

March 18, 1969

M. R. HAWKINS

3,433,400

TRANSPORTABLE CONTAINER

Filed June 21, 1966

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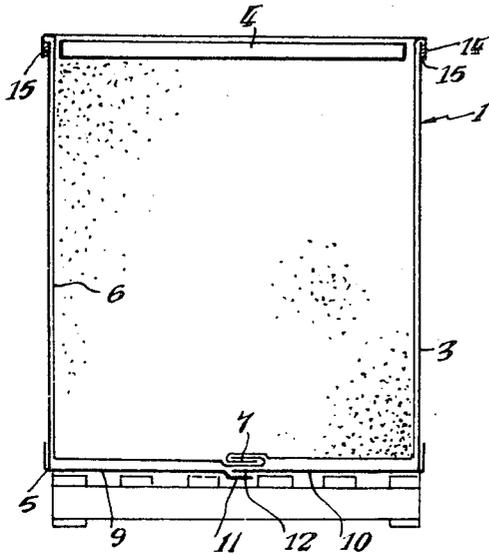


Fig. 1.

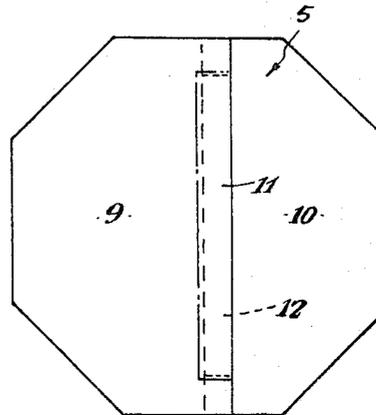


Fig. 2.

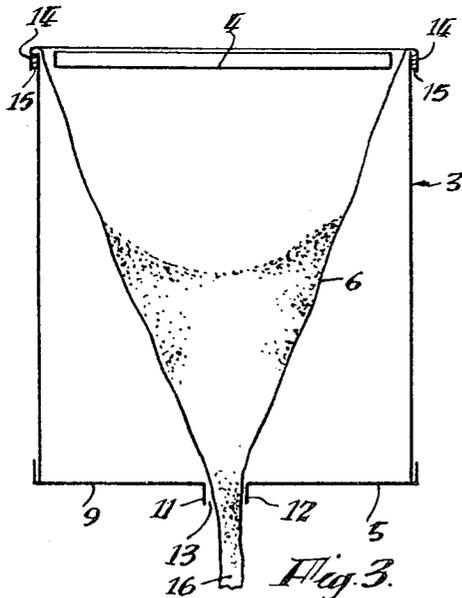


Fig. 3.

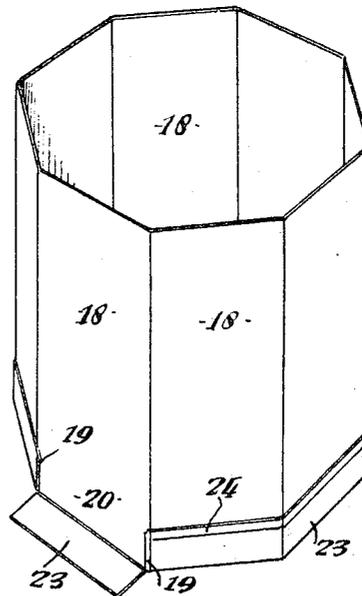


Fig. 4.

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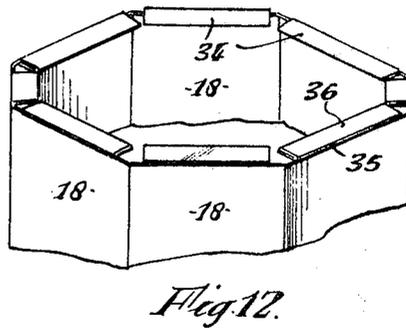
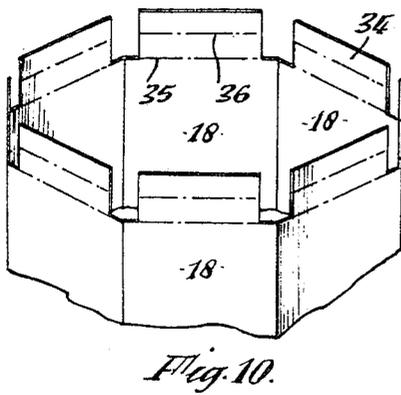
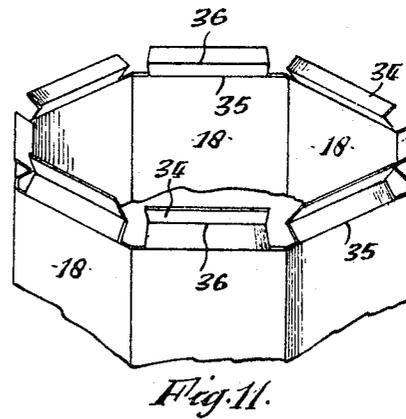
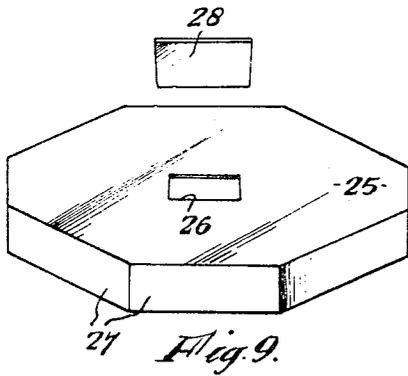
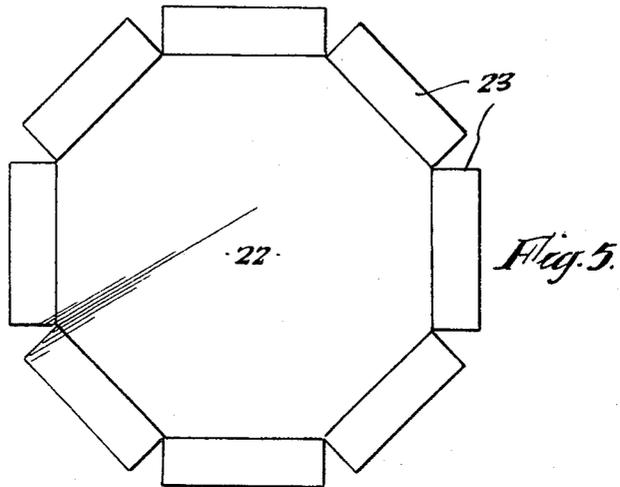
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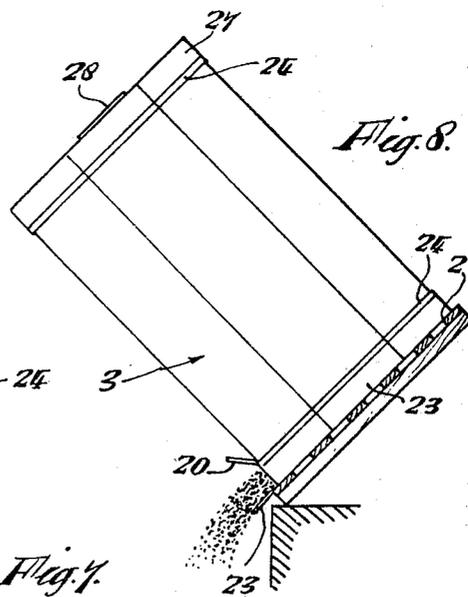
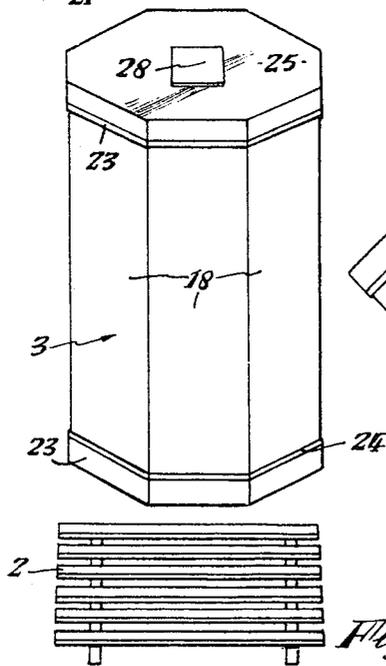
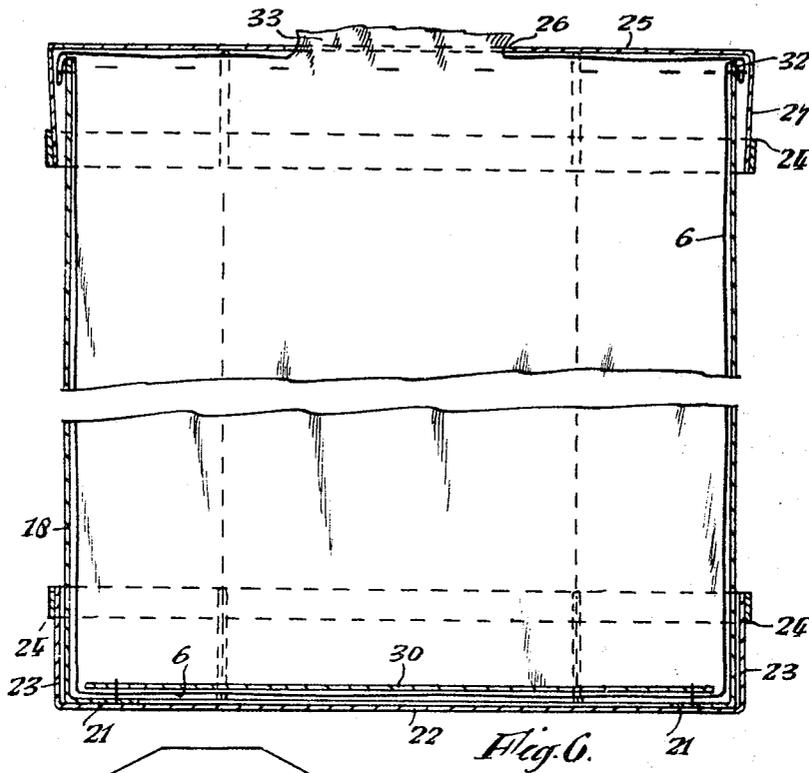
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**TRANSPORTABLE CONTAINER**

Mervyn Roy Hawkins, Redland, Bristol, England, assignor, by mesne assignments, to Ashton Containers Limited, Bristol, England

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3 Claims

Int. Cl. B65d 5/58; B67d 5/64

**ABSTRACT OF THE DISCLOSURE**

A collapsible container is described for use in the transporting and handling of flowable substances in place of the more expensive rigidly constructed intermediate bulk containers commonly in use. Such containers are described as being made of cardboard and provided with openings through which the contents of the containers can readily be dispensed from the lower side wall or from the bottom, the containers having flexible linings to protect the contents. The modifications described show the use of pallets with the containers and the adaptation of the top of the containers to allow for settling of the contained material.

This invention relates to containers for transporting and handling flowable substances, and it is one of the objects of the invention to provide an inexpensive expendable container to use in place of a rigidly constructed intermediate bulk container.

According to this invention we provide a container for flowable material comprising a collapsible outer tubular body having rectangular vertical panels, a separate bottom and a separate top, and a separate tubular lining of flexible material, means for forming an outlet being provided at or near the bottom of the container, the top portion of the tubular lining being united to the top portion of the outer body and the bottom of the lining lying on the bottom of the outer tubular body. In plan the preferred shape is octagonal.

Embodiments of the present invention are described with reference to the accompanying drawings wherein:

FIG. 1 is a diagrammatic sectional side elevation of one form of container,

FIG. 2 is an underneath plan of the bottom of this form of container,

FIG. 3 is a sectional side elevation showing one method of emptying the container,

FIG. 4 is a perspective view of the body of a second form of container,

FIG. 5 is a blank from which the bottom of the body shown in FIG. 4 is formed,

FIG. 6 is a sectional elevation of the assembled container, the centre portion being broken away,

FIG. 7 is a perspective view of the filled container ready for transport, the pallet being shown separately for clarity,

FIG. 8 is a side elevation of the container in the emptying position,

FIG. 9 is a perspective view of the top of the container shown in FIGS. 6, 7 and 8,

FIG. 10 is a perspective view of the top portion of the body in a modified form, and

FIGS. 11 and 12 show two positions of this top portion in use.

Referring to the drawing FIG. 1 shows a sectional side elevation of a container 1 mounted for transport on a conventional open-decked pallet 2, the container being preferably glued to the pallet. The container 1 comprises an outer cardboard or like tubular body 3, a top 4, a bottom

5 and a length of lay flat tube of polyethylene or other suitable flexible material formed into a lining 6. The lower end of the lining 6 is folded to form a diametrical closure 7 at the bottom. The body 3 is collapsible and comprises eight panels joined one to the next through lines of weakening. Items 3, 4 and 5 are fabricated separately and fastened together (e.g. by staples at the place where the container is filled. In the specific embodiment being described the container is 66" high with a base width of 42", giving a total capacity of about 50 cubic feet.

FIG. 2 shows the octagonal bottom 5 of the container. This is constructed from two pieces 9 and 10 of material, which overlap on the centre line. The two end portions of the overlapping pieces 9 and 10 are firmly fixed together. However, each piece is cut to form a flap 11 and 12 respectively and these flaps are only lightly secured so that they can be readily pulled down to expose a long rectangular opening 13. The liner 6 is preferably positioned within the outer body 3 so that its closure 7 is parallel with and accessible through the opening 13. Instead of having two flaps 11 and 12 it is possible to have only one flap, the inner flap being dispensed with. The upper peripheral edge portion 14 of the liner 6 is turned over the upper edge of the body 3 and secured by adhesive as indicated at 15.

In use, the bottom 5 of the container 1 is glued to the open-decked pallet 2 with the bottom closure surmounting a space between the deck-boards of the pallet. It is filled in any conventional manner and the top 4 applied and secured. The container is then transported to its destination, complete with pallet. At its destination the pallet is placed over a receiving hopper or other vessel. The flaps 11 and 12 are bent down to form the opening 13 and the closure 7 of the liner 6 is unfolded. The end portion 16 of the liner 6 is pulled through the opening 13. The bulk of the contents is allowed to fall out of the container by gravity, and to ensure that all the material is removed, the end portion 16 is pulled down and shaken, thereby discharging all the material into the receiving vessel. If necessary the bottom of the liner 6 can be slit for emptying.

An alternative to the form of bottom to that shown in FIGS. 1, 2 and 3 not illustrated, is to form the bottom 5 from one piece of material with the opening therein, another separate piece larger than the opening being lightly secured below and covering the opening. To empty the container this piece would be removed.

In the alternative form of the invention shown in FIGS. 4-9, at least one panel 18 of the tubular outer body 3 has a pair of slots 19 at its lower end coinciding with the lines of weakening between adjacent panels 18 to form a flap 20 which can be bent upwardly to form an outlet. Alternate panels each have an extension 21 at its lower end which is turned in to lie horizontally. Preferably two opposite panels 18 are provided with slots 19 forming flaps 20.

FIG. 5 shows a blank from which the bottom shown in FIG. 4 is formed. The blank comprises a main octagonal panel 22 each side of which has a flap 23. In order to form the bottom, the flaps are bent at right angles to the panel 22 and held in this position by adhesive tape 24. The bottom is so dimensioned as to fit over the lower end of the body 3 when made up.

The top shown in FIG. 9 is made with the same shaped blank as the bottom except that the main panel 25 has a central filling aperture 26. The flaps 27 forming the walls are held in the upright position by tape 24 as before. A rectangular cover 28 is provided for closing the aperture 26 after filling.

FIG. 6 shows the details of the assembled container.

Means are provided for holding the liner 6 in the container 1. These means comprise an octagonal blank or spacer 30 placed inside the liner 6 to lie on the bottom 5 parallel to the panel 22 and this is secured to the extension flaps 21 for example by stapling. The lower end of the liner which conveniently can be closed by a transverse heat seal, is sandwiched between the blank 30 and the bottom 5. Alternatively the spacer 30 can be arranged on the outside of the liner in which case the ears formed at the ends of the transverse seal are folded under the spacer and secured together for example by tape. The upper end portion of the liner 6 is secured to the top of the body 1 by forming a flange 32 of a double layer of the flexible lining material which is then in turn secured to the outside of the body. The bottom is secured to the lower end of the body 3 for example by gluing. The top is now applied to the body and the free end of the liner 6 is bunched together, as shown at 33, and drawn upwards through the hole 26. Filling is effected through the hole 26 after which the bunched end 33 is closed and pushed down into the body and the cover 28 is tacked on top.

FIG. 7 shows the container ready for transport. It must be understood that the bottom 21 is glued to the pallet 2 which has been shown separately only to show the construction.

To empty the container, one of the flaps 23 is pulled downwards and outwards to expose the flap 20 behind it which is then bent upwards to reveal the liner 6 which is slit to expose the contents.

FIG. 8 shows the container being emptied by tipping the container on its pallet through an angle of 45°. This is not always necessary and if the contained material is free flowing the flap 20 can be used to control the discharge. In other circumstances it can be torn off altogether. Clearly, with this embodiment an open-decked pallet is not needed. In some instances with very light loads the pallet can be dispensed with altogether or can be incorporated in the bottom of the container by providing a number of short legs or blocks glued to and projecting downwards from the bottom 21.

Referring now to FIGS. 10-12, the container is substantially the same as described in FIGS. 4-9 but the upper edge portion of the body 3 is discontinuous, each panel 18 having a hinged flap 34 at its upper end of reduced width and joined through a line of weakening 35. Each flap 34 is provided with a medial transverse line of weakening 36 whereby the said flap can be collapsed inwardly and be doubled back on itself as indicated in FIGS. 11 and 12. In operation, the container is filled to the brim, but subsequently, due to movement, the material settles. The discontinuous top edge portion of the body 3 will allow the top to collapse under pressure, until it is supported on the filling material. This arrangement enables a second container to be supported on top of a first, after settling has occurred—in general it provides for stackability.

It must be understood that the liner 6 is attached to the flaps 34 but the liner 6 has been omitted from the drawing for clarity.

What I claim and desire to secure by Letters Patent is:

1. Container for flowable material comprising a collapsible outer tubular body having vertical rectangular panels, a separate bottom and a separate top, and a separate tubular lining of flexible material, means for forming an outlet being provided at or near the bottom of the container, the top portion of the tubular lining being united to the top portion of the outer body and the bottom of the lining lying on the bottom of the outer tubular body, the lining being united to the top portion of the outer body by means of a flange formed from a double layer of the lining material attached to the outside of the body.

2. Container for flowable material comprising a collapsible outer tubular body having vertical rectangular panels, a separate bottom and a separate top, and a separate tubular lining of flexible material, means for forming an outlet being provided at or near the bottom of the container, the top portion of the tubular lining being united to the top portion of the outer body and the bottom of the lining lying on the bottom of the outer tubular body, and means comprising a flat member placed adjacent to the inside of the lining and parallel to the bottom of the container for holding the lining at the bottom of the body.

3. Container for flowable material comprising a collapsible tubular outer body of polygonal shape having rigid longitudinal panels, top and bottom caps fitted to the respective ends of the outer body, an open-top flexible inner bag for receiving the flowable material which is secured to the outer body by folding its top portion over the upper edge of the outer body and bonding it to the outer body, the remainder of the bag depending freely downward to the bottom cap, means for forming an opening in the top cap, and means for forming a bottom outlet in the bottom cap, whereby formation of the outlet exposes an adjacent portion of the bag which can be pulled through the outlet to form the bag into a substantially inverted cone inside the tubular outer body.

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JOSEPH R. LECLAIR, *Primary Examiner.*

U.S. Cl. X.R.

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