

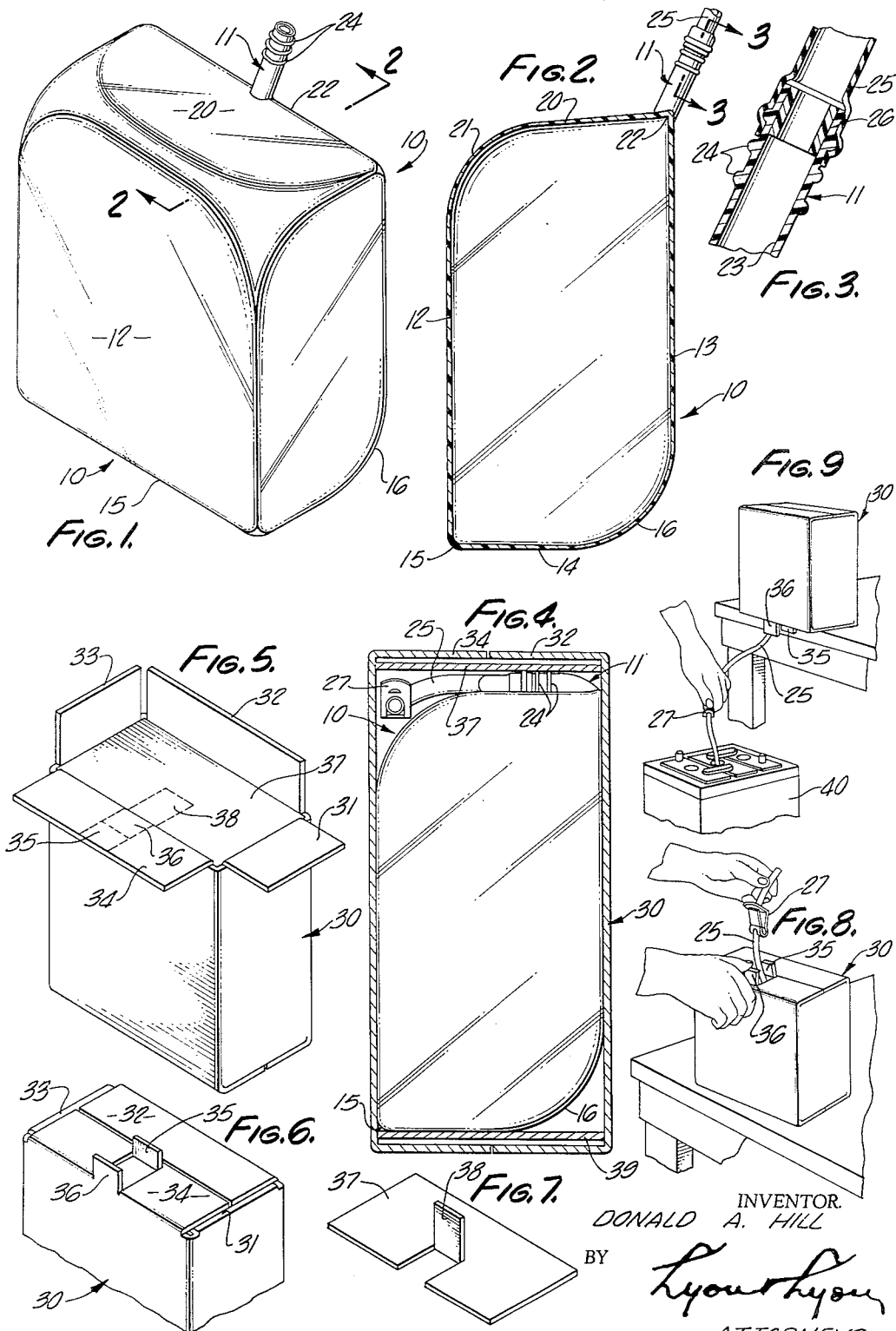
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D. A. HILL

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CONTAINER

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3,199,742

CONTAINER

Donald A. Hill, Arcadia, Calif., assignor to Hill Brothers Chemical Company, City of Industry, Calif., a corporation of California

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This invention relates to containers and particularly relates to a container for use in charging electric storage batteries.

Many of the electric storage batteries now being manufactured for various vehicles are sold to retail outlets such as service stations in a dry or uncharged state. Upon a sale to a customer, such a battery is charged with a dilute acid, generally, sulfuric acid. The handling of the acid presents a serious safety problem because of its toxicity and corrosiveness. The acid is presently supplied in disposable, acid inert containers shaped in conventional forms and containing the proper amount of charging liquid for a particular battery. It is practically impossible to completely empty these containers and a certain residue thus remains after use. The "empty" container may then be handled or disposed of in such a manner that the remaining acid escapes, often causing personal or property damage.

According to the present invention, a container is provided that is constructed such that all its contents will be discharged upon use. The container has an acid inert liner disposed in a supporting framework or box, the box being designed to permit easy access to the discharge spout of the liner. The container thus may be disposed of after use without any possibility of it being a future safety hazard.

It is therefore an object of the present invention to provide a container for storing and completely discharging liquids.

It is also an object of the present invention to provide such a container wherein an acid inert liner is supported in a box and shaped so as to insure complete discharge of any liquid stored therein.

It is another object of the present invention to provide such a container wherein said box is constructed so as to permit easy access to said liner.

These and other objects of the present invention will become more apparent upon reference to the accompanying description and drawings in which:

FIGURE 1 is a perspective view of the bag or liner of the present invention;

FIGURE 2 is a sectional view taken along lines 2-2 of FIGURE 1;

FIGURE 3 is a sectional view taken along lines 3-3 of FIGURE 2;

FIGURE 4 is a cross-sectional view of the container of the present invention showing the liner of FIGURE 1 positioned within its supporting box;

FIGURES 5, 6 and 7 show operative details of the box; and

FIGURES 8 and 9 show the operative sequence of the use of the container of the present invention in the filling of an electric storage battery.

Referring now to the drawings, there is shown a plastic bag or liner 10 that has a spout 11 protruding therefrom. The bag 10 is formed by blow molding and must thus be constructed of a plastic material that is capable of being blow molded and is inert to action of the corrosive fluid to be contained therein, generally sulfuric acid. Examples of such materials are polyethylene and polystyrene.

As can be seen from FIGURE 2, the bag 10 has vertical front and back walls 12 and 13 and an end wall

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14 which is joined to the front wall 12 to form a generally square joint 15, and to the back wall 13 by a curved portion 16. The front wall 12 is of tapered thickness, the thickest portion being at the lower end where this wall joins the end wall 14. The end wall 14 is similarly tapered with its thickest portion also being at the joint 15. The joint 15 therefore is stiff and provides strength and rigidity to the container at this point. The rounded portion 16 is made quite thin and thus the container is easily flexed in this area.

The other end wall 20 of the bag 10 is also tapered in thickness, with its thin portion being joined to the front wall 12 by a curved portion 21 which, like the curved portion 16, is very thin and flexible. Unlike the joint 15 formed by the walls 12 and 14, the thicker parts of walls 13 and 20 come together at a slightly acute angle to form a line joint 22. This angle is provided by forming the wall 20 at an angle with the horizontal. The spout 11 is molded in a position such that its outlet passage 23 lies astride the line formed by the intersection of the walls 13 and 20. It can thus be seen that the outlet passage 23 of the spout 11 will be positioned at the lowest point in the liner 10 when the liner 10 is turned upside down.

As can best be seen from FIGURE 3, the spout 11 is formed with a plurality of annular ridges 24 which serve to engage the end of a flexible supply hose 25. The spout 11 is provided with a stiffener sleeve 26 at its mouth to assure that the spout will not collapse and thereby release the hose 25. The supply hose is provided with a clamp 27 which acts as a valve by pinching the hose sufficiently to block any liquid flow therethrough.

The lining 10 is disposed in and supported by a box 30 which is preferably made of stiff cardboard. The box 30 is provided with the conventional top flaps 31, 32, 33 and 34. The flap 34 is perforated to form the outlines of tabs 35 and 36 which can be pulled upwardly to form an opening in the top of the box 30 as illustrated best in FIGURE 6.

A reinforcing strip of stiff cardboard 37 is inserted in the box 30 over the liner 10. The cardboard strip 37 is provided with perforations which form the outline of a tab 38 which may also be pulled upwardly to form a passageway through this strip as best shown in FIGURE 7. The tab 38 is positioned directly below the tabs 35 and 36, all of the tabs being positioned over the spout 11 so that whenever these tabs are opened, the spout 11 and supply tube 25 can be easily extracted from the interior of the box 30, as shown in FIGURE 8.

The operation of the container is apparent from the foregoing description and is illustrated in FIGURES 8 and 9. After the supply tube 25 together with the clamp 27 is extracted from the interior of the box 30, the box 30 is turned over and rested on the top of a table or other similar support with the tab portion of the flap 34 extending over the edge of the table so that the supply tube 25 hangs freely downward. The end of the supply tube is then inserted into the various cell filling holes of the battery 40 and the clamp valve 27 opened to permit the liquid in the liner 10 to flow into the cells. Because of the construction of the liner 10 as explained above, the line joint 22 will be at the lowest point in the liner and therefore the complete contents of the liner will flow out through the passageway 23 in the spout 11. If desired, the supply tube 25 can be plugged at its outer end to provide additional safety from accidental discharge of the liquid, the plug being eliminated by severing it from the tube immediately before use.

From the foregoing description, it can be seen that a container has been provided that will be completely em-

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ptied of the liquid contained therein. Such a container is of great utility for dispensing acids or other corrosive liquids as it eliminates the chance of a residue being left which might cause property or personal injury if it was accidentally emptied from the container.

The invention may be embodied in other specific forms not departing from the spirit or central characteristics thereof. The present embodiment is therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein.

I claim:

1. In a container for storing and discharging liquids, a unitary plastic liner forming a completely enclosed chamber, said liner including vertical front and back walls and an end wall, said end wall being joined to said front wall by a rounded portion, the material of said rounded portion being thin and flexible, said end wall being joined to said back wall at an acute angle, said end wall tapering in thickness so that at said joint it is thick and inflexible relative to said rounded portion, said back wall at said joint also being relatively thick and inflexible whereby a line joint is formed between said walls, and a spout located at said joint of said end and back walls and having a passageway therethrough which communicates with said chamber, the inner end of said passageway lying directly astride said line joint.

2. In a container for storing and discharging liquids, a unitary plastic liner forming a completely enclosed chamber, said liner including vertical front and back walls and first and second end walls, said first end wall being joined to said front wall by a rounded portion, the material of said rounded portion being thin and flexible, said first end wall being joined to said back wall at an acute angle, said first end wall tapering in thickness so that at said joint it is thick and inflexible relative to said rounded portion, said back wall also being tapered in thickness with its relatively thick and inflexible end at said joint whereby a line joint is formed between said walls, said second end wall being joined to said rear wall by a rounded portion, the material of said rounded portion being thin and flexible, said second end wall being joined to said front wall at approximately a right angle, said second end wall tapering in thickness so that at said joint it is thick and inflexible relative to said rounded portion, said front wall also being tapered in thickness with its relatively thick and inflexible end at said joint, and a spout located at said joint of said first end wall and said back wall and having a passageway therethrough which communicates with said chamber, the inner end of said passageway lying directly astride said line joint.

3. A container for storing and discharging liquids, comprising: a box having side walls and top and bottom walls defining a closed space; a unitary plastic liner forming a completely enclosed chamber positioned in said space, said liner having vertical front and back wall and an end wall, said end wall being joined to said front wall by a rounded portion, the material of said rounded portion being thin and flexible, said end wall being joined to said back wall at an acute angle, the end wall and back wall in the area of the joint being relatively thick and inflexible whereby a line joint is formed, and a spout located at the joint of said end and back wall and having a passageway therethrough which communicates with said chamber, the inner end of said passageway lying directly astride said line joint; valve means coupled to said spout for controlling the flow of liquid therethrough; said top wall of said box having means therein for permitting said spout and said valve means to be withdrawn from said closed space.

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4. The apparatus of claim 3 wherein said last mentioned means comprises tabs formed by perforations in said top wall, said tabs being movable away from said top wall.

5. A container for storing and discharging liquids, comprising: a box having side walls and top and bottom walls defining a closed space; a unitary plastic liner forming a completely enclosed chamber positioned within said space, said liner including vertical front and back walls and an end wall, said end wall being joined to said front wall by a rounded portion, the material of said rounded portion being thin and flexible, said end wall being joined to said back wall at an acute angle, said end wall tapering thickness so that at said joint it is thick and inflexible relative to said rounded portion, said back wall tapering thickness so that at said joint it is thick and inflexible relative to said rounded portion, said back wall at said joint also being relatively thick and inflexible whereby a line joint is formed between said walls, and a spout located at said joint of said end and back walls and having a passageway therethrough which communicates with said chamber, the inner end of said passageway lying directly astride said line joint; valve means coupled to said spout for controlling the flow of liquid therethrough; said top wall of said box having at least one tab formed therein, said tab being movable away from said top wall to permit the withdrawal of said spout and said valve means from within said closed space.

6. The apparatus of claim 5 wherein said valve means includes a flexible hose connected to said spout and a clamp connected to said tube for pinching said tube to prevent the flow of liquid therethrough.

7. The apparatus of claim 5 wherein reinforcing strips are provided in said box above and below the plastic liner, the strip positioned above said liner having a tab formed therein, said tab being movable away from said strip to permit the passage of said spout and said valve means therethrough.

8. A container for storing and discharging liquids, comprising: a box having side walls and top and bottom walls defining a closed space; a unitary plastic liner forming a completely enclosed chamber positioned within said space, said liner including vertical front and back walls and first and second end walls, said front and back walls engaging corresponding side walls of said box, said first end wall being joined to said front wall by a rounded portion, the material of said rounded portion being thin and flexible, said first end wall being joined to said back wall at an acute angle, said first end wall tapering in thickness so that at said joint it is thick and inflexible relative to said rounded portion, said back wall also being tapered in thickness with its relative thick and inflexible end at said joint whereby a line joint is formed between said walls, said second end wall being joined to said rear wall by a rounded portion, the material of said rounded portion being thin and flexible, said second end wall being joined to said front wall at approximately a right angle, said second end wall tapering in thickness so that at said joint it is thick and inflexible relative to said rounded portion, said front wall also being tapered in thickness with its relatively thick and inflexible end at said joint, and a spout located at said joint of said first end wall and said back wall and having a passageway therethrough which communicates with said chamber, the inner end of said passageway lying directly astride said line joint; a flexible tube coupled to said spout; valve means connected to said flexible tube for controlling the flow of liquid therethrough, said top wall of said box having at least one tab formed therein, said tab being movable away from said top wall to permit the passage of said valve means, said flexible tube and said spout therethrough.

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5 EVERETT W. KIRBY, *Primary Examiner*.

LOUIS J. DEMBO, *Examiner*.