

[54] **INTEGRALLY MOLDED LOCKING DEVICE**

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[51] Int. Cl. .... B65d 7/00, B65d 43/12, A01k 1/02

[58] Field of Search ..... 220/4 R, 4 D, 4 F, 220/41, 22, 20; 215/32; 119/19

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[57] **ABSTRACT**

An improved lightweight molded container of relatively high load-bearing capacity and easy assembly and disassembly is provided which comprises an upper enclosure slideably engaged with a lower tray through mating tapered flanges. The container is formed from a single hollow container body molded with a divider strip initially interconnecting the flanges. The divider strip is removed to separate the upper enclosure and lower tray, after which these components are slideably assembled together. Locking means and an integrally formed well with access port may also be provided.

**5 Claims, 7 Drawing Figures**

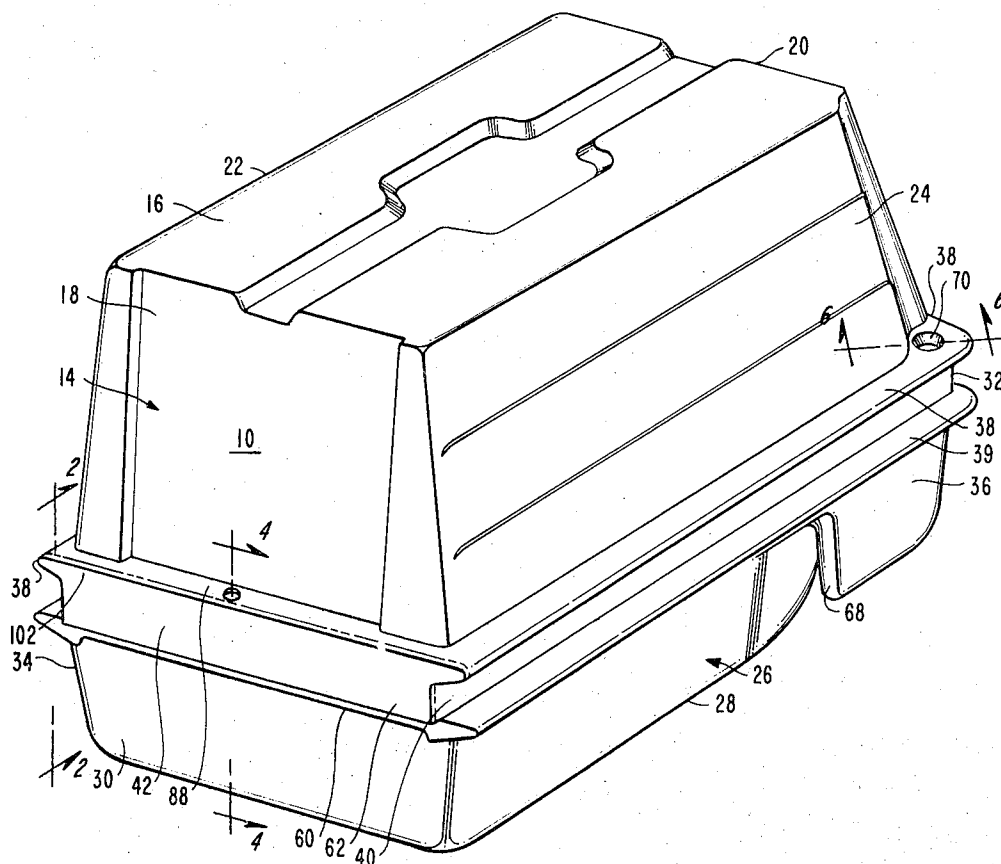


FIG.-1

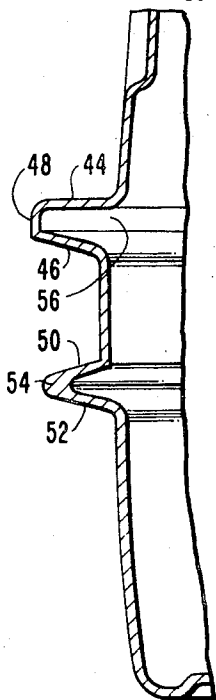
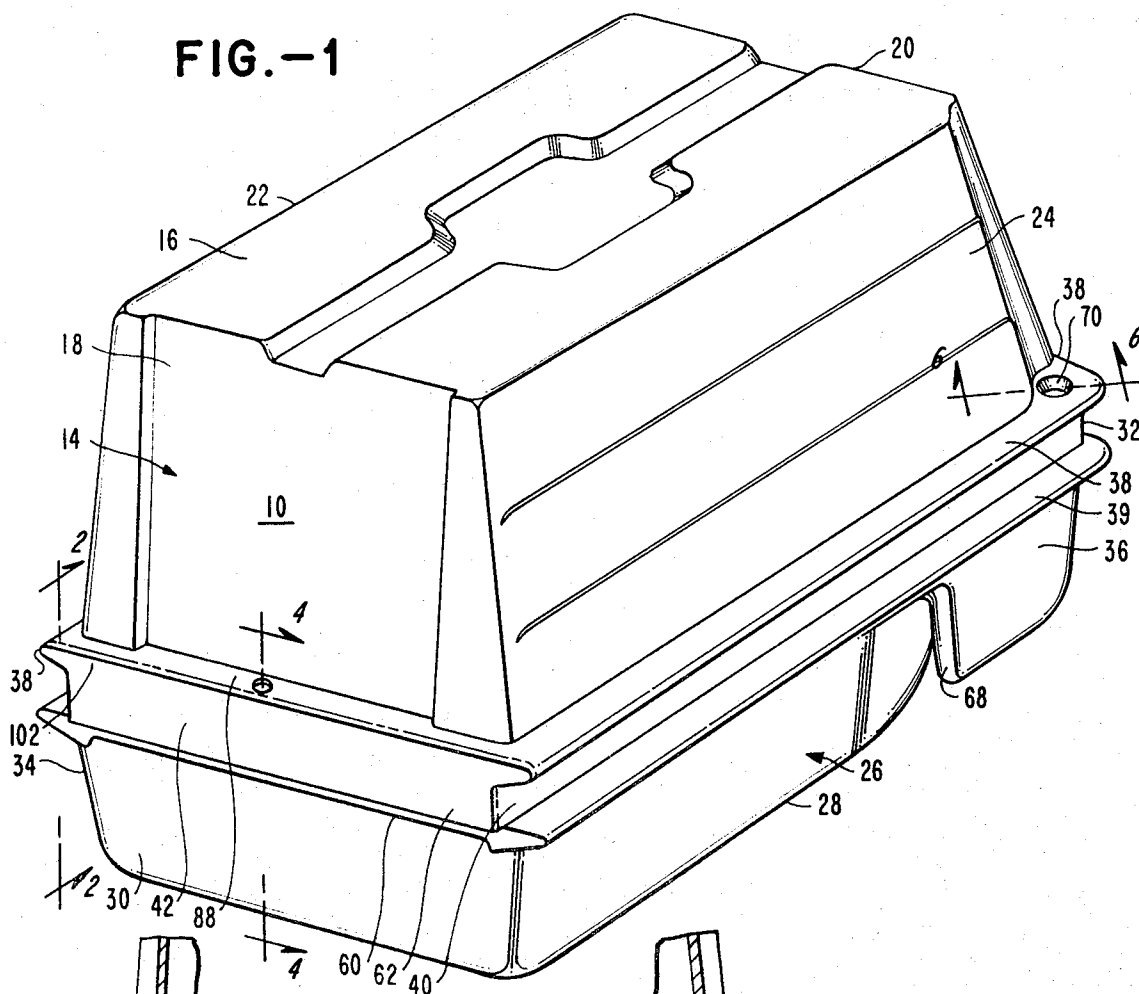


FIG.-2

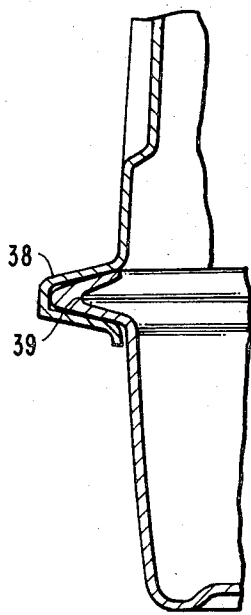


FIG.-3

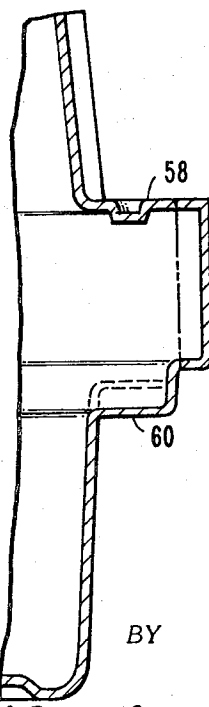


FIG.-4

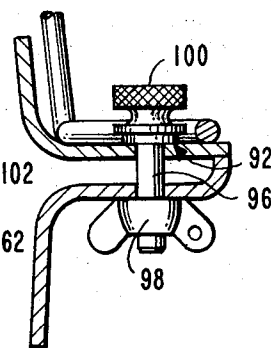


FIG.-5

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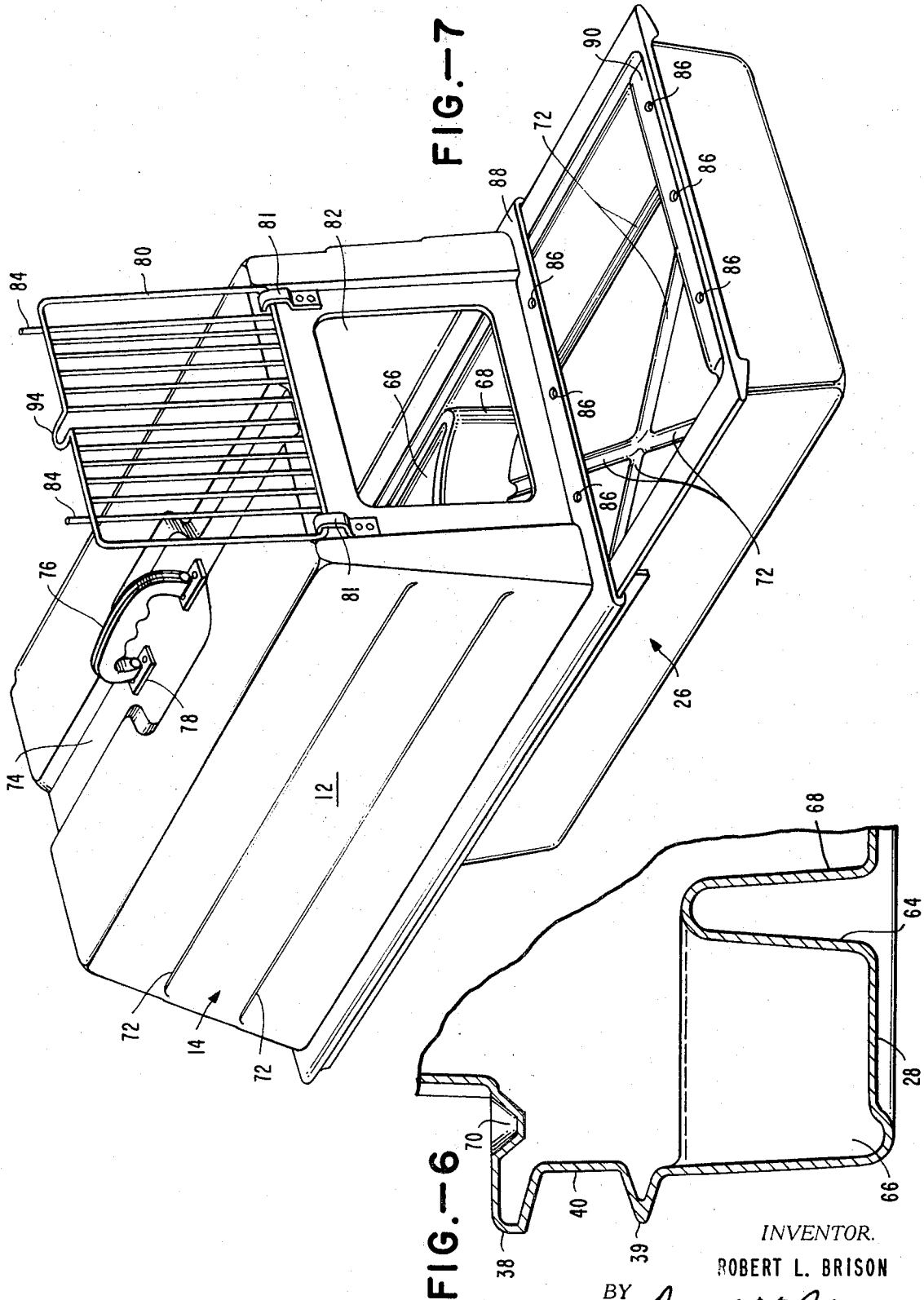


FIG.-6

FIG.-7

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## INTEGRALLY MOLDED LOCKING DEVICE

## BACKGROUND

## 1. Field of Invention

This invention relates to containers and methods of making the same.

## 2. Prior Art

Most portable containers and the like which are fabricated by molding operations employ components which are separately molded and which, thereafter, are assembled. Moreover, most of such containers, when fabricated of light-weight materials, either are incapable of adequately supporting heavy loads or employ complicated structure support means. This is particularly the case where the components thereof are required to detach from one another for loading, cleaning and related purposes. Accordingly, it would be desirable to provide an improved construction for a container which could easily be molded of lightweight materials in a single operation and which provide for easy assembly and disassembly while also providing an inherently large load-bearing capacity.

## SUMMARY OF INVENTION

The invention is substantially as set forth in the Abstract above. In this regard, an improved light-weight portable container can be provided by a single molding operation to form a single hollow molded body which then could be separated into the basic two components of the container. Such container has an upper enclosure slideably received over a lower tray by means of mating flanges on these two components. The assembly requires no special load-bearing support. In forming the container, a single piece container body is initially molded with a divider strip separating the integral flanges thereof. This strip is then removed from between the flanges and from a portion of a front projection to form the two components thereof.

## DRAWINGS

FIG. 1 is a perspective view of a preferred embodiment of the molded hollow container body of the invention;

FIG. 2 is an enlarged partial section taken along the section line 2—2 of FIG. 1;

FIG. 3 is an enlarged partial section of a portion of the body of FIG. 1 after removal of the divider strip between the flanges thereof and after assembly of the upper flange over the lower flange;

FIG. 4 is an enlarged partial section taken along the section line 4—4 of FIG. 1;

FIG. 5 is an enlarged partial section of a portion of one embodiment of locking means for the container of the invention;

FIG. 6 is an enlarged partial section taken along the section line 6—6 of FIG. 1; and,

FIG. 7 is a perspective view of a preferred embodiment of the container of the invention fabricated from the container body of FIG. 1.

## DETAILED DESCRIPTION

As shown in perspective view in FIG. 1, a preferred embodiment of the container body of the invention is depicted. The container body 10 after full fabrication and assembly forms the container 12 of FIG. 7. Body 10 includes an upper enclosure 14 having walls integrally joined together, which walls are identified as top

walls 16, front end and rear end walls, 18 and 20, respectively, and opposed side walls 22 and 24, respectively. The container body also includes a lower tray portion 26, having integrally molded bottom wall 28, opposed front end and rear end walls 30 and 32, respectively, and opposed side walls, 34 and 36, respectively. Disposed between the enclosure 14 and tray 26 are a pair of tapered flanges, specifically a tapered upper flange 38 integral with the lower end of the opposed side walls 22 and 24 and that of the rear end wall 20 of the enclosure 14 and extending outwardly therefrom, and a tapered lower flange 39 integral with the upper end of the opposed side walls 34 and 36 and rear end wall 32 of the lower tray 26. The two flanges are separated by a divider strip 40. Flanges 38 and 39 may be of the general configuration shown in partial section FIG. 2.

A front projection 42 interconnects the lower end of the front end wall 18 of the upper enclosure 14, the upper end of the front end wall 30 of the lower tray 26 and the front end of the upper and lower flanges 38 and 39 and divider 40, and extends forwardly therefrom. Upper flange 38 is dimensioned with respect to lower flange 39 so that the lower flange 39 (after removal of divider strip 40) can nest in mating arrangement with upper flange 38 for slideable engagement therewith as shown in FIG. 3. In this regard, upper flange 38 initially comprises a downwardly and outwardly directed lip 44, an upwardly and outwardly directed lip 46 and a bridging wall 48 interconnecting lips 44 and 46 at their outer ends. In like manner, flange 39 may include an upper lip 50 and lower lip 52 meeting at thickened point 54. Projection 42 may be generally box-like in configuration, as shown in section in FIG. 4, with rim-forming walls 58 and 60 and bridging wall 62.

As shown in FIGS. 1 and 7, a portion 64 of the bottom wall 28 adjacent the flanges 38 and 39 includes an upwardly extending, open-topped container well 66 having an upstanding rim 68. Well 66 may be integrally formed in wall 28 and is useable as means for holding water or food or the like when the container is employed, for example, as a kennel. An access port 70 may be provided extending through upper flange 38 into communication with well 66 for passage of liquid or solid material into well 66 while enclosure 14 is disposed over tray 26 in container 12 as shown in FIG. 7. It will be understood that well 66 and access port 70 are optional.

In the embodiment of container 12 illustrated in FIG. 7, a plurality of reinforcing ribs 72 are shown disposed in bottom wall 28 and in side walls 22 and 24, and a like reinforcement area 74 defining a recess is provided in top wall 16 for such purposes and for easy containment of a handle 76 secured to wall 16, as by brackets 78.

Further, as shown in FIG. 7, a grid 80 of metal, plastic, glass or the like, is hingedly secured to wall 18 by hinges 81 which also permit upward and downward movement of grid 80 over loading aperture 82 defined in wall 18. The grid 80 may be provided with depending projections 84 adapted to be received within aligned apertures 86 extending through rims 88 and 90 of enclosure 14 and tray 26 so as to releaseably prevent sliding of enclosure 14 against tray 26. Through aligned apertures 86 there may be releaseably secured locking means 92 adapted to cooperate with a loop 94 of grid 80 to releaseably secure grid 80 in a closed position and to further prevent sliding of enclosure 14 away from

tray 26. Such locking means 92 may include threaded bolt 96 with fixed lower wing nut 98 and upper knurled locking nut 100 threadably received on the upper end of bolt 96.

### METHOD OF MANUFACTURING

Container body 10 may be fabricated in any suitable manner, for example, by molding polyethylene plastic or other suitable thermoplastic material in a conventional molding process. It will be understood that polyurethane, polyvinylchloride and other thermoplastic molding compounds can be employed in the molding operation to form the container body at conventional molding temperatures, for example, about 400° F. utilizing conventional equipment such as a split mold, in a rotary or other molding operation.

In accordance with the method of the present invention, after the molding of container body 10 is completed, body 10 is removed from the mold. Divider strip 40 is removed, as by cutting away from the molded container body 10, to leave flanges 38 and 39 in the configuration shown in FIG. 3 (after the cutting operation) as opposed to FIG. 2 (before the cutting operation). Portion 102 of front projection 42 is also removed. Container body 10 is now in two separate parts, represented by enclosure 14 and tray 26 each bearing one of the flanges. The upper enclosure 14 can then be slideably disposed over the lower tray 26, as shown in FIG. 7, by means of flanges 38 and 39 to form container 12. Before such assembly, loading aperture 82 can be cut or otherwise provided in front end wall 18, handle 76 and grid 80 can be assembled and secured to the appropriate container surfaces by the previously described brackets, aligned apertures 86 can be punched in rims 88 and 90 and locking means 92 can be installed. It will be understood that handle 76, grid 80, rim apertures 86, locking means 92 and well 66 and access port 70 are optional, although desirable.

The finished container 12 has a number of advantages. Since the load to be borne in tray 26 is transmitted to enclosure 14 through flanges 38 and 39 which are substantially continuous around three faces of container 12 and since flanges 38 and 39 dovetail closely, there is no tendency of enclosure 14 to pull away from tray 26, even under a heavy load. Moreover, container 12 can be formed of light-weight, durable, attractive and inexpensive thermoplastic material with a minimum of fabrication cost. Accordingly, an improved container can be fabricated by the present method, utilizing an improved container body, to provide the desired results in a simple and economical manner.

I claim:

1. An improved, unitary molded hollow container body comprising:

- a. An upper enclosure including integral top, opposed front and rear end and opposed side walls;
- b. A lower tray including integral bottom, opposed front and rear end and opposed side walls;
- c. A tapered upper flange integral with the lower end of said opposed side walls and said rear end wall of said upper enclosure and extending outwardly therefrom;
- d. A tapered lower flange integral with the upper end of said opposed side walls and said rear end wall of said lower tray;
- e. A divider strip interconnecting the adjacent ends of said flanges; and,

f. A front projection defining an opening for a locking means and interconnecting the lower end of said front wall of said upper enclosure, the upper end of said front wall of said lower tray, and the front end of said upper and lower flanges and said divider and extending forwardly therefrom, a portion of said bottom wall adjacent said flanges including an integral upwardly extending open-topped container well having a continuous rim, at least one of said flanges adjacent said well defining an access part to said well.

2. An improved molded container comprising, in combination:

- a. an upper enclosure including interconnected top, opposed front and rear end and opposed side walls, a tapered upper flange integral with the lower ends of said opposed side walls and said rear end wall and extending outwardly therefrom, and a forwardly extending rim integral with the front end of said upper flange and the lower end of said front end wall of said enclosure;
- b. a lower tray including interconnected bottom, opposed front and rear end and opposed side walls, a tapered lower flange integral with the upper ends of said opposed side walls and said rear end wall and extending outwardly therefrom, and a forwardly extending rim integral with the front end of said lower flange and the upper end of said front end wall of said tray, said upper flange being slideably received over said lower flange in mating engagement therewith, said rims defining aligned apertures, releaseable locking means being disposed through said aligned apertures, said front end wall of said enclosure defining an aperture for easy access to the hollow interior of said container, a portion of said bottom wall adjacent said flanges including an integral upwardly extending open-topped container well having a continuous rim, and at least one of said flanges defining an access port to said well.

3. The improved container of claim 2 wherein said container is a portable kennel and includes a grid containing a plurality of lower projections, said grid being hingeably secured to said front end wall of said enclosure, wherein said front end wall of said enclosure defines a loading aperture adjacent said grid and wherein said rims define a plurality of space aligned apertures adapted to releaseably receive said lower projections.

4. An improved, unitary molded hollow container body comprising:

- a. An upper enclosure including integral top, opposed front and rear end and opposed side walls;
- b. A lower tray including integral bottom, opposed front and rear end and opposed side walls;
- c. A tapered upper flange integral with the lower end of said opposed side walls and said rear end wall of said upper enclosure and extending outwardly therefrom;
- d. A tapered lower flange integral with the upper end of said opposed side walls and said rear end wall of said lower tray;
- e. A divider strip interconnecting the adjacent ends of said flanges; and
- f. A front projection interconnecting the lower end of said front wall of said upper enclosure, the upper end of said front wall of said lower tray, and the front end of said upper and lower flanges and said

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divider and extending forwardly therefrom, said flanges being configured and dimensioned for mating engagement such that the inner surfaces of said upper flange project from said body a slightly greater distance than the other surfaces of said lower flange. 5

5. An improved molded container comprising, in combination:

- a. an upper enclosure including interconnected top, opposed front and rear end and opposed side walls, a tapered upper flange integral with the lower ends of said opposed side walls and said rear end wall and extending outwardly therefrom, and a forwardly extending rim integral with the front end of said upper flange and the lower end of said front end wall of said enclosure; 10 15
- b. a lower tray including interconnected bottom, opposed front and rear end and opposed side walls, a

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tapered lower flange integral with the upper ends of said opposed side walls and said rear end wall and extending outwardly therefrom, and a forwardly extending rim integral with the front end of said lower flange and the upper end of said front end wall of said tray, said upper flange being slideably received over said lower flange in mating engagement therewith, wherein each of said upper and lower flanges includes a downwardly and outwardly tapered upper lip, an upwardly and outwardly tapered lower lip and a generally vertical bridging wall interconnecting said lips at the outer end thereof, to define in said upper flange a lower flange — receiving space, and wherein a plurality of reinforcing ribs are integrally disposed in at least some of said walls.

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