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PARENTERAL SOLUTION EQUIPMENT

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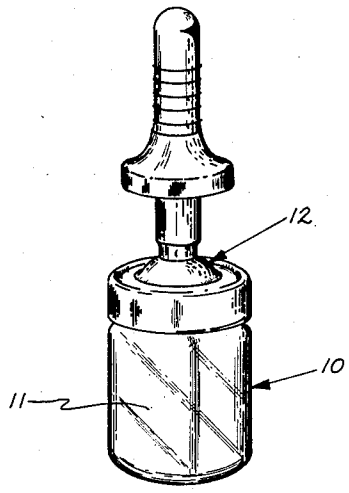


Fig. 1.

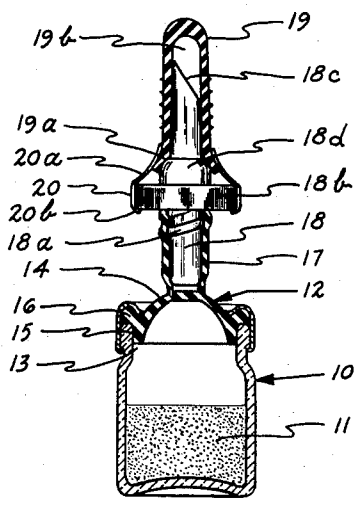


Fig. 2.

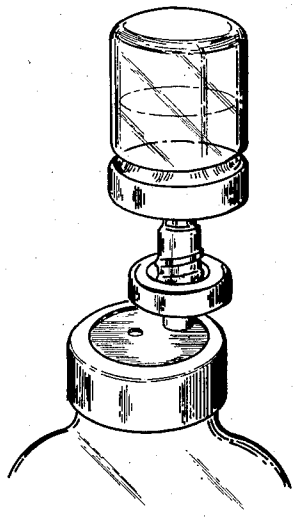


Fig. 3.

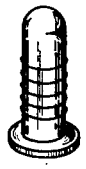


Fig. 4.

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PARENTERAL SOLUTION EQUIPMENT

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5 Claims. (Cl. 222—545)

This invention relates to parenteral solution equipment and, more particularly, to a spout-equipped dispensing container having a tamperproof closure.

In the field of parenteral therapy it is often necessary to fortify or supplement a given solution such as glucose or saline with a medicine indicated in the treatment of a given patient. Such would be the case where specific vitamins are added to a bulk solution, or where anesthetic agents are incorporated therein just prior to surgery. Since it is mandatory that the solution and its administration be of a sterile nature, it is also important that the fortification of the solution, as indicated above, be also carried out under sterile conditions. Even though the additive medicine used to fortify a parenteral solution is, in itself, sterile when prepared, it may become unsterile if it is not fitted with a tamperproof closure.

To provide a tamperproof closure for a dispensing vial used to fortify a parenteral solution, we have devised a structure including a protector stocking provided with an annular flange. The annular flange is provided integral with the stocking and is positioned adjacent the open end thereof. Means are provided on the spout-equipped vial for clamping this flange in an unreinsertable relation to such means.

Our invention will be explained in conjunction with the accompanying drawing in which Fig. 1 is a perspective view of a spout-equipped additive vial provided with the closure of our invention; Fig. 2 is a cross-sectional view of the vial shown in Fig. 1; Fig. 3 is a fragmentary perspective view of a spout-equipped additive vial from which the closure has been removed, the vial spout being inserted into the stopper of a parenteral solution bottle; and Fig. 4 is a perspective view of the stocking of our invention after removal from the closure portion of the vial.

Referring now to the drawing and, in particular Fig. 1, the numeral **10** generally designates a glass vial or bottle having an internal volume of the order of 20 ml. Charged within vial **10** is sterile medicine **11**. As pointed out above, medicine **11** may be any agent considered useful in fortifying a parenteral solution. An anesthetic so provided is succinylcholine chloride, which in small dosages has been found useful as a skeletal muscle relaxant.

Referring now to Fig. 2, wherein like numerals to those used in Fig. 1 are employed, the numeral **12** generally designates the closure for the mouth **13** of vial **10**. Closure **12** includes a resilient dome-shaped cap **14** which is described in co-owned, co-pending application Serial No. 543,129, filed October 27, 1955. Cap **14** is provided with an integral depending annular flange **15** useful in positioning it within mouth **13** of vial **10**. Cap **14** is also provided with an outwardly extending bead-equipped flange **16** which also operates to maintain cap **14** over the mouth of vial **10**. Integral with and extending upwardly from the domed portion of cap **14** is spout socket **17**.

Mounted in the spout socket **17** of cap **14** is tubular spout **18**. Spout **18** is removable from socket **17** only with extreme difficulty, not only because of the press fit

engagement with socket **17**, but also because of the provision of threads **18***a* on the portion of spout **18** received within socket **17**.

Intermediate the ends of spout **18** is provided an annular flange **18***b*. The end of spout **18** opposite the end received in socket **17** is provided with a tapered point as at **18***c*.

In operation, when medicine **11** is desired to be introduced into a parenteral solution bottle, vial **10** is held mouth downwardly by grasping it and flange **18***b*, the latter being achieved by the use of the thumb and forefinger. With a firm grasp, the spout is plunged through the rupturable diaphragm associated with the stopper of a parenteral solution bottle, the tapered point **18***c* facilitating the rupture. The resulting combination is seen in Fig. 3. Then, in the case medicine **11** is a liquid, the same can be transferred to the parenteral solution bottle by removing vial **10** in a reciprocating fashion, thereby flexing cap **14** and "pumping" medicine **11** into the parenteral solution bottle.

In the embodiment of our invention shown in Figs 1 and 2, flange **18***b* of spout **18** is provided with an integral boss-like element **18***d* on the side adjacent tapered point **18***c*. Mounted over the portion of spout **18** outward of boss-like element **18***d* is protector stocking **19**. Stocking **19** is constructed of a resilient flexible material, such as rubber, and is essentially tubular in nature, having one end closed. Adjacent the open end stocking **19** is provided an integral flange **19***a*. Stocking **19** is press mounted on spout **18** with stocking flange **19***a* bearing against boss-like element **18***d*. Maintaining flange **19***a* in such relation is collar element **20**, which is provided with inwardly extending shoulders **20***a* and **20***b*, shoulder **20***b* underlying flange **18***b* and shoulder **20***a* overlying flange **19***a*. Collar **20** is substantially rigid, being constructed by metal or celloseal so that upon removal of flange **19***a* from its position between shoulder **20***a* and boss-like element **18***d*, it is virtually impossible to be reinserted therebetween.

It is to be noted that not only does stocking **19** provide a tamperproof closure, but also one capable of maintaining the medicine **11** in a sterile condition. A seal against contamination is provided first by the press fit of the interior of stocking **19** with the periphery of spout **18** and, second, by the clamping of flange **19***a*.

In the depicted embodiment of our invention, stocking **19** is of such a length as to have the inward side of its closed end spaced from tapered point **18***c* as at **19***b*. Thus, the portion of stocking **19** designated **19***b* presents a structure easily graspable between the thumb and forefinger to pull off stocking **19**. Aiding in easy removal is the configuration of collar **20** wherein the inwardly extending shoulder **20***a* which overlies flange **19***a* is angled upwardly.

The foregoing detailed description has been given for purposes of clearness only and no unnecessary limitation is to be inferred therefrom.

We claim:

1. A medicine dispensing container equipped with a dispensing spout and having tamperproof closure therefor comprising a container, a flange-equipped spout closing the mouth of said container, a protector stocking having an open end and a closed end and mounted on said spout and provided with an annular flange adjacent its open end, said stocking flange overlying said spout flange, and rigid collar means associated with said spout equipped container, said collar means provided with an internal shoulder, said shoulder overlying said stocking flange.

2. A dispensing container adapted to add a medicine to a parenteral solution bottle comprising a vial, a flange-equipped spout closing the mouth of said vial, a flexible resilient protector stocking mounted on said spout, said

protector stocking having an integral flange adjacent its open end, a collar associated with said vial and provided with an inwardly extending shoulder overlying said stocking flange whereby said stocking flange is unreinsertably maintained between said collar shoulder and said spout flange to provide a tamperproof closure for said vial.

3. A dispensing container adapted to add a sterile medicine to a parenteral solution bottle comprising a vial, a flange-equipped tubular spout closing the mouth of said vial, a flexible resilient protector stocking press mounted on said spout, to provide a seal against contamination of said sterile medicine, said protector stocking having an integral flange adjacent to its open end, a collar associated with said container and provided with an inwardly extending shoulder overlying said stocking flange whereby said stocking flange is unreinsertably clamped between said collar shoulder and said spout flange to provide an additional seal against contamination of said sterile medicine.

4. A dispensing container of the character set forth in claim 3 wherein the closed end of said flexible resilient protector stocking is spaced from the end of said spout, whereby the portion of said stocking outward of said spout end provides a convenient finger graspable means for removing said stocking.

5. A dispensing container adapted to add medicine to a parenteral solution bottle, comprising a vial, an elongated puncturing spout closing the mouth of said vial, an elongated tubular member having a closed end and an open end, said tubular member being mounted on said spout and having an annular flange adjacent its open end, said spout having laterally-extending flange means whereby the flange of said tubular member is adapted to overlie the flange means of said spout, and a collar associated with the said vial and provided with an inwardly-extending shoulder overlying the flange of said tubular member, whereby said tubular member flange is unreinsertably maintained between said collar shoulder and the flange means of said spout to provide a tamperproof closure for said vial.

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