June 22, 1926. 1,589,881

G. N. HEIN

AMPUL

Filed August 30, 1924

Fig. 1.

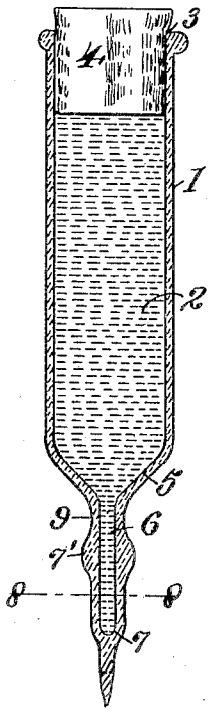
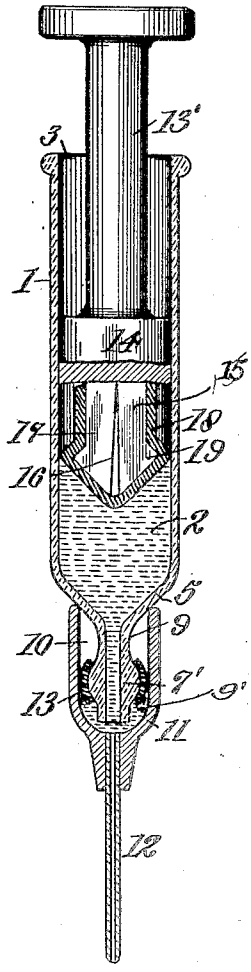


Fig. 2.



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UNITED STATES PATENT OFFICE.

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AMPUL.

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It is the present practice in giving hypodermic injections for the doctor or nurse to fracture one end of the ampul containing the desired solution and after assembling the syringe to insert the needle thereof into the ampul through the fracture and by operation of the piston of the syringe to withdraw from the ampul the solution to be subsequently injected into the patient. This operation necessitates the maintaining of the syringe barrel sterilized and requires considerable time and care in filling the syringe with the desired solution.

The present invention relates to the employment of a solution containing ampul as the syringe barrel for receiving the piston and mounting the needle, the solution being injected directly from the ampul into the patient, thereby overcoming the liability of the solution being contaminated due to its transfer and rendering it possible to destroy the ampul after the injection has been made, and the needle and piston removed therefrom. By my present invention, the solution is maintained in a sterile condition within a closed ampul which is subsequently opened by fracture, to enable the discharge of the fluid therefrom.

With the above mentioned and other objects in view, the invention consists in the novel construction and combination of parts hereinafter described, illustrated in the accompanying drawings, and set forth in the claims hereto appended, it being understood that various changes in the form, proportion, size and minor details of construction within the scope of the claims may be resorted to without departing from the spirit or sacrificing any of the advantages of the invention.

To more clearly comprehend the invention, reference is directed to the accompanying drawings, wherein—

Fig. 1 is a view in vertical section of one form of ampul employed.

Fig. 2 is a similar view illustrating the expelling piston operating within the ampul, one closed end of the ampul being fractured, affording a mounting for a hypodermic needle.

In the drawings, wherein like characters of reference designate corresponding parts, 1 designates the body of an ampul preferably formed of glass and having a chamber 2 therein, in this embodiment the chamber 2 being open at one end as at 3, which opening is normally closed by a cork or other removable closure 4. The chamber 2 is preferably circular in cross section and is formed, for a majority of its length, with parallel side walls, the walls at one end of the body converging at 5 and terminating to form a relatively small discharge channel 6, closed at its end as at 7 by the fusing of the glass. This lower end is the common form, with the exception that in the present embodiment the body is provided with a channel illustrated as at 6. The wall forming the channel 6 is, at a point near the base of the chamber 2, formed with an annular bead 7′ and the material beyond this point, as for example, on the line 8—8, is adapted to be fractured and the fused point 7 removed from the remainder of the ampul, affording an outlet for the bore 6. On the removal of the portion of the ampul beyond lines 8—8, there is afforded a hypodermic needle retaining tip indicated as a unit by the numeral 9 in Fig. 2 and the same is designed for insertion into the tubular recess 10 of the conventional base 11 of a hypodermic needle 12. If desirable, an elastic packing 13 may be positioned over the bead 7′ to insure a fluid tight joint between the bead and the needle base wall. It will be noted that a space 9′ is provided between the lower end of the tip 9 and the base of recess 10, enabling any fluid pressure which may accumulate in the space, and which would tend to force the base from the tip 9 to act on the packing edge within the space 9′ in such manner as to compact the packing between the bead 7′ and needle base wall, affording greater resistance to the needle being blown off. With the hypodermic needle mounted on the discharge tip end of the ampul 1 the cork or closure 4 is removed from the other end of the ampul and an ejecting piston 13′ is inserted thereinto. The handle and stem 13′ of the piston are of a conventional form and at one end of the handle mounts a head 14 which is preferably detachable therefrom and is reduced at its end as at 15, said reduced portion being inwardly slotted as at 16 to provide yieldable extensions 17. Over the reduced portion 15 is positioned a suitable elastic cup 18, which affords a piston packing, the cup and reduced portion 15 being of tapered formation to enable the cup to be inserted into the base of the ampul and eject all fluid contained therein. A circumferential flange 19 on the reduced portion 15 of the head 14 stretches

the cup 18 to insure its peripheral surface engaging the inner wall of the ampul to make a fluid tight fit therewith.

I claim:

1. A hypodermic syringe comprising a tube having a tubular extension and adapted for reception within a tubular syringe needle base, and a piston for reciprocation within the tube to discharge the fluid therein through the needle, said piston provided with a circumferential flange and being longitudinally slotted to afford yieldable extensions, and an elastic packing enclosing the piston, the yieldable extensions and overlying said circumferential flange.

2. A piston for hypodermic syringes comprising a cylindrical piston head formed with a conical terminal end, said end terminating at its base in an annular flange projecting outwardly beyond the remainder of the head, said head being longitudinally slotted through said conical end and flange affording yieldable extensions, and an elastic packing stretched over and enclosing said head.

3. A piston for hypodermic syringes comprising a cylindrical piston head formed with a conical terminal end, said end terminating at its base in an annular flange projecting outwardly beyond the remainder of the head, and an elastic packing stretched over and enclosing said head.

4. A hypodermic syringe comprising a tube having an extension formed with an annular bead, a piston reciprocably mounted within the tube, said extension and annular bead adapted for reception within a tubular syringe needle base, and an elastic packing interposed between the annular bead and needle base wall and acted on in accordance with a variation of pressure of fluid discharged from the tube into the needle base.

In testimony whereof I have signed my name to this specification.

GEORGE N. HEIN.