

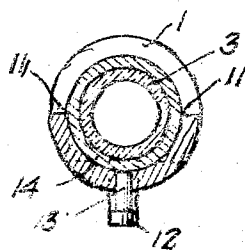
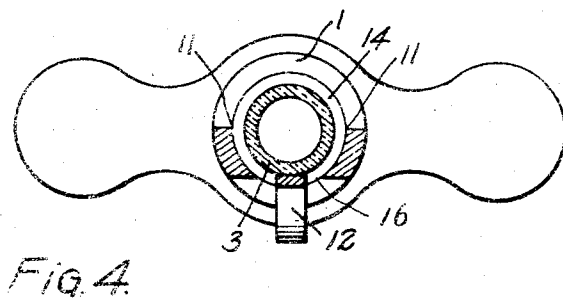
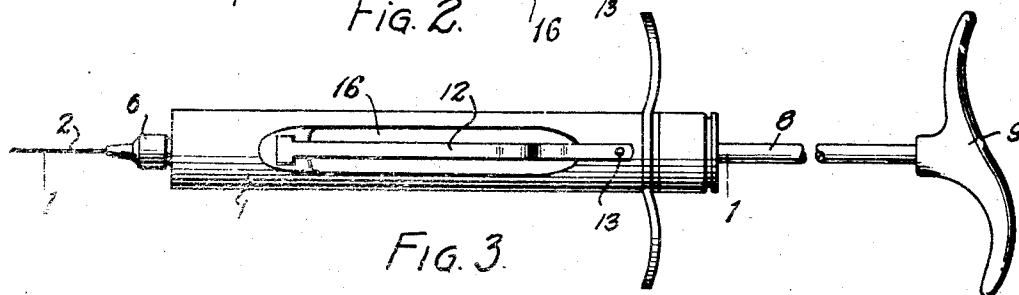
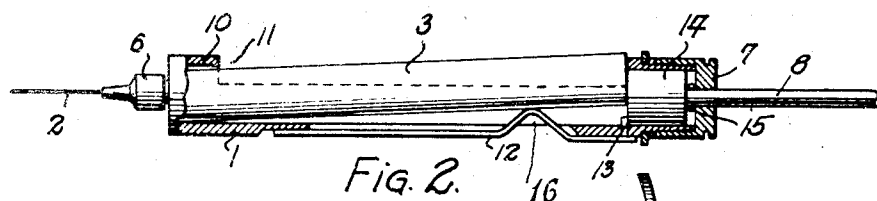
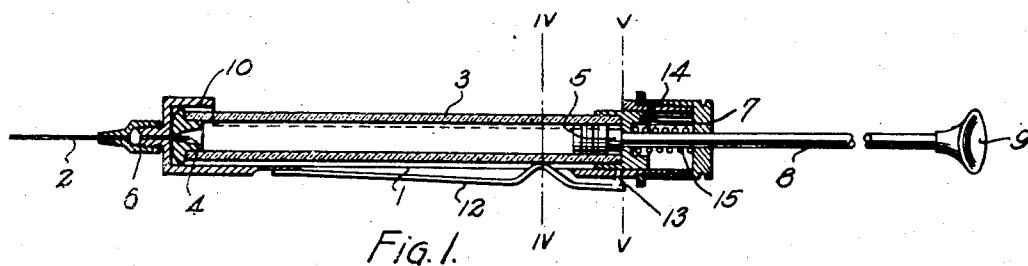
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F. C. MONTUORI

1,757,809

HYPODERMIC SYRINGE

Filed Jan. 5, 1929



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HYPODERMIC SYRINGE

Application filed January 5, 1929. Serial No. 330,653.

The invention relates to hypodermic syringes, and my improvements are mainly directed to simplifying the construction of the device with a saving in cost of manufacture, increasing the convenience of manipulation of the syringe in inserting and removing medicinal cartridges and the like, securely and accurately holding the cartridge open to inspection at all times while it is in place in the syringe.

With such objects in view the invention consists in the useful features, parts and combinations thereof hereinafter set forth and pointed out in the claims.

In order to make the invention more clearly understood there are shown in the accompanying drawings means for carrying the same into practical effect, without limiting the improvements, in their useful applications, to the particular constructions which, for the purpose of explanation, have been made the subject of illustration. In the said drawings:

Fig. 1 is a longitudinal section of a hypodermic syringe embodying my improvements, on line I—I of Fig. 3, showing the cartridge in place in the syringe and the piston slightly entered into the cartridge.

Fig. 2 is a similar section, showing the cartridge in the position which it primarily takes either in being inserted into the syringe or in being ejected therefrom.

Fig. 3 is a bottom view of the barrel portion of the syringe.

Fig. 4 is a cross-section on line IV—IV of Fig. 1.

Fig. 5 is a cross-section on line V—V of Fig. 1.

Referring to the drawings, 1 is the main body, central part or barrel of the syringe, which is or may be a frame or hollow cylinder of suitable character to receive a tubular needle 2 at its front end, a cartridge 3 in its intermediate part, the front end of which cartridge is ordinarily to be punctured by

the rear extension 4 of the needle, and a piston 5 adapted to expel the medicinal contents of the cartridge through the needle and into the wound or puncture made by the needle. These parts are or may be of known character and mode of operation. The needle is held in place by a removable nut or cap 6. 7 is a slide bearing at the rear end of the barrel in which fits and operates the rod 8 of the piston 5. 9 is a handle fixed on the outer end of the piston rod. The inner end of the barrel 1 is preferably formed with a retaining seat 10 into which the inner end of the cartridge, carpule or ampule 3 may be placed when it is entered into the barrel for use through an opening 11 in the side of the barrel.

When the cartridge is pressed into place it presses outwardly a side spring 12 and as the cartridge becomes central in the barrel the spring 12 carries outward a pin 13 fixed on the outer end of the spring and thereby releases a movable retainer 14 for the outer end of the cartridge, being so moved by a spring 15.

When it is desired to remove the cartridge the handle 9, rod 8 and piston 5 are drawn a little outward, whereupon the piston moves the retainer 14 away from the cartridge, compressing the spring 15, and the side spring 12 immediately ejects the cartridge through the opening 11.

It will be understood that the cartridge is securely held in its central operative position, in line between the needle and piston, and while the piston makes its inward movement against or into the outer end of the cartridge, and during this time holds and stresses the side spring 12 outwardly, and when the piston is withdrawn and the retainer 14 pulled outward to free the cartridge, the spring 12 is also released and ejects the cartridge as aforesaid.

Opposite to the opening 11 the barrel may be formed with an opening 16, so that the

contents of the carpule may be viewed by the aid of light passing through the syringe from the opposite side of the same to the eye.

What I claim is:

1. A hypodermic syringe having a barrel and means for holding a needle, said barrel having a loading opening in its side and constructed to receive a cartridge, movable means for holding an end of the cartridge, and means automatically to eject the cartridge upon movement of said movable means.
2. A hypodermic syringe having a barrel and means for holding a needle, said barrel having a loading opening in its side and constructed to receive a cartridge, a cartridge retaining spring operating at the end of the cartridge, and a cartridge ejecting spring operating automatically at the side of the cartridge, upon action of said retaining spring.
3. A hypodermic syringe having a barrel and means for holding a needle, and a piston, said barrel having a loading opening in its side and constructed to receive a cartridge, and means released by the cartridge to hold the cartridge in position between the needle and the piston.
4. A hypodermic syringe having a barrel and means for holding a needle, and a piston, said barrel having a loading opening in its side and constructed to receive a cartridge, means released by the cartridge to hold the cartridge in position between the needle and the piston, and means to retain said cartridge holding means in inoperative position until released.
5. A hypodermic syringe having a barrel and means for holding a needle, said barrel having a loading opening in its side and constructed to receive a cartridge, a cartridge retaining spring operating at the end of the cartridge, and a control spring therefor operating at the side of the cartridge, to retain said first spring against operation.
6. A hypodermic syringe having a barrel and means for holding a needle, and a piston, said barrel having a loading opening in its side and constructed to receive a cartridge, a movable cartridge retainer and spring operating at the end of the cartridge, the piston having a connection with the retainer, and a cartridge ejecting spring operating automatically at the side of the cartridge, and means operable by the latter spring to eject the cartridge upon movement of said retainer.
7. A hypodermic syringe having in combination a barrel, means for holding a hollow needle at one end of the barrel, a piston mounted at the other end of the barrel for operating at the end of a cartridge, said barrel having a side opening to receive a cartridge, means for holding the cartridge in place between the needle and the piston, and means to automatically eject the cartridge upon

movement of the piston to its limit of travel in one direction.

8. In a side-loading syringe having a cartridge, means for retaining said cartridge in place, means for ejecting said cartridge from said syringe, and means for setting said cartridge-retaining means into releasing position to be freed by the insertion of the cartridge.

9. In a syringe having a cartridge, movable means for retaining said cartridge in place and means for ejecting said cartridge when said retaining means is released, and means for setting said cartridge-retaining means into releasing position to be set free by the insertion of the cartridge to retain the latter.

10. In a side-loading syringe, movable means for retaining said load in place and means for holding said retaining means in inoperative position, said holding means being constructed to release said retaining means upon loading of the syringe.

11. In a side-loading syringe having a cartridge, means for retaining said cartridge in place, means for releasing said cartridge from said syringe, and means for setting said cartridge-retaining means into locked inoperative position to be released by insertion of the cartridge.

12. In a syringe having a piston, means to position a cartridge for engagement by the piston, and means to eject the cartridge, said ejecting means being self-operative when the piston is pulled back to reload.

13. In a side-loading syringe having a piston, means to position and lock a cartridge for engagement by the piston, movable means actuated by the loading cartridge to release said first means, whereby the cartridge will be locked in position.

14. In a side-loading hypodermic syringe, the combination of a barrel having a side opening, means for holding a needle, and a piston at the respective ends of said barrel, a sliding retainer for the outer end of the cartridge mounted on the piston rod and engageable by the piston to disengage the retainer from the cartridge, a spring urging the retainer to engage the cartridge, a cartridge-ejecting spring and means operated by the latter to hold the retainer disengaged and to release the same.

15. In a side-loading hypodermic syringe, the combination of a barrel having a side opening, means for holding a needle and a piston at the respective ends of said barrel, a movable retainer for the outer end of the cartridge engageable by the piston to disengage the retainer from the cartridge, a spring urging the retainer to engage the cartridge, a cartridge-ejecting device and means operated by the latter to hold the retainer disengaged and to release the same.

16. A hypodermic syringe having a bar-

rel and means for holding the needle, said barrel having a loading opening in its side and constructed to receive a cartridge, a cartridge retaining spring operating at the end of the cartridge, and a control spring operating at the side of the cartridge to eject said cartridge upon releasing movement of the retaining spring and effective to hold said retaining spring in an inoperative position.

In testimony whereof I affix my signature.

FELIX C. MONTUORI.