Dec. 20, 1966 R. J. READING 3,292,749

PLASTIC CASES

Original Filed Oct. 24, 1963 2 Sheets-Sheet 1

Fig. 1.

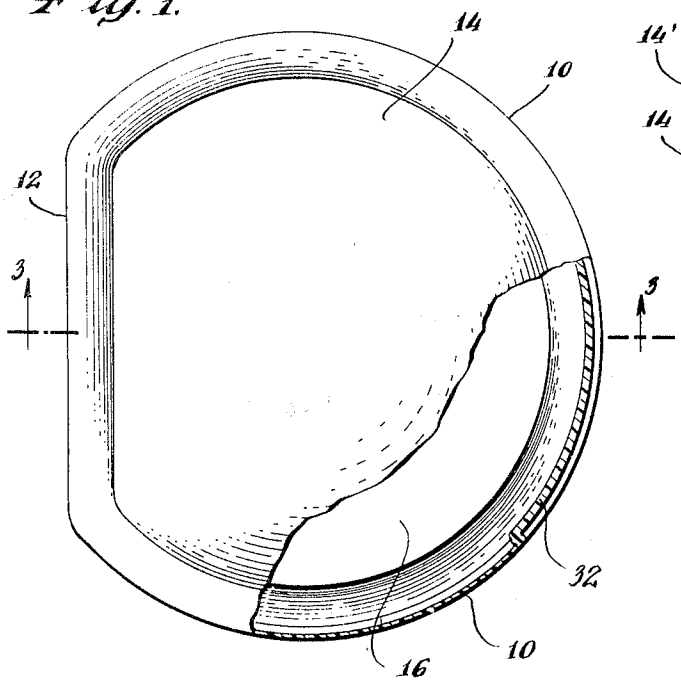


Fig. 2.

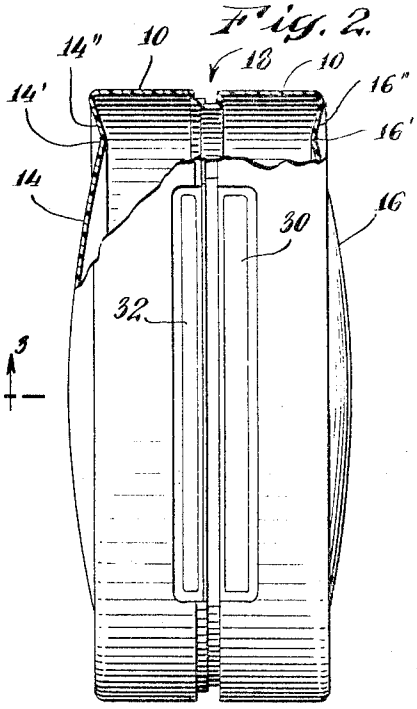


Fig. 3.

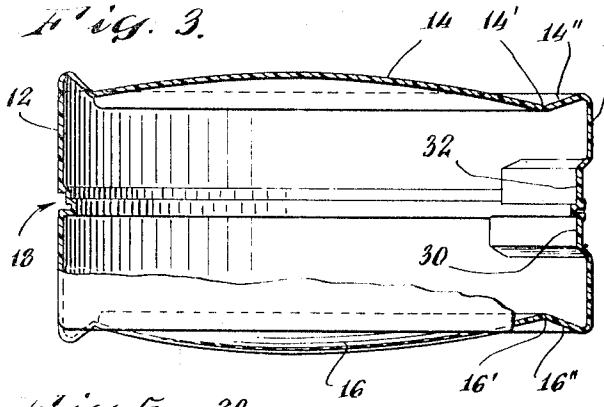


Fig. 4.

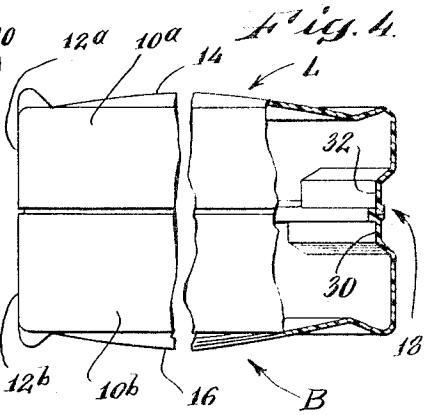
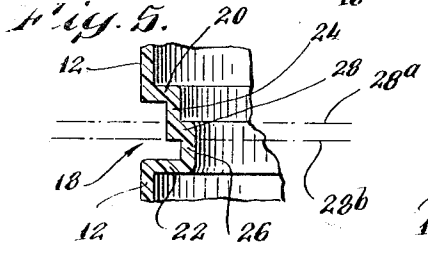


Fig. 5.



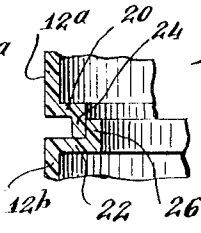


Fig. 6.

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Fig. 7.

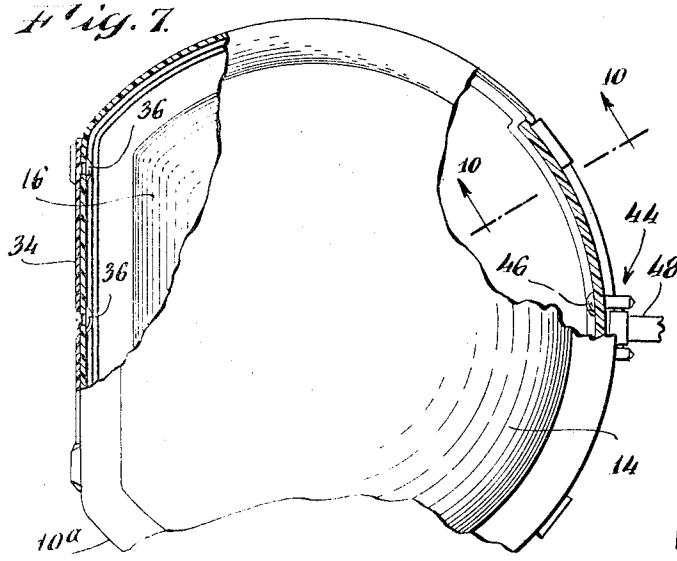


Fig. 8.

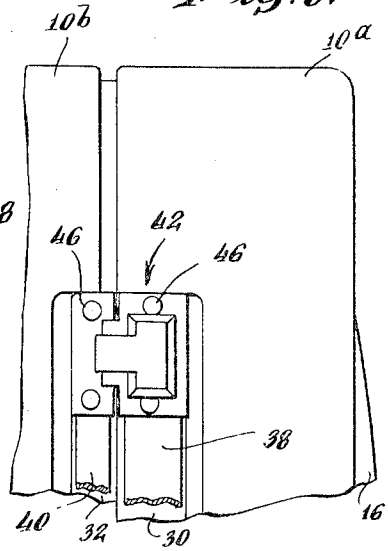


Fig. 9.

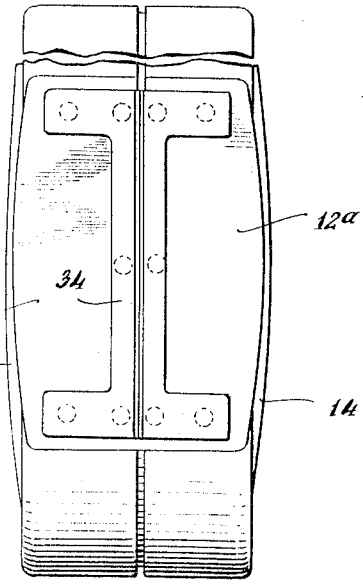


Fig. 10.

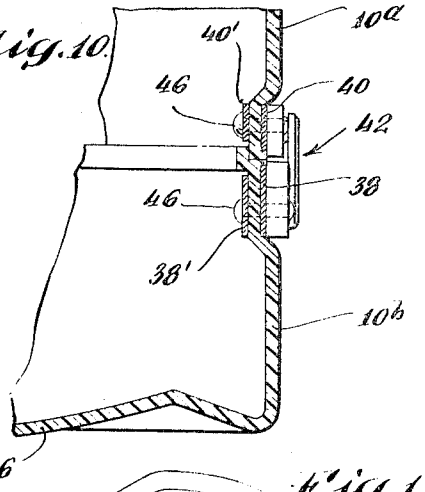


Fig. 11.

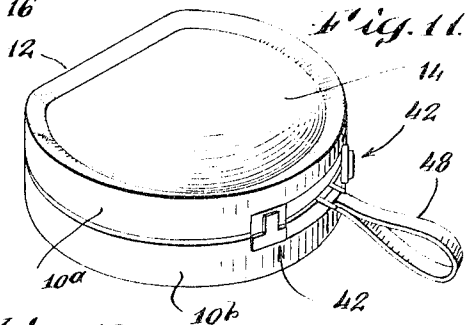


Fig. 12.

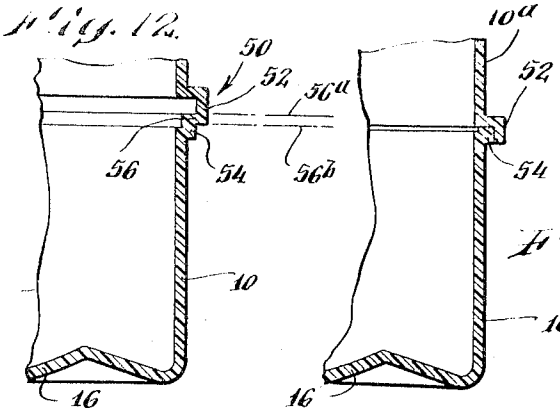


Fig. 13.

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PLASTIC CASES

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Original application Oct. 24, 1963, Ser. No. 318,586. Divided and this application June 9, 1965, Ser. No. 470,661

3 Claims. (Cl. 190—56)

This application is a division of application Serial Number 318,586, filed October 24, 1963.

This invention relates to cases and, more particularly, to inexpensive plastic luggage.

The traditional method for manufacturing luggage is relatively complex and requires a number of different steps. Conventional luggage is built around a metal frame. This metal frame forms the contacting edges of the finished case and is also the chief source of mechanical strength. For this reason, the metal frame is carefully designed and is produced to relatively exact tolerances to provide both the proper fit between the body and lid of the luggage and the sturdiness required as the basic foundation element. The metal frame comprises two rims, each associated with a different section of the completed case. To these rims are fastened hardware and the covering which forms the body and lid of the case. The covering may be, for example, leather, plastic, cloth, or other sheet material. The two rims are hinged together and are provided with the necessary latches and with a handle for carrying the completed case. It will thus be seen that, in luggage constructed according to the prior art, the metal frame is an important feature which provides the required fit between the body and lid of a piece of luggage, functions as a base for the luggage hardware, and serves as the primary structural connection between the handle and the contents of the completed case. It will also be apparent that this method of construction utilizes a number of different materials and involves a number of steps and separate operations. For this reason, luggage constructed in accordance with the prior art is relatively expensive.

Accordingly, it is the primary object of this invention to provide luggage of improved construction. Other objects are to provide such luggage which may be readily mass-produced, may be inexpensively manufactured, will utilize inexpensive materials, will require fewer parts, and is of high quality.

The manner in which the foregoing objects are achieved will be more apparent from the following description, the appended claims, and the figures of the attached drawings, wherein:

FIG. 1 is a plan view of an intermediate article produced in accordance with the method of this invention, partially broken away to illustrate its construction;

FIG. 2 is a right end view of the article of FIG. 1;

FIG. 3 is a cross sectional view taken substantially along the line 3—3 of FIG. 1;

FIG. 4 is a front view of the article of FIGS. 1–3 at a later stage of construction, partially cut away for purposes of illustraiton;

FIG. 5 is an enlarged detail of the central groove on the intermediate article of FIGS. 1–3;

FIG. 6 is an enlarged detail of the flanges of the article of FIG. 4 as produced from the groove illustrated in FIGS. 3 and 5;

FIG. 7 is a plan view showing a completed luggage case constructed in accordance with the invention, partially broken away to illustrate the mounting of the luggage hardware;

FIG. 8 is an enlarged detail of a latch mounted on the case between the body and lid of the completed luggage case;

FIG. 9 is a left end view of the case of FIG. 7;

FIG. 10 is an enlarged section taken along the line 10—10 of FIG. 7;

FIG. 11 is a perspective view of the luggage case of FIGS. 7–10;

FIG. 12 illustrates a modification in the groove formation of the intermediate article employed in this invention; and

FIG. 13 illustrates the flange produced from the modified groove formation of FIG. 12.

In accordance with this invention, a hollow intermediate case-like article is produced which defines upon its surface a groove formation comprising a pair of interconnected flanges. The intermediate article is then cut along the groove formation in such a manner that the interconnecting material between the flanges is removed. The two halves of a case which are thereby produced comprise luggage sections and are joined by suitable hinges and latches so that the flanges on the two sections fit into one another.

The method disclosed herein is primarily adapted to the production of plastic luggage by a blow molding process. Blow molding is a well-known method for forming hollow plastic articles. One technique of blow molding, for example, involves the production of a tube of a suitable thermoplastic material such as polyethylene, polypropylene, or styrene. The tube is placed in a heated mold and the ends of the tube are pinched. A needle is then inserted into the tube and air, or a similar compressible medium, is injected into the tube which thereupon expands to take the form of the mold. The mold is then cooled and the completed object removed. It will be readily understood that blow molding is a rapid and economical method for manufacturing many types of articles. However, it will also be readily understood that one of the characteristics of blow molding is that it produces a completely enclosed hollow object. By means of the present invention, there is provided a blow molded article which can be cut to provide the body and lid portions of a flanged container.

In the attached drawings, there is disclosed a method of manufacturing a lady's hat box, which is merely one example of the various types of luggage and similar containers that may be manufactured by this invention. FIGS. 1, 2, and 3 illustrate a hollow intermediate article produced from plastic by the blow molding process. The article is generally drum-shaped and includes a cylindrical edge wall 10 terminating at a flattened base 12 and bounded by a first side wall 14 and a second side wall 16. The edge wall 10 and base 12 define a centrally positioned groove formation 18 which extends completely around the perimeter of the molded article. The cross section of this groove formation is most clearly illustrated in the enlarged detail of FIG. 5. As will be seen from FIG. 5, groove formation 18 is defined on one side by a relatively short, inwardly-projecting annular shelf 20 and on the other side by a somewhat longer inwardly-projecting annular shelf 22. The bottom, i.e., radially inner side, of groove formation 18 is at two levels. The upper level is formed by an outer cylindrical flange 24 projecting from shelf 20 and the other level is formed by an inner cylindrical flange 26 projecting from shelf 22. Flanges 24 and 26 are interconneced by means of a common portion of material generally designated 28 and bounded by planes 28*a*, 28*b*. It is important to note that the radially outer surface of the inner flange 26

and the radially inner surface of the outer flange 24 coincide.

After removal of the intermediate article shown in FIGS. 1–3 from the mold, it is separated into two sections by removing the material between planes 28*a*, 28*b*. This can be easily accomplished by means of a single cut, using a saw of suitable width. Inspection of FIG. 5 will indicate that removal of material between the planes 28*a*, 28*b* automatically removes all interconnecting material 28 between the outer flange 24 and the inner flange 26, and thereby leaves them completely independent of one another. It has already been explained that the inner surface of flange 24 and the outer surface of flange 26 lie on essentially the same cylindrical surface. Accordingly, these surfaces will now nest alongside one another as is illustrated in FIG. 6. It will now be apparent that, in place of a single hollow article, there has been formed a pair of sections, comprising a body B and a lid L, as is illustrated in FIG. 4. The lid L is defined by side wall 14, edge wall 10*a*, and base wall 12*a*. Body B is defined by side wall 16, edge wall 10*b*, and base wall 12*b*. Depending from edge wall 10*a* and base wall 12*a* is recessed flange 24 which fits snugly around matching flange 26 supported by the edge wall 10*b* and base wall 12*b* of body B. It will thus be apparent that, by a single blow molding operation followed by a single saw cut, there has been provided a pair of casing sections forming an essentially complete hat box and provided with nesting flanges for protection of the contents from dust, dirt and moisture.

Before proceeding further, it would be advisable to note certain structural details of the article of FIGS. 1–3. These details are not directly related to the production of the nesting flanges, but are nevertheless useful in achieving a practical luggage construction. One of these details relates to the construction of the flanges themselves. Although it would be possible to so construct the flanges of the luggage case so that at least one of them would not be offset from its edge wall, this would result in a loss of strength. It is to be remembered that the product of this invention replaces conventional luggage wherein a metal frame serves as a reinforcing element for retaining the shape of the luggage and transferring the load to the handle. In the present invention, the flanges 24 and 26, which are offset from their respective edge walls, serve to perform these functions of the metal frame.

In addition to the foregoing feature, various other techniques for strengthening the plastic sections of the luggage may be employed. For example, in the illustrated hat box, the side walls 14, 16, which are essentially convex, are each terminated at an annular groove 14′ or 16′, which then adjoins the edge wall 10 and base 12 by an outwardly sloping conical surface 14″, 16″. This type of construction greatly adds to the rigidity of the plastic carrying case. A recess 30 and a recess 32 are also provided adjacent the groove formation 18 for attaching a handle and the required latches. It will be apparent to those skilled in the art that these recesses also add substantially to the rigidity of the final product.

The two sections of the hat box formed by cutting through the intermediate article are connected by a hinge 34, as is mostly clearly illustrated in FIGS. 7 and 9. In keeping with the objective of low cost luggage, this hinge may be advantageously constructed of extruded plastic, such as polypropylene, with the hinge and feet combined. Furthermore, the hinge may be constructed to include molded studs 36 positioned to be inserted into corresponding predrilled or premolded holes in the base of the hat box. After insertion into the holes, these studs may be heat formed and expanded to secure the hinge 34 to the case sections.

FIGS. 7, 8 and 10 illustrate the mounting of the latches 42 and handle 48. These members are secured by means of elongated metal plates 38, 40 mounted on the outer surface of the recesses 30, 32. Corresponding back-up plates 38′, 40′ are mounted on the inner surfaces of the case walls opposite plates 38, 40. The latches 42 and the handle support 44 are then mounted externally of the case by means of rivets 46 extending through the case walls and the metal plates 38, 38′, 40, 40′. A suitable strap-like handle 48 may then be connected to the handle support 44. The completed hat box, constructed in accordance with this invention, is illustrated in FIG. 11.

It will be apparent that a number of modifications and variations may be made in this invention. For example, in the procedure just described for producing the hat box, the nesting flanges on the hat box case were illustrated and described as being positioned within the edge wall of the intermediate article. However, these may also be formed by a convex protrusion extending radially outwardly from the edge wall. This is illustrated in FIGS. 12 and 13. FIG. 12 illustrates the formation of a raised ridge 50 on the outer surface of edge wall 10. In this construction, the flanges 52, 54 are positioned outwardly of the case surface. Upon separating the component parts of the case by cutting between planes 56*a*, 56*b* to remove the interconnecting material 56, the construction of FIG. 13 results, with the overlapping flanges being positioned on the outer surface of the hat box. When using this type of construction, it is advisable to extend the interlocking flanges only around the curved portion of the hat box so as not to interfere with the flattened base 12. Various other minor modifications relating, for example, to the mounting of hardware may be made but will be apparent to those skilled in the art. Whether the plastic luggage described herein is manufactured with the internal or the external sealing flange, it will be noted that a highly accurate fit between the body and lid will result. This is a natural consequence of the disclosed technique of molding the case as a single unit and then dividing it.

In addition to the foregoing modifications, many others will be apparent. It will also be obvious that although the foregoing description has been concerned with the construction of a lady's hat box, the techniques employed are equally adapted to use in making other types of luggage. In each instance, luggage constructed in accordance with this invention will be characterized by being both rigid and inexpensive. Accordingly, it is to be understood that the invention is limited only by the scope of the following claims.

What I claim as new and desire to secure by Letters Patent of the United States is:

1. A plastic luggage case comprising: a body section and a lid section defining spaced first and second side walls and abuttable first and second edge walls, each of said edge walls being integral with a different one of said side walls and defining a recessed portion therein; a first dependent flange integral with the edge of said first edge wall and laterally displaced therefrom; a second dependent flange integral with the edge of said second edge wall and laterally displaced therefrom, said first and second flanges being disposed to lie in side by side relationship when said case is closed; hinge means interconnecting said body and lid sections; a metal facing plate on the outer surface of each of said edge walls and within said recessed portion; a metal back-up plate on the inner surface of each of said edge walls; and latch means positioned to selectively secure said body and lid sections to each other, a portion of said latch means being secured to each of said edge walls by fastening means passing through said wall and both of said plates.

2. The case of claim 1 wherein said hinge means is a solid plastic hinge.

3. The case of claim 2 wherein handle means is secured to at least one of said edge walls by fastening means passing through said wall and both of said plates.

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5

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