

Nov. 29, 1949

K. S. TYDINGS ET AL

2,489,600

HYPODERMIC NEEDLE

Filed April 2, 1948

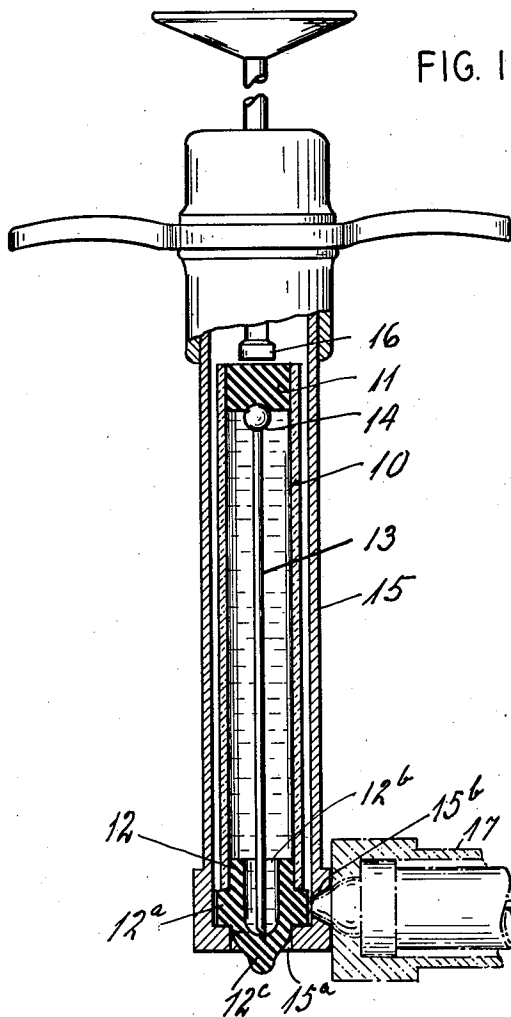


FIG. 1.

FIG. 3.

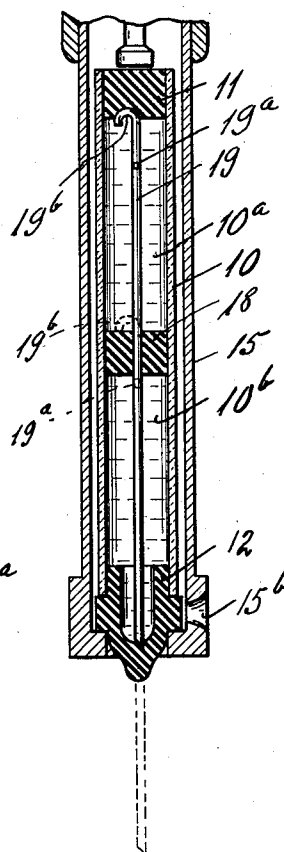


FIG. 2.

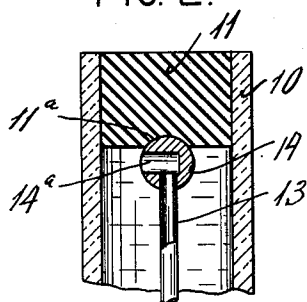
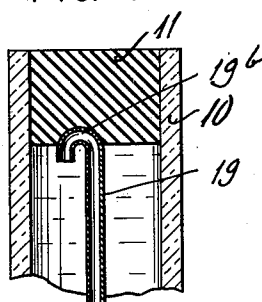


FIG. 4.



INVENTOR.
Kenneth S. Tydings and Helen
M. Tash

BY

Max O. P. P. P.
ATTORNEY.

UNITED STATES PATENT OFFICE

2,489,600

HYPODERMIC NEEDLE

Kenneth S. Tydings and Helen M. Tash,
Long Beach, N. Y.

Application April 2, 1948, Serial No. 18,567

4 Claims. (Cl. 128—220)

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This invention relates to injecting apparatus, such as hypodermic needles, and has for its principal object to provide a construction in which the injecting needle is hermetically enclosed in the fluid filled ampul to be ready for use without sterilization, and so that the ampul with its needle may be thrown away after it has been used once.

Another object is to provide means which will facilitate the refilling of the ampul during treatment.

With these and other objects in view that will become apparent from the detailed description of the invention, the latter consists of the novel combination, arrangement and construction of parts as will be hereafter fully described and defined in the appended claims.

In the drawings, which constitute part of this specification, and in which similar reference characters denote corresponding parts;

Fig. 1 is a longitudinal section of the injecting apparatus;

Fig. 2 an enlarged section of the rear part of the ampul;

Fig. 3 a similar section of a modified construction of the ampul; and

Fig. 4 an enlarged section of the rear part of the latter.

Referring in detail to the drawing, 10 denotes the usual tubular container or ampul made of glass or any other suitable material, and which is hermetically closed at its ends by rubber closures or plugs 11, 12. The rear plug 11 is slidable within the ampul and adapted to act as a plunger, as will be presently described, while the plug 12 in the forward end of the ampul is fixed in position.

This forward plug, for the purposes hereinafter explained, is made hollow to form a chamber which at its inner side is open as at 12^b. The hollowed part of this plug is extended, as at 12^a, to project outwardly from the forward end of the ampul and terminates in a nipple like tip 12^c. The injecting hollow needle 13, at its rear open end is formed with or has fixed to it a bead 14 having a passage 14^a one end of which opens into the ampul and the other end into the needle. The bead 14 may engage a cavity 11^a provided on the inner face of the rear closure 11 whereby the needle may be centered within the ampul. The forward open end of the needle projects into the

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front plug 12 and when forced forwardly by the plunger or plug 11, is adapted to pierce the tip 12^c.

Any suitable means may be used to hold the ampul in position and to exert pressure on the rear plunger in operating the injecting needle. In the present example a cylindrical or tubular holder 15 is used, through whose forward open end 15^a projects the tip 12^c of the hollow plug 12.

The object of making the front closure hollow and extending the hollowed part 12^a beyond the front end of the ampul is to render it possible to refill the ampul or add some fluid into it during the treatment without the necessity of substituting a fresh ampul and needle. To accomplish this end, the holder 15 at its forward end may be provided with a peripheral aperture 15^b which is open to the extended hollow part 12^c of the plug 12. By placing an auxiliary injecting apparatus 17 so that its forward closure or plug will coincide with or engage said aperture 15^b, additional fluid from said auxiliary apparatus may be injected by means of the auxiliary needle 17^a which will pierce the periphery of the main plug 12.

In the modification shown in Fig. 3, the container or ampul 10 is divided by a movable partition 18 into two compartments 10^a, 10^b, each adapted to receive a different fluid that may be needed to be injected in one operation. As in the first modification, the forward end of the ampul is closed by the stationary closure or plug 12 and the rear end of the ampul is closed by the movable closure 11. The needle 19 in this modification is provided with a peripheral opening 19^a in addition to its rear end opening. The distance between the peripheral opening and said end opening is so admeasured that when said closure 11 reaches the partition 18 the opening 19^a will have passed from the rear into the forward compartment.

By these means when successive injections of two different fluids in a single operation are desired, the plunger 11 is advanced, forcing the fluid to enter the needle first from the rear compartment 10^a and when the plunger 11 has reached the partition 18 the opening 19^a has passed through said partition 18, forcing the fluid from the forward compartment 10^b to enter the needle.

Instead of the bead 14, the rear end of the

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needle is hook-shaped, as at 19^b, with the open end projecting away from the plug 11 so that when the plunger 11 has reached the partition 18, it will bear against said partition and thereby close said open end.

What we claim is:

1. In an injecting apparatus of the character described, a tubular container or ampul for the fluid to be injected, a closure fixed in the forward end of said ampul and a closure slidably mounted in the rear end of said ampul, a hollow injecting needle extending throughout the length of the ampul and adapted, when said needle is pushed forwardly by said slidable closure, to pierce the forward closure, and a member on the rear open end of said needle adapted to bear against said rear closure and formed with a passage communicating at its outer end with the ampul and at its inner end with said needle.

2. In an injecting apparatus according to claim 1 in which the rear closure on its inner face is formed with a cavity to engage said member and thereby hold said needle centered within the container.

3. In an injecting apparatus according to claim 1 in which said forward closure is hollow, opening into the ampul at its inner end, and whose outer end projects outwardly from said container to permit its being pierced peripherally by an auxiliary injecting instrument for refilling purposes.

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4. In an injecting apparatus of the character described, a tubular container or ampul for the fluid to be injected, a closure fixed at the forward end of said ampul and having a portion with a hollow closed off passageway projecting outwardly of the said forward end to permit piercing of said portion peripherally by an auxiliary injecting instrument, a closure slidably mounted in the rear end of said ampul, and having a cavity on its inner face, a hollow injecting needle extending throughout the length of the ampul and adapted when said needle is pushed forwardly by said slidable closure, to pierce the forward closure, and a bead on the rear open end of the needle closing off said end and adapted to engage in said cavity and thereby hold said needle centered within said container, said bead having a passageway communicating at its outer end with the ampul and at its inner end with said needle.

KENNETH S. TYDINGS.
HELEN M. TASH.

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The following references are of record in the file of this patent:

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