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HYPODERMIC SYRINGE

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Fig. 1.

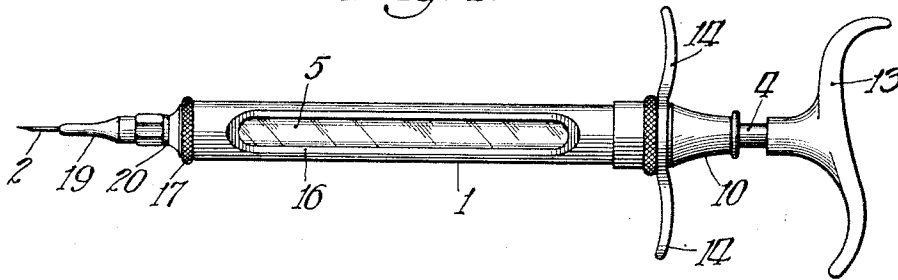
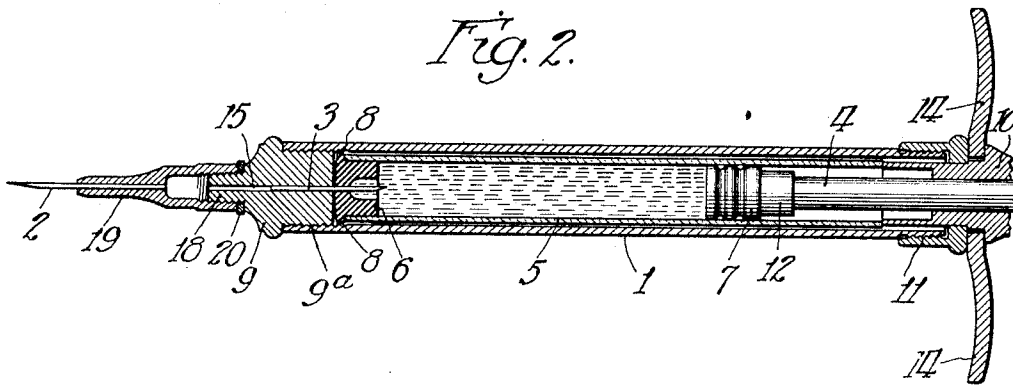


Fig. 2.



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UNITED STATES PATENT OFFICE.

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HYPODERMIC SYRINGE.

Application filed August 23, 1924. Serial No. 733,675.

The present invention relates to hypodermic syringes, and among other objects aims to provide improvements contributing to convenience and aseptic practice.

5 For illustration, one form of syringe containing an embodiment of the invention is shown in the annexed drawings, in which

Fig. 1 is a side elevation of the syringe.

10 Fig. 2 is an enlarged longitudinal section of the principal parts of the syringe.

It is to be understood that the illustrative form shown in the drawings is simply a preferred embodiment of the invention; and that in the following explanation of that specific form, the described details of structure and organization are merely exemplary.

The syringe comprises a holder or carrier represented by the syringe barrel 1 in which a package or cartridge containing the medicament may be placed; a hypodermic needle 2 having associated therewith a cartridge piercing canula 3 for conducting the contents of the cartridge to the needle; and means represented by a plunger rod 4 of the instrument 25 for reducing the interior volume of the cartridge to expel its contents through the needle.

The cartridge shown fitted in the syringe barrel in Fig. 2 comprises a glass tube 5 having a puncturable head 6 and a plunger head 7 designed to be pushed forward by the plunger rod for forcing out the fluid. This exemplifies a puncturable cartridge constructed to permit contraction of its interior space for expulsion of contents.

35 The puncturable cartridge head 6 is provided, in this instance, with a cup-shaped plug of rubber or the like having a flange 8 overlying the mouth of the glass tube. This plug, when compressed to fit tightly in the mouth of the tube, provides an effectual sealing closure susceptible of piercing by the fine canula 3 without undue effort or liability of breaking the canula. Among other uses the flange 8 coacts with the end of the tube to prevent accidental forcing of the plug into the tube by the piercing operation. During the ejecting operation, the end thrust of the glass tube is cushioned by the plug 6, which seats against a removable head 9 screwed into the 50 syringe barrel as at 9^a and closing the same.

In the syringe shown, the barrel may be opened at either end for insertion or removal of the cartridge, whose length approximates the length of the interior of the barrel. As 55 shown, head 10 is screw-threaded at 11 to the

barrel at the end opposite from head 9. The plunger 4 slides through head 10 and has an inner preferably enlarged end 12 designed to push cartridge head 7 during the ejecting operation. On the outer end of the plunger 60 there is a handle 13, which in conjunction with finger grips 14 carried by the head 10, provides means whereby the practitioner may slide the plunger longitudinally to dispense the contents of the cartridge. 65

After inserting the cartridge in the syringe barrel, it may be pierced by forcing it against the initially-positioned canula, which is secured, as by swaging, within a fine axial bore 15 in the barrel head 9, and extends from 70 said head into the barrel a sufficient distance to puncture the plug 6, but a less distance than the length of the screw-threaded portion of the head 9. The provision of two opposite openings 16 in the barrel enables the practitioner the more readily to force the cartridge 75 against the canula, and also permits survey of the cartridge and its contents.

To pierce the cartridge when initially inserted, the canula-carrying head 9 is simply 80 screwed upon the barrel; and to facilitate such screwing, the head 9 is provided with a knurled flange 17, also serving as a stop. This procedure is a particularly easy operation due to the fact that the head 9 en- 85 engages the threads 9^a on the barrel prior to the puncturing of the cartridge plug, so that the canula is initially centered with respect to said plug, and so that the considerable mechanical advantage of the screw threads is 90 availed of. Then, too, the head 9 is convenient to handle and easy to cleanse and sterilize. Thus the difficulty and annoyance of manipulating a fine canula are minimized.

Projecting from the outer end of barrel 95 head 9 is a screw-threaded boss 18 to which the body 19 of the hypodermic needle 2 is secured. A gasket 20, of soft metal, seals the joint between the hypodermic needle and its carrying member 9, so that under the pressure 100 which obtains during the ejecting operation the medicament is dispensed through the canula and needle without leakage.

The described syringe is particularly well designed for the aseptic administration of 105 hypodermic medicaments, and is especially convenient for the busy practitioner or for a physician working under unusual and difficult conditions.

Obviously the present invention is not re- 110

stricted to the particular embodiment thereof herein shown and described, nor is it indispensable that all the features of the invention be used conjointly; they may be employed
5 advantageously in various combinations and sub-combinations as defined in the claims.

Notice is given that the specific cartridge herein shown and described, and a syringe comprising such cartridge with an associated
10 holder having a cartridge-piercing canula or needle and a plunger to operate the cartridge, are the subjects-matter of and are claimed by me in my prior and now pending applications Serial Nos. 713,902 and 713,903,
15 filed May 17, 1924. Therefore in this application no claim is made for the cartridge per se nor broadly for a syringe embodying such cartridge apart from the features or characteristics of the present invention as recited
20 in the appended claims.

In view of a prior invention and pending application of Everett L. Hoskins filed January 4, 1923, Serial No. 610,565, relating to a syringe of the general type to which my present invention relates, in which Hoskins syringe the cartridge-holding barrel has at its fore end a detachable head with a detachable
25 needle holder, the head being axially bored and having an inwardly-protruding needle secured in the bore of said head and adapted to pierce through a stopper in the fore end of the cartridge tube, I do not claim such construction broadly or apart from the features or characteristics of the present invention as recited in the appended claims.
35

What is claimed is:—

1. A hypodermic syringe comprising, in combination, a puncturable medicament cartridge; a carrier for the cartridge; a head closing and screwed to one end of said carrier and provided with a conduit for the medicament; a canula fast to the head in communication with said conduit and projecting therefrom to extend into the carrier, the head, the canula and the cartridge being of such length
45 that the head engages with the screw threads of the carrier before the canula pierces the cartridge, so that piercing thereof is facilitated.

2. An instrument of the class described, for use with a cartridge having a pierceable stopper in its fore end, comprising a cartridge holder provided at its fore end with a detachable screw-plug screwed into the holder and

having a shoulder to engage the end of the holder, said screw-plug having a fine axial bore, and a canula consisting of a hollow needle fixedly secured in said bore and projecting axially a substantial distance into said holder to pierce through said stopper; the proportion of the parts being such that when the screw-plug is attached, after insertion of the cartridge, the screw-plug will engage with the screw threads of the holder before the canula pierces the stopper, thereby centering the canula and enabling the piercing to be done by the screwing up of the screw-plug; and means associated with said holder for operating the cartridge to expel its fluid contents through the canula and communicating bore to the delivery point of the instrument.
55 60 65 70

3. In an instrument of the class described, for use with a cartridge having a pierceable stopper in its fore end, a cartridge holder provided at its fore end with a detachable screw-plug having an axial bore and a canula consisting of a hollow needle fixably secured in said bore and extending axially into the holder a substantial distance to pierce through said stopper, the proportions of parts being such that when attaching the screw-plug after insertion of the cartridge, the screw-plug will engage with the screw threads of the holder before the canula pierces the stopper, whereby the canula is properly centered and the piercing may be done by screwing up the screw-plug.
75 80 85

4. In an instrument of the class described, for use with a cartridge having a pierceable stopper in its fore end, a cartridge holder having a screw-threaded head to fit within and close one end of the holder; said head having an axial bore and a canula consisting of a hollow needle fixedly secured in said bore and projecting axially from the head a substantial distance into the holder to pierce through the stopper, and said head having a knurled annular flange serving as a stop to limit the extent to which said head may enter the holder and also facilitating screwing of said head; the proportions of the head and canula extension being such that the head will engage the holder before the canula pierces the stopper.
90 95 100 105

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

JOHN MacGREGOR.