TWO-PART BOX

FIG. 1

FIG. 2
ABSTRACT OF THE DISCLOSURE

The two-part box, in accordance with the invention, comprises a two-part box of thermoplastic material comprising a lid part and a strap, and a bottom part connected with said lid part at one rim by said strap acting as a hinge, there being provided on the rims of said bottom part and of said lid part opposite said hinge, closure elements cooperating with each other and locking elements engaging each other to produce, respectively, transverse locking of said two box parts, said locking elements consisting at one rim of at least one projecting cylindrical pin provided with an undercut and on the opposite rim of at least one cylindrical lug provided with a circular sharp-edged aperture adapted to receive said pin at its undercut.

It has long been customary to pack goods in boxes, to wrap the box in paper and pass it to the customer tied up. For this purpose cardboard boxes are generallu used, in which the goods, e.g. a pair of shoes, have already been packaged before sale and are stacked one above the other on shelves. The production of such boxes with modern machinery is however expensive, and in addition to the cost of the box there must also be added the costs of the additional packaging. A further disadvantage of cardboard boxes is that they are easily damaged by moisture and their rigidity when stacked is not very great. Finally, the transportation of empty boxes is also difficult, as these cannot be transported stacked one inside another, so that a considerable amount of transportation space is required.

The object of the invention is to produce a two-part plastic box, obviating the above mentioned defects, which is rigid, insensitive to moisture and has closure means to avoid having to use binding means to close the box.

The releasable closure consists on the one hand of projecting cylindrical undercut pins and on the other hand of cylindrical lugs which have a circular aperture, in which the pins engage by their undercut.

Along the rims of the two box parts projections may be provided at distances apart, which engage e.g. in scissors fashion, in similarly arranged projections on the other part.

A further feature of the box in accordance with the invention is that hollow projections, preferably triangular, are provided on the bottom of the box parts, preferably along the diagonal of the same, which projections engage in one another by their e.g. conical tips or by a recess corresponding to this tip.

The abovementioned hinge may consist of a plastic strip, all of one material, repeatedly folded and provided with at least one groove, which connects the two box parts in the manner of a "film hinge".

The handle consists of recesses formed in the two box parts, interengaging as the box is closed, and making the box easy to carry when closed.

Finally the bottoms of the box parts are provided with grooves which form recesses on one part and projections on the other, which interengage when two boxes are stacked one above the other, and form a secure transverse locking arrangement.

A further advantage of the box in accordance with the invention is that an oblique surface is formed on one box part which can be used for sticking on labels.

Specific embodiments of the invention will now be described by way of example with reference to the accompanying drawings, in which:

FIGURE 1 is a longitudinal section taken on the line I—I in FIGURE 2, and
FIGURE 2 is a plan view of the lower box half in FIGURE 1.

FIGURE 3 is a cross-section taken on the line III—III in FIGURE 2.
FIGURES 4 to 5 show a further embodiment similar to that shown in FIGURES 1 to 3.
FIG. 6 shows this embodiment in a cross-section taken on the line VI—VI of FIGURE 5.

The box shown in FIGURE 1 comprises two parts 1 and 2. Both parts are made together from a plastic foil in a single operation by deep-drawing. The substantially rectangular box parts have four side walls 3 to 6 and are articulately connected together by a multiplicity of folded plastic strips 7. It has been found that opening and closing the two box parts more than one hundred times does not cause any damage to the hinge 7. Any desired number of boxes may be stacked one inside another in the open condition and thus may be transported in a space saving manner as all the deep-drawn parts (walls and projections) are tapered.

On the rim lying opposite the hinge is provided a closure arrangement, consisting of two undercut pins 8, which engage in a lug 10 on the other box part, provided with a sharp-edged bore 9. Only a small pressure is required to press the pins 8, 10 into the bores 9 in order to obtain a closure which is easy to open but sufficiently secure for transportation purposes.

In the vicinity of the closure there is also formed a handle, consisting of recesses 11, 12 respectively, which interengage as the box is closed. In carrying the box four fingers of the hand lie in the recess, thus ensuring safe transport.

In the case of a boot box there are arranged diagonally in each box half, a multiplicity of triangular hollow webs 13, which engage by their conical tips 14 in similar recesses 15 of the web 16 on the opposite box part. The object of these webs is to keep the two shoes placed in the box in position and separate from one another. Of course the arrangement and shape of the webs 13, 16 may be adapted to the particular article packaged.

The lateral rims of the walls 3 and 5 are provided with scissor-like projections 17, which engage in conjugately formed projections 18 on the other box part. The object of this measure is to obtain reciprocal locking and support of the side walls in the transverse direction, thus considerably improving the rigidity of the box. Between the projections 17, 18 slots may be provided when the box is closed, thus making it possible to ventilate the interior of the box.

The bottoms 19 of the two box parts are provided with longitudinal grooves 20 or a uniformly distributed multiplicity of transverse grooves 21. These grooves are formed as projections on one box part and as recesses on the other box part, so that boxes of similar shape stacked one above the other engage by the raised grooves of one box in the recessed grooves on the other box. This feature ensures a locking in the transverse direction of boxes stacked one above the other.

The transverse wall 4' of one box part (FIGURE 1) has a bevel of about 45 degrees and thus makes possible the pasting of labels, on which the contents of the box can be marked.

The two forms of embodiment represented in FIG-
URES 4 to 6 of a box in accordance with the invention differ from the box in FIGURES 1 to 3 in that while the projections 17, 18 are present they do not however substantially project beyond the rim of the box parts. Accordingly, the ventilation slots are omitted and the rims of the box parts 22, 23 are preferably so formed that when the box is closed they grip over one another. Furthermore, it can be seen from FIGURE 5, by contrast with FIGURE 2, that the handle 11, 12 for ease of transport is widened and that the undercut closure knobs 8" lying laterally to the handle, are complemented by pins 24 which engage in corresponding bores on the other box part. It is clear that the box in accordance with FIGURES 4 to 6 can be closed tightly at the rims and also in the vicinity of the handle.

The box in accordance with the invention can be used for the storage or transport of different kinds of goods, inter alia of bottles and various articles of all kinds, in which connection only an alteration of the web 13 is required to be able to hold the goods inserted firmly in position.

I claim:

1. A two-part box of thermoplastic material comprising a lid part and a strap, and a bottom-part connected with said lid part at one rim by said strap acting as a hinge, there being provided on the rims of said bottom part and of said lid opposite said hinge closure elements cooperating with each other, and locking elements engaging each other to produce, respectively, transverse locking of said two box parts; said closure elements consisting of handles formed at said rims and provided with recesses fitting into each other for carrying the box, and said locking elements consisting at one rim of two projecting cylindrical pins, each having an undercut and both arranged on both sides of said handle recesses, and on the opposite rim, at two cylindrical lugs each provided with a circular-shaped sharp-edged aperture to receive said pins at their undercut.

2. A box as claimed in claim 1, comprising along at least some of the other rims of one of said box parts spaced-apart projections adapted in scissors fashion to engage similarly arranged projections on the other box part.

3. A box as claimed in claim 1, wherein said hinge is a plastic strip of continuous material, repeatedly folded and provided with at least one groove.

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