

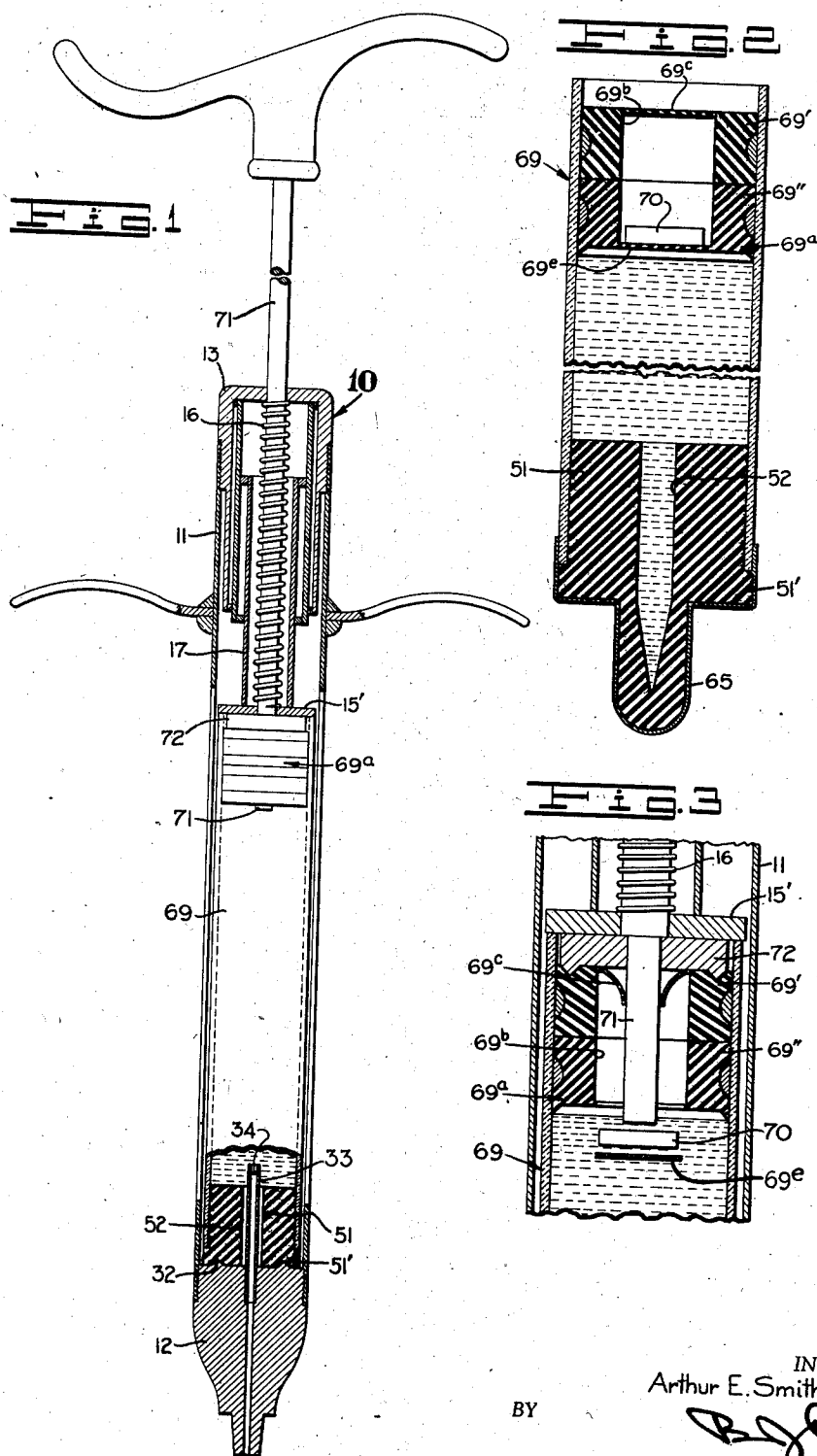
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HYPODERMIC SYRINGE

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HYPODERMIC SYRINGE

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6 Claims. (Cl. 128—218)

This invention relates to hypodermic syringes. The general object of the invention is to provide a hypodermic syringe having a novel ampule therein.

A further object of the invention is to provide a novel ampule construction.

An additional object of the invention is to provide a novel drug holding cork for use in an ampule.

A further object of the invention is to provide a novel ampule syringe.

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 section showing my invention;

Fig. 2 is a fragmentary sectional view showing the ampule; and

Fig. 3 is a section showing the closure of Fig. 2 in another position.

This application is a division of my co-pending application, Serial No. 696,506, filed November 3, 1933, now Patent No. 2,251,527, patented August 5, 1941.

Referring now to the accompanying drawing by reference characters I have shown my invention as embodied in a syringe indicated generally at 10. As shown this syringe includes a barrel 11 having a front member 12 thereon at one end. The barrel is closed at the other end by a cap 13 which has a plunger 71 movable therethrough. The plunger 71 has a head 72 fixed thereon which is normally urged forward by a disk 15' which is slidably mounted on the plunger and is engaged by a spring 16. The spring 16 is surrounded by telescopic segments 17 as clearly shown in the drawing.

Within the barrel 11 I show my improved ampule 69 which is preferably made of glass and is cylindrical with ends at right angles to the axis of the ampule.

In the front end the ampule is provided with a closure 51 having a hole 52 extending therethrough and having a severable tip 65 which closes the hole. For use the tip 65 is cut off as shown in Fig. 1.

The front member is provided with a sharp circumferentially inwardly extending bead 32 which engages the end of the closure 51 and forces a shoulder 51' on the closure against the end of the ampule and maintains the parts in fluid tight engagement.

The front end is provided with an open tube 33 which is provided with lateral discharge aper-

tures 34 and is of considerably less diameter than the diameter of the hole 52 so that the tube enters the hole without touching the walls thereof and thereby avoids mishaps.

The ampule 69 has a movable piston therein indicated generally at 69a. This piston is made of two parts comprising an upper member 69' and a lower member 69''. These members are provided with aligning recesses 69b. The upper recess is closed by a diaphragm 69c and the lower recess is closed by a diaphragm 69e. A tablet member 70 is placed in the recess between the members 69c and 69e. When the plunger 71 is moved inwardly the head 72 moves the piston 69a while the disk 15' abuts against the end of the ampule 69.

In use the plunger 71 perforates the diaphragm 69c, then pushes the tablet 70 through the diaphragm 69e into the vehicle. The plunger will include means on its end face, such as the head 72, to seal the aperture produced when the diaphragms are removed. The closure 51 and piston members 69' and 69'' are made of rubber or similar material.

From the foregoing description it will be apparent that I have invented a novel type of ampule syringe which can be economically manufactured and which is highly efficient in use.

Having thus described my invention, I claim:

1. In combination with a multiple compartment ampule having three corks therein, two of said corks being adjacent each other and having spaced normally imperforate and readily pierceable portions forming the ends of a chamber, a drug in the chamber, the third cork being spaced from the two corks to form a second chamber, the said two corks being frictionally engaged with the walls of the ampule and movable together as a piston.

2. In combination with a multiple compartment ampule having a cylindrical inner wall and having three disks therein, two of said disks being adjacent each other and having pierceable portions forming the ends of a chamber, the peripheries of the said two disks having frictional sealing engagement with the inner wall of the ampule; a drug in the chamber, the third disk being spaced from the two disks to form a second chamber, a vehicle for the drug in the second chamber, a hypodermic syringe plunger having a puncturing element at one end thereof, and adapted when moved to pierce the first two disks to cause the first chamber to be opened to the second chamber.

3. A multiple compartment ampule adapted for use in a syringe having a discharge member at one end and having a puncturing member at the other end comprising outer tubular confining means and a plurality of separators each mounted in frictional sealing relation in said confining means to form separated compartments hermetically sealed from each other, a drug in one compartment and a vehicle for the drug in the other compartment, two of said separators being puncturable by the puncturing member and having peripheral portions thereon, each peripheral portion being slidably engaging said tubular confining means.

4. In combination with a syringe having a barrel and a plunger operating therein, said plunger having a piercing element on the inner end, a multiple compartment ampule comprising a tubular outer member and a plurality of disks secured in sealing relation therein to form separated compartments hermetically sealed from each other, at least two of said disks being pierceable and normally imperforate, said pierceable disks being cylindrical and being entirely inside said tubular member, two of said disks being in close relation at one end of the tubular member in position to be engaged by the piercing element of the plunger.

5. In combination with a syringe having a barrel and a plunger operating therein, said plunger having a piercing element on the inner end, a multiple compartment ampule comprising a tubular outer member and a plurality of members each secured in sealing relation therein to form separated compartments hermetically sealed from each other, at least two of said members being pierceable and normally imperforate, said pierceable members being hollow cylindrical elements and being entirely inside said tubular member with their peripheries frictionally engaging the walls thereof, said pierceable members being in close relation at one end of the tubular member in position to be engaged by the piercing element of the plunger, said piercing element having a shoulder engaging the outer of said two pierceable members.

6. A multiple compartment ampule comprising a tubular outer member, a plurality of separators disposed in said member to form separated compartments, the entire peripheral surfaces of said separators located within said member being frictionally sealed to the inner wall of the member, at least two of said separators being normally imperforate and readily pierceable and being slidable in said tubular member.

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