March 15, 1966 R. W. OGLE 3,240,209

NEEDLE CAP

Filed June 29, 1964

FIG. 1

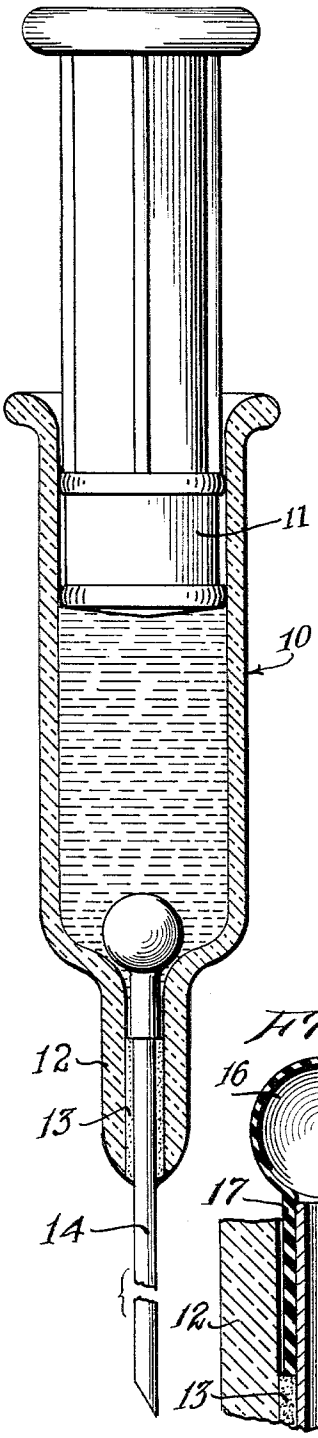


FIG. 2

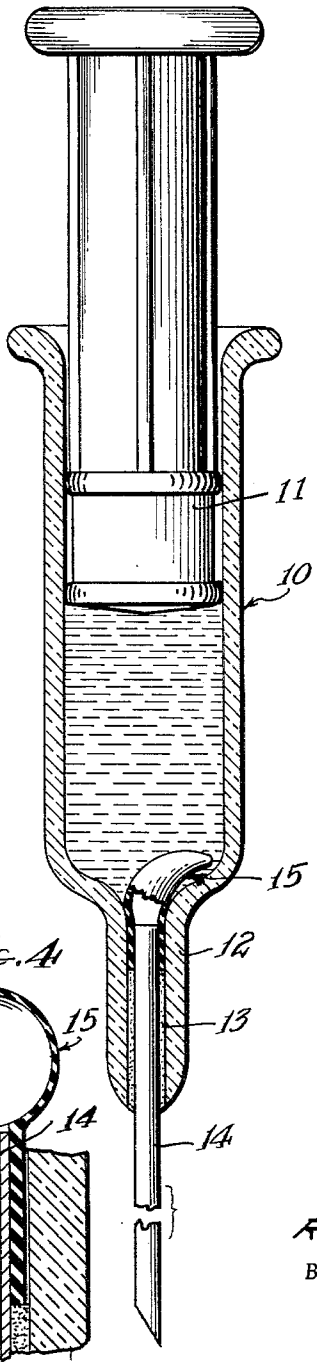


FIG. 3

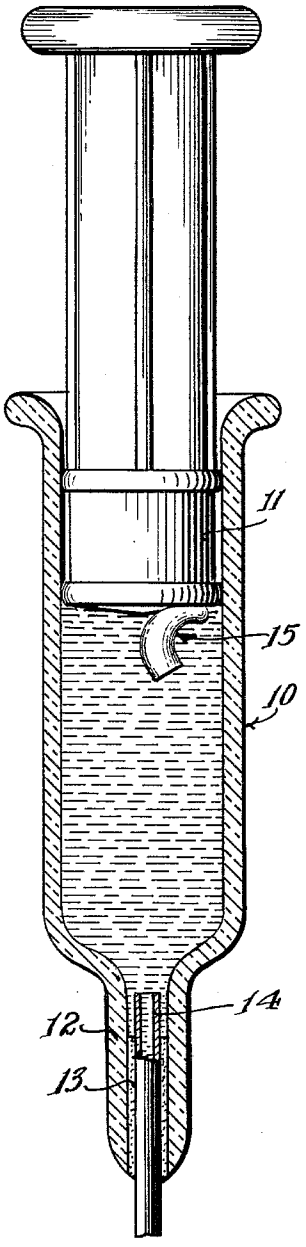
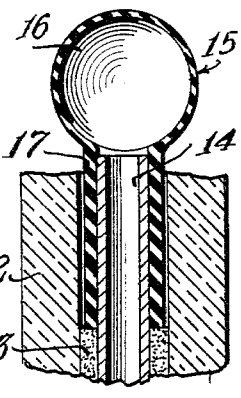


FIG. 4



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3,240,209

NEEDLE CAP

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4 Claims. (Cl. 128—218)

This invention relates to a needle cap for the needles of hypodermic syringes.

It is a feature of this invention that a syringe of almost any type can be employed, but the needle is closed for storage by a cap which can be unseated from the needle when it is desired to use the syringe and which will float in the liquid contained in the syringe. It thus forms a barrier between the contents of the barrel and the needle for storage purposes, but is removable for use. There are many injectables which are not compatible with stainless steel over extended periods of time and if a single dose injectable is desired to be stored in disposable syringes some such separation is required. Such separation is effective by the present invention.

These and other features, objects and advantages of the present invention will be apparent from the annexed specification in which:

FIGURE 1 is a side view of the device embodying the present invention;

FIGURE 2 is a view similar to FIGURE 1 with some pressure having been applied to the plunger;

FIGURE 3 is a view similar to FIGURES 1 and 2 with negative pressure having been applied on the plunger; and

FIGURE 4 is an enlarged section taken through the needle cap in the upper end of the needle as affixed in the boss formed on the barrel.

Referring now more particularly to the invention, there is illustrated a syringe having a barrel **10**, a plunger **11** and a boss **12** in which is cemented by an epoxy resin **13** a needle **14**. As shown most effectively in FIGURE 4, the needle **14** has applied at the top end thereof a cap **15** in the form of a balloon **16** having a downwardly extending sleeve **17**, which sleeve **17** is placed over the upper end of the needle **14**. The cap **15** for assembly is soaked or dipped in a silicone solution to render the same to be rejected by the epoxy resin **13** and to assure that when negative pressure is applied in the barrel **10** the sleeve and balloon will ride off of the upper end of the needle as shown in FIGURE 3. In FIGURE 2 there is shown

what happens when projective pressure is applied, it being noted that balloon **16** has collapsed. In FIGURE 3 where negative pressure has been applied the cap is entirely removed from the needle and floats to the top.

While there has been described what is at present considered a preferred embodiment of the present invention, it will be appreciated by those skilled in the art that various changes and modifications can be made therein without departing from the essence of the invention and it is intended to cover herein all such changes and modifications as come within the true spirit and scope of the appended claims.

I claim:

1. A hypodermic syringe comprising in combination a hollow barrel member provided with a hub, a plunger normally received within said barrel, a hollow needle extending from said hub and having an inner end extending into the interior of said barrel, a cap comprising a balloon constituting the major portion of a hollow sphere and a tubular sleeve depending from said balloon and fitted over the inner end of said needle.

2. The hypodermic syringe of claim **1**, wherein said sleeve has a silicone lining.

3. A hypodermic syringe comprising in combination a hollow barrel provided with a hub, a hollow needle extending from the end of said barrel and having an inner end extending into the interior of said barrel, a cap comprising a balloon constituting the major portion of a hollow sphere and a tubular sleeve depending from said balloon and being fitted over the inner end of said needle, and a plunger disposed within and retractable with respect to said barrel to create a vacuum within the barrel to displace the cap from said needle into said barrel.

4. The hypodermic syringe of claim **3**, wherein said sleeve has a silicone lining.

References Cited by the Examiner

UNITED STATES PATENTS

1,137,388	4/1915	Earp-Thomas.	
2,573,552	10/1951	Detzel	215—41
2,798,487	7/1957	Ferguson	128—218
2,854,003	9/1958	Kirsch	215—43
2,874,863	2/1959	Unger et al.	215—40

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