Jan. 4, 1938. C. L. GRABER 2,104,704

FLASK

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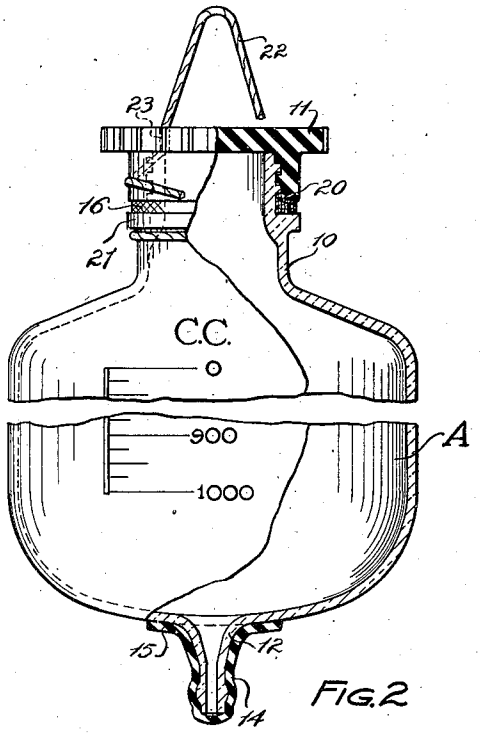


FIG. 2

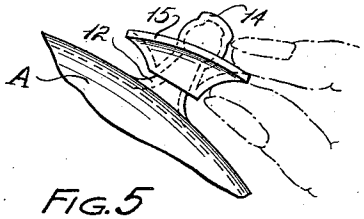


FIG. 5

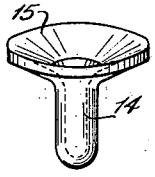


FIG. 6

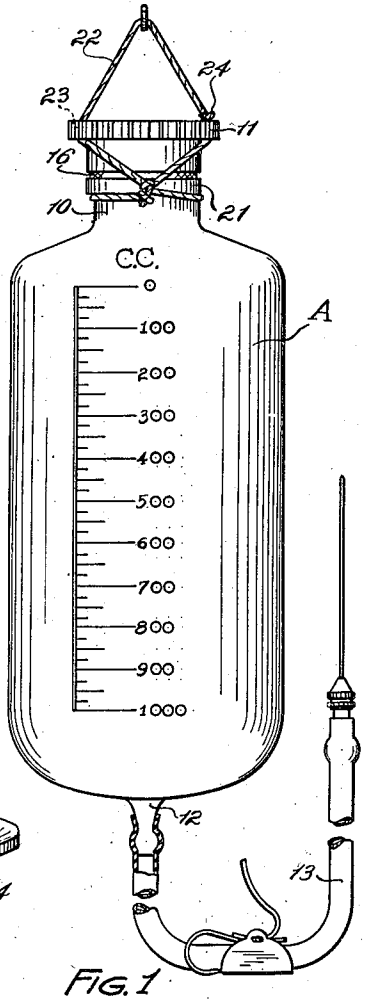


FIG. 1

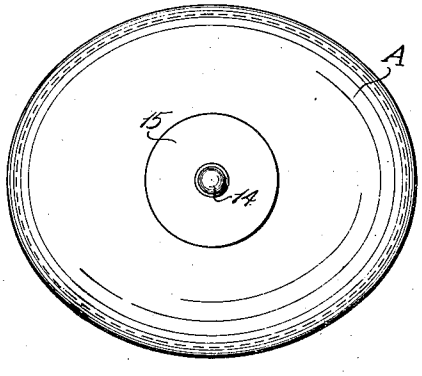


FIG. 3

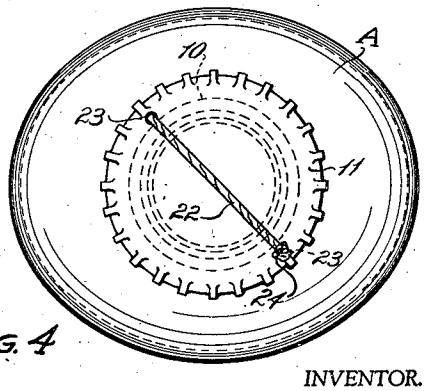


FIG. 4

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FLASK

Christian Lee Graber, Lakewood, Ohio

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4 Claims. (Cl. 128—214)

The present invention relates to containers or flasks, especially containers for solutions used in intravenous therapy, and the principal object of the invention is the provision of a container or flask of this character that can be readily sterilized, easily filled and closed, and subsequently used with the minimum possibility of the contents thereof becoming contaminated.

Another object of the invention is the provision of a novel flask or container especially suited for containing solutions used in intravenous thereapy, provided with means for filtering the air entering above the liquid while the contents thereof is being withdrawn, as for delivery to the patient.

Another object of the invention is the provision of a novel closure for a flask or container especially suited for use in intravenous therapy and provided with a neck adapted to have the end of a rubber delivery tube attached thereto, which closure can be readily applied to the sterilized neck and subsequently removed therefrom without contaminating the same, and which will retain the neck in a sterilized condition while applied thereto.

Further objects and advantages of the invention will be apparent to those skilled in the art to which it relates from the following description of the preferred embodiment thereof described with reference to the accompanying drawing forming a part of this specification, in which similar reference characters designate corresponding parts throughout the several views, and in which

Fig. 1 is a perspective view of a flask or container, embodying the present invention, as suspended for use;

Fig. 2 is an enlarged view, with portions broken away and in section on the center line of the device, of the container shown in Fig. 1 before the closure member has been removed from the lower end and the delivery tube attached thereto;

Fig. 3 is a a bottom plan view of the device as shown in Fig. 2;

Fig. 4 is a top plan view of the device as shown in Fig. 2;

Fig. 5 is a perspective view showing the manner in which the closure member is removed from the lower end preparatory to attaching the delivery tube; and

Fig. 6 is a perspective view of the closure member shown in Figs. 2, 3, 4 and 5 as it appears detached from the container.

Devises of the present character are used in storing and administering solutions used in intravenous therapy. Ordinarily the flasks are charged or filled and stored for future use. When it is desired to use the flasks, they are usually suspended in some convenient manner at a relatively high elevation above the patient and the liquid contents thereof administered to the patient through a rubber delivery tube attached to the lower end of the flask, the free end of which delivery tube is provided with a suitable needle or the like. After being filled, the flasks are sterilized and subsequently great care must be exercised in preventing the contents thereof from becoming contaminated and thereby rendered unfit for use.

According to the provisions of the present invention the container proper has a lower neck or extension to which the delivery tube is to be attached, and a novel closure member is applied thereto at the time of charging, which will retain the neck or extension sterile during shipping, storage, etc., and which can be removed therefrom with the minimum possibility of the neck or extension becoming contaminated. The invention also contemplates the provision of means for filtering the dust, etc., out of the air entering the flask above the liquid during use.

Referring to the drawing, the reference character A designates generally a flask or container of the type referred to, particularly adapted for use in intravenous therapy. The flask or container proper is made of heat-resistant, comparatively alkali-free glass, having a capacity slightly greater than a liter, and is preferably graduated in cubic centimeters. The upper neck 10 is comparatively large to facilitate charging or filling the container and is closed by a cap 11 projecting downwardly thereover and having threaded engagement with the exterior thereof. The cap 11 is preferably made of metal, bakelite or the like, and the threads thereof are slightly loose on the threads of the neck 10 so as to facilitate the entrance of air into the upper end of the flask when the cap is loosened or turned a small amount in a direction to remove the same.

The lower neck 12 to which the delivery tube 13 is adapted to be attached is provided with a closure member 14 made of rubber or the like and comprising an elongated tubular body portion closed at the lower end and having an outwardly extending flange 15 formed integral with the upper end thereof. After the flask, contents, and closure member have been sterilized, the closure member 14 is slipped or pushed onto the neck 12, preferably with the flange 15 engaging

a portion of the flask proper immediately adjacent the neck 12. The closure member 14 is preferably applied to the neck while the same is slightly moist as this facilitates the application of the closure member and causes the same to better adhere to the glass of the container.

When it is desired to use the flask, the closure member 14 can be readily removed from the neck 12 by grasping the flange 15 thereof between the thumb and forefinger of one hand while the flask is held in a horizontal or inverted position in the other hand. In removing the closure member 14 from the neck, the flange 15 and at least the upper part of the tubular body portion are rolled back over the tubular body portion as the closure member is stripped from the neck with very little, if any, possibility of the neck becoming contaminated. As will be apparent, there is no necessity of touching the neck 12 with the hands, etc., and the properly sterilized delivery tube can be immediately applied thereto.

In order to permit the entrance of air into the upper end of the flask for the purpose of replacing the solution as it is withdrawn through the delivery tube, the cap 11 is backed off the upper neck 10 a fraction of a revolution immediately before the flask is suspended for use. Preferably a piece of sterile gauze, felt or the like, indicated at 16, is wrapped about the neck adjacent the lower end of the cap 11 in such a manner that any air entering the container underneath the cap is required to pass therethrough, with the result that any dust, etc., will be filtered out and a sterile condition of the contents maintained. In the present instance, the lower part of the cap 11 is counterbored or undercut as at 20, and a piece of sterile gauze or felt is tightly wrapped in the space between the flange 21 on the upper neck and the lower end of the cap 11. The gauze or felt is caused to extend up into the counterbore 20, the resiliency of the gauze or felt will prevent movement of the cap away from the material upon slight longitudinal movement of the cap 11 on the neck 10, and the gauze or felt will always be maintained in the path of the entering air.

While it is understood that the flask may be suspended in any convenient manner, as illustrated, the flask is adapted to be suspended by a cord or string 22 tied around the upper neck 10 and extending through holes 23 in the edge of the cap 11. In order to limit the amount that the cap 11 can be unscrewed and thereby relieve the operator of the necessity of paying close attention to the device while unscrewing the cap and avoid the possibility of the cap being entirely removed, a knot 24 is tied in the right-hand leg, as viewed in Fig. 1, of the string above the cap 11. In practice it has been found that the string adheres sufficiently to the glass neck of the container to prevent relative rotation therebetween, especially when the string is wet, but, if desired, it will be apparent that the string can be positively fixed to the neck or to the container.

From the foregoing description of the preferred embodiment of the invention it will be apparent that the objects of the invention have been attained, and that a new and improved flask of the type referred to has been provided, which can be readily handled, stored, and used with the minimum possibility of the contents thereof becoming contaminated. While the preferred embodiment of the invention has been described with considerable detail, I do not wish to be limited to the particular construction shown, which may be varied within the scope of this invention. It is my intention to cover hereby all applications, variations, and uses thereof that come within the practice of those skilled in the art to which the invention relates, and I particularly point out and claim as my invention the following:

I claim:

1. A flask or container for medical solutions used in intravenous therapy comprising a transparent body portion, a reduced extension or neck at the upper end of said body portion, a cap-like member positioned over said reduced extension or neck for closing the same, a second reduced extension or neck at the lower end of said body portion adapted to have a rubber tube or the like attached thereto, and an elastic cap-like member positioned over said second extension or neck, said elastic cap-like member having an annular flange about the open end thereof adapted to be grasped so that the closure member can be removed from said extension or neck by having at least a portion thereof rolled or pulled back over itself and without the hand of the operator coming in contact with said extension or neck.

2. A flask or container for medical solutions used in intravenous therapy comprising a transparent body portion open at the upper end, a screw-threaded closure member for the upper end of said body portion, means for admitting air around said screw threads to the upper end of said body portion, said means including a filter, a reduced extension or neck at the lower end of said body portion adapted to have a delivery tube attached thereto, and a closure member for said reduced extension or neck.

3. A flask or container for medical solutions used in intravenous therapy comprising a body portion open at the upper end, a closure member for the upper end of said body portion, means for admitting air to the upper end of said body portion, said means including a filter, a reduced extension or neck at the lower end of said body portion adapted to have a delivery tube attached thereto, and a closure member for said reduced extension or neck, said closure member comprising an elastic tubular shaped portion closed at the lower end and adapted to fit over the end of said extension or neck and an annular flange about the open end of the tubular portion adapted to be grasped and the closure member removed therefrom by being at least partially rolled or pulled back on itself and without the hand of the operator coming in contact with the extension or neck.

4. A flask or container for medical solution used in intravenous therapy, comprising a transparent body portion, a reduced extension or neck at the lower end of said body portion adapted to have a rubber tube or the like attached thereto, and an elastic cap-like member positioned over said extension or neck, said elastic cap-like member having an annular flange about the open end thereof adapted to engage the body portion of said flask adjacent said reduced extension or neck and adapted to be grasped so that the closure member can be removed from said extension or neck by having at least a portion thereof rolled or pulled back over itself without the operator coming in contact with said extension or neck.

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