July 3, 1956 D. GABRIEL 2,752,919

HYPODERMIC SYRINGES

Filed March 26, 1953

Fig. 1.

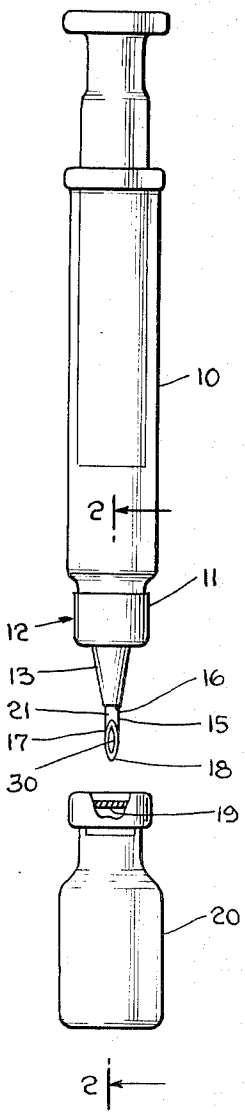


Fig. 2.

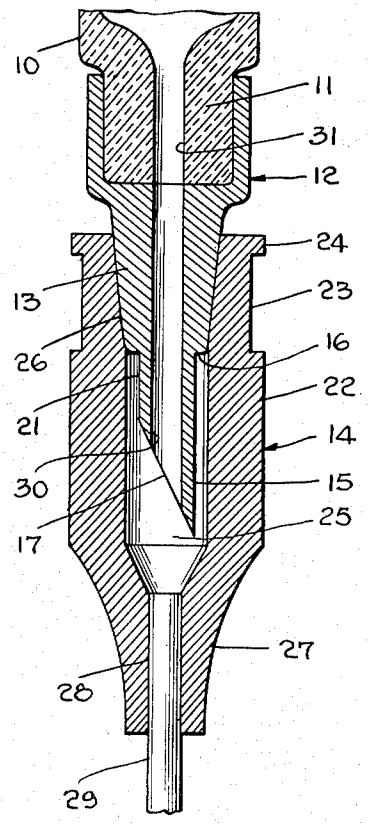
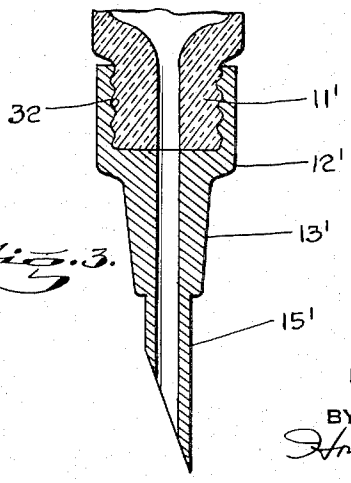


Fig. 3.



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2,752,919

Patented July 3, 1956

2,752,919

HYPODERMIC SYRINGES

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Application March 26, 1953, Serial No. 344,788

4 Claims. (Cl. 128—218)

This invention relates to hypodermic syringes for use in injecting various potions into a patient by a physician. More particularly, the invention deals with providing a syringe of this type and kind with a stub needle structure for directly filling the syringe vial, in which operation the hypodermic needle is detached with respect to the vial, after which the hypodermic needle is attached to the vial and the injection performed.

Still more particularly, the invention deals with a structure of the character described, wherein the stub needle constitutes part of a coupling ferrule fixed to one end portion of the syringe, the ferrule having a slightly tapered portion for quick attachment and detachment of the hypodermic needle unit and, still more particularly, the invention deals with a stub needle structure of the character described, wherein said stub needle constitutes an integral part of a ferrule tip at the discharge end of the syringe, the said tip including a tapered portion for detachable mounting of hypodermic needles in connection therewith.

The novel features of the invention will be best understood from the following description, when taken together with the accompanying drawing, in which certain embodiments of the invention are disclosed and, in which, the separate parts are designated by suitable reference characters in each of the views and, in which:

Fig. 1 is a side view of a syringe diagrammatically illustrating the method of its use.

Fig. 2 is an enlarged sectional detail view on the line 2—2 of Fig. 1 of one end portion of the syringe indicating part of a hypodermic needle coupled therewith; and

Fig. 3 is a view, similar to Fig. 2, showing only part of the construction and showing a modification.

In the use of hypodermic syringes, a problem exists, particularly in the handling of certain types and kinds of potions and those having the characteristics of heavy oil-like properties. In such instances, physicians have found the need to first use one needle for transferring the potion from a vial into the syringe, to then remove this needle and attach a hypodermic needle suitable for injection. These operations take up considerable time and also require the use of unnecessary equipment.

My improved stub needle structure attached, and constituting part of the syringe, will provide a very simple means for initially drawing the potion directly into the syringe, after which, in a single operation, the hypodermic needle can be attached to the syringe for the injection to be performed.

My invention deals with structures of the type and kind disclosed in my prior Patent No. 2,626,603, granted January 27, 1953, wherein a short stub needle is directly attached to the luer lock-type of syringe, including the threaded coupling portion for secure attachment of the hypodermic needle with the syringe. My present structure deals with a type of hypodermic needle having a tapered bore for snug frictional mounting upon the tapered portion of a ferrule on the syringe.

In Fig. 1 of the drawing, I have shown diagrammatically at 10 a syringe having, at its lower contracted end 11, a metallic or other ferrule 12, the latter being cemented or otherwise secured to the end 11, as shown in Figs. 1 and 2. The ferrule includes a reduced and downwardly tapered portion 13, the taper being slight, so as to provide firm mounting of a hypodermic needle unit 14 therewith while, at the same time, facilitating forcible detachment of the needle unit whenever desired.

It is the purpose of my invention to provide a special ferrule construction which includes a further reduced downwardly extended tubular portion 15, which joins the tapered portion in an annular shoulder 16, the tubular portion having an abrupt angular grinding, as at 17, to form a sharply pointed end 18. This end can be pierced through the rubber stopper 19 of a vial 20 containing the fluid to be drawn into the syringe 10. In this operation, the shoulder 16 is brought into firm engagement with the rubber stopper 19, so as to prevent any possible passage of air into the syringe and, further, to be certain that the short portion 21 of the needle extends into the vial beyond the limits of the stopper 19. The tubular needle portion 15, in its overall length, is materially less than the length of the ferrule 12, including its tapered portion 13.

In Fig. 2 of the drawing, I have shown the lower ferrule portion of the syringe, with part of the hypodermic needle unit 14 mounted thereon. The unit 14 has an enlarged body portion defined by a body 22 which can be square or other angular cross-sectional form to facilitate rotation thereof. The upper part of the body has a reduced neck 23 which terminates at its upper end in an outwardly extending flange 24. The body 22 has a large diameter bore 25, the end portion of which, within the collar 23, is tapered outwardly, as indicated at 26 to fit snugly upon the tapered portion 13 of the syringe in the detachable mounting of the unit 14 on the syringe. The lower portion of the body 22 is contracted, as seen at 27, and has a reduced diameter bore 28, in which the hypodermic needle 29 is arranged. Only part of the needle is shown.

The bore 25 forms a large chamber, in which the stub needle end 15 of the ferrule 12 is arranged. It will be apparent from a consideration of Fig. 2 of the drawing that a one diameter bore is provided through the stub needle 15 and ferrule 12, or the part 13 thereof, as indicated at 30, and this bore is in alinement with the bore 31 in the reduced end 11 of the hypodermic syringe.

In Fig. 3 of the drawing, I have shown a slight modification of the structure shown in Figs. 1 and 2, wherein the reduced end 11′ of the hypodermic tube is externally threaded and a ferrule 12′ is employed, which differs from the ferrule 12 solely in having an internal thread 32 for mounting on the threaded portion 11′ of the syringe. In other words, the ferrule 12′ has a tapered portion 13′, similar to the portion 13, and a stub needle portion 15′, similar to the stub needle 15. Thus, no further detail description of the structure shown in Fig. 3 will be given. The structure of Fig. 3 is desirable from the standpoint of providing detachable mounting of the stub needle unit with respect to the syringe. The stub needle portion of the unit can become worn or damaged in the handling thereof. Thus, with the structure of Fig. 3, the same can be conveniently removed and a new needle unit substituted; whereas, the needle unit shown in Figs. 1 and 2 of the drawing is permanently fixed to the syringe and replacement would become difficult.

Having fully described my invention, what I claim as new and desire to secure by Letters Patent is:

1. In hypodermic syringes of the character described, having a reduced tubular lower end portion, a stub needle unit mounted on said reduced end portion of the syringe, said unit having a ferrule including a slightly tapered portion, on which a hypodermic needle unit can be detachably mounted, the stub needle unit including a stub needle part projecting from the outer end of said tapered portion,

said stub needle part being materially less in length than the ferrule including said tapered portion and said stub needle unit joining the tapered portion in an outwardly extending shoulder which forms a stop limiting movement of the stub needle with respect to a vial in withdrawal of fluid from the vial.

2. In hypodermic syringes of the character described, having a reduced tubular lower end portion, a stub needle unit mounted on said reduced end portion of the syringe, said unit having a ferrule including a slightly tapered portion, on which a hypodermic needle unit can be detachably mounted, the stub needle unit including a stub needle part projecting from the outer end of said tapered portion, said stub needle part being materially less in length than the ferrule including said tapered portion, said stub needle unit joining the tapered portion in an outwardly extending shoulder which forms a stop limiting movement of the stub needle with respect to a vial in withdrawal of fluid from the vial, and said stub needle unit having a one diameter bore extending through the stub needle and the tapered portion of said unit.

3. In hypodermic syringes of the character described, having a reduced tubular lower end portion, a stub needle unit mounted on said reduced end portion of the syringe, said unit having a ferrule including a slightly tapered portion, on which a hypodermic needle unit can be detachably mounted, the stub needle unit including a stub needle part projecting from the outer end of said tapered portion, said stub needle part being materially less in length than the ferrule including said tapered portion, said stub needle unit joining the tapered portion in an outwardly extending shoulder which forms a stop limiting movement of the stub needle with respect to a vial in withdrawal of fluid from the vial, and means on the reduced end of said syringe and the upper end of said stub needle unit for detachable mounting of the unit on said reduced end.

4. In syringes of the character described, comprising a syringe having a reduced tubular end portion, a stub needle unit directly mounted on said end portion and including a downwardly tapered portion terminating in a reduced stub needle integral with the tapered portion, the length of said stub needle being materially less than the remaining length of said unit, a stop shoulder formed at the junction of the stub needle with said tapered portion, a hypodermic needle unit detachably mounted on said stub needle unit and comprising a needle supporting body having a large diameter bore therein, said bore being tapered to conform with and snugly fit upon the tapered portion of said stub needle unit in coupling the hypodermic needle unit with said stub needle unit, the bore of said body forming a large chamber, in which the entire stub needle is adapted to be arranged, and said body of the hypodermic needle unit having a reduced diameter bore, in which the needle of said unit is mounted.

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