May 20, 1969 H. REHRIG 3,445,034

PLASTIC CRATE WITH METAL STACKING EAR

Filed April 17, 1968

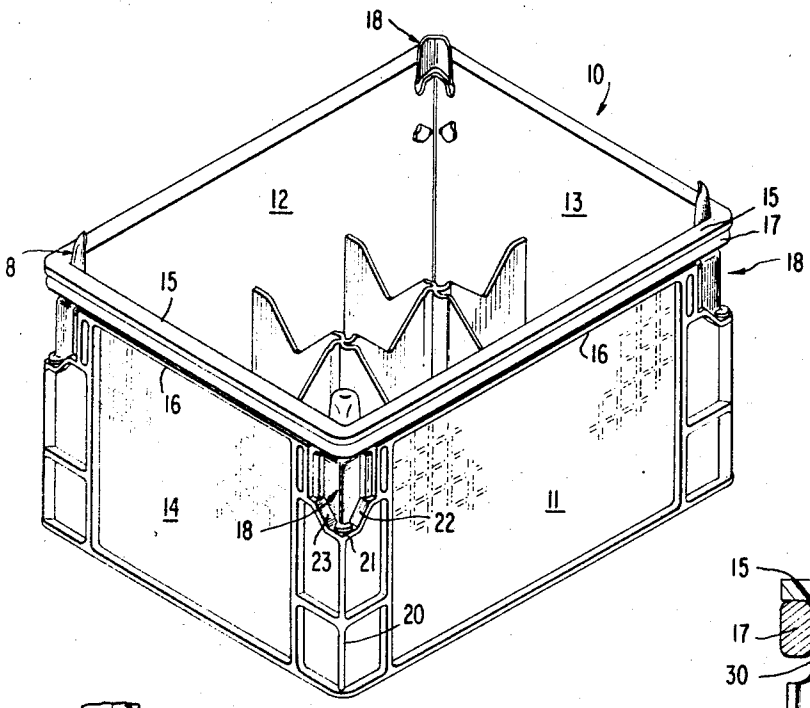


FIG. 1

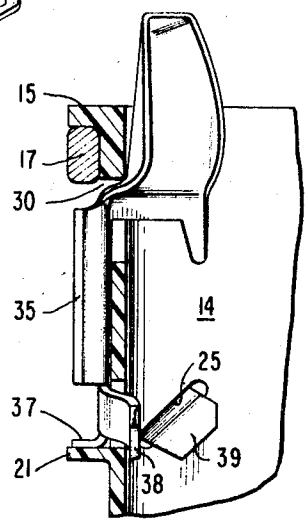


FIG. 4

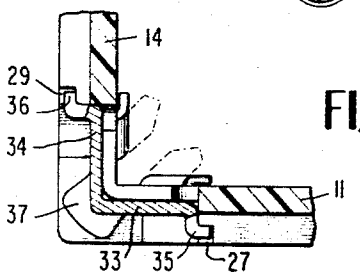


FIG. 5

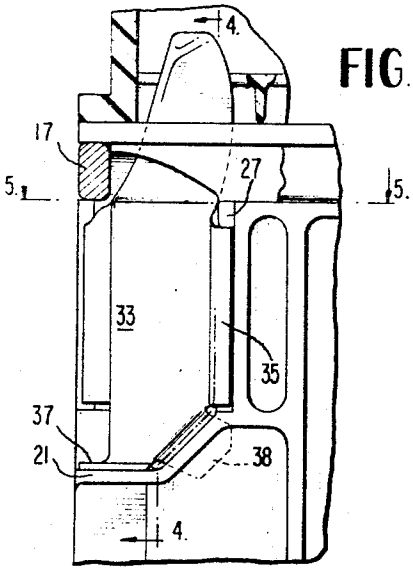


FIG. 2

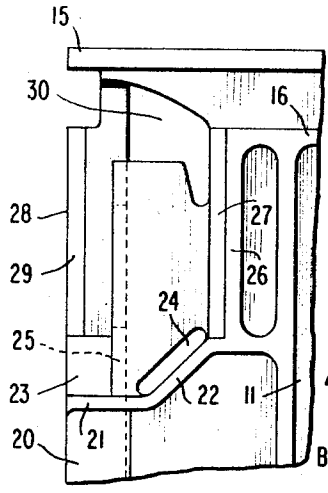


FIG. 3

INVENTOR

HOUSTON REHRIG

BY Brumm, Schuyler & Beveridge

ATTORNEYS

United States Patent Office

3,445,034
Patented May 20, 1969

3,445,034

PLASTIC CRATE WITH METAL STACKING EAR

Houston Rehrig, 100 Los Altos Drive,
Pasadena, Calif. 91105

Filed Apr. 17, 1968, Ser. No. 722,028
Int. Cl. B65d 21/02, 7/44
U.S. Cl. 220—97 9 Claims

ABSTRACT OF THE DISCLOSURE

A molded plastic material handling crate having a metal stacking ear rigidly mounted on and projecting above each corner of the crate in position to project into openings in the corners of the bottom of other crates to facilitate stacking of a plurality of crates. The stacking ears each include a body adapted to extend around a corner and overlie a portion of the walls of the crate adjacent the corner. An ear portion projects from the body through an opening in the corner of the crate and upwardly therefrom within and above the corner of the crate to provide the stacking guide. The lower part of the body is rigidly attached to the walls of the crate adjacent the corner.

This invention relates to material handling crates, and more particularly to material handling crates having side walls molded from synthetic resin material (hereinafter referred to as plastic) with metal stacking ears rigidly mounted on and projecting above the corners of the crate.

Conventional material handling crates constructed of wood, wire frame, and the like, have frequently employed metal stacking ears mounted on and projecting upwardly from the corners of the crate to facilitate stacking. Such stacking ears are designed to project into openings or recesses in the corners of the bottom of similar crates when the crates are stacked one upon another. Such conventional crates are illustrated, for example, in my prior Patent Nos 2,903,150 and 2,952,382.

Crates suitable for use in handling relatively heavy loads, such as the milk crates illustrated in the above-mentioned patents, have recently been formed from molded plastic material. However, difficulty has been encountered in forming a stacking ear on the molded plastic crate to enable their use interchangeably with the existing supply of conventional wood or wire frame crates. Such stacking ears are frequently subjected to high impact loads, both in the vertical and lateral direction, and the plastic materials normally used to mold such crates do not have sufficient strength or impact resistance to withstand such loads applied to stacking ears mounted thereon by conventional means. Accordingly, the primary object of the present invention is to provide an improved molded plastic material handling crate having metal stacking ears.

Another object is to provide such a material handling crate in which the stacking ears are separately formed from sheet metal, and rigidly attached one to each corner of the material handling crate.

Other objects and advantages of the invention will become apparent from the following detailed description, taken with the drawings, in which:

FIG. 1 is a perspective view of an improved material handling crate embodying the present invention;

FIG. 2 is an enlarged fragmentary view of a portion of the material handling crate shown in FIG. 1, with certain parts broken away more clearly illustrated in other parts;

FIG. 3 is a view similar to FIG. 2, but showing the molded plastic structure only;

FIG. 4 is a fragmentary sectional view taken along line 4—4 of FIG. 2; and

FIG. 5 is a sectional view taken along line 5—5 of FIG. 2.

Referring now to the drawings in detail, a material handling crate according to the present invention is indicated in FIG. 1 by the reference numeral **10**, and includes a pair of opposed, generally vertically extending side panels **11**, **12** and a pair of opposed, generally vertically extending end panels **13**, **14**. The panels **11**, **12**, **13**, and **14** molded from a single mass of plastic material, with the panels being integrally joined at the corners of the crate and extending therefrom in generally perpendicular relation to define a rectangular crate. A pair of integrally molded, vertically spaced flanges **15**, **16** are formed around the crate adjacent the top outer periphery thereof, forming a substantially C-shaped channel around the periphery of the crate adjacent its top. An endless reinforcing rod member **17** is positioned within the channel between the flanges **15**, **16** to reinforce the top of the crate in the manner similar to that illustrated in my U.S. Patent No. 3,341,060. A metal stacking member is mounted on each corner of the crate and projects upwardly therefrom above the flange **15**, providing a guide to facilitate stacking of the crates one upon another. Since the stacking members are identical in construction, they have each been designated generally by the reference numeral **18**, and identical reference numerals will be used throughout this description to refer to corresponding parts of the respective stacking members. Similarly, since the respective corners of the crate are identical to one another, at least insofar as the mounting of the stacking members are concerned, only the corner of the crate defined by the intersection of side panel **11** and end panel **14** will be described in detail, and identical reference numerals shall be employed to designate like parts of the respective corners of the crate.

A vertically extending reinforcing rib **20** is integrally molded with and extends outwardly from the corner of the crate, with the rib **20** terminating in a substantially horizontal platform **21** in vertically spaced relation with respect to the reinforcing rod **17**. A pair of diagonal reinforcing webs **22**, **23** extend upwardly from the platform **21**, with the web **22** extending along and being integrally molded with the side panel **11**, and web **23** being integrally molded with and extending along the outer surface of end panel **14**. An elongated opening **24** is formed in wall **11** along the upper edge of web **22**, and a similar opening **25** is formed in end panel **14**. Reinforcing web **22** is integrally joined at its upper end with a second vertically extending reinforcing web **26** extending outwardly from the outer surface of panel **11**, with the web **26** being integrally joined at its upper end with the flange **16**. A recess **27** is formed in the side of web **26**, the purpose of which will be more fully explained hereinbelow. A similar vertically extending web **28**, having a recess **29** formed therein, is integrally molded on the surface of end panel **14**. An opening **30** is formed in the corner of the crate, with the opening extending around the corner into panels **11** and **14**, between the webs **26** and **28**, adjacent the top thereof. Opening **30** extends upwardly into the channel defined by the flanges **15** and **16**, so that a portion of the flange **16** is removed at the corner of the crate.

Each of the stacking members **18** are formed from a single piece of sheet metal, and include a body portion **31** extending around the corner of the crate on the outer surface thereof, and a stacking ear portion **32** projecting through the opening **30** into the crate and upwardly above the upper surface of the flange **15**. As is most clearly illustrated in FIG. 5, the body portion **31** is bent at sub-

stantially right angles along a vertical line at the corner of the crate, with its two sides **33, 34** overlying the outer surfaces of the side panel **11** and end panel **14**, respectively adjacent the corner of the crate. An offset shoulder **35** is formed on the lateral vertical edge of side **33**, with the shoulder **35** engaging the reinforcing web **26** and extending into the recess **27**. A similar offset shoulder **36** is formed on the vertical side edge of the side **34**, with the shoulder **36** engaging the web **28** and extending into the recess **29**. An outwardly turned, substantially horizontal foot **37** is integrally formed on the bottom of the body **31**, with the foot **37** engaging and resting on the top horizontal surface of the platform **21** to provide vertical support for the stacking member.

A pair of tabs **38, 39**, respectively, project through the openings **24, 25** and are deformed downwardly within the crate so that the tab **38** engages the inner surface of panel **11** and the tab **39** engages the inner surface of end panel **14**. Tabs **38** and **39** retain the bottom of the body **31** in firm engagement with the outer surface of the corner of the crate. Reinforcing webs **22** and **23** reinforce their respective associated panels in the area of the tabs **38** and **39**, and the tabs engaging the side of the opening also provide vertical support for the reinforcing element.

As shown in FIGS. 2 and 4 the stacking ear portion **32** of the stacking element **18** is offset inwardly with respect to the body portion **31**, and projects upwardly therefrom within the corner of the crate to terminate above the top of the flange **15**, with the projecting portion forming a guide for stacking a plurality of similar crates one upon another. As illustrated in FIG. 2, such crates are normally provided with an opening or recess at each corner of their bottom panel so that the stacking ears of a crate may project upwardly into another crate stacked thereon, with the four stacking ears cooperating to vertically align the superimposed crates. The stacking ear **32** projects through the opening **30** and engages the inner surface of the panels **11** and **14** at the corner immediately inboard of the reinforcing element **17** so that there is no danger of the stacking element being pulled out of the crate by reason of failure of the plastic material outboard of the stacking ear **32**.

The stacking member **18** is assembled in the crate by first inserting the stacking ear **32** through the opening **30**, then swinging the bottom of the body portion **31** inwardly toward the corner of the crate to project the tabs **38, 39** through the openings **24, 25**, respectively, and to position the foot **37** on the horizontal platform **21**. In this position the stacking ear **32** is held firmly against the inner, upper corner of the crate and the body of the stacking element engages the outer surface of the corner of the crate. Also, the shoulders **35, 36** firmly engage the reinforcing ribs **27, 29** to provide additional lateral support for the stacking member. With the stacking member firmly retained in this position, the tabs **38, 39** are deformed downwardly into firm engagement with the inner surface of the associated panel so that the stacking element is rigidly and permanently locked in place.

A molded plastic crate employing a stacking element of the type described above may be used interchangeably with the conventional crates, and the stacking element and its associated support structure are sufficiently rigid and strong to withstand normal use throughout the life of the crate.

While I have disclosed a preferred embodiment of my invention, I wish it understood that I do not intend to be restricted solely thereto, but that I do intend to include all embodiments thereof which would be apparent to one skilled in the art and which comes within the spirit and scope of my invention.

I claim:

1. In a material handling crate including a bottom panel, a side panel and an end panel extending upwardly from said bottom panel and laterally from one another

at a corner of the crate, said side and said end panels being integrally joined at said corner and being molded from a single homogeneous mass of plastic material, the improvement comprising a stacking ear formed from sheet metal mounted on said crate at said corner, said stacking ear including a body extending around said corner and along a portion of the outer surface of said side and said end panels, means securing the lower portion of said body to said side and said end panels, an opening formed in said crate at said corner, and an ear portion integrally formed with said body, said ear portion extending through said opening and projecting upwardly therefrom within said crate at said corner and overlaying the inner surface of a portion of said side and said end panels and projecting upwardly thereabove.

2. The material handling crate defined in claim **1** further comprising reinforcing ribs integrally molded on and extending outwardly from said side and said end panels adjacent said corner, and means on said body engaging said reinforcing ribs.

3. The material handling crate defined in claim **1** further comprising a horizontally extending ledge integrally molded with said side and said end panels and extending outwardly from said corner, and foot means on said body engaging said ledge, said ledge and said foot means cooperating to provide vertical support for said stacking ear.

4. The material handling crate defined in claim **1** wherein said means securing the lower portion of said body to said side and said end panels comprises a pair of openings formed one in said side panel and one in said end panel adjacent said lower portion, and a pair of tabs integrally formed with said body, said tabs extending one through each of said openings and engaging the inner surface of the respective panels.

5. The material handling crate defined in claim **4** further comprising an endless reinforcing rod member extending around the outer periphery of said crate adjacent the top thereof.

6. The material handling crate defined in claim **5** wherein said endless reinforcing rod member extends around said corner in outwardly spaced relation with respect to said ear portion, said reinforcing rod member reinforcing said side and end panels at said corner to prevent damage resulting from loads applied to said ear portion.

7. In a material handling crate including a generally rectangular bottom panel, a pair of opposed generally vertical side panels and a pair of opposed generally vertical end panels extending upwardly from said bottom panel, said side and said end panels being integrally molded from a single homogeneous mass of plastic material and joined at the corners of the crate, and an endless reinforcing rod member extending around the outer periphery of said crate adjacent the top thereof, the improvement comprising a stacking member formed from sheet metal and rigidly mounted on and projecting above the crate at each corner thereof, said stacking members each including a body extending around one corner of said crate and along a portion of the outer surface of the adjacent side and end panels and a stacking ear portion, means securing the lower portion of said bodies to the adjacent side and end panels, an opening formed in said side and end panels at each corner of the crate, said openings extending around said corners adjacent said endless reinforcing ring, said stacking ear portions each extending through one of said openings and projecting upwardly therefrom within said crate, said ear portions extending closely adjacent the inner surface of a portion of said side and said end panels and projecting upwardly thereabove.

8. The material handling crate defined in claim **7** further comprising reinforcing ribs integrally molded on and extending outwardly from said side and end panels

adjacent each said corner, means on said body portions engaging and overlaying the adjacent reinforcing ribs, a ledge integrally molded with said side and end panels at each said corner, and foot means on said body portions for engaging the adjacent ledge, said ledge and said foot means cooperating to provide vertical support to said stacking members.

9. The material handling crate defined in claim 8 wherein said means securing the lower portion of said bodies comprises a pair of openings formed one in said side and one in said end panels at each said corner, and a pair of tabs formed on said lower portion of each said body, said tabs each extending through one of said openings and engaging the inner surface of one of said panels.

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GEORGE E. LOWRANCE, *Primary Examiner.*

U.S. Cl. X.R.

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