June 10, 1958 W. F. BUTLER 2,838,046

CONTAINER FOR BLOOD AND THE LIKE

Filed April 6, 1955 2 Sheets-Sheet 1

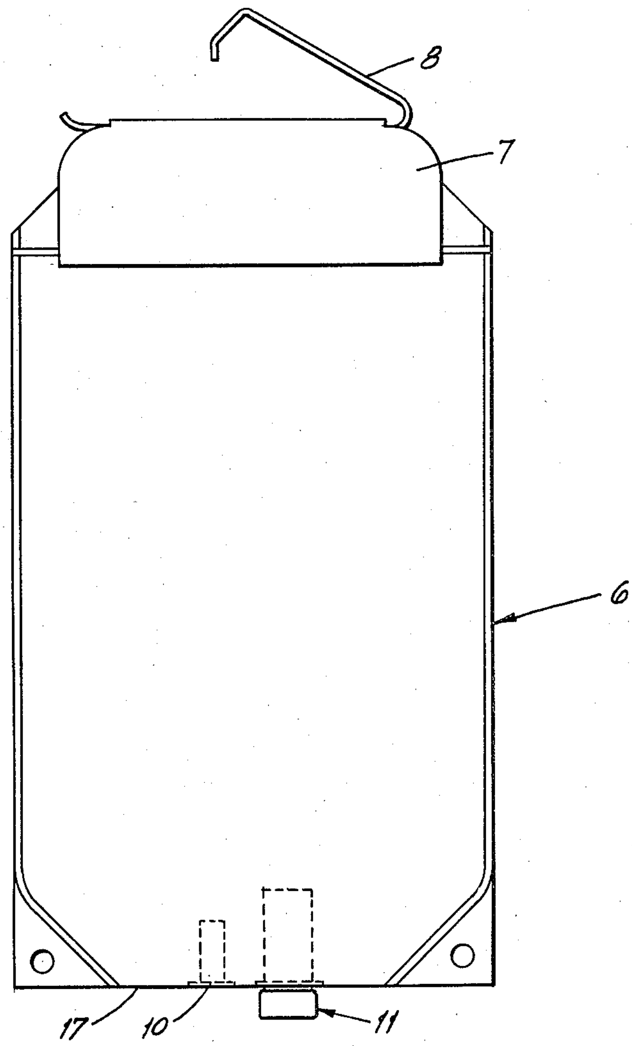

Fig. 1

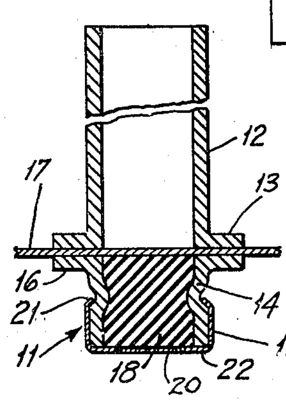

Fig. 3

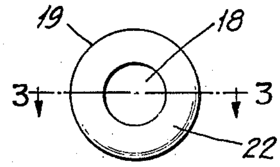

Fig. 2

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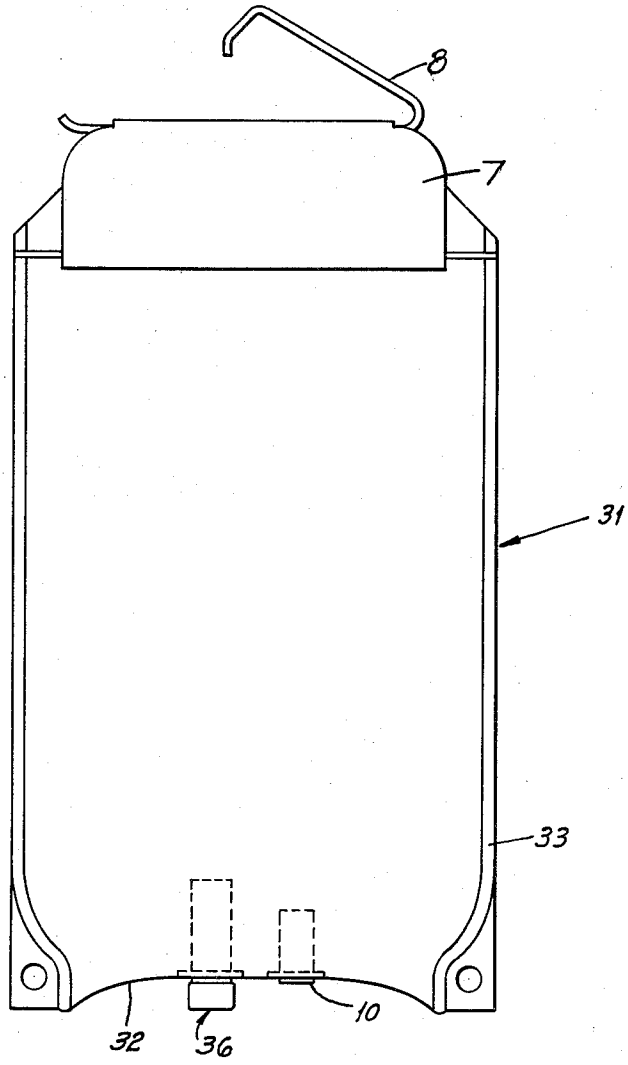

Fig.4

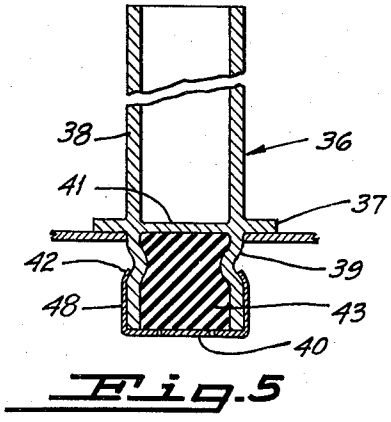

Fig.5

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CONTAINER FOR BLOOD AND THE LIKE

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6 Claims. (Cl. 128—272)

This invention relates to an improved container suitable for use for the collection, storage and transfusion of blood and, more particularly, to improved means enabling a fluid connection to be established to the sterile interior of the container for the deposit of blood or other fluid therein through a self-sealing filling means.

In the collection and storage of blood and like fluids, flexible plastic containers have recently come into use, replacing the common glass flasks widely used heretofore; the reasons for the substitution are quite obvious, the flexible container is not subject to breakage and can be handled, transported and used more readily. However, because of the substitution of the flexible plastic container for the glass, the problem of providing a re-sealable fluid connection to the sterile interior of the flexible container has become of some moment; the fluid connections previously available have not been satisfactory in that when blood or other fluid is deposited in the container, the filling connection to the container has been apt to leak. This is highly objectionable since it could result in contamination of the contents of the container.

It is in general the broad object of the present invention to provide a novel and improved flexible container for blood and the like.

Another object of the present invention is to provide a novel filling means for a flexible blood container which is relatively simple and yet which can be utilized to enable blood, another fluid or a medicament to be deposited within the container without leakage through the filling means.

The invention includes other objects and features of advantage, some of which, together with the foregoing, will appear hereinafter wherein the present preferred form of a flexible container and particularly of the filling means embodying this invention are disclosed.

In the drawing accompanying and forming a part hereof, Figure 1 is a side elevation, showing the completed flexible container including the novel filling means of this invention.

Figure 2 is a plan view of the filling means, while Figure 3 is a section taken along the line 3—3 in Figure 2.

Figure 4 is a side elevation showing another complete flexible container including a novel filling means embodying the present invention.

Figure 5 is a section taken through the novel filling means shown in Figure 4.

Referring to the drawing and particularly to Figures 1–3, I have indicated at 6 a container made of a suitable flexible material such as saran, polyvinyl chloride, polyethylene and the like. At its upper end, the container includes a transverse support member 7 having a wire hook 8 secured thereto so that the device may be conveniently supported in use. At the bottom of the container are provided an outlet generally indicated at 10, and an inlet, generally indicated at 11, and to which the present invention specifically relates in part.

In accordance with this invention, the inlet 11 comprises a first tubular portion 12, having a flange 13 at one end, and a second tubular portion 14, also having a flange 16 at one end. The tubular portions 12 and 14 are secured opposite one another with end wall 17 of the flexible container interposed between them; the three parts, that is, tubular portion 12, tubular portion 14 and the end wall 17 of the container, are secured together as by solvent sealing, heat sealing, or induction sealing, the flanges 13 and 14 being on opposite sides of the end wall 17 with the passage in each of tubular portions 12 and 14 in axial alignment.

Further and in accordance with this invention, the second tubular portion 14 includes a resilient plug 18, which rests against the end wall 17 of the container, and is retained in place and is held in a state of compression in member 14 by an annular metal cap, generally indicated at 19, including a tear strip cover 20 and having one peripheral edge 21 crimped to deform the tubular portion 14 uniformly and retain the plug 18 in a compressed state, as is shown in Figure 3. The other peripheral end 22 and the cover 20 of the metal cap 19 extends over the end of the tubular member and a portion of the plug 18 to provide mechanical protection for these.

Referring to that embodiment of the invention which is shown in Figures 4 and 5, another form of a flexible container is indicated generally at 31. This is fabricated of any of the useful flexible plastic materials such as those previously mentioned, the container being made from a sheet rectangular shape folded upon itself about its lower end 32 and suitably sealed about its edges to provide a sealed container. A transverse support member 7 is provided at the upper end of the container and with wire hook provides a support for the container.

The container shown in Figure 4 includes the outlet 10 as is shown in Figures 1 and 3. However, the inlet in this form of the invention is generally indicated at 36 and comprises a length of tubing having a flange at 37 intermediate its ends enabling the tube to be mounted upon and secured to the inner wall of the flexible element making up the bag 31. A first portion 38 of the tube extends within the bag while a second portion 39 extends beyond the bag. The portions 38 and 39 are further separated and defined by a frangible diaphragm of 41 positioned across the tube at the elevation of flange 37. A plug 43 of resilient material is mounted within the portion 39 and is retained by the metal cap 48 provided over the end of portion 39. The metal cap is crimped over as at 42 to retain the plug in place. The metal cap includes a central tear strip 40.

In use, to place a batch of blood or other fluid in the container, it is only necessary to sterilize the exposed end of the resilient plug 18 or 43 and then insert a suitable sterilized hollow needle. Insertion or withdrawl of the needle can be effected numerous times through the resilient plug 18 or 43 without any leakage from the container following withdrawal of the needle because the plug is compressed and so is inherently self-sealing.

Thus, it is possible, for example, to make a deposit of blood or solution within the flexible container and subsequently hold the container in storage without any leakage occurring. Subsequently, the fluid in the container can be removed through the outlet 10. If during the course of an infusion it is desirable to add a medicament to the fluid being administered to the patient, this can be added to the liquid through the inlet 11 or 36, depending upon which form of the invention is utilized.

It will be apparent that with this structure, I provide a relatively simple and novel filling connection for a flexible container for blood and the like. The length of the tubular portion 12 or 38, in conjunction with the length of the tubular portion 14 or 39 is such that the end of hollow needle utilized does not extend beyond the open

end of the tubular member 12 or 38, thus protecting the sidewall of the bag against inadvertent puncture if the bag should be accidentally struck on the side while the needle is present.

I claim:

1. A flexible container adapted to have a fluid withdrawn therefrom with a hollow needle, said container having a wall, a tubular member mounted on said wall and having a first portion extending on one side of the container wall and a second portion extending on the other side of said container wall and concentrically with the bore in said first portion, a resilient plug compressed in said second portion and providing a closure therefore, and means retaining said plug in position against displacement when punctured by a needle, said first and second tubular portions providing an aligned tubular passage of a length in excess of that of said needle.

2. A flexible container adapted to have a fluid withdrawn therefrom with a hollow needle, said container having a wall, a tubular member mounted on said wall and having a first portion extending within the container and a second portion extending on the exterior of said container concentrically with the bore in said first portion, and a resilient plug compressed in said second portion and providing a closure therefore, said tubular member providing an aligned tubular passage of a length in excess of that of said needle.

3. A flexible container adapted to have a fluid withdrawn therefrom with a hollow needle, said container having a wall, a first tubular member mounted on said wall within the container, a second tubular member mounted on said wall on the exterior of said container concentrically with the bore in said first tubular member, a resilient plug in said second tubular member providing a closure therefore, and a metal cover secured on said second tubular member and compressing said resilient plug in said second tubular member, said first and second tubular members providing an aligned tubular passage of a length in excess of that of said needle.

4. A flexible container having a wall, a tubular member mounted on said wall and having a first tubular portion in communication with the interior of the container and a second tubular portion on the exterior of said container, a resilient plug compressed in said second portion and providing a closure therefor, and means retaining said plug in position in said second portion, the second portion extending coaxially with the first portion to provide a tubular guide for a needle passing through the plug.

5. A flexible container having a wall, a tubular member mounted on said wall and having a first tubular portion in communication with the interior of the container and a second tubular portion on the exterior of said container, a resilient plug in said second portion providing a closure therefor, and a metal cover secured on said second portion and compressing said resilient plug in said second portion, the second portion extending coaxially with the first portion to provide a tubular guide for a needle passing through the plug.

6. A flexible container having a pair of parallel side walls and an end wall, tubular means mounted on said wall and including a first tubular portion, a second tubular portion extending exteriorly of said container wall and coaxially with the bore in said first tubular portion, a resilient plug compressed in said second tubular portion and providing a closure therefor, and means retaining said plug in position in said second tubular portion, the two portions having a substantially like internal bore whereby the first portion acts as a guide and sheath for a needle passing through the plug.

References Cited in the file of this patent

UNITED STATES PATENTS

2,642,866	Smith	June 23, 1953
2,698,619	Beacham et al.	Jan. 4, 1955
2,702,034	Walter	Feb. 15, 1955
2,704,075	Cherkin	Mar. 15, 1955
2,757,669	Gewecke et al.	Aug. 7, 1956

FOREIGN PATENTS

1,034,196	France	Apr. 8, 1953