Oct. 16, 1962 E. B. WESTLAKE, JR 3,058,624

PLURAL WALLED CONTAINER

Filed Jan. 7, 1959

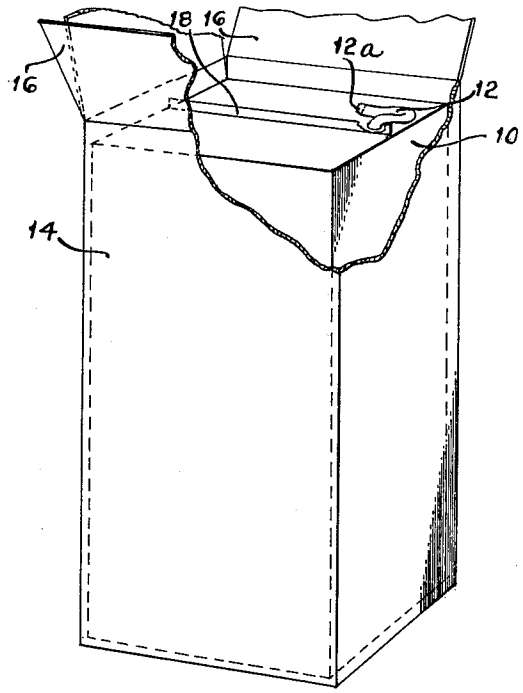


FIG. 1

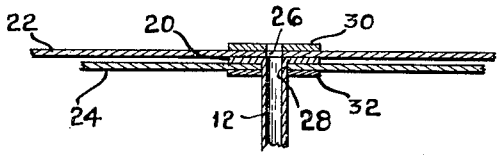


FIG. 2

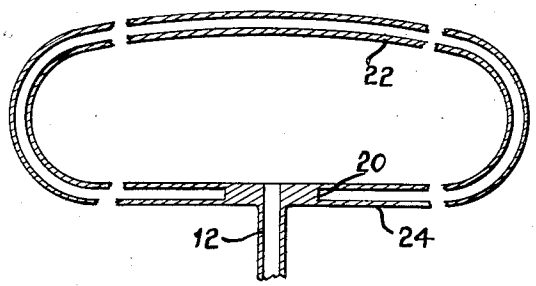


FIG. 3

INVENTOR.
EDWARD B. WESTLAKE JR.

BY

HIS ATTORNEYS

United States Patent Office

3,058,624
Patented Oct. 16, 1962

3,058,624

PLURAL WALLED CONTAINER

Edward B. Westlake, Jr., 307 Lincoln Ave., Havertown, Pa.

Filed Jan. 7, 1959, Ser. No. 785,437
1 Claim. (Cl. 222—107)

This invention relates to a container for liquids and more particularly relates to a plural-walled container for storing special types of liquids.

Certain types of liquids, such as various acids, are required to be stored and transported in plural-walled containers in order to minimize the danger of accidents in their handling. A problem in the fabrication of such containers has been the difficulty of producing a satisfactory joint or connection between such a plural-walled container and an access tube or spout, which is fluid-tight, and is simple and inexpensive to form.

The present invention provides such a fluid-tight leakproof joint between a double envelope of a container and an access tube or spout. The tube is formed with a flange which is located between the two walls of the envelope, and the flange and walls are subsequently fused by an induction heating process.

It is, accordingly, an object of the present invention to provide a novel method for sealing a pouring tube to a double-walled container.

Another object is to provide a novel container structure comprising a double-walled envelope and an access tube fastened thereto in such a manner as to provide a fluid-tight connection to both walls.

Other objects and advantages reside in the construction of parts, the combination thereof, the method of manufacture and the mode of operation, as will become more apparent from the following description.

In the drawings, FIGURE 1 is a perspective view, partly broken away, showing the double-walled container of the present invention, including an access tube attached thereto, positioned within an outer container for transportation and storage.

FIGURE 2 is an enlarged fragmentary sectional view, showing the structure of the double envelope and the access tube in assembled relation, and the heating elements in proper position for fusing the two together.

FIGURE 3 is a sectional view showing the double-walled container and the access tube integral therewith after the fusing operation has taken place.

Referring now to FIGURE 1 of the drawings, a double-walled container **10** having an access tube **12** attached thereto is shown positioned within a carton **14**, such as a corrugated carton. Both the container **10** and the tube **12** may be made from some suitable plastic material resistant to corrosion caused by the fluid being stored, but capable of fusing under application of an appropriate amount of heat energy. Polyethylene has been found acceptable to the trade for shipping sulphuric acid.

The carton **14** is provided with end flaps **16** to enable the container **10** to be sealed within the carton for transportation and storage. A double-walled container **10** is commonly required in the storage of fluids which are inherently dangerous, such as sulphuric acid, and where safety considerations are of prime importance. Both the inner and outer walls of the container are fused together along the line **18**, so that the only passage from the interior of the container is provided by the tube **12**.

Due to the dangerous character of the fluid to be stored within the container, it is especially important that the connection between the tube and the two walls of the container be absolutely fluid-tight. One means of accomplishing this is to fuse the tube and the two walls of the container together. The manner in which this is accomplished in the present invention is illustrated in FIGURE 2.

The tube **12** is provided, at the end which engages the container, with a flange **20** which is positioned between the inner wall **22** and the outer wall **24** of the double envelope. This flange **20** is integral with the tube **12**. The flange may be formed from a portion of the tube flared into the flange. It will be seen that both walls **22** and **24** are provided with apertures to provide access to the interior of the container by the tube **12**. The aperture **26** in the inner wall **22** is of the same size and configuration as the bore of the tube, while the aperture **28** in the outer wall **24** is of the same size and configuration as the outside of the tube **12** to permit said tube to extend through the outer wall **24** of the container.

A pair of metallic heating elements **30** and **32** are positioned on opposite sides of the inner and outer walls **22** and **24**. These elements are of the same general size and shape as the flange **20** and are provided with apertures which correspond in size to the apertures in the walls adjacent which the elements **30** and **32** are positioned.

An alternating magnetic field is then applied to the elements **30** and **32** by an induction coil or by any other well known manner to cause said elements to become heated to a high temperature sufficient to fuse the tube **12** and flange **20** to the inner and outer walls **22** and **24**. This results in the structure shown in FIGURE 3, in which the tube **12** is in effect integral with the walls **22** and **24** of the container **10**.

After the fusing process has been completed, the heating elements **30** and **32** are removed from the walls **22** and **24** and the container may be closed by fusing the walls together in a well known manner along a line, such as is shown at **18** in FIGURE 1. It is thus seen that by a simple, inexpensive and effective method, a novel leakproof container of double-walled construction and having an access tube integral therewith has been formed. The outer end of the tube **12** is provided with a sealing plug **12***a* fused to the walls of the tube **12**. Before pouring out contents of the envelope or bag, the end of the tube **12** is cut to eliminate the plug to open the tube.

Although the preferred embodiment of the device has been described, it will be understood that within the purview of this invention various changes may be made in the form, details, proportion and arrangement of parts, the combination thereof and mode of operation, which generally stated consist in a device capable of carrying out the objects set forth, as disclosed and defined in the appended claims.

Having thus described my invention, I claim:

A plural-walled container comprising, in combination, an inner container wall of heat fusible plastic material completely enclosing the interior of the container, and having an aperture of a first diameter therein; an outer container wall of like plastic material completely enclosing said inner container wall and having an aperture positioned in alignment with the aperture in the inner

wall; a tube of like plastic material having an outside diameter substantially equal to the diameter of the aperture in the outer wall and registering with the aperture in the inner wall, said tube abutting the inner wall and extending through the aperture in the outer wall to the exterior of the outer wall; and a flange on one end of said tube integral therewith positioned between the inner and outer walls and integral with both of said walls to provide a container which is fluid-tight excepting for the passage afforded by the tube, said flange maintaining the

inner wall, the outer wall and the tube in predetermined relationship.

References Cited in the file of this patent

UNITED STATES PATENTS

637,011	McCaslin	Nov. 11, 1899
2,404,418	Walker	July 23, 1946
2,453,930	Paul et al.	Nov. 16, 1948
2,526,165	Smith	Oct. 17, 1950
2,850,422	Welch	Sept. 2, 1958