July 8, 1941. A. E. SMITH 2,248,469

SYRINGE DEVICE

Filed May 5, 1939

FIG. 1

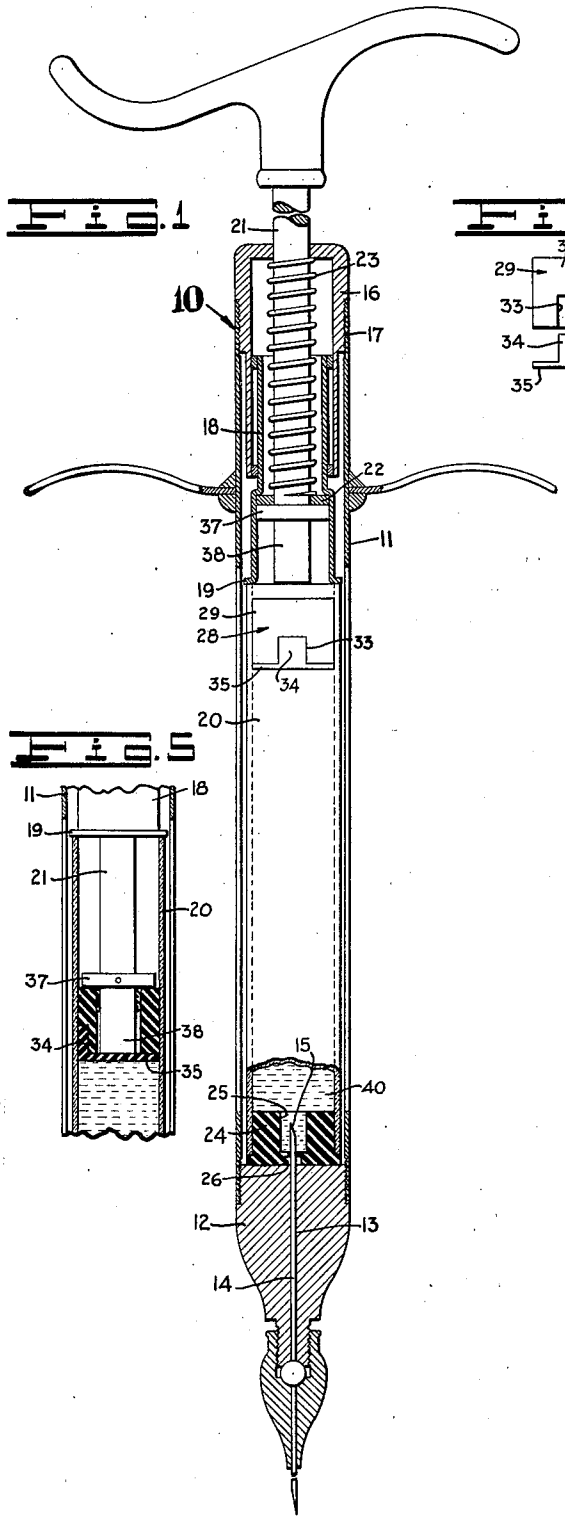


FIG. 3

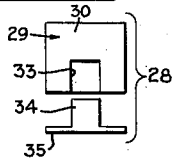


FIG. 2

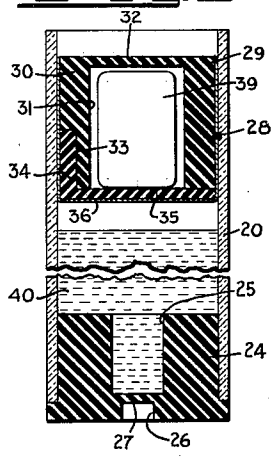


FIG. 4

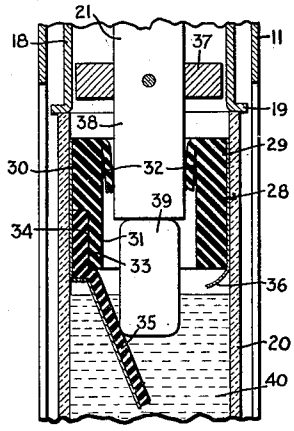


FIG. 5

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SYRINGE DEVICE

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Application May 5, 1939, Serial No. 271,889

6 Claims. (Cl. 128—218)

This invention relates to syringes.

The general object of the invention is to provide an improved ampule type syringe.

Another object of the invention is to provide a novel ampule.

A further object of the invention is to provide a novel cork for ampules.

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

Fig. 1 is a central sectional view, partly in elevation, showing my invention;

Fig. 2 is a fragmentary sectional view showing the cork;

Fig. 3 is a side elevation on a reduced scale showing the cork;

Fig. 4 is a fragmentary central sectional view showing the parts in use; and

Fig. 5 is a view similar to Fig. 4.

Referring to the drawing by reference characters I have shown my invention as embodied in a syringe which is indicated generally at 10. As shown the syringe includes a barrel 11 having a front member 12 thereon. The front member includes a hole 13 through which a needle 14 extends so that the point 15 thereon is arranged within the barrel.

At the rear end the barrel includes an end member 16 which is threaded as at 17 to the barrel and is provided with a segment 18 which has a flanged end portion 19 adapted to engage the end of an ampule 20. The end member 16 includes a plunger 21 which passes through an apertured flange 22. The flange 22 is secured to the segment 18. The flange 22 and the segment 18 are pushed forward by a spring 23 so that the flange 19 of the segment urges the ampule 20 to seated position.

The ampule 20 is preferably a hollow cylindrical glass tube having a rubber closure 24 at the forward end thereof. This closure includes a recess 25 which opens inwardly and a smaller outwardly opening recess 26 with a diaphragm 27 between the recess 25 and 26.

At its other end the ampule includes a piston cork 28 and includes an element 29 having a cylindrical wall 30 and having a recess or chamber 31 the outer end of which is closed by a diaphragm 32. The cylindrical wall 30 includes a recess 33 in which a tongue 34 on a trap door closure 35 fits thus allowing the trap door 35 to pivot to the position shown in Fig. 4.

A seal of suitable membranous light material 36 such as water proof "Cellophane" is shown as arranged over the trap door 35 and along the sides of the member 28.

The plunger 21 is provided with a head member 37 and a projecting end 38. In use the ampule is seated in the barrel and the end member 16 secured in place. Pressure on the plunger causes the portion 38 thereon to pierce the diaphragm 32 and to push through or push against a medicinal preparation 39 in the recess 31 thus swinging the trap door 35 about its hinge and breaking or tearing the "Cellophane" covering 36 as indicated in Fig. 4 so that the tablet 39 is brought into contact with the fluid vehicle 40 in the ampule.

From the foregoing description it will be apparent that I have invented a novel syringe ampule and ampule cork which is highly efficient for the intended purpose.

Having thus described my invention, I claim:

1. For use in a syringe, an ampule having a cork therein at one end, a piston cork in the other end of the ampule, said piston cork including a cylindrical wall and having a chamber therein with a diaphragm closing one end of the chamber, said diaphragm being punctureable, said piston cork having a recess therein, a trap door closure engaging the other end of the piston cork and closing the other end of the chamber, said trap door closure having a tongue thereon fitting said recess, a medicinal preparation in said chamber, a vehicle for the preparation in said ampule between the corks and a breakable membranous seal extending over said trap door closure and along said piston cork.

2. In a syringe, a barrel, and an ampule in the barrel, said ampule having a front cork therein, a needle on the barrel and extending into the ampule, said barrel having a rear member thereon engaging the rear end of the ampule, a plunger slidable in the rear member, a piston cork in the rear of the ampule, said piston cork including a wall and having a chamber therein with a diaphragm closing one end of the chamber, said diaphragm being punctureable by said plunger, said piston cork having a recess therein, a trap door closure engaging the other end of the chamber and closing the other end of the chamber, said trap door closure having a tongue thereon fitting said recess, a medicinal preparation in said chamber, and a vehicle for the preparation in said ampule between the corks.

3. In a syringe, a barrel having a front member thereon, a needle on the front member and ex-

tending into the barrel, an ampule in the barrel, said ampule having a front cork therein, said cork including a diaphragm adapted to be punctured by said needle, said barrel having a rear member thereon, a plunger slidable through the rear member, means about the plunger engaging the rear end of the ampule, said plunger having a head member thereon and having a projecting end beyond the head member, a piston cork in the rear of the ampule, said piston cork including a cylindrical wall and having a chamber therein with a diaphragm closing one end of the chamber, said diaphragm being punctureable by said plunger projecting end, said piston cork wall having a recess therein, a trap door closure engaging the piston cork to close the other end of the chamber and having a tongue thereon fitting said recess, a medicinal preparation in said chamber, a vehicle for the preparation in said ampule between the corks and a breakable membranous seal extending over said trap door closure and along said piston cork.

4. For use in a syringe, an ampule having a piston cork therein, said cork having a chamber therein, said piston cork having a recess therein, a trap door closure engaging the end portion of the piston cork and closing the chamber therein, said trap door closure having a tongue thereon fitting said recess and a medicinal preparation in said chamber.

5. For use in a syringe, a piston cork including a cylindrical wall having a chamber therein with a diaphragm closing one end of the chamber, said diaphragm being punctureable, said piston cork having a recess therein, a trap door closure engaging the other end portion of the piston cork and closing the other end of the chamber, said trap door closure having a tongue thereon fitting said recess.

6. For use in a syringe, an ampule having a cork therein at one end, a piston cork in the other end of the ampule, said piston cork including a chamber therein with a diaphragm closing one end of the chamber, said diaphragm being punctureable, said piston cork having a recess therein, a trap door closure engaging the other end of the piston cork and closing the other end of the chamber, said trap door closure having a tongue thereon fitting said recess, a medicinal preparation in said chamber and a vehicle for the preparation in said ampule between the corks.

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