight lateral edges within said slide guides, but displacement of said slide lid being prevented by said locking members projecting laterally outwardly from said straight edges and of said slide guide respectively.

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