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A. E. SMITH
DISPOSABLE AMPOULE SYRINGE

2,524,362

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Fig. 1.

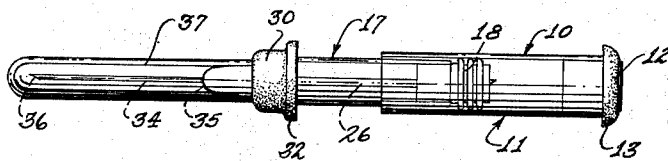


Fig. 2.

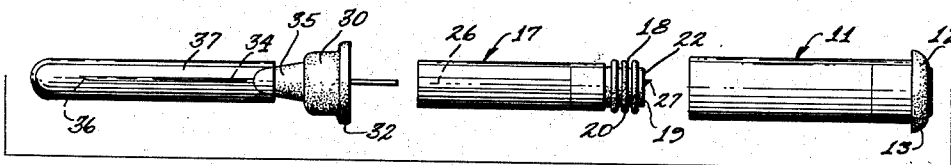
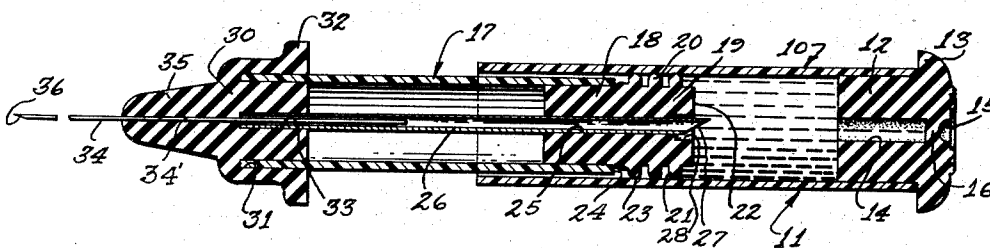


Fig. 3.



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DISPOSABLE AMPOULE SYRINGE

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1 Claim. (Cl. 128—220)

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This invention relates to disposable hypodermic syringes.

The general object of the invention is to provide an improved, disposable, hypodermic syringe which is ready for use as soon as a needle protecting cap is removed.

A further object of the invention is to provide a hypodermic syringe of the ampule type wherein an improved piston carrying plunger moves within the ampule to cause discharge of the drug held in the ampule.

Another object of the invention is to provide a syringe including an ampule having a piston plunger therein and having a needle receiving tube in the plunger which needle serves to afford communication between the ampule and a needle on the plunger.

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

Fig. 1 is a side elevation of an ampule embodying the features of my invention;

Fig. 2 is an extended side elevation showing the parts of my syringe before they have been assembled, and

Fig. 3 is an enlarged, central, sectional view showing the syringe ready for use.

Referring to the drawing by reference characters, I have shown my invention as embodied in a syringe indicated generally at 10. As shown the syringe includes a cylindrical ampule or barrel 11, which may be made of plastic. A stopper 12, which may be made of rubber, is mounted in one end of the ampule. The stopper includes a projecting flange 13 and has an inwardly directed recess 14 and an outwardly directed recess 15 with a diaphragm 16 between the recesses.

The syringe includes a plunger, indicated generally at 17. The plunger, as shown, may be made of plastic or glass and is in the form of a cylindrical tube. At its rear end it has a piston stopper 18 therein. The stopper 18 includes a cylindrical body arranged within the plunger and having a projecting end 19 which has piston ring forming beads 20 integral therewith. I show three of the beads 20, with the innermost bead 21 arranged at a distance from the end 22 of the stopper while the outermost bead 23 is arranged in spaced relation to the end 24 of the plunger 17.

The piston stopper 18 has a central bore 25 in which I arrange a tube 26. This tube 26 has a pointed end 27 by means of which it may be readily passed through the bore 25 of the stopper.

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The inner end of the bore 25 is enlarged as at 28.

In the forward end of the plunger 17 I arrange a front member or cap 30 which is preferably made of rubber and which has an annular groove 31 in which the forward end of the tubular plunger 17 is seated as shown in Fig. 3. The front member includes a flange 32 which may be grasped by the fingers of the operator during an injection. The front member includes a recess 33 in which the forward end of the tube 26 is arranged. The front member also supports a hypodermic needle 34 which passes through a bore 34' in a tapered tip 35 on the front member. The bore 34' extends through the body of the front member and the needle 34 is resiliently engaged by the wall of the bore 34'. The forward end 36 of the hypodermic needle is sharpened and is surrounded by a cap 37 which engages the resilient tip 35.

In use the parts are constructed as described and are assembled preferably with the plunger 17 fully advanced into the ampule and with the tip 27 of the tube arranged in the recess 14. A hypodermic needle is then inserted through the diaphragm 16 and the medicament or solution to be injected is forced into the ampule and as this occurs the piston is caused to be moved away from the stopper 12. The amount of movement of the piston indicates the amount of medicine within the ampule and when the correct amount has been passed into the ampule the hypodermic needle is withdrawn from the diaphragm 16, the hole in which seals of its own accord due to the resiliency of the stopper. The cap 37 is then placed on the tip 35 to maintain the needle 34 in sterile condition.

In use the cap 37 is removed and the needle is inserted in the patient. The cap 12 is then pushed forward a slight distance and then withdrawn and if blood appears in the ampule, it will show the needle is in a blood vessel, whereupon the needle may be withdrawn and correctly inserted. When the needle is correctly inserted the ampule is pushed along the plunger, thus causing an injection to be made.

From the foregoing description it will be apparent that I have invented a novel disposable hypodermic syringe which may be economically manufactured and which is highly efficient for its intended use.

Having thus described my invention, I claim:

A syringe including a cylindrical ampule member and a plunger, a closure disposed at one end of the ampule, said plunger including a hollow, tubular body having a piston stopper at the in-

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ner end thereof, said stopper forming a closure for the other end of the ampule, said stopper including a portion projecting beyond the inner end of the body and having a portion slidably engaging the inner wall of the ampule, said piston stopper having an axial bore therethrough, the inner end of said bore being enlarged, a tube disposed in said piston bore, said plunger having a front member thereon, said front member including a portion within the plunger body and a projecting tapered tip, said front member having a finger engaging flange, said front member having an axial bore and having an enlarged recess at the inner end of the bore, said tube extending into said front member recess, and a needle in said front member bore, said needle being resiliently engaged by the front member, said needle extending into said tube.

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