June 25, 1968 KASHICHI HIROTA 3,389,831

COLLAPSIBLE BOX FOR CARRYING BOTTLES

Filed March 2, 1966

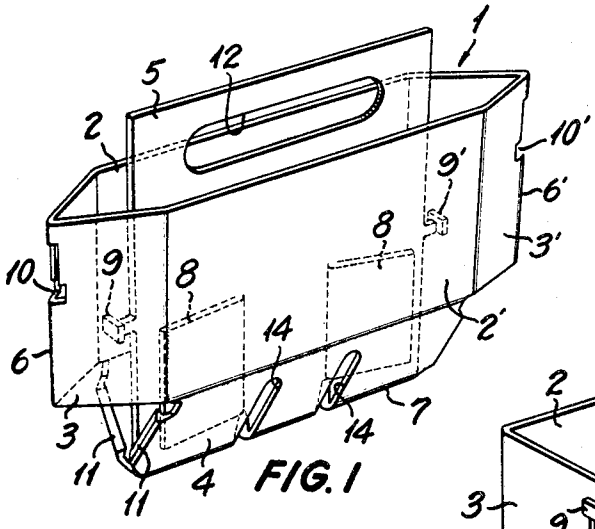


FIG. 1

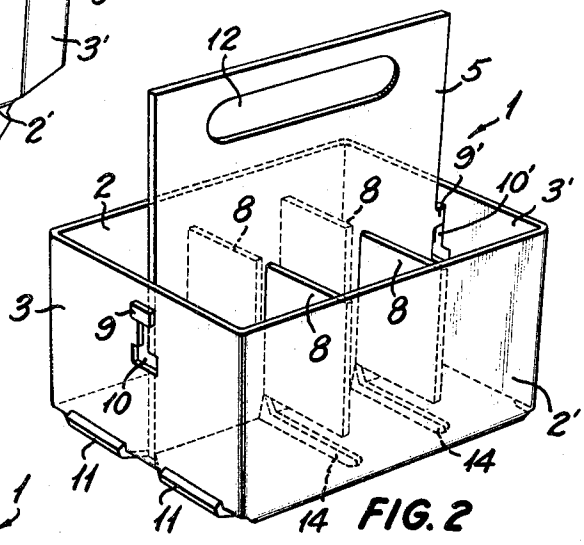


FIG. 2

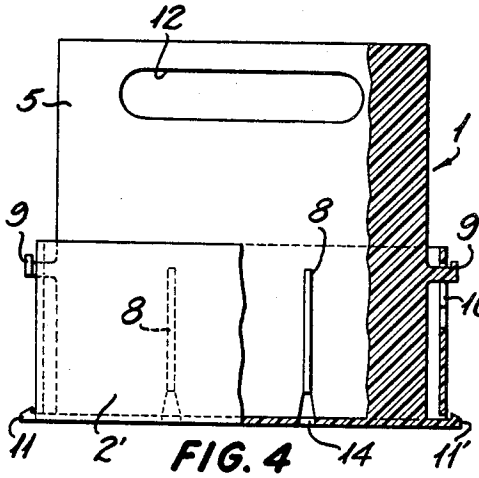


FIG. 4

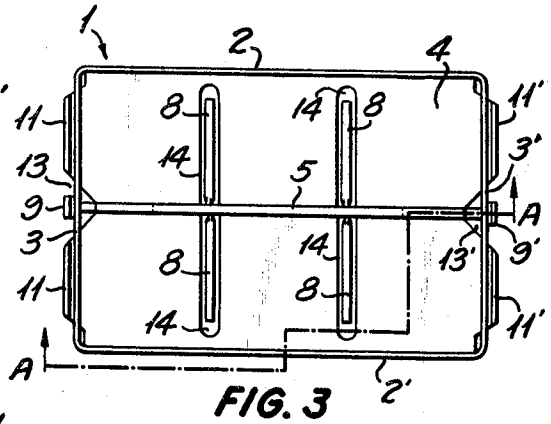


FIG. 3

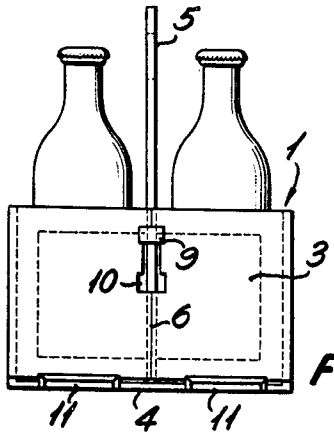


FIG. 5

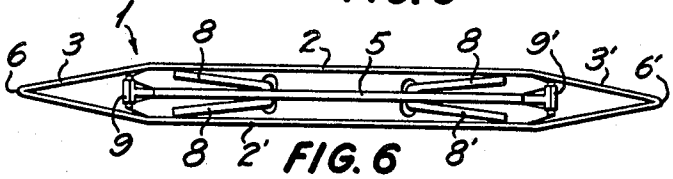


FIG. 6

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3,389,831

COLLAPSIBLE BOX FOR CARRYING BOTTLES

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Filed Mar. 2, 1966, Ser. No. 531,206
Claims priority, application Japan, Aug. 17, 1965, 40/67,548
4 Claims. (Cl. 220—111)

ABSTRACT OF THE DISCLOSURE

A folding carrier for bottles or the like having a central partition connected to a folding center line of a bottom wall and folding end panels separate from the central partition but adapted for engagement therewith when the box is erected.

The present invention relates to a collapsible box for carrying bottles and more particularly to an integrally formed plastic box which is capable of being collapsed into a flat shape when not in use and erected into a box for carrying bottles as desired.

Ordinary boxes of collapsible type have been produced conventionally by bending and splicing suitably shaped cardboards. The boxes of this type, however, not only require a variety of machines and much labor for the production thereof but also, since the boxes are made of paper, they are not durable and they are not adapted for repeated use. In particular, when such a box becomes wet, it tends to be ruptured and thus it is impossible to carry bottles therein.

An object of the present invention, therefore, is to obviate the foregoing drawbacks by providing a collapsible box by means of a plastic moulding.

Another object of the present invention is to provide a box for carrying bottles which is capable of being erected and collapsed as the occasion demands.

Further objects and advantages of the present invention will become apparent from the following descriptions with reference to the accompanying drawings, in which:

FIGURE 1 is a perspective view of the box of the present invention substantially in the collapsed state;

FIGURE 2 is a perspective view of the box shown in FIGURE 1 in the erected state;

FIGURE 3 is a plan view of the same box in the erected state;

FIGURE 4 is a cross-sectional view taken along the line A—A of FIGURE 3;

FIGURE 5 is an end view of the box in the erected state; and

FIGURE 6 is a plan view of the box in the collapsed state.

Referring now to the drawings, the box for carrying bottles is generally indicated by reference numeral **1**, said box being composed of a peripheral wall consisting of a pair of side walls **2** and **2'** and a pair of end walls **3** and **3'**, a bottom wall **4** and a central partition wall **5**. Each of the end walls **3** or **3'** is formed at its center with a vertically extending folding line **6** or **6'**, while the bottom wall **4** is formed at its center with a folding line **7** extending longitudinally thereof. The box may be collapsed by folding each of said walls along the respective folding line.

The central partition wall **5** is connected at its bottom end to the bottom wall **4** integrally along the folding line **7** and, on each side of the partition wall **5**, there is provided two small partition panels **8** respectively at such locations that said partition wall **5** may be equally

divided into three sections in the longitudinal direction, said small partition panels **8** being formed integrally with said partition wall **5**. As best shown in FIGURE 3, each of these partition panels **8** is reduced in thickness at the portion where it is connected to the partition wall **5** to thereby facilitate the folding of the same along the partition wall **5** when the box is to be collapsed. These partition panels **8** are disposed at the lower portion of the partition wall **5** and extending in vertical planes perpendicular to said partition wall, and serve to divide a rectangular chamber of the box formed on each side of the partition wall **5** into three substantially square chambers within the box when the partition wall **5** is pulled upwardly to erect the box.

Formed at both side edges of the central partition wall **5** are substantially T-shaped projections **9** and **9'** which respectively engage with inverted T-shaped slots **10** and **10'** formed at the upper portion of the end walls **3** and **3'** when the box is erected, whereby the box is maintained in its erected shape. The bottom wall **4** has ledges **11** and **11'** formed at its periphery which engage the bottom edges of the end walls **3** and **3'** respectively when the box is erected, so that the box is maintained in the erected state without being deformed due to the weight of the bottles contained therein.

A slot **12** providing for a handle is formed at the upper portion of the partition wall **5**, whereas V-shaped cutaways **13**, **13'** are formed at both ends of the bottom wall **4** and slots **14** are formed in said wall below the partition panels **8**.

The boxes of the present invention being constructed as described above, may be collapsed into the shape shown in FIGURES 1 and 6 and stocked one on another when not in use, and therefore very little space is required for storage. On the other hand, when a box is to be used, it may be readily erected by pulling the central partition wall **5** to form a box shape, engaging the T-shaped projections **9** and **9'** with the respective slots **10** and **10'** and then swinging the partition panels **8** outwardly.

The collapsible box in accordance with the present invention is formed integrally by moulding plastic material such as polyethylene, whereby its durability is substantially increased.

The details of the structure may be modified substantially without departing from the spirit of the invention and exclusive use of such modification as come within the scope of appended claims is contemplated.

What I claim is:

1. In a folding carrier for bottles, cans and the like, having a peripheral wall with a pair of side walls and a pair of end walls, a bottom wall, and a central partition wall, each of said end walls having a vertically extending fold line at its center portion, and said partition wall being connected at its lower end with said bottom wall along a longitudinal folding line, the improvement comprising said central partition being structurally independent of said end walls and being integral with said base wall only so as to form an integral member and securing means forming part of said integral member and projecting beyond and engaging said end walls for effectively maintaining the shape of said carrier when erected.

2. A folding carrier in accordance with claim **1**, wherein at least one rigid partition panel is integrally formed at the lower portion of each side of the central partition wall, said partition panel extending in a vertical plane perpendicular to said partition wall for substantially the height of said side walls so that each chamber defined on one side of the partition wall is divided into at least

two chambers, said partition panel being foldable along said partition wall when the box is to be collapsed.

3. A folding carrier in accordance with claim **1**, wherein said securing means comprises at least one projection on the central partition wall adapted to engage with a correspondingly shaped slot in the adjacent end wall so as to effectively maintain the shape of the box when erected.

4. A folding carrier in accordance with claim **3**, wherein said bottom wall is provided at the free edges with projecting ledges which are adapted to engage with the lower ends of said end walls when the box is erected so as to effectively maintain the shape of the box.

References Cited

UNITED STATES PATENTS

2,850,205	9/1958	Painter	220—111
3,063,595	11/1962	Smith et al.	220—113

FOREIGN PATENTS

829,685	3/1960	Great Britain.

WILLIAM T. DIXSON, JR., *Primary Examiner.*

JOSEPH R. LECLAIR, *Examiner.*

R. PESHOCK, *Assistant Examiner.*

UNITED STATES PATENT OFFICE

CERTIFICATE OF CORRECTION

Patent No. 3,389,831 June 25, 1968

Kashichi Hirota

It is certified that error appears in the above identified patent and that said Letters Patent are hereby corrected as shown below:

In the heading to the printed specification, lines 3 and 4, "691 Sanda-Higashi-cho, Hachiaji-shi, Tokyo, Japan" should read -- Tokyo, Japan, assignor to Kyowa Denki Kagaku Kabushiki Kaisha, Tokyo, Japan, a corporation of Japan --.

Signed and sealed this 21st day of April 1970.

(SEAL)
Attest:

Edward M. Fletcher, Jr.
Attesting Officer

WILLIAM E. SCHUYLER, JR.
Commissioner of Patents