

Nov. 7, 1944.

A. E. SMITH

2,362,103

AMPULE

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Fig 1

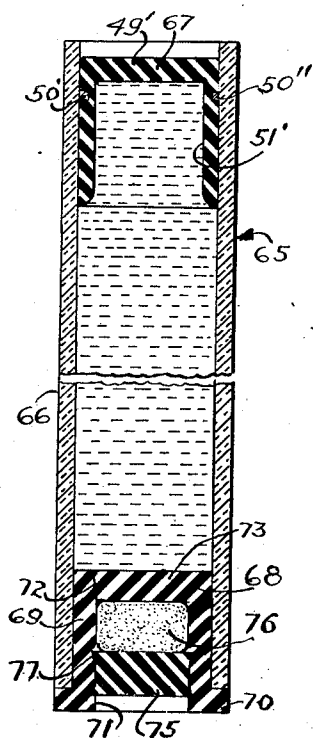


Fig 2

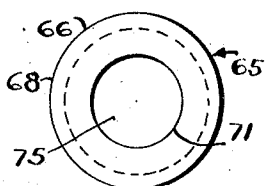


Fig 3

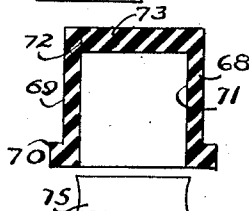


Fig 4

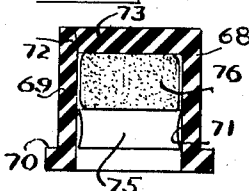


Fig 5

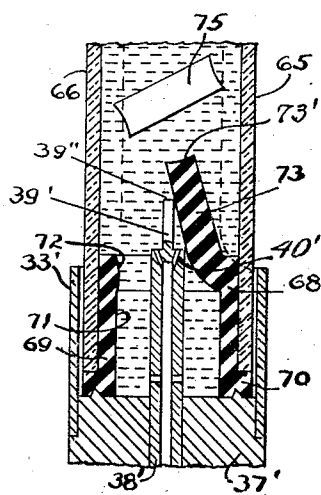
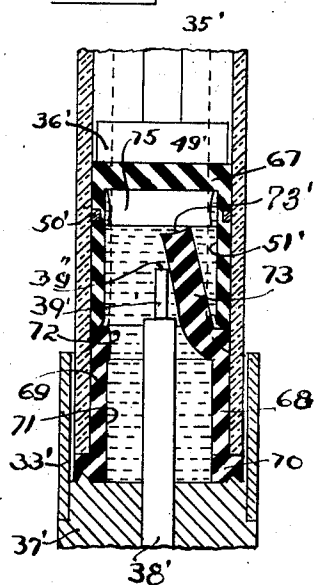


Fig 6



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UNITED STATES PATENT OFFICE

2,362,103

AMPOULE

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Original application January 4, 1941, Serial No. 373,127. Divided and this application November 13, 1942, Serial No. 465,433

1 Claim. (Cl. 128—272)

This invention relates to improvements in medicinal containing ampoules, the contents of which are adapted to be discharged therefrom by placing the ampoule in a suitable syringe.

The general object of the invention is to provide an improved ampoule wherein the vehicle and medicament are remotely maintained therein until a predetermined time.

Another object of the invention is to provide an improved ampoule including a body portion having an end closed by a novel stopper member containing a medicament.

A further object of the invention is to provide an ampoule including a body portion having a liquid therein and closed at one end by a stopper having a chamber therein containing a medicament and having a hinged trap door member closing the inner end of the chamber to hermetically seal the medicament from the liquid in the ampoule body and having opposite the trap door a closure hermetically sealing the medicament from the atmosphere.

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 fragmentary central longitudinal section through an ampoule embodying the features of my invention.

Fig. 2 is an end view of the discharge end of the ampoule shown in Fig. 1.

Fig. 3 is a central longitudinal section through the lower stopper of the ampoule shown in Fig. 1 before it is positioned in the ampoule and showing the disk member removed from, but aligned for placement in, the stopper.

Fig. 4 is a view similar to Fig. 3 showing the disk member positioned in the stopper.

Fig. 5 is a fragmentary longitudinal section through a syringe with the ampoule fully inserted therein, and

Fig. 6 is a view similar to Fig. 5 showing the positions of the stopper members when the liquid is fully discharged from the ampoule.

This application is a division of my copending application Serial No. 373,127, filed January 4, 1941, now Patent 2,313,483 of March 9, 1943.

Referring to the drawing by reference characters I have shown my improved ampoule at 65. As shown the ampoule 65 includes a hollow cylindrical glass, body portion 66 closed at one end by a rubber plunger stopper 67 and at the opposite end by a rubber container stopper 68.

The plunger stopper 67 includes a body por-

tion 49' having a groove 50' therearound intermediate its length which is filled with a suitable lubricant 50'' such as paraffin. Opening through the inner end thereof the body 49' has a coaxial recess 51'.

The stopper 68 includes a body portion 69 having an enlarged flange portion 70 on the outer end thereof which overlies the adjacent end of the ampoule body 66. Opening through the outer face thereof the body 69 has a coaxial recess 71 therein of a predetermined depth. The portion of the body 69 between the inner end thereof and the bottom of the recess 71 is partly severed to provide a convex lip as at 72 thereby forming a trap door portion 73; the peripheral wall of the trap door is concave as at 73'. The portions 72 and 73' engage to provide a tight seal.

Positioned in the recess 71 a predetermined distance from the end of the stopper, I provide a rubber disc member 75. The peripheral wall of the disc member 75 is formed concave.

Before the stopper 68 is positioned in the ampoule body 66 the recess 71 is of the same diameter as that of the disc 75 and the outer diameter of the stopper body 69 is larger than the interior of the ampoule body 66.

When assembling the stopper 68, a medicament tablet 76 is positioned in the recess 71 and then the disc 75 is placed therein. Thereafter the stopper is placed in the ampoule and in so doing, it is compressed whereupon a portion of the side walls of the recess 71 bulges into the concave peripheral wall of the disc 75 as indicated at 77 (Fig. 1).

In use the ampoule 65 is adapted to be placed in a syringe which includes a barrel 33'. The syringe includes a front tip portion 37' having a hollow stem portion 38' thereon which projects into the barrel. The stem 38' includes a reduced tip 39' the free end of which is blunt as at 39''. The stem includes discharge apertures 40'.

The ampoule 65 is placed in the syringe body 33' with the stopper 68 towards the tip 39' and thereafter is moved towards the tip until the end of the stopper firmly engages the inner face of the tip portion 37'. As the ampoule is thus moved into the barrel the end of the reduced tip 39' engages the disc 75 forcing it and the medicament tablet 76 towards the stopper 67 thereby forcing the trap door 73 to swing inwardly as shown in Fig. 5. The disc 75 and the tablet 76 are forced into the ampoule body until the disc 75 is beyond the trap door 73 as shown in Fig. 5.

To eject the liquid from the ampoule the operator moves the plunger head 35' into engagement

with the stopper 67 and forces the stopper 67 towards the stopper 68 thereby forcing the liquid out of the ampoule body into and through the apertures 40' in the stem 38'.

As the stopper 67 approaches the stopper 68 the disc 75 enters the recess 51' and thereafter the extended trap door 73 enters the recess 51' as shown in Fig. 6 thus allowing a maximum discharge of the liquid from the ampoule.

The construction described is designed for containers in which it is desired to maintain a drug in a compartment sealed off from the solvent for the drug. For example, since novocain deteriorates when in solution, a novocain tablet or powder may be placed in the chamber in the container stopper and the solvent for the novocain placed in the main body of the container. When the trap door is opened, the novocain will enter the solvent providing the desired fresh solution.

From the foregoing description it will be apparent that I have invented a novel medicinal ampoule which is simple in construction and highly efficient in use.

Having thus described my invention, I claim:

In an ampoule, an elongated cylindrical glass body having a plunger stopper in one end thereof, said plunger stopper being made of rubber

and having a recess in one end thereof, a container stopper in the other end of said body, said container stopper comprising a body portion having an enlarged flange engaging the adjacent end of the ampoule body, said container stopper having an outwardly opening recess therein, the portion of the body at the bottom of the recess being severed substantially in alignment with the adjacent side wall of the recess except for a small hinge portion, thus forming a trap door, the severed portion of the trap door having a concave peripheral wall, and the portion of the container stopper body engaged by the trap door having a convex portion for engaging the concave periphery of the trap door, and a disk member seated in said container stopper recess, said disk member having a concave peripheral wall, said recess and said disc being of substantially the same diameter, so that upon said disc being seated in said recess said disc is compressed so that a portion of the side walls of said recess bulge into said concave peripheral wall to form a positive seal, and a medicament preparation adjacent the disk member and within the container stopper recess.

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