Dec. 14, 1954 M. MORTEROL 2,696,929

COLLAPSIBLE CONTAINER

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Fig. 1

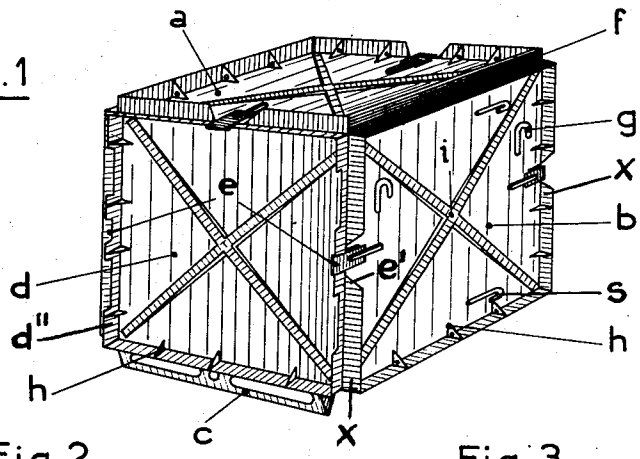


Fig. 2

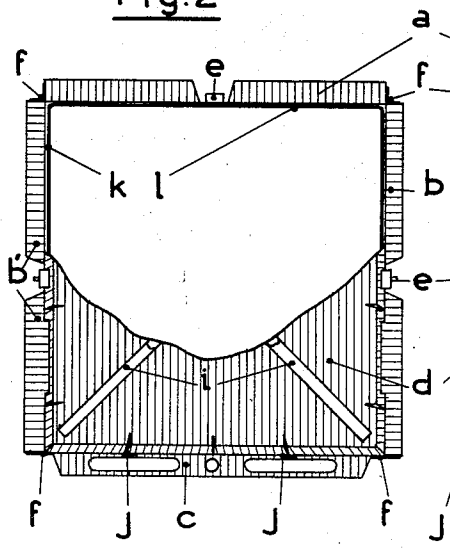


Fig. 3

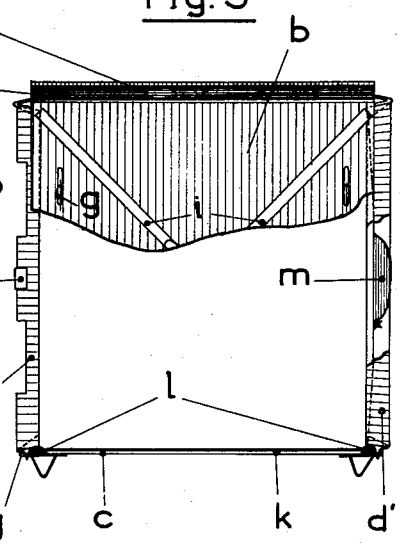
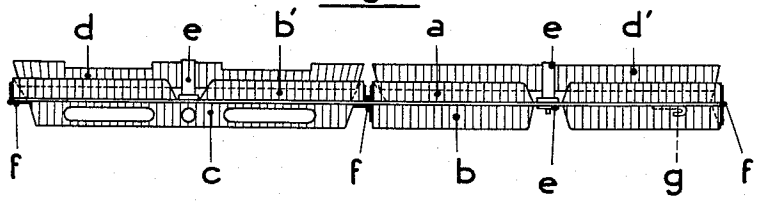


Fig. 4



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Fig.5

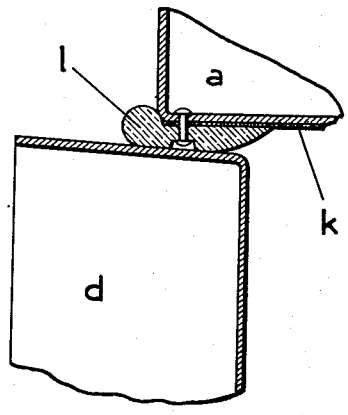
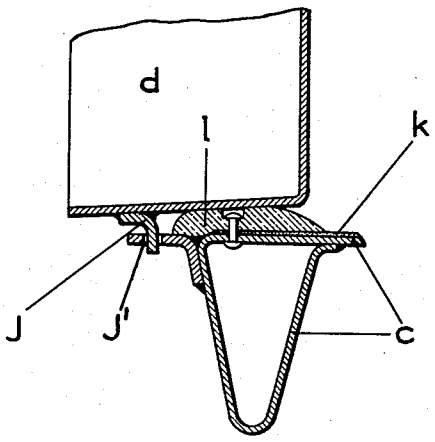


Fig.6



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COLLAPSIBLE CONTAINER

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Application January 17, 1951, Serial No. 206,351

Claims priority, application France January 20, 1950

3 Claims. (Cl. 220—4)

The present invention relates to improvements in or relating to containers for the shipping of solid, liquid or pulverulent goods and to the particular use such containers may be put.

It is an object of the invention to provide an improved container for any packaged or loose goods which container can be collapsed for the return shipment or for storage when empty.

It is another object of the invention to provide means affording the manufacture of a collapsible container which in operative condition is shock-resistant and substantially undeformable.

Containers heretofore known are not perfectly liquid- or fluid-tight and cannot be used for the transportation of solid or pulverulent goods during an outward transportation and for shipping of liquid bulk goods during a return shipment or vice versa. Additionally, when these known containers are manufactured to be foldable for the return journey, the volume reduction in the folded condition is comparatively small.

It is therefore another object of the invention to provide an improved container avoiding some or all these aforementioned drawbacks.

The parallelepipedic container according to the invention is easily foldable as a compact article, the volume thereof being approximately one-fifth of the volume of the unfolded container.

According to a further aspect of the present invention a rubber sheet internally lines the container thereby ensuring the imperviousness of said container. When shipping bulk liquids an additional impervious pouch or bag is placed inside the container and after being filled occupies the entire available inside volume of the container.

The above and other objects and advantages will appear more fully hereinafter from consideration of the following description taken in conjunction with the accompanying drawings in which:

Fig. 1 illustrates a perspective view of the container according to the invention.

Fig. 2 illustrates, partly broken, one of the removable doors of said container.

Fig. 3 illustrates, partly broken, one of the lateral panels of said container.

Fig. 4 shows said container in the folded condition.

Fig. 5 is a fragmentary view of the lateral panel of Fig. 2, showing its connection with the upper horizontal panel.

Fig. 6 is a fragmentary view of the lateral panel of Fig. 2, showing its connection with the lower horizontal panel.

As shown in Fig. 1 the container according to the invention comprises in combination a prismatic frame having the four panels thereof *a*, *b*, *b'* and *c* hinged along the adjacent pairs of parallel side edges through continuous hinges or knuckle-joints *f*. The container further includes two doors *d* and *d'* provided with two lugs *j* cooperating with two holes provided in a pair of metal angles secured to the base panel *c* and closing the opposed open ends defined by the adjacent groups of free end edges of the panels.

The rim of each one of the panels *a*, *b* and *b'* is bent providing a flange disposed at 90° with the panel-body, brackets *h* being perpendicularly disposed to the surface of said panels and their bent rims.

Two opposite rims of the panel *c* are bent (as more

fully shown in Fig. 6) in order to provide a pair of legs on which rests the container.

All panels are strengthened by tighteners or stiffening means formed by metal cross strips or bars *i*.

The peripherally extending rims or flanges *d''* of the doors *d* and *d'* of the container are bent at an exterior angle of about 80°.

Solid goods are loaded in the container resting on the legs of its panel *c* and having its doors tilt back on the ground (the lugs *j* of the horizontally disposed doors *d* and *d'* being engaged in the corresponding holes of the metal angles of panel *c*) or even removed, the loading being performed through the two openings.

For closing the container said doors are rotated around the lugs *j* from the horizontal to a vertical position thereby allowing the locking means *e* extending from panels *a*, *b*, *b'* to slidably or displaceably catch the flanges of the respective doors. These locking means *e* extend through respective slots or openings *e'* of the rims *x* of panels or walls *a*, *b*, *b'* as shown.

The locking means are in the form of abutments which push the door *d* as a wedge in the opening of the container, the outwardly flaring rim at an exterior angle of 80° of the door pressing firmly against the rims of the panels *a*, *b*, *b'*, *c* through a continuous rubber gasket *l* surrounding the openings to be closed by the doors.

The securing of the doors *d* in the openings results in the completed container of a rigid rectangular parallelepipedic shape, the rubber gasket absorbing lateral shocks during the handling.

For folding or collapsing the container (Fig. 4) the doors *d* and *d'* are firstly removed, then the panel *b* is lowered, till its rims, by rotation around the hinges or knuckle-joints *f* between the panel *b* and the panel *c*, reach the ground thereby bringing panels *b* and *c* into the same horizontal plane. The two other panels *a* and *b'* through this folding are brought respectively into a superimposed position with respect to the panels *b* and *c* and provide two recesses for the doors *d* and *d'* which are secured thereon by the aforementioned locking means *e*. Through this arrangement the container in its folded state constitutes a flat single unit on which can be placed the next folded container and so on.

A continuous sheet *k* of rubber or similar material secured through an adhesive and/or by rivets lines the inside of the panels *a*, *b*, *b'* and *c*, the sheet being secured under the gasket *l* (Figs. 3, 5 and 6). The sheet *k*, the gasket *l*, and the doors *d* and *d'* firmly pressing against the gasket, insure a perfect sealing or imperviousness to moisture of the container in accordance with the principles of the invention.

For shipping bulk liquid goods, the container rests on one of its doors *d* and a bag or pounch (not shown) may be used, the pouch occupying the entire space within the container by pressing against the four hinged panels and the two doors.

A lift of the "Clark" or "Fenwick" type can be used for carrying the container, the arms of the lift being introduced in the slots provided in the legs of the panel *c* (Fig. 2) or between the legs (Fig. 3).

The container can be also handled by a crane, the cables thereof being fastened to the hooks *g*.

When the container is loaded with liquid or pulverulent goods, the container rests on the door *d*, the rims of the door *d* being provided with slots allowing the introduction of the arms of a crane. Hooks *s* in a perpendicular relationship with the aforenmentioned hooks are secured to the panels *b* and *b'* for allowing cables of a crane to support the container.

The invention is not restricted to the specific illustrated embodiments, but is subject to modifications and adaptations which will occcur to those skilled in the art, and it should be understood that protection is sought for the invention as covered by the spirit and the language of the attached claims.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent, is:

1. A collapsible container comprising four panels each having two side edges and two end edges, the side edges of two adjacent panels being provided with hinge means movably connecting said panels with each other to form

an articulated frame and with said end edges disposed to define opposite door openings, doors closing said openings and arranged for removal from said frame, at least three of said panels being provided with peripherally extending, marginal, angularly and outwardly bent rims, at least some of said rims being provided with slots, said doors being provided with outwardly extending peripheral flange means engaging said end edges of said articulated frame in closed position of said doors, and displaceable securing means mounted on said frame and extending through said slots of respective rims of said panels and hooking onto the flange means of said doors and pressing the latter against said frame, said securing means being accommodated within the confines of said rims and being protected by the latter against deformation.

2. A container according to claim 1, including lugs on the respective doors, said end edges of said frame being provided with holes engaged by said door lugs, whereby said doors are swingably connected relative to said frame.

3. A container according to claim 1, said door means being dimensioned so as to be received within the confines of said wall rims in collapsed condition of said container.

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