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METHOD OF UTILIZING HYPODERMIC MEDICAMENTS, ETC

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Fig. 1.

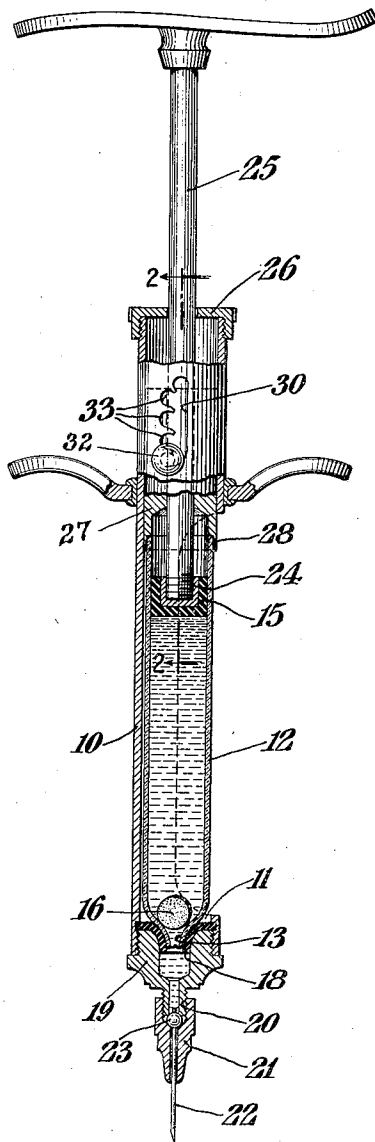


Fig. 2.

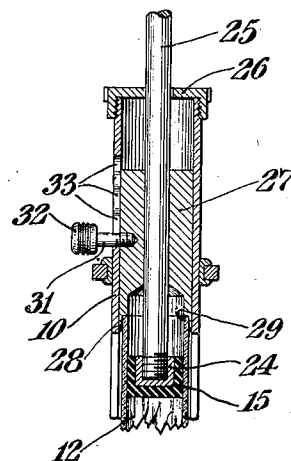
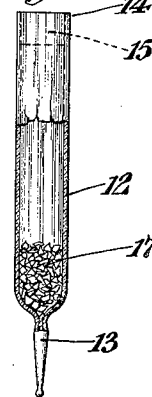


Fig. 3.



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METHOD OF UTILIZING HYPODERMIC MEDICAMENTS, ETC.

Application filed June 20, 1928. Serial No. 286,832.

This invention relates to improvements in methods of utilizing hypodermic medicaments such as certain anesthetics, etc. and devices usable in connection therewith.

5 The main object of the invention is to provide an improved method of utilizing hypodermic medicaments, etc. whereby the same may be prepared and kept in sterile condition and utilized with a minimum danger of
10 contamination.

Further and more specific objects, features and advantages will more clearly appear from the detailed description given below, taken in connection with the accompanying
15 drawing which forms part of the specification, and which illustrate one embodiment of an apparatus suitable for carrying out the invention.

In the drawing:

20 Fig. 1 is a longitudinal section through an ampule syringe suitable for utilizing the invention,

Fig. 2 is a partial section thereof taken on the line 2—2 of Fig. 1; and

25 Fig. 3 is a sectional view of a form of ampule employed with the syringe.

The device shown in the drawing comprises a syringe having a barrel 10 cut away along one side at 11 to permit of the insertion therein of an ampule 12. This ampule 12 is preferably of glass and has a long tapered sealed end 13 which can be broken off, and an open end 14 which is normally sealed by a rubber piston 15. This ampule is prepared in the
30 laboratory under stringent antiseptic conditions and in it is placed the medicament in dry form which may be in the form of a tablet 16 of a given character and strength, as shown in Fig. 1, or in the form of a determined quantity of powdered medicament 17,
35 as shown in Fig. 2. The medicament thus prepared in dry form and sealed at the laboratory in the ampule, will generally keep better than when made up in the form of a
40 solution, and, when employed in accordance with my hereinafter described new method, can be used with any fluid carrier desired or available at the time the injection is to be made.

50 In the drawing the ampule 12 is shown in

position in the barrel 10. The lower end 13 has been broken off and this end rests firmly against a resilient packing sleeve 18 forming a lining for a recess in a plug or cap 19 threaded into the lower end of the barrel 10.
55 This cap has a threaded extension 20 on to which is screwed an elongated nut 21 having a bore to receive a hollow needle 22, the inner end of which is provided with a ball 23 gripped between the nut 21 and the end of
60 stem 20.

The upper end of ampule 12 is provided with the movable piston 15, preferably of rubber. This piston has a metallic socket 24 molded therein which is threaded to receive
65 the lower threaded end of a piston rod 25. This piston rod passes through a bore in a cap 26 threaded on to the upper end of barrel 10.

Within the barrel above the ampule 12 is
70 located a slidable sleeve 27 having a bore through which the piston rod 25 passes. The lower end of this sleeve has a peripheral rim 28, the inner face of which is beveled to engage the sides of the upper end of ampule 12
75 and is provided with a shoulder 29 which abuts the end of the ampule. The barrel is provided with a slot 30 through which extends a pin 31 connected at one end to the sleeve 27 and provided on the other end with
80 a head 32. The slot along one side is provided with offset recesses 33 into any of which the pin can be moved to hold the sleeve 27 in any desired position. This sleeve can
85 be pressed down manually against the upper end of the ampule to hold it in the barrel and to hold the lower end firmly against the packing 18 to form a tight joint at this point without the use of springs, and to create a
90 positive manual pressure on the ampule, and when so pushed down the pin is moved into the adjacent slot 33 to lock the member 27 and the ampule 12 in place.

According to my invention in its preferred
95 form, the ampules 12 with the proper quantity of medicament therein in dry form, are prepared in the laboratory where the medicament may thus be put up under the best conditions. The ampules are closed by the
100 pistons 15 so that the medicament is sealed

in the ampules without any liquid therein. Thus the medicament may be kept well for long periods of time before use. When it is desired to use the same the end 13 of the ampule is broken off and the ampule placed in the syringe as shown in Fig. 1. The ampule 12 is inserted into the barrel 10 with the lower end resting against the packing 18. The sleeve 27 is then moved down to firmly engage the upper end of the ampule. The needle is attached so that it is in communication with the broken end of the ampule, and the piston rod 25 is screwed into the socket 24 so as to be connected to the piston 15. If, for example, it is desired to use the spinal fluid of the patient to dissolve the medicament, the piston is pushed to the other end of the ampule, the needle inserted in the spinal column, the piston withdrawn to cause the spinal fluid to be drawn into the ampule and then the instrument may be withdrawn, or it may be left with the needle in the spinal column and when the medicament has dissolved in the fluid, the piston is again pushed in to eject the solution and inject the same into the spinal column. If it is desired to dissolve the medicament in water or saline solution instead of from body fluid such as spinal fluid, the method is employed except instead of inserting the needle into the spinal column it is inserted into water or a saline solution and such liquid is drawn into the ampule to dissolve the medicament, after which it may be injected in the usual manner. In dissolving the medicament, heat may or may not be used to aid the solution.

It will be noted that the medicament in the ampules, while in the form of a powder or pellet, is not coated and is in readily soluble form and the medicament can be dissolved within the ampule 12 in any desired solution which need not be formed until the time for the injection, and consequently there is a minimum chance of the medicament solution being contaminated by foreign substances or deteriorating with age.

While I have described my invention in detail and with respect to a preferred form thereof, I do not desire to be limited to such details or form since many changes and modifications may be made and the invention embodied in other forms without departing from the spirit and scope of the invention in its broader aspects. Hence, I desire to cover all modifications and forms coming within the language or scope of any one or more of the appended claims.

What I claim as new and desire to secure by Letters Patent, is:

1. A method of hypodermically injecting a liquid comprising unsealing a single chambered sealed ampule containing undissolved medicament apt to deteriorate in air and suitable for hypodermic injection, placing a needle in communication with the interior

of said ampule, inserting the needle into a fluid to be injected, and sucking said fluid into said ampule containing said medicament through the unsealed portion thereof and then hypodermically injecting the solution from the ampule.

2. A method of hypodermically injecting a liquid comprising sealing a medicament in dried undissolved form suitable for hypodermic injection in a single chambered ampule having one end frangible and with a piston in the other end, breaking the frangible end of the ampule, pushing in the piston, placing the open end of the ampule in communication with the liquid, retracting the piston to draw in the liquid in contact with the medicament and then hypodermically injecting the liquid and medicament from the ampule.

3. A single chambered container for a hypodermic syringe having two sealed ends, one of said ends being sealed with a piston, the other end being sealed by a frangible portion which is to be broken off to provide an opening and an undissolved medicament for hypodermic injection sealed therein by the walls of said container only, whereby upon unsealing the frangible end, liquid may be sucked into said ampule into contact with said medicament and the liquid medicament may be hereafter injected through said opening.

4. In combination, a hypodermic syringe comprising a holder for a tube, a needle in one end of said holder, a piston rod at the other end of said holder, an undissolved medicament for hypodermic injection sealed without liquid in a single chambered tube having a frangible end and a piston at the other end, said tube being adapted to be placed in said holder, whereby upon breaking said frangible end and pushing in said piston by said piston rod, and placing said needle in contact with a liquid, said piston may be withdrawn by said rod to suck the liquid into said tube in contact with said medicament and thereafter said liquid and medicament may be hypodermically injected.

5. The combination of a barrel, a medicament container therein, a needle attached to one end of the barrel and adapted to communicate with an end of the container, a slidable rotatable sleeve in the bore of the barrel engaging the opposite end of the container and a device for moving said sleeve into engagement with the ampule and locking it in position including a pin member and a slot having a plurality of recesses, whereby the sleeve can be manually moved by the pin and when engagement is effected the pin can be rotated into one of said recesses.

6. The combination of a barrel, a medicament container therein, a needle attached to one end of the barrel and adapted to communicate with an end of the container, a

slidable rotatable sleeve in the bore of the barrel having an inner face beveled to engage the sides of the upper end of the container, a slot in said barrel adjacent said sleeve, a pin projecting through said slot connected to said sleeve, the slot being provided with offset recesses into which the pin can be moved to hold the sleeve in desired position whereby upon pressing the sleeve against the ampule the pin may be moved into a recess opposite thereof to lock the ampule in position.

7. In a hypodermic syringe, the combination comprising a medicament tube having a frangible end which is to be broken off to provide a passageway at one end thereof, a piston plug sealing the opposite end of the tube, a dry solid medicament sealed in the tube in a physical state to be rapidly dissolved upon contact with liquid to be hypodermically injected, the said medicament being normally unassociated with liquid or other foreign material and loosely retained in the tube and in the form to avoid obstructing said passage, thereby permitting passage of liquid through said passageway to dissolve the said medicament and through which passageway the liquid medicament is to be discharged when injection is made.

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

MENDEL NEVIN.

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