Sept. 14, 1954 A. E. SMITH 2,688,963

SYRINGE UNIT

Filed Oct. 13, 1951

Fig. 1.

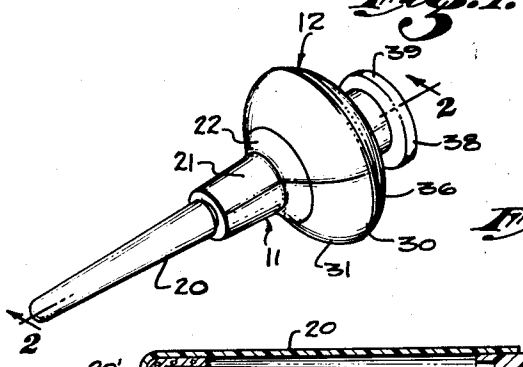


Fig. 2.

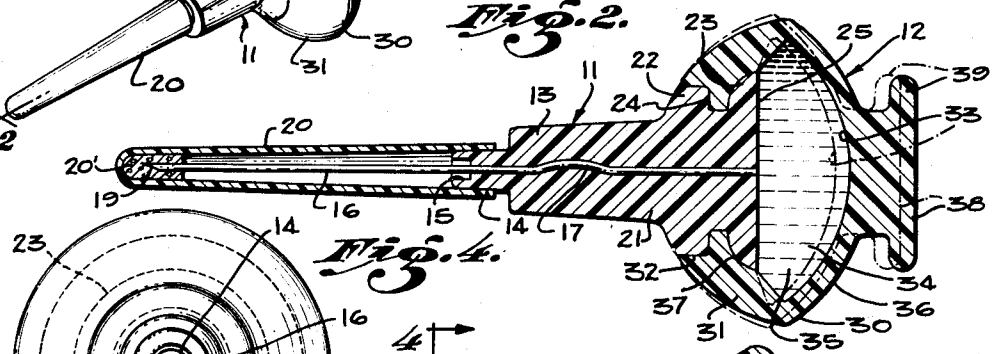
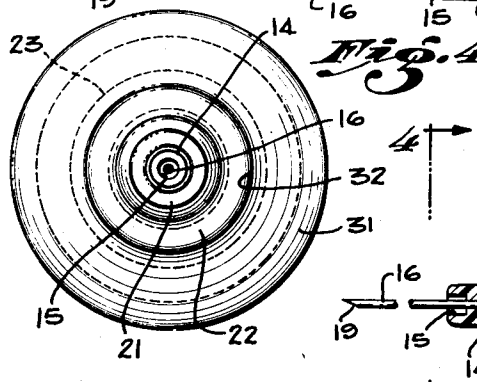
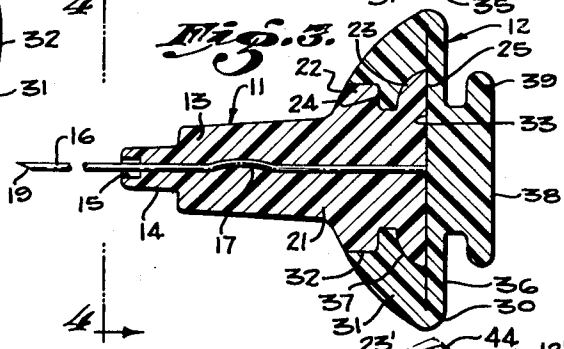


Fig. 4.



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Fig. 3.



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Fig. 5.

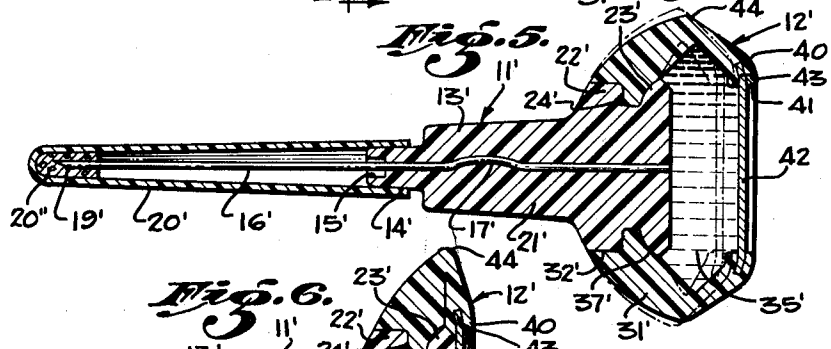
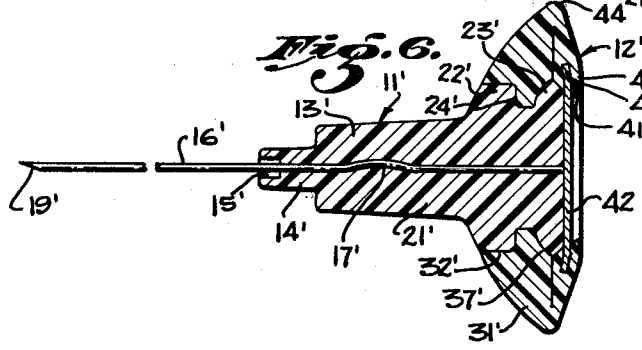


Fig. 6.



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SYRINGE UNIT

Arthur E. Smith, Los Angeles, Calif.

Application October 13, 1951, Serial No. 251,166

3 Claims. (Cl. 128—216)

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This invention relates to a syringe unit.

The general object of the invention is to provide an improved disposable syringe construction which involves a minimum number of parts.

A more specific object of the invention is to provide a unitary syringe wherein a more or less rigid front member is employed as a needle support and wherein a collapsible, recessed, flexible closure member is secured to the front member to form, with the front member, a solution holding chamber and wherein the closure may be operated to reduce the capacity of the chamber and thereby discharge the contents of the chamber.

Another object of the invention is to provide a novel disposable syringe which includes a front member having a plane rear face and a resilient rear member with the two members combining to form a chamber, the volume of which is reduced when the rear member is operated to thus produce an injecting effect.

An additional object of the invention is to provide a novel front member for a syringe.

Another object of the invention is to provide a novel rear member for a syringe.

Other objects and advantages of the invention will be apparent from the following description taken in connection with the accompanying drawings, wherein:

Fig. 1 is an isometric view showing a syringe embodying the features of my invention;

Fig. 2 is a sectional view taken on line 2—2, Fig. 1, and on an enlarged scale;

Fig. 3 is a view similar to Fig. 2, showing the parts in condition after the solution has been discharged;

Fig. 4 is a section taken on line 4—4, Fig. 3;

Fig. 5 is a view similar to Fig. 2, showing a modification, and

Fig. 6 is a view similar to Fig. 3, showing the modification after the solution has been discharged.

Referring to the drawing by reference characters, my invention is shown as embodied in a syringe which includes a front member 11 and a rear closure member 12. The front member may be made of rigid material such as metal, artificial rubber, plastic, et cetera, and includes a tapered portion 13 and a reduced, tapered tip 14. The tip 14 has a recess 15 which is spaced from a needle 16 to allow flexibility of the needle and to provide a novel safety feature against needle breakage at the junction of the needle and base of the recess.

The needle 16 includes a curved portion 17

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which is inserted in the body 11 to prevent rotation and axial movement of the needle. The front of the needle is preferably sharpened. A cap 20 is disposed about the needle. The cap 20 engages the tapered portion 14 to prevent contamination of the needle before use. A cork 20' disposed in the closed end of the cap 20 engages the point 19 of the needle.

The body 11 includes a rear portion 21, which has a pair of exterior flanges 22 and 23 which provide a groove 24. The rear portion 25 of the body is preferably plane as at 25.

The rear member 12 is flexible and may be translucent or transparent and may be made of such materials as rubber, artificial rubber, polyethylene or other flexible plastics, and includes an outwardly flaring body 30 from which an inwardly flaring skirt 31 extends forwardly and terminates in a bead 32 which fits into the groove 24 in the body 11. The inner wall of the skirt 31 is frusto-conical in shape and intersects the plane face 25 of the front member.

The closure body 30 includes an inner wall 33, which is shown as semi-spherical, and is spaced from the wall 25, and the two walls 25 and 33 together form a chamber 34 in which a medicament 35 is placed. The medicament may be inserted through the closure wall as at 36 of the closure member or may be placed in the closure chamber defined by the wall 33 before the closure is placed in the front member.

Cement, as at 37, may secure the bead 32 in the groove 24. The closure 12 terminates in an end 38 which has a flange 39 thereon.

In use the cap 20 is removed and the injection is made. After the needle is in place, pressure on the end 38 will cause the volume of the chamber 34 to be reduced so that the medicament will pass through the needle 16. In order to test and determine whether the needle is in a vein, the flange 39 on the closure rear wall is moved rearwardly to aspirate into the syringe and if blood appears, the needle may be withdrawn and reinserted.

In the modification shown in Figs. 5 and 6 the closure 12' includes a rearwardly directed body portion 40 which is flexible and has a circular hole 41 therein. This hole 41 is closed by a stiff panel member 42 which may be made of metal, hard rubber, plastic or similar material. The edges of the panel 42 are bent as at 43 and imbedded in the closure portion 40. When the syringe is ready for use, pressure on the panel 42 will decrease the size of the medicament holding chamber, causing the material to be ejected. To

aspirate the syringe, pressure may be applied on opposite sides of the periphery 44 of the closure to thus draw material back into the chamber.

With my invention, wherein there is no piston employed in the syringe, I secure a very compact, highly efficient syringe, which does not take much space in a doctor's kit, in storage or in transportation, and in which the solution is maintained in sterile condition until used.

Having thus described my invention, I claim:

1. A disposable syringe including a front member and a rear member, a needle carried by said front member, said front member having a rear face, the entire area of said rear face being planar, said rear member being made of flexible material and including a portion secured to the front member, said rear member having a recessed portion, said recessed portion including a frusto-conical portion which intersects the planar rear face of the front member, said recessed portion also including a part spaced from said front member plane face to form a solution receiving chamber, said needle communicating with said chamber.

2. A disposable syringe including a front member and a rear member, a needle carried by said front member, said front member having an external peripheral flange adjacent to the rear end thereof, said body front member having a plane rear face, said rear member including a body made of flexible material and having a frusto-conical skirt portion secured to the flange on said front member, said rear member including a recessed portion integral with the frusto-conical portion and spaced from said front member rear face to form a solution receiving chamber, said needle communicating with said chamber.

3. A disposable syringe including a front member and a rear member, a needle carried by said front member, a cap on said front member and surrounding said needle, said front member having an external peripheral flange at the rear end thereof, said front member having a plane rear face which is perpendicular to the axis of the needle, said rear member including a body made of flexible material and including a portion secured to the flange on said front member, said rear member including a rigid plane portion which is parallel to and spaced from said front member body rear face to form a solution receiving chamber, said needle communicating with said chamber.

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