July 7, 1959 J. F. HOMAN ET AL 2,893,678

PARENTERAL SOLUTION EQUIPMENT

Filed Jan. 27, 1956

FIG. 1.

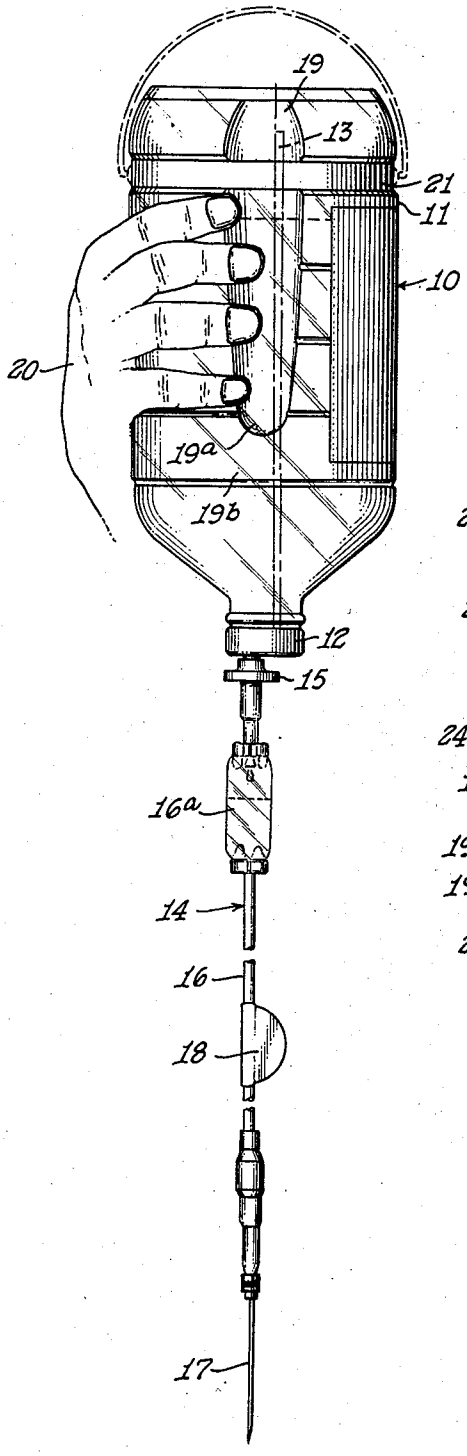
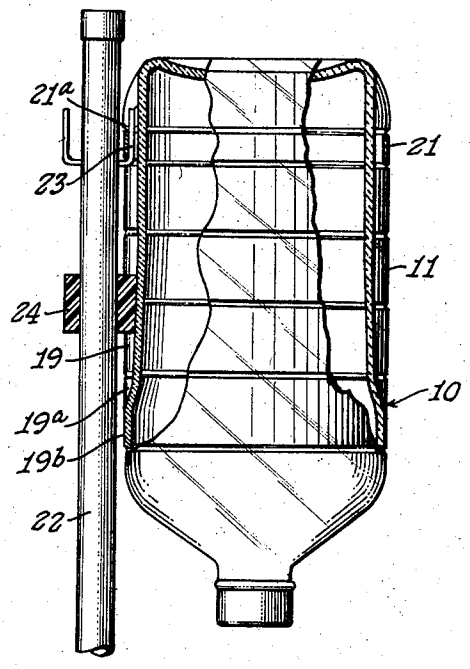


FIG. 2.



INVENTORS
John F. Homan
Theodore H. Gewecke
Cyrus R. Broman

BY Jerome F. Fallon

ATTORNEY

United States Patent Office

2,893,678

Patented July 7, 1959

2,893,678

PARENTERAL SOLUTION EQUIPMENT

John F. Homan and Theodore H. Gewecke, Glenview, and Cyrus R. Broman, Evanston, Ill., assignors to Baxter Laboratories, Inc.

Application January 27, 1956, Serial No. 561,711

3 Claims. (Cl. 248—311)

This invention relates to parenteral solution equipment and, more particularly, to a parenteral solution container.

Parenteral solution containers are generally constructed of glass and have a cylindrical form. They are usually provided in sizes suitable for containing 150, 250, 500 and 1,000 ml. of parenteral liquids such as glucose, saline, blood or plasma. The solutions are dispensed from these containers by mounting these containers in a mouth downward fashion and causing the solution to flow through a flexible tube into the arm of a patient, the actual entry being made through a hypodermic needle designated a recipient needle.

Because of the smooth outer surface in the presently provided glass containers, it is often difficult or awkward for a nurse to handle them—especially insofar as the inverting and suspending operations are concerned. This is distinctly true of the larger sizes, where on occasion a bottle has slipped from the grasp of the administrator. It is to be appreciated that such an accident may have consequences other than the mere loss of the solution and spillage created. It may be that the solution is needed at the precise moment and no substitute solution is immediately available.

Once the solution bottle is suspended from a vertical standard placed adjacent the bed or operating table and the course of administration commences, it is possible, with the presently provided containers, for wobbling or shifting of the bottle on its support to occur. This may result in disengagement of the fluid conducting tube from the patient or movement of the recipient needle with consequent pain to the patient.

The improved container of our invention avoids these aforementioned difficulties and in addition provides a more economical container. Essentially, our invention includes the provision of a specially designed longitudinal recess or slot in the outside wall of a parenteral solution bottle which facilitates handling and which cooperates with the devices used for suspending the bottle to prevent wobbling.

Our invention will be explained in conjunction with the attached drawing in which Fig. 1 is an elevational view of the container of our invention shown in manual grasp prior to suspension; and Fig. 2 is an elevational view partially in section of the container of our invention equipped with a band and mounted thereby on a vertical standard.

Referring now to the drawing, the numeral **10** generally designates a parenteral solution container. Container **10** includes a glass bottle **11** of a size in the range from 150 ml. to 1,000 ml. as described above. The mouth of bottle **11** is closed by a resilient plug **12** through which extend liquid outlet and air inlet passages (not shown). Mounted in the air inlet passage of plug **12** and extending inwardly of bottle **11** is air tube **13** which permits air to enter bottle **11** to replace exiting liquid. Inserted into the liquid outlet passage of plug **12** and frictionally secured therein is parenteral administration set, generally designated **14**. In the usual embodiment, administration set **14** includes a plug-in connector **15** which communicates with the liquid outlet passage of plug **12**. Secured to the unconnected end of connector **15** is a length of flexible tubing **16**. The unattached end of tubing **16** is provided with a recipient needle **17** suitable for introduction into the body of a patient. Regulating the flow through tubing **16** is clamp **18** which may take one of many forms known to the art. Intermediate the ends of tubing **16** is drip meter **16*a*** which permits visual determination of the rate of flow of the parenteral solution by counting the number of drops falling through meter **16*a*** during a given period of time.

Referring again to bottle **11**, it is to be noted that the outer side wall of the container is provided with longitudinal slot or recess **19**, which permits bottle **11** to be grasped tightly by a hand **20** when the fingertips are pressed against the trough of recess **19**.

Longitudinal slot **19** extends from the base of bottle **11** to a point spaced from the shoulder of the bottle. Thus, the end of slot **19** provides a stop or limit should the bottle be grasped with wet fingers. A stop or limit is provided at the base end of slot **19** by band **21**. Limiting the extent of slot **19** to only a portion of the length of the cylindrical portion of bottle **11** also provides a non-interrupted smooth side wall as at **19*b***. Having a smooth side wall on bottle **11** is important for mass production where bottles are frequently abutting and may rotate. Without smooth side walls the recesses may become engaged and interrupt the smooth flow of bottles on a conveyor.

Referring now to Fig. 2, yet another use of our invention is shown wherein it is possible to mount the apparatus of Fig. 1 without the need for using a conventional bail or wire hoop (as shown in dotted lines in Fig. 1) secured to band **21**. Band **21** is maintained in position adjacent the base of bottle **11** by mounting it in an annular recess **21*a***. Alternatively, band **21** can be so positioned by providing annular ribs or beads and not forming bottle **11** with annular recess **21*a***. Standard **22** is provided with an upturned hook or ear **23** which is inserted under band **21** at the point where band **21** crosses recess **19**. Mounted on standard **22** is rubber sleeve **24** which engages recess **19** to maintain bottle **11** in a stable position.

In addition to providing a more economical unit by the elimination of a bail, the apparatus of Fig. 2 has the further advantage of being easily cratable. In the crating of a bail-equipped bottle (it is the usual practice to sell a carton of six or twelve units), care must be exercised to insure that the bail is not extended outwardly of the base of bottle **11**. Should this be the case, the bail may become disengaged or rupture the carton.

We have found it desirable to provide a pair of recesses **19**, in diametrically opposed positions to permit easier manipulation of bottle **11** under the conditions shown in Fig. 1.

The foregoing detailed description has been given for clearness of understanding only and no unnecessary limitations are to be unfairly inferred therefrom.

We claim:

1. Parenteral solution equipment, comprising a vertical standard, an upwardly-extending hook mounted on said standard, a sleeve mounted on said standard and spaced below said hook, and a cylindrical glass parenteral solution bottle having its outer wall interrupted by a longitudinally-extending slot and an annular recess adjacent to but spaced from the base of said bottle, said longitudinally-extending slot extending from the base of said bottle only partway along the length of said bottle, a circular band mounted in said annular recess, said hook

being received in said recess in said slot under said band and said sleeve being received in said slot, whereby said bottle is mounted on said standard secure against accidental lateral displacement.

2. A container for parenteral fluids comprising a generally cylindrical glass bottle equipped with a closure closing the mouth thereof, the outer wall of the bottle being interrupted by a pair of diametrically opposed, longitudinal slots and band means in an annular recess adjacent to but spaced from the bottom of the bottle and encircling the bottle to provide, with said slots, ear-receivable means for mounting said container on a vertical standard.

3. In parenteral solution administration equipment for the dispensing of parenteral fluids from a rigid container mounted in a mouth-downward condition, a vertical standard equipped with an upwardly extending hook and

a cylindrical glass parenteral solution bottle having its outer wall interrupted by a pair of longitudinally extending slots and an annular recess adjacent to but spaced from the base of the bottle, said longitudinally extending slots extending from the base of said bottle only partway along the length of the bottle, and a circular band mounted in said annular recess, said hook being received in one of said slots under said band.

References Cited in the file of this patent

UNITED STATES PATENTS

845,777	Grossman	Mar. 5, 1907
1,240,072	Maiden	Sept. 11, 1917
2,224,672	Davis	Dec. 10, 1940
2,723,665	Goldsmith	Nov. 15, 1955
2,780,225	Barr	Feb. 5, 1957