

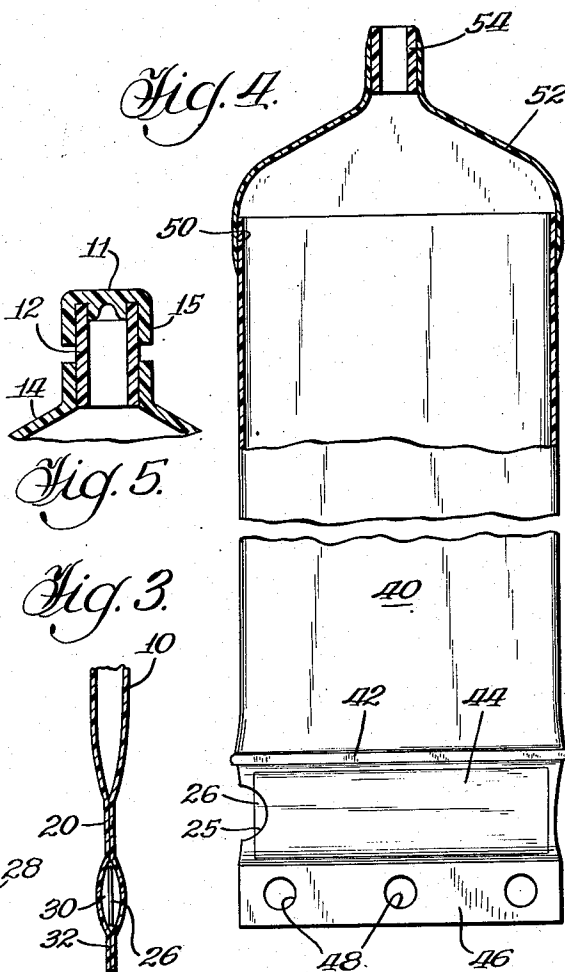
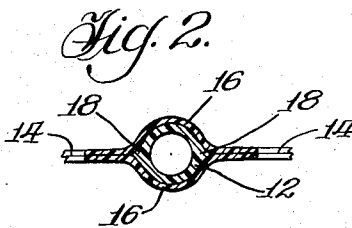
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VENOCLYSIS EQUIPMENT

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VENOCLYSIS EQUIPMENT

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4 Claims. (Cl. 128—272)

My invention relates to equipment for receiving, storing and dispensing fluids of the general type including whole blood, blood plasma, glucose solution, etc., and includes among its objects and advantages increased dependability and cheapness in a disposable storage receptacle.

In the accompanying drawings,

Figure 1 is a side elevation of a receptacle according to the invention;

Figure 2 is a section on line 2—2 of Figure 1;

Figure 3 is a section on line 3—3 of Figure 1;

Figure 4 is a side elevation of an alternative construction; and

Figure 5 is a section on line 5—5 of Figure 1.

In the embodiment of the invention selected for illustration in Figure 1, the bag proper is a tube 10 of flexible plastic. At the end shown uppermost in Figure 1, it has a discharge tube 12 closed by the stopper 11, having a reversible sleeve 15. The stopper is of a mixture of rubber and plastic.

The cap is self-sealing, and is sealable to the tube 15 either by heat or solvent. Ordinary rubber caps cannot be used, as rubber is not sealable to plastic. In fact, a rubber cap has a pronounced tendency to pop off the plastic tube. A plastic cap cannot be used, as plastic is not self-sealing. The self-sealing feature is important to retain sterility of the bag during operating procedures in the use of the bag. To fill and empty the bag, a conventional hypodermic cannula is thrust through the stopper.

The top closure is completed by welded diagonal edge seals at 14 extending symmetrically inward. At their inner ends these merge into a solid block formed by the tube 12 and the opposing walls 16 of the tube structure. The tube 12 is extruded with filler enlargements 18 to assist in forming a solid structure without flexing the walls 16 into a sharp angle. In this way a solid mass free of air holes or weak spots is easily obtained by juxtaposing the parts in the positions indicated in the drawings and applying heat and gentle pressure.

Containers according to Figure 1 can be produced in large quantities from tubing of indefinite length by forming the other end of the container as indicated in Figure 1. The sealing band 20 defines the lower end of the container proper. Beyond that is a short zone 22 where the opposite walls are not sealed to each other, and the material is slitted or cut open at 24 to define an opening into which a bit of thin cardboard or paper 26 can be slipped after the user has written on the slip of paper the identifying indicia by which the container and its contents can be identified during subsequent processing and use. The edges of the slit are cut away in the middle to leave an arcuate opening 25. The mouth of the opening 25 is narrower than the card 26, so that the card is securely retained, but a little longitudinal tension applied to the edges stretches them so that the card can be easily removed and replaced. If it should happen to stick a little, it can be pushed as well as pulled by applying a finger tip at the point indicated at 28 in Figure 1. Below the transverse receiving chamber 30 holding the card 26 there is a sealing zone 32. The remote end of this zone is a counterpart of the opposite end of the container, and thus a tube of indefinite length can be sealed at intervals and then cut without waste, to form the finished articles. Accordingly, beyond the zone 32 there is a fairly wide ear 34 on each side, of the same axial extent as the fillers 18,

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and beyond the ears 34 are triangular flaps 36 tapered outwardly. Apertures 38 on opposite sides afford a convenient means of hanging up the filled container.

In Figure 4 I have illustrated a main container body 40 of the same tubing as the body 10, which may be sealed by a transverse sealing zone 42, followed by a transverse pocket at 44 to hold the identification card, followed by a square sealed end tab 46 provided with attachment holes 48. In this embodiment the square cutoff leaves the upper end of the tube as indicated at 50. Before the bottom is formed, the tube can be slipped on a mandrel of a shape to fit inside the tapered neck portion 52 and inside the end nipple 54. Then the portion 52 is formed by dipping the assembly repeatedly in a liquid plastic mixture to build up successive layers of plastic. After the mandrel is removed, the seals at 42 and 46 complete the fabrication of this embodiment. It will be obvious that the main bodies for containers according to Figure 4 can be produced from continuous tubing, as in the case of the embodiment of Figure 1.

The filler enlargements 18 in the tube 12 co-operate with the adjacent wall parts and cap to form a substantially solid lump that is convenient for the operator to grasp and hold when inserting or withdrawing a cannula. If a larger lump is desired, the integral portions 18 could be increased in size or even formed as separate pieces.

Others may readily adapt the invention for use under various conditions of service by employing one or more of the novel features disclosed or equivalents thereof. As at present advised with respect to the apparent scope of my invention, I desire to claim the following subject matter:

1. An aseptic container for receiving, storing and dispensing venoclysis fluids comprising, in combination: a one-piece body consisting of a tube-like section of uniform diameter; said tube having a flexible and stretchable wall of chemically inert and physically non-porous plastic; said body having a bottom end and an inlet opening portion at the opposite end; said filling end tapering down to an axial inlet opening portion; said end portion being defined and rigidified by a tubular insert communicating with the interior of the said body section; said insert being welded to the adjacent body wall; a stopper closing said insert; said stopper having a self-sealing central portion adapted to receive a penetrating cannula for filling and emptying the bag; and a peripheral sleeve turned axially down around the external surface of said tube; said stopper and tube being permanently sealed together; the bottom end of said body being sealed by a weld, said container being capable of receiving, storing, and dispensing venoclysis fluids without employing a rigid auxiliary supporting container therefor.

2. An aseptic container for receiving, storing, and dispensing venoclysis fluids comprising, in combination: a one-piece body consisting of a tube-like section having a flexible wall of chemically inert and physically non-porous plastic; said body having a filling end and a bottom end; the said wall adjacent the said filling end being tapered inwardly to form a small diameter opening; a tubular insert shaped to fit inside the filling end; said insert having two diametrically opposite generally triangular enlargements, each having extending faces extending out to an apex; said insert and the said wall contiguous thereto being welded to each other to form oppositely disposed welded portions enclosing and forming with the said triangular enlargements, an end plug of substantial bulk and of greater strength and rigidity than the rest of said body.

3. An aseptic container for receiving, storing, and dispensing venoclysis fluids comprising, in combination: a body section of a generally rectangular configuration having a substantially uniform diameter; said body section having flexible walls of chemically inert and physically non-porous plastic and having a bottom end and an inlet opening portion at the opposite end; said inlet portion being defined and rigidified by a relatively stiff plastic tubular insert communicating with the interior of the said body section; said insert being sealed to the adjacent walls of the said body section forming an integral structure; a stopper closing said insert; said stop-

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per having a self-sealing diaphragm portion adapted to receive a penetrating cannula for filling and emptying the said container; said stopper and insert being fixedly secured together; said bottom end of the body section being sealed by a weld; and said container being capable of receiving, storing, and dispensing venoclysis fluids without employing a rigid auxiliary supporting container therefor.

4. In a flexible walled plastic aseptic container for receiving, storing, and dispensing venoclysis fluids comprising in combination a generally flexible tube-like body section of inert non-porous plastic having a bottom end closed by a welded portion and an inlet opening portion at the opposite end, the improvement comprising: an inlet opening portion which is defined and rigidified by means of a relatively stiff plastic tubular insert disposed in the inlet opening portion of the said body section, said insert being sealed to the adjacent surfaces of the body section forming an integral structure therewith, and said tubular insert being closed by a stopper member fixedly secured thereto which has a self-sealing diaphragm member adapted to receive a penetrating cannula for filling and emptying the said container, whereby said inlet open-

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ing portion serves as a support for a self-sealing diaphragm member and a spacer means to protect the said flexible body section during penetration of the said diaphragm member by a hypodermic needle.

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