# United States Patent [19]

**Harris, Jr.**

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[54] **CONTAINER CONSTRUCTION**


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[52] **U.S. Cl.** ..... **215/10**

[51] **Int. Cl.** ..... **B65d 21/02**

[58] **Field of Search** ..... 215/10; 206/501, 503, 504, 206/509, 510, 512; 220/23, 83



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*Primary Examiner*—Donald F. Norton

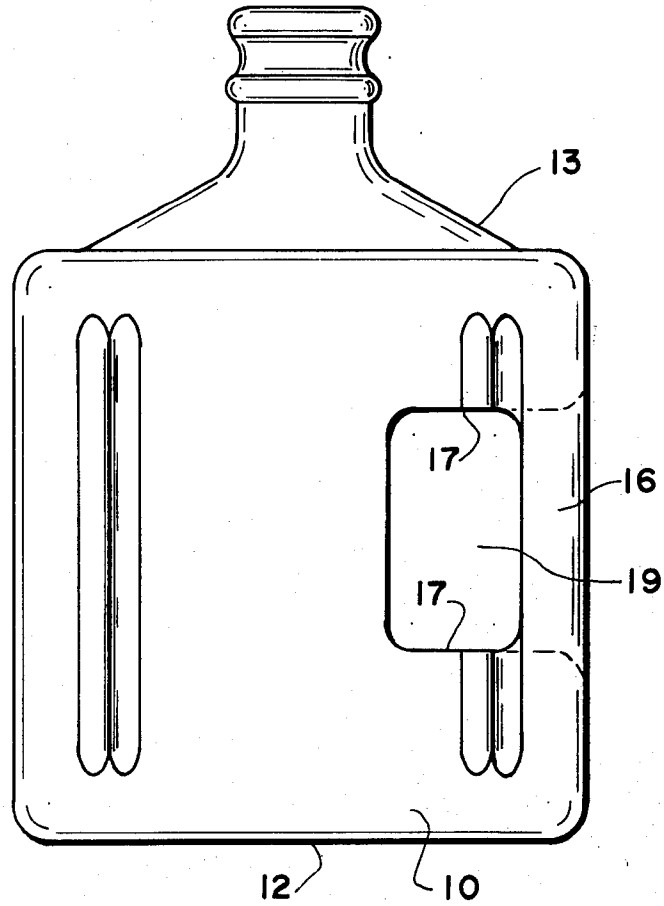
*Attorney, Agent, or Firm*—Flehr, Hohbach, Test, Albritton & Herbert



[57] **ABSTRACT**

A container suitable for storage and shipment of various materials (e.g., drinking water) and which can be made by molding methods (e.g., by molding plastic materials.) The construction is such that the containers can be stacked (e.g., on a pallet) in interlocking relationship without the use of supporting racks or crates.


**8 Claims, 8 Drawing Figures**



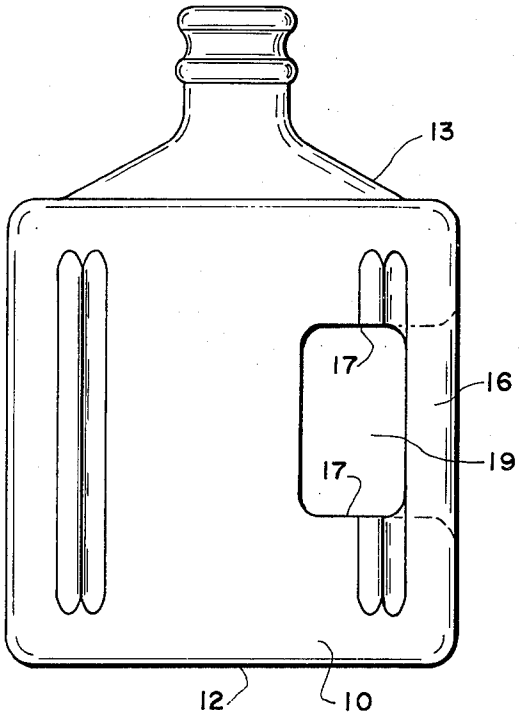



FIG.-1

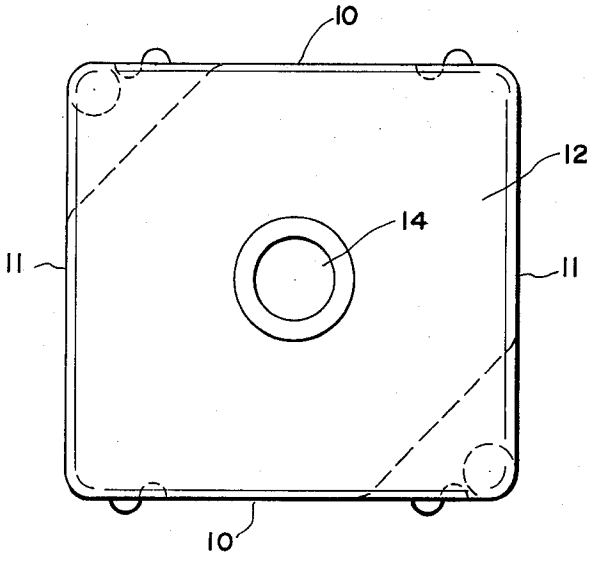



FIG.-2

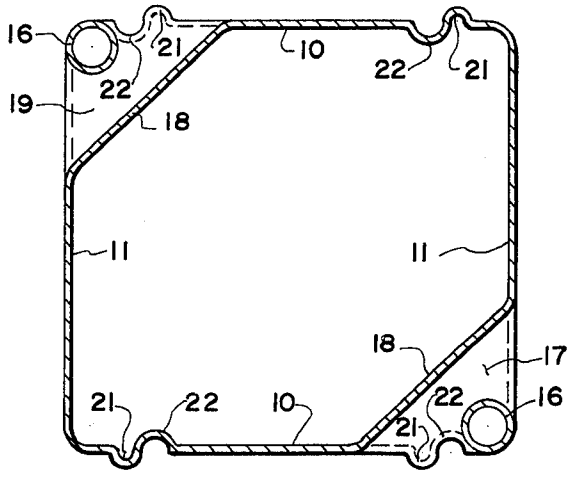



FIG.-3

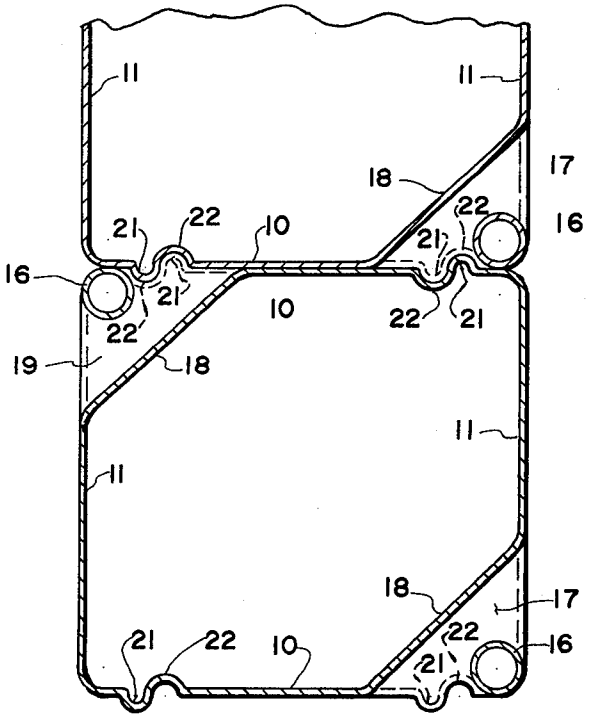



FIG.-4

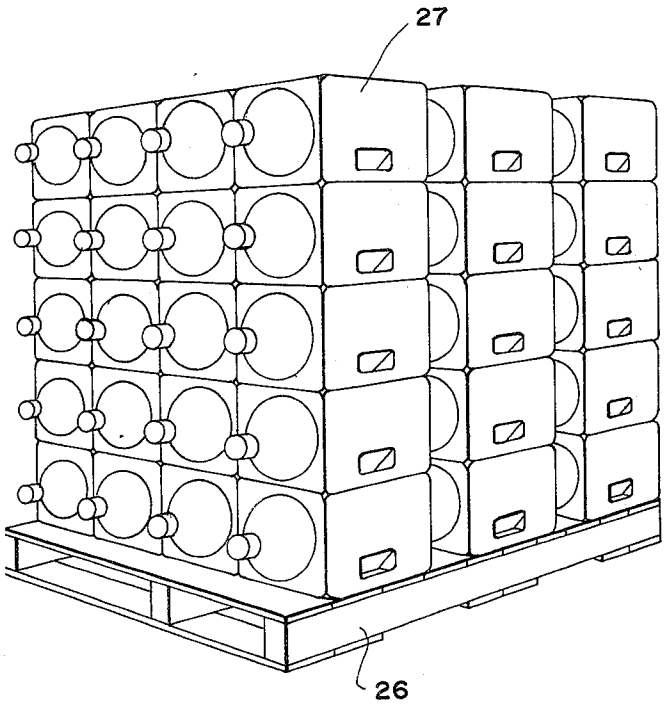



FIG.—5

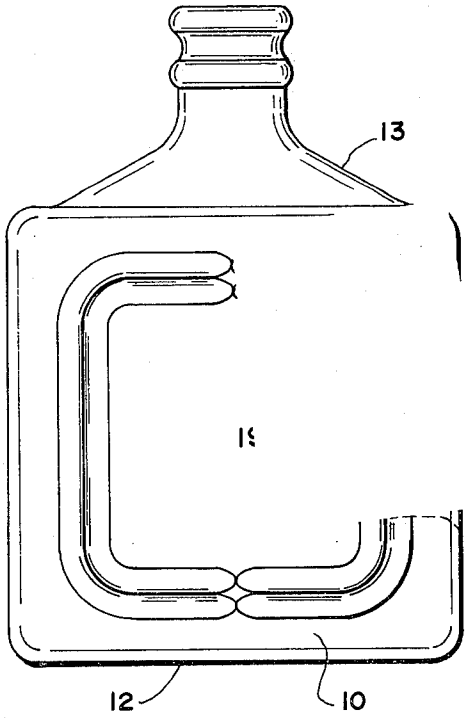



FIG.—6

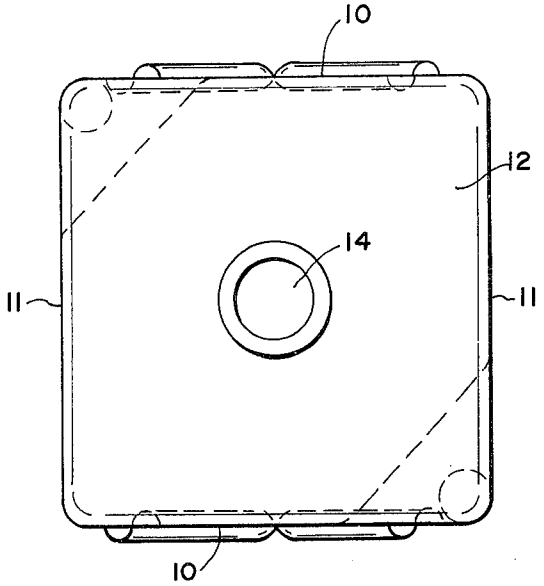



FIG.—7

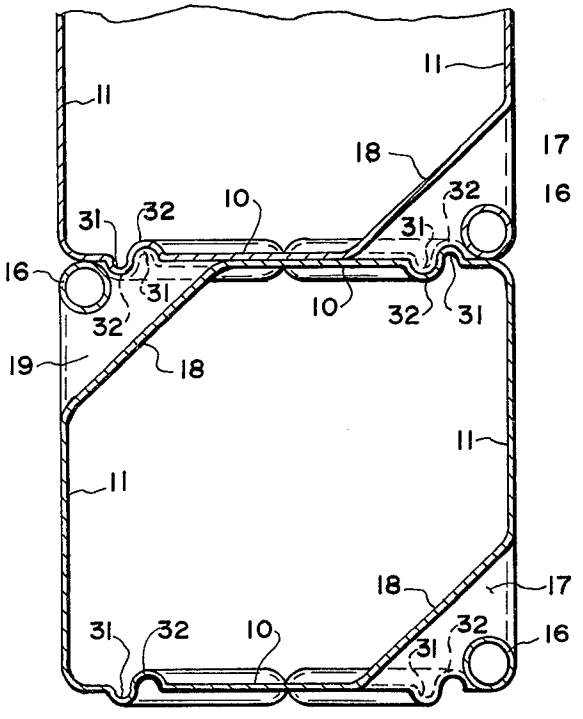



FIG.—8

# CONTAINER CONSTRUCTION

## BACKGROUND OF THE INVENTION

This invention relates generally to the construction of containers such as are used for storage and transportation of various liquids.

Conventional containers that are used for the storage and transportation of various liquid materials (e.g., bottles or carboys) are generally made of molded glass with a cylindrical body. When such containers are stored or transported by rail or truck, it is common to provide a rack or crate having a space to receive each container in horizontal position. Such racks or crates are relatively expensive, and they occupy considerable space for a given storage capacity. Much labor is required in the use of such racks or crates since each container must be fitted into and removed from a confined rack or crate space that is accessible only from the front of the rack or crate.

## SUMMARY OF THE INVENTION AND OBJECTS

In general it is an object of the present invention to provide a container construction which makes possible stacking of the containers one upon the other for storage or shipment, without the use of the conventional storage racks and crates. In general, this is accomplished by making the containers of a particular configuration and providing means whereby, when the containers are stacked in horizontal position, they are interlocked in such a manner as to prevent relative shifting.

Another object is to provide containers for liquid materials which have provision for effecting interlocking engagement between adjacent containers when stacked in horizontal position, and which construction lends itself to simple molding operations, utilizing materials like plastics.

Another object is to provide a container construction which lends itself to the manufacture of such containers from suitable plastic materials.

In general, the present invention consists of a container having side walls and a bottom wall joined together along their edges to form a generally rectangular configuration as viewed in plan. The upper or neck portion of the container is joined to the side walls and provides an access opening. On two opposite side walls of the container, means is providing for interlocking the container to adjacent upper and lower like containers, when stacked horizontally. The interlocking means on one side is complementary to the interlocking means provided upon the other side. In one form of the invention the interlocking means consists of adjacent ridges and valleys which are formed in the side walls of the container, and which provide the desired interlocking engagement with complementary ridge and valley portions of an adjacent container.

Additional objects and features of the invention will appear from the following description in which the preferred embodiments have been set forth in conjunction with the accompanying drawing.

## BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a side elevational view showing a container incorporating the invention.

FIG. 2 is a plan view of the container shown in FIG. 1.

FIG. 3 is a cross-sectional view of FIG. 1.



FIG. 4 is a sectional view illustrating the manner in which two containers can be stacked with interlocking engagement between them.

FIG. 5 illustrates the manner in which the containers can be stacked in multiple rows upon a forklift type of pallet.

FIG. 6 is a view like FIG. 1 but showing another embodiment of the invention.

FIG. 7 is a plan view of the container shown in FIG. 6.

FIG. 8 is a view similar to FIG. 4 but showing the containers constructed in accordance with the embodiment of FIG. 6.

## DESCRIPTION OF THE PREFERRED EMBODIMENTS

The container shown in FIGS. 1 and 2 is square or rectangular in configuration as viewed in plan, and consists of the opposed two parallel side walls **10** and the opposed two parallel side walls **11**, all of which are integrally joined together along their vertical edges and with the edges of a substantially flat bottom wall **12**. The upper portion **13** which is joined to the upper edges of the side walls forms a neck for the container and is provided with the access opening **14**.

For convenient handling of the container, it is provided with handholds **16** which preferably are formed as integral parts of the container. Thus as shown in FIGS. **3** and **4**, each handhold **16** can be in the form of a tube, the material of which is integral with and merges with the adjacent side walls **10** and **11** and the upper and lower walls **17**. An annularly disposed corner wall **18** which extends between the adjacent side walls and between the spaced walls **17**, provides the free space **19** about the handhold **16**. Generally two such handholds are provided in diametrically opposite corners of the containers.

The two opposed side walls **10** in this instance are formed to provide complementary interlocking means. Thus on the uppermost one of the two side walls **10** (as shown in horizontal position in FIGS. **1** and **3**) the wall is provided with an elongated ridge **21**, the ends of which terminate short of the bottom wall **12** and the upper wall **13** of the container. Immediately adjacent and merged with the ridge **21**, there is a valley **22** which is of the same length as the ridge. Both the ridge and the valley extend parallel to one edge of the wall **10**. Near the other edge of the wall **10**, as viewed in FIG. **3**, a similar ridge **21** and valley **22** is formed, although in this instance the valley **22** is nearest to the edge of the wall **10**. Also in this instance both the ridges and the valleys are interrupted by the space **19** surrounding one of the handholds **16**. This interruption of the ridges and valleys is shown in the right hand portion of FIG. **1**, while the left hand portion of FIG. **1** shows continuous ridges and valleys as in the upper right hand corner of FIG. **3**.

The lower side wall **10** as shown in FIG. **3** is likewise provided with complementary ridges and valleys. Thus a ridge and valley **21** and **22** are shown near the lower left hand corner as illustrated in FIG. **3**, and the interrupted ridges and valleys **21** and **22** are shown in the lower right hand corner of FIG. **3**.

The interlocking means just described is utilized in the manner shown in FIG. **4**. Thus, assuming that one container is placed horizontally upon a supporting surface and a second container placed on top of the first,

the ridges and valleys of the adjacent side walls of the two containers nest together in the manner shown in FIG. **4.** This nesting of the complementary ridges and valleys forms an interlock which retains the containers in a desired position one upon the other, and prevents any shifting movement between two containers in a lateral direction. It likewise forms an interlock which prevents shifting of the containers in the direction of their parallel horizontal axes. In other words, the containers are interlocked in such a manner that shifting cannot occur in either one of two directions 90° with respect to each other.

FIG. **5** illustrates how such containers can be stacked in multiple rows upon a suitable supporting surface, such as a fork lift pallet **26.** The individual containers are indicated at **27,** and are disposed in adjacent stacks. This provides a stable stack assembly which can be transported by rail or truck without danger of the individual stacks becoming dislodged from the desired relationship. Also it greatly facilitates one-by-one removal of containers or application of containers to the stack, since it is not necessary to remove or introduce containers into a space which is open only from the front side of a rack or crate.

With the construction described above, it is evident that the interlock tending to prevent lateral shifting between adjacent stacked containers, or in other words, shifting at right angles to the side walls **11,** is more positive in its restraining action than the restraint applied to shifting in a direction parallel to the axes of the containers. This is because of the shaping of the elongated ridges and valleys **21** and **22.** In the embodiment illustrated in FIGS. **6–8,** the interlock is made more positive and effective in preventing shifting between adjacent containers in a direction parallel to their axes. Thus in this instance the ridges and valleys **31** and **32,** instead of being elongated in one direction as in FIGS. **1–4,** are made to extend over substantially U-shaped areas as shown in FIG. **6.** Thus each ridge **31** has a portion which extends substantially parallel to one side edge of the corresponding side wall, and other portions or legs which extend parallel to the upper and lower edges of the same side wall. With this arrangement, it is evident that the portions of the ridges and valleys which extend generally parallel to the side edges of the wall provide an adequate interlock to prevent lateral shifting, whereas the other portions of the ridges and valleys provide adequate interlocks to prevent shifting between containers in a direction parallel to their axes.

It will be evident that the container constructions described above greatly simplify stacking for storage or shipment and make possible total elimination of supporting racks or crates.

While the containers can be made of various materials, including metals and glass, the construction lends itself to use of plastics which can be molded to the desired form and which provide lightness and relative freedom from breakage.

I claim:

**1.** A container construction suitable for stacking comprising side walls and a bottom wall, the side walls being joined together and to the bottom wall along their edges to form a container that is generally rectangular in configuration as viewed in plan, the container also including upper wall means secured to the upper edges of the side walls and provided with an access opening; and locking means upon two opposite side walls of the container for locking the container to adjacent upper and lower like containers when stacked horizontally, the locking means on each wall comprising adjacent parallel ridge and valley portions formed integral with the material of the wall, said ridge portions interfitting with the valley portions of like containers to prevent shifting movement between two adjacent stacked containers the major portions of each of the side walls being in a common plane except for said ridge and valley portions.

**2.** A container construction as in claim **1** in which the ridge portions merge with the valley portions.

**3.** A container construction as in claim **2** in which at least some of the ridge and valley portions extend parallel to the vertical edges of the side wall in which they are formed.

**4.** A container construction as in claim **3** in which some of the ridge and valley portions extend generally parallel to the bottom wall of the container.

**5.** A container construction as in claim **4** in which the ridge and valley portions are formed in generally U-shaped areas with the legs of such areas extending toward the center line of the wall in which the ridge and valley portions are formed.

**6.** A container construction as in claim **4** in which the ridge and valley portions are spaced from the vertical edges of the side walls and from the bottom wall of the container.

**7.** A container construction as in claim **4** in which a handhold portion is formed in a corner of the container at the junction between two side walls, said handhold being disposed to interrupt some of said ridge and valley portions that extend parallel to the vertical edges of the side walls.

**8.** A container construction as in claim **1** in which the material from which the container is made is a molded plastic.

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