Feb. 3, 1942. A. E. SMITH 2,271,719

AMPOULE SYRINGE

Filed April 3, 1935

Fig. 1

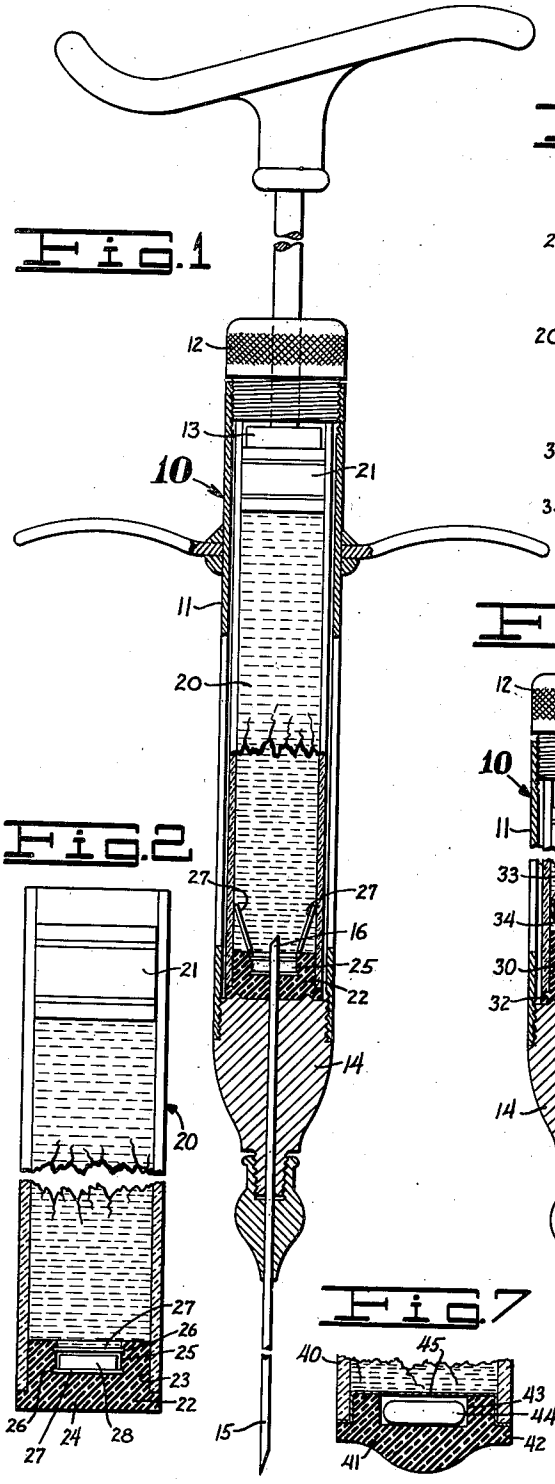


Fig. 2

Fig. 3

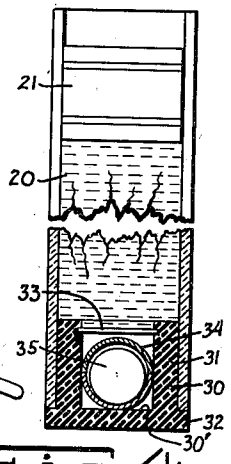


Fig. 4

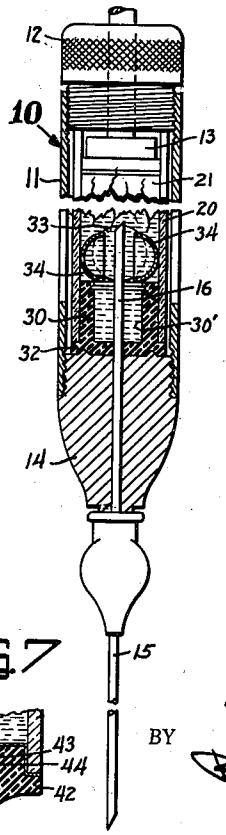


Fig. 5

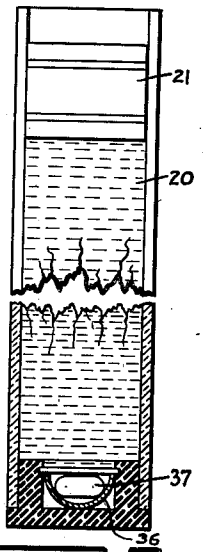


Fig. 6

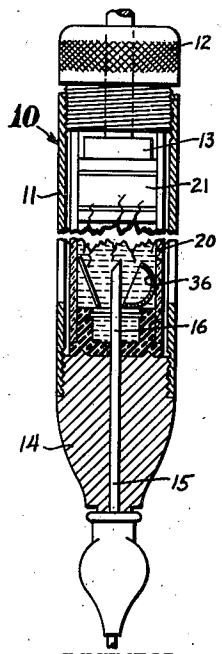


Fig. 7

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AMPOULE SYRINGE

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2 Claims. (Cl. 128—272)

This invention relates to ampoule syringes.

The general object of this invention is to provide an improved ampoule syringe wherein novel means is provided for holding a medicinal preparation in the closure of the ampoule.

Another object of the invention is to provide a novel ampoule closure.

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 longitudinal sectional view through an ampoule syringe embodying the features of my invention;

Fig. 2 is a central sectional view of my improved ampoule;

Fig. 3 is a view similar to Fig. 2 showing a modified form of ampoule closure;

Fig. 4 is a fragmentary longitudinal sectional view showing a syringe with my modified ampoule therein;

Fig. 5 is a view similar to Fig. 2 showing a further modification;

Fig. 6 is a fragmentary longitudinal sectional view of a syringe showing the second modification; and

Fig. 7 is a fragmentary longitudinal sectional view showing a further modified form of ampoule closure.

Referring to the 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 rear closure **12** thereon which includes a plunger **13** and having a front member **14** and in which a needle **15** is mounted. This needle **15** includes a pointed rear end **16** which is disposed within the syringe barrel.

The ampoule embodying the features of my invention is shown generally at **20** and is preferably made of glass and is cylindrical and includes a rear movable cork **21** and a front stationary cork **22**. The front cork is preferably made of rubber and includes a skirt portion **23** which engages the ampoule body and an end portion **24** which is imperforate. The cork **22** is preferably made of rubber and is provided with a chamber **25** which has a pair of circumferentially extending inwardly facing grooves **26** therein. In each of these grooves I seat a disk **27**, which may be made of Celluloid and between the disks I arrange a medicinal preparation shown as in the form of a tablet **28**.

In use, the ampoule is inserted in the syringe barrel and the rear closure **12** is screwed to position thus forcing the needle point **16** through the imperforate wall **24** of the ampoule closure and engaging the forward disk **27** which in turn engages the tablet **28** and the latter engages the rear disk **27** thus forcing the two disks and the tablet into the body of the ampoule so that the tablet may dissolve in the fluid contents of the ampoule. In the drawing the two disks **27** are shown as disposed in an inclined manner on opposite sides of the point **16** of the needle but since these disks are free it will be understood that they may assume any position within the ampoule after being displaced from the closure.

The closure **22** being made of rubber engages the front member **14** of the syringe to effect a tight seal should any fluid leak around the needle.

In Fig. 3, the closure **30** includes a portion **31** which engages the interior of the ampoule and a front portion **32** which engages the end of the ampoule. This front portion is imperforate and is adapted to be pierced by a needle such as shown in Fig. 1. The closure **30** is provided with chamber **30'** which has a peripheral groove adjacent the outer end thereof in which a disk **33** is seated. This disk may be made of Celluloid and within the chamber I provide a pair of hemispherical cup members **34** which may be made of material such as Celluloid and which abut to form a sphere and within this sphere I arrange a medicinal preparation which may be in the nature of a tablet **35**.

In use, the ampoule is inserted in the syringe as previously described in connection with Fig. 1 and the needle after piercing the imperforate closure wall engages the sphere and pushes the sphere into the ampoule body and upon separation of the hemispherical members the medicinal preparation passes into the fluid contents of the ampoule.

In Figs. 5 and 6 the construction shown is similar to that shown in Figs. 3 and 4 except that a hemispherical cup member **36** is provided in which a medicinal tablet **37** is positioned instead of two spherical members and in use the operation is similar to that already described.

In Fig. 7 the ampoule **40** is provided with a closure **41** which has an end flange **42** thereon to engage the end of the ampoule. The closure is provided with a cavity **43** in which a medicinal preparation **44** is placed. Prior to its insertion in the ampoule a diaphragm member **45** which may be made of thin rubber or which may be made of very thin metal foil is stretched across the end of the closure to close the chamber **43**. To

assemble this device the closure **41** is forced into the ampoule while the diaphragm **45** is held in place so that it is gripped between the ampoule wall and the body of the closure.

In use, pressure on the end of the resilient closure **41** will burst the foil or diaphragm **45** freeing the medicinal contents **44** or if desired the ampoule may be placed in the syringe barrel such as **10** in Fig. 1 and the needle may then force the medicinal tablet **44** against the diaphragm **45** to rupture the latter.

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

Having thus described my invention, I claim:

1. A cartridge closure comprising a body having a resilient, imperforate, penetrable partition and a chamber having one end open and the other closed by said partition, and a sealing device for the open end of said chamber and located in said chamber, said device having a portion extending to the inner surface of said partition, said partition serving as a pressure medium to expel said sealing device upon pressure on the outer surface of the partition, said portion being at least in part free of the inner side walls of the chamber.

2. A cartridge closure comprising a body having a resilient imperforate penetrable partition and a chamber having one end open and the other end closed by said partition, and a sealing device for the end of the chamber and located in the chamber, a sealing device ejecting means having a portion extending towards the inner surface of the partition, said partition serving as a pressure medium to move said ejecting means and thereby expel said sealing device upon pressure on the outer surface of the partition.

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