The present invention relates to double walled containers, and more particularly to containers of the so-called insulated type wherein the two walls are disposed in spaced-apart relation to each other to form an insulating chamber therebetween.

In some instances, containers of this general type merely utilize the space between the walls as an air chamber wherein the air confined between the walls serves as the insulating medium. In other constructions, a suitable type of insulating material is introduced between the walls of the container.

The purpose of such constructions, as is well known, is to tend to minimize the transmission of heat through the double walls of the container. Containers of this type are especially suitable for use in connection with temporary storage of liquids, either hot or cold. Their use, however, extends to other fields wherever it is desirable to tend to maintain the contents of the container at a desired range of temperatures for several hours or days.

One of the objects of this invention is to provide a novel and improved container construction of the character indicated which is of relatively simple construction, efficient in use, and which is capable of withstanding a substantial amount of shock without breakage.

Another object is to provide an improved container of the character indicated which is characterized by the provision of a liner or inner wall formed of plastic material which is disposed within and in spaced-apart relation to an outer jacket of the container.

A further object resides in the novel construction and arrangement of a container of the character indicated, by virtue of which the inner liner of the container is fixedly secured in desired spaced relation to the outer jacket of the container.

Still another object is to provide an improved container construction characterized by the provision of an inner liner of plastic material formed with outwardly extending members for engaging the inner surface of the outer jacket for maintaining the body of the inner liner in proper spaced-apart relation to the outer jacket.

With these and other objects in view, my invention consists in the construction, arrangement and combination of the various parts of my device whereby the objects contemplated are attained, as hereinafter more fully set forth, pointed out in my claim and illustrated in the accompanying drawing, wherein:

Figure 1 is a perspective view of the two plastic sections comprising the inner liner of the container embodying the present invention and which, as shown, is in the form of a flask;

Figure 2 is a vertical section through the completed container;

Figure 3 is a vertical section through a jug type container, embodying the present invention, and

Figure 4 is a fragmentary enlarged sectional view of the upper end of the container, showing a modified form of retaining means for securing the plastic inner liner in fixed relation to the outer jacket of the container.

The container, as illustrated in Figures 1 and 2 of the drawing, is of flask type and, as seen, is of smaller cross-sectional dimensions at the lower end thereof as compared with the upper end. The container includes an outer wall or jacket 10, preferably formed of metal. In the construction as illustrated in Figure 2 of the drawing, the outer jacket, for convenience in manufacture and assembly, is formed of two sections indicated at 11 and 12, the abutting edges of which are secured together by a folded crimped joint, as indicated at 14.

The liner for the container, as indicated at 15, is formed of suitable plastic material, and for convenience in manufacture said liner is formed of a plurality of sections 16, herein indicated as two, which are substantially identical in form with the exception of the threaded external surface of the neck as hereinafter described. The liner is of generally oblong form and the two halves are disposed in abutting relation and integrally united together to form a unitary article.

Depending upon the character of plastic material employed, it may be necessary, in certain instances, to utilize certain types of adhesives for bonding the sections together. In the use of other types of plastics, it may be desired to merely use a suitable solvent for coating the abutting edges of the liner sections so that, when placed together, the parts in effect become a single element.

The outer marginal edges of each of the plastic sections, including the sides, the upper end and bottom, preferably terminate in laterally extending flanges 17. These flanges are of suitable dimension so that when the liner receptacle is disposed within the outer jacket 10, said flanges engage the inner surface of the outer jacket and thereby space the body of the plastic liner in proper relation to the outer jacket and thus provide a cavity or chamber between the liner and jacket.

The upper end of the plastic liner terminates
in an upstanding neck 20 which is externally threaded, as indicated at 20a, the neck being dimensioned to extend through an opening formed in the upper end of the outer jacket 10, and projects a substantial distance thereabove for receiving a screw-threaded cap or closure member 21 for sealing the upper end of the neck.

It will be apparent that the two sections 16 of the inner liner may in all respects be identical, with the exception of the threading on the exterior of the neck 20. Obviously, the threaded portions of the respective sections must be cooperatively formed so that when the sections are connected together they form a continuous thread.

The flanges 17, at the upper end of the liner, converge into bosses 23 which, when the two sections are connected together, form in effect a collar or shoulder around the base of the neck.

When the inner liner is placed in position within the outer jacket 10, the top of the collar formed by the bosses 23 seats firmly against the undersurface of the outer jacket 40. The outer edges of the flanges 17 are disposed in contact with the inner surface of the outer jacket 40. The space between the outer jacket and the body portion of the liner 16 is preferably filled with suitable insulating material, as indicated at 25.

To further insure proper positioning of the liner within the outer jacket, I provide a clamping nut 27, which is threaded onto the base portion of the neck 20 of the liner for firmly gripping the portion of the outer jacket 10 immediately surrounding the opening through which the neck 20 extends, firmly between the nut 27 and the collar formed by the bosses 23 of the liner.

By virtue of the construction above described, it will be apparent that the plastic inner liner, in addition to possessing various constructional advantages, also results in providing a construction which is relatively substantial in that it is capable of withstanding substantial shock without breaking. In double walled receptacles as hereinafore manufactured for this general purpose, a glass inner liner has usually been employed, and it is a well known fact that a sudden shock or blow to the container would frequently result in shattering of the glass inner liner.

Figure 3 represents an adaptation of my invention to a jug type of container which includes an outer jacket 30, preferably of sheet metal. The jacket is composed of a plurality of sections and preferably two in number, and which, as seen in the drawing, comprises a base portion 31 and an upper body portion 32, which parts are connected together by a folded crimped joint, as indicated at 33.

The inner liner, indicated at 35, is composed of two sections 36 and 31 joined together at a horizontal plane. The lower section 36 is of generally U-shaped formation and the abutting edges of the two sections terminate in laterally extending annular flanges 38, which are adapted to be integrally united together to form a unitary liner. The upper end of the upper section 37 terminates in a neck 45, adapted to extend through an opening formed in the upper end of the outer jacket 30. The outer surface of the neck is threaded for receiving an internally threaded cap or closure member 41. Threaded onto the base portion of the neck is a clamping nut 42, which functions in the manner above described in connection with the structures shown in Figures 1 and 2, for firmly clamping the portion of the jacket, immediately surrounding the opening through which the neck 40 extends, between the body portion 44 formed at the base portion of the neck 40.

The lower portion of the side wall and the bottom of the liner 35 is formed with a plurality of spaced-apart projections 46 dimensioned for engaging, respectively, the inner surface of the side wall and the bottom of the outer jacket 30, for maintaining the inner liner 35 in proper spaced relation to the outer jacket 30 to form a chamber therebetween. The chamber formed between the two walls is preferably filled with suitable insulating material, as indicated at 41.

The side wall of the lower portion 36 of the plastic liner, preferably adjacent the bottom, is provided with a tubular duct 49, adapted to extend laterally through an opening formed in the outer jacket 30. It is to be understood that the outer end of the tubular duct may be provided with a suitable spigot or other type of closure for controlling the discharge of the liquid contents of the jug in lieu of pouring from the relatively large size opening in the neck.

Figure 4 represents a modified form of retaining structure in which the collar 36d is preferably filled with suitable insulating material, as indicated at 36a. In this construction, the external surface of the base portion of the neck 40a is provided with an annular groove 50, and the upper end of the outer jacket 30a terminates in an upstanding flange 51, which is formed with a concavo-convex annular rib 53, adapted to be seated in the annular groove 50 of the neck. The flange 51 of the outer jacket is secured firmly in position around the neck 40a of the plastic inner liner by means of a spring ring 54, which may be initially spread for insertion over the neck 40a and flange 51 until it registers with the concave surface of the bead 53 of the neck flange 51 and then is permitted to snap into place. This arrangement provides a simple, sturdy and durable connection between the plastic inner liner and the outer jacket, and tends to maintain the inner liner in relatively fixed relation to the outer jacket. This construction in some respects is preferable to the clamping nut as disclosed in Figures 2 and 3 of the drawing, wherein there is a possibility of the nut causing stripping of the plastic threads at the base of the neck, during the clamping of the parts together.

Some changes may be made in the construction and arrangement of the parts of my device without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claim any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope without sacrificing any of the advantages thereof.

I claim as my invention:

In a double walled heat insulated container, an outer jacket, and an inner liner of plastic material disposed within and in spaced apart relation to the outer jacket and having a threaded neck of less cross-sectional dimensions than the body thereof, said liner being formed of a plurality of sections having their abutting edges terminating in outwardly extending flanges integrally united together to form a unitary liner, said flanges being dimensioned to engage the inner surface of the jacket to maintain the body of said liner in spaced relation to the jacket.

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