

United States Patent

[11] 3,549,083

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 [73] Assignee **Equitable Bag Co., Inc.**
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a corporation of New York

[56] **References Cited**

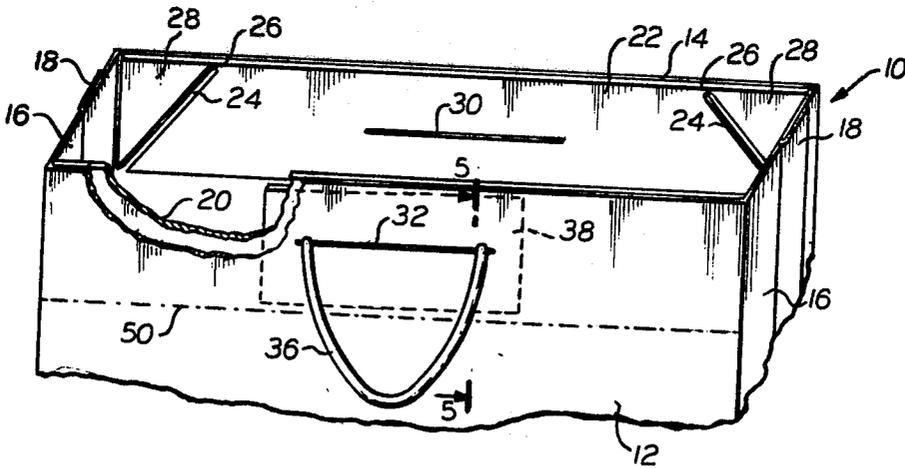
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Attorney—Sandoe, Hopgood and Calimafde

[54] **HANDLE AND CLOSURE FOR FLEXIBLE BOX**
 10 Claims, 8 Drawing Figs.

[52] U.S. Cl. 229/52,
 229/54
 [51] Int. Cl. B65d 5/46,
 B65d 25/28
 [50] Field of Search 229/54,
 54C, 52A, 52AC, 52AL, 52AM; 190/57; 150/12,
 33; 16/110, 114; 229/62, 63

ABSTRACT: A handle and closure construction for a flexible box with the grip portion of the handle made of material stiff enough to be pushed through a reinforced slit in one of the top panels and into position to be inserted into and pulled through a corresponding slit in the other panel to hold the top of the box closed. Attachment of the handle to a piece of board with the uppermost fastening at a mid portion of the board permits the handle to be bent up at the fastening to support the box evenly and to provide an inexpensive construction.



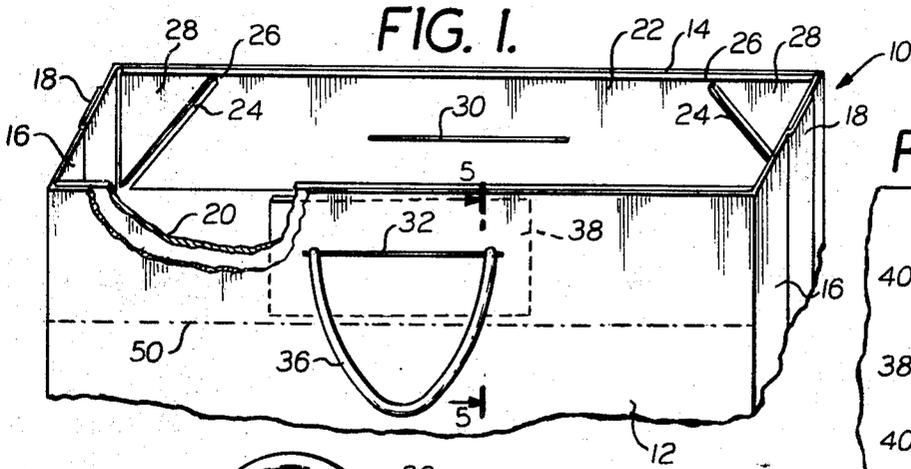


FIG. 5.

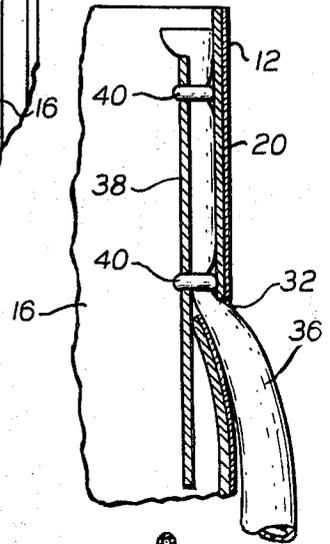


FIG. 2.

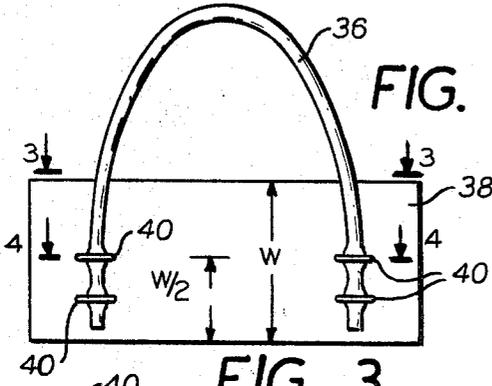


FIG. 3.

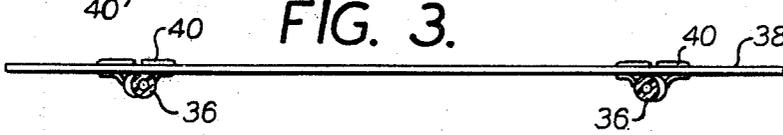


FIG. 4.

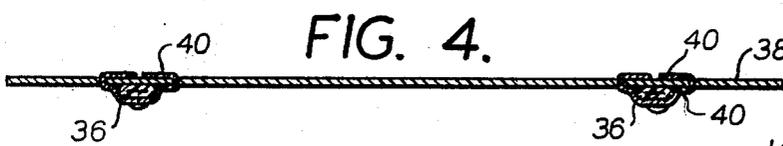


FIG. 7.

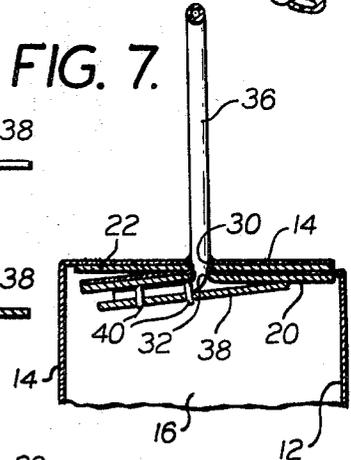
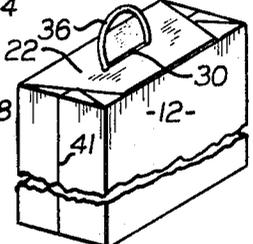
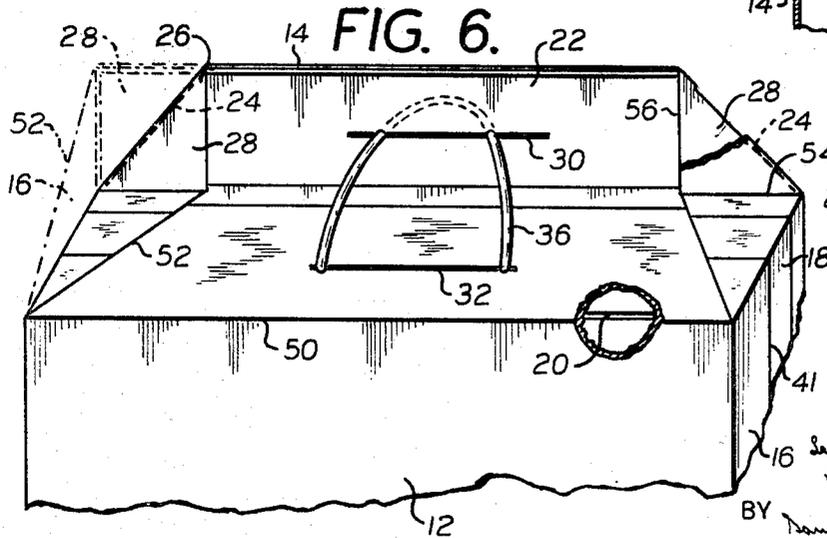


FIG. 8.



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HANDLE AND CLOSURE FOR FLEXIBLE BOX

BACKGROUND AND SUMMARY OF THE INVENTION

New forms of flexible boxes have a carrying handle that extends through the uppermost panel of the box. The handle is used for holding the folding panels of the top in closed position, in addition to its handle function.

Low cost is essential in the making of flexible boxes, and handle connections that require substantial hand labor are prohibitive. Some manufacturers have resorted to supplying flexible boxes with unattached handles; but this is objectionable because the unattached handles sometimes get lost. It also involves an extra step in closing. The loose handle must be inserted before other closure steps can be taken. Users want bags with the handles already attached and ready for use.

This invention preferably makes use of a handle such as shown in the U.S. Pat. No. 3,339,822 issued to C.C. Pearl, Sept. 5, 1967.

Instead of fastening the handle to the side of the container as in the Pearl construction, this invention secures the handle to a separate piece of cardboard or similar anchoring means. The folding panels at the top of the flexible box, on both sides thereof, have slits that register with one another when the top panels are folded into closed positions. The handle is stiff enough to be readily pushed through the slit in the panel that is to be folded down first when the top is being closed. When closing the box, the handle is then bent up at a right angle and it is inserted into the slit in the upper panel. The handle distorts the sides of the slits and fits tightly enough to hold the panel in closed position.

Other objects, features and advantages of the invention will appear or be pointed out as the description proceeds.

BRIEF DESCRIPTION OF DRAWING

In the drawing, forming a part hereof, in which like reference characters indicate corresponding parts in all the views:

FIG. 1 is a fragmentary view showing the upper end of a flexible box made in accordance with this invention, the front edge being partly broken away and in section;

FIG. 2 is a view of the handle and the piece of board to which the handle is connected;

FIGS. 3 and 4 are enlarged sectional views taken on the lines 3-3 and 4-4, respectively, of FIG. 2;

FIG. 5 is a sectional view taken on the line 5-5 of FIG. 1;

FIG. 6 is a view of the upper part of the carrier box bag shown in FIG. 1 but with the top part way closed;

FIG. 7 is a sectional view through the upper portion of the box bag after the bag is fully closed; and

FIG. 8 is a reduced scale view of the box shown in the other views, but with the box fully closed.

DESCRIPTION OF PREFERRED EMBODIMENT

A flexible box 10, shown in FIG. 1, has a front panel 12 and a back panel 14 connected together by side panels 16. In the construction illustrated, the box has lap seams 18 which are glued or otherwise bonded to make the panels 12, 14 and 16 an integral structure which is effectively a one-piece construction.

The panels 12 and 14 and the sides 16 are preferably made of paper, but other sheet material can be used.

At the upper part of the front panel 12 there is a stiffener 20 which is preferably made of cardboard of sufficient thickness to make the top of the box stiff enough to prevent any substantial bending when the box is being carried. The thickness and stiffness of this stiffener 20 will, of course, depend upon the size of the box and the load which the box is intended to carry.

The front stiffener 20 has a width substantially equal to the width of the front panel 12 and has a depth equal to the width of the side panels 16. The stiffener 20 is bonded to the front panel 12 by adhesive or in any other desired manner and the bonding preferably extends over the entire areas of the confronting faces of the stiffener 20 and the upper part of the panel 12 with which the stiffener 20 contacts.

There is a back stiffener 22 secured to the back panel 14. This back stiffener 22 is of the same size as the front stiffener 20 but differs in construction in that it has diagonally extending slots 24 extending upward from its bottom corners at 45° to locations near the upper edge of the back stiffener 22. There are short sections 26 of the stiffener 22 beyond the ends of the slot 24 connecting the center portion of the stiffener 22 with tabs 28 of the stiffener beyond the slots 24.

The purpose of the slots 24 is to provide hinge lines along which the back panel 14 can bend easily for purposes which will be explained, and in place of the continuous slots 24 shown in FIG. 1, incised lines can be used.

There is a slit 30 in the stiffener 22 and in the back panel 14. A similar slit 32 extends through the front stiffener 20 and the front panel 12. These slits 30 and 32 are centrally located between the upper and lower edges of the stiffeners 20 and 22. Narrow slots can be provided in place of the slits 30 and 32, but if slots are used, they should be narrower than the handle of the box for reasons which will be explained in connection with FIG. 7. Slits have the added advantage that there is no material removed in forming them and thus no waste which must be disposed of when making the boxes on high speed machinery.

FIG. 2 shows the handle construction of this invention. A handle 36 is attached to a free panel 38 by staples 40. The handle 36 is preferably formed of tubular plastic material of sufficient diameter to provide a comfortable handle for carrying the box. The staples 40 extend through the panel 38 and are applied with sufficient force to flatten the plastic tube of which the handle 36 is made. This flattening of the tube is illustrated by the sectional view in FIG. 4. The flattened tube provides a stronger connection between the handle 36 and the panel 38 since more force is required to pull the handle out of the staples 40 than would be the case if the handle were not flattened.

The upper staples 40 are located midway between the upper and lower ends of the panel 38. Thus when the handle 36 is bent upwardly, substantially normal to the surface of the panel 38, the handle is located at or near the middle of the panel 38. This location of the upper staples 40 is illustrated in FIG. 2 where the staples 40 are shown at a distance $W/2$ on a panel having a total width W .

The free panel 38 is preferably made of cardboard since this is the most inexpensive material for the purpose, but other materials can be used, if desired, provided that they have sufficient stiffness to distribute the load of the handle over a substantial area of the stiffeners 20 and 22 when the box is closed, as shown in FIGS. 7 and 8.

When the box is supplied to the user, the handle 36 is preferably located in position as shown in FIGS. 1 and 5, though the box is folded flat along fold lines 41 in accordance with conventional practice, after the handle 36 has been located in the position shown. The handle 36 is assembled with the front panel 12 by inserting the handle through the slit 32 in the manner illustrated in FIG. 5. The edges of the slit 32 are displaced by the insertion of the handle 36 and this displacement requires that the handle be inserted through the slit 32 at a location intermediate the ends of the slit where the edges of the slit can move away from one another without tearing the panel 12 or the stiffener 20. As the handle 36 is inserted through the slit 32, the handle travels along the slit toward the opposite ends of the slit to the approximate position shown in FIG. 1. The separation of the ends of the handle 36, as determined by the location of the upper staples 40 (FIG. 2) is preferably slightly less than the length of the slit 32 so that the handle can be pulled all the way into the slit without tearing the ends of the slit.

When the box is to be closed, the upper part of the panel 12 is folded inwardly, as shown in FIG. 6. This fold occurs along a line 50 which is determined by the location of the lower edge of the stiffener 20. This folding of the front panel causes the sides 16 to bend so that each side has a fold 52 extending from the top of the back panel 14 to the fold line 50, as shown in dotted lines at the left-hand side of FIG. 6.

The tabs 28 are then folded inward along the hinge line formed by the slots 24. Since these slots 24 extend at substantially 45° to the top and bottom edges of the stiffener 22, each tab 28 folds into a position which locates one side 54 parallel to the front fold line 50 and at substantially the same level as this fold line 50. The top edge of the tab 28 forms an edge 56 at right angles to the side 54.

The handle 36 is inserted through the slit 30 in the back panel and the back panel is then folded down over the folded upper end of the front panel 12 while pulling the handle 36 through the slit 30. This completes the closing of the box, as shown in FIGS. 7 and 8. The displacement of the edges of the slit 30 causes them to grip the handle 36 tightly and in such a manner that they strongly resist reverse movement of the folded position of the back panel 14 upward along the handle 36. Any such relative movement causes the edges of the slit 30 to grip the handle with a togglelike pressure. Thus the box is held tightly closed.

The panel 38, to which the handle 36 is connected, bears against the underside of the stiffener 20, which, in turn, bears against the under side of the back stiffener 22 to support the box. At the lower ends of the handle 36 the load is transmitted through the transversely extending portions of the handle are unsymmetrical with respect to the panel 38 so that the panel accommodates itself to the clearances provided by the construction and there is some flexing of the panel 38 and stiffeners 20 and 22 as necessary to distribute the load over the respective areas of the supporting structures, in accordance with the load carried in the box.

The preferred construction of the invention has been illustrated and described, and the invention is defined in the appended claims.

We claim:

1. The combination comprising a flexible box having front and back panels and side panels connecting the front and back panels, each of the front and back panels including a flexible lower portion and a stiffener bonded to the upper portion of each of the front and back panels, each stiffener extending downward from the upper end of its respective panel for a distance substantially equal to the width of a side panel, elongated openings through each of the front and back panels and through the stiffeners at the center region of each of the stiffeners, the stiffened upper portion of the front panel extending from its lower edge rearward toward the back panel and the stiffened upper portion of the back panel extending from its lower edge forward over said upper portion of the front panel to close the box, said openings being in position to register with one another with the box so closed, a free panel located adjacent to the front stiffener and with a top face of the free panel generally parallel to and confronting the back face of said front stiffener, a loop handle having end portions that lie against the top face of the free panel between said top face and the front stiffener and located on one side of a longitudinal center line of the free panel, fastening means securing the end portions of the handle to the free panel adjacent to said longitudinal center line the handle being made of relatively stiff material for original insertion into the opening through the front stiffening panel by pressure applied to the free panel,

the handle having a cross section wider than the opening through the upper stiffened portion of the front panel so that the side edges of the front panel opening are distorted by the handle and the handle is held in a friction grip of the distorted sides of the front panel opening, and the handle being bent upward at right angles to the top surface of the free panel at the fastening means and extending through the registering openings in the upper stiffened portions of the front and back panels.

2. The flexible box combination described in claim 1 characterized by the handle extending through one of the sides to hold it in assembled relation with the box when the box is shipped in flat condition in a stack, and the opening through which the handle extends having its sides distorted by the handle transversely of the plane of the side through which the handle extends to provide a friction grip for holding the handle assembled with the box.

3. The combination described in claim 1 characterized by the free panel being of a transverse width less than the height of the stiffener and being located inside of the box with the handle extending downward through the opening in the front panel so that the loop of the handle is on the outside of the front panel, the sides of the opening being distorted transversely of the plane of the front panel to grip the handle to hold it in its assembled relation with the box.

4. The combination described in claim 1 characterized by the means securing the end portions of the handle to the free panel including a staple for each end portion of the handle, each staple extending through the free panel and anchoring the handle to the free panel at a location substantially on the longitudinal center line of the free panel, the staples being spaced from one another along the center line for a distance approximately equal to the width of the fingers of an adult hand when the fingers are closed against one another.

5. The combination described in claim 4 characterized by the handle being made of plastic and each end portion of the handle being secured to the free panel entirely by staples, there being at least two staples securing each end portion of the handle to the free panel.

6. The combination described in claim 4 characterized by the handle being a hollow, generally round, plastic tube, and the tube being flattened against the free panel by the staples which secure the handle to the free panel.

7. The combination described in claim 1 characterized by both of the openings through the panels being narrower than the thickness of the handle, and the panels being pushed into contact with one another and so held by the friction grip of the sides of the openings against the handle to hold the box closed.

8. The combination described in claim 1 characterized by the opening through the front panel being a slit.

9. The combination described in claim 1 characterized by the openings through both the front and back panels being slits, and the handle being a substantially round plastic tube.

10. The combination described in claim 1 characterized by the free panel being pulled up against the inside of the front panel and held there by the grip of the sides of the panel opening against the handle when the box is closed.

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