

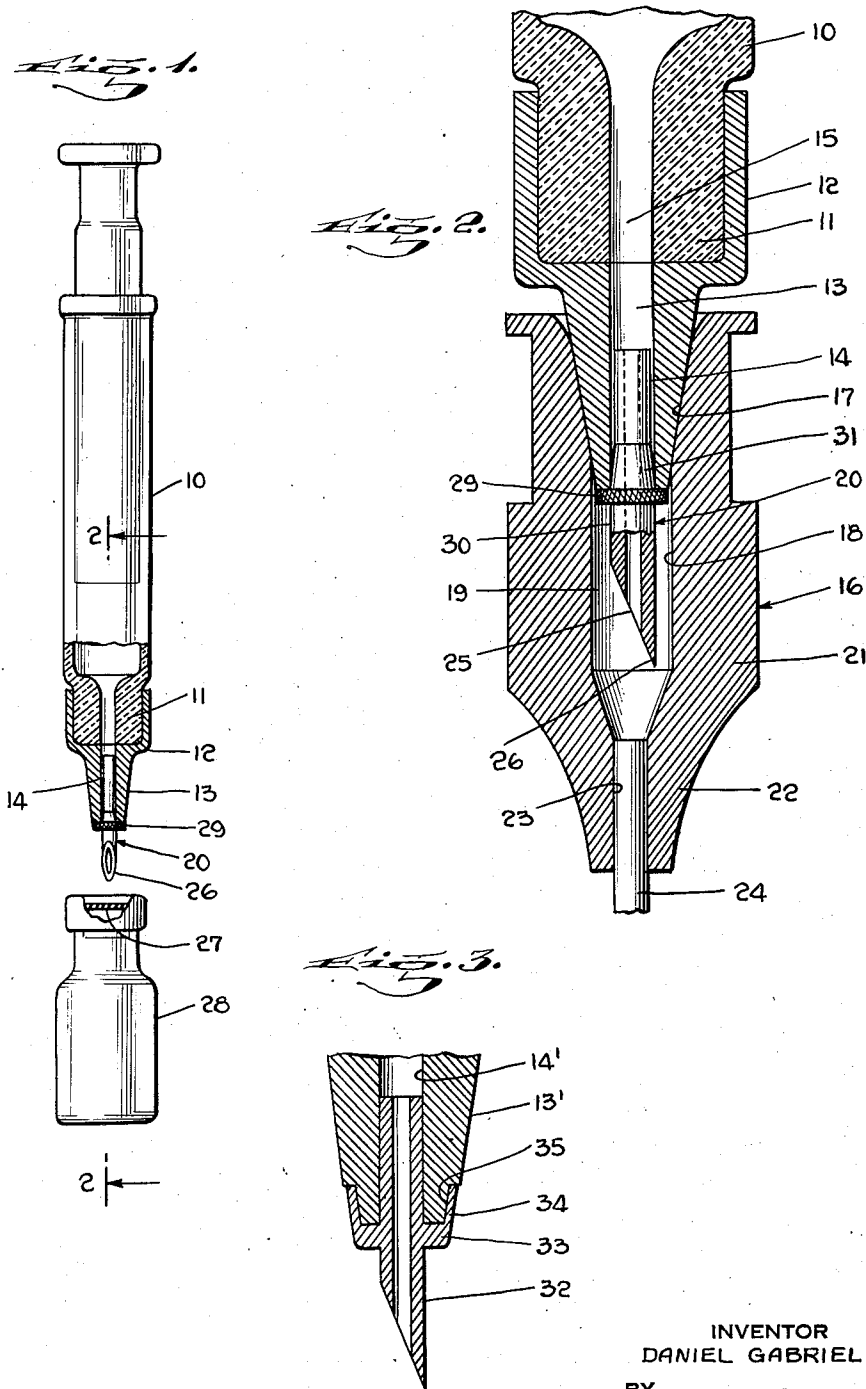
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DETACHABLE STUB NEEDLE FOR HYPODERMIC SYRINGES

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DETACHABLE STUB NEEDLE FOR HYPODERMIC SYRINGES

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6 Claims. (Cl. 128—221)

This invention relates to hypodermic syringes for use in injecting various potions into a patient. More particularly, the invention deals with the provision of a syringe having a stub needle structure forming a part thereof which can be utilized for initial filling of the syringe, after which, the hypodermic needle can be coupled with the syringe for injection into a patient in the usual manner.

Still more particularly, the invention deals with a structure of the kind defined, wherein a stub needle is employed having a tapered portion facilitating detachable mounting of the needle with the syringe to facilitate removal of the needle from time to time.

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 indicating the method of its use.

Fig. 2 is an enlarged sectional view on the line 2—2 of Fig. 1 through one end portion of the syringe and indicating a hypodermic needle unit mounted thereon, only part of the needle unit being shown; and

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

In Figs. 1 and 2 of the drawing, I have shown at 10 a syringe having a reduced tubular end portion 11, with which a ferrule 12 is mounted, the ferrule enveloping the portion 11 and having a downwardly extending externally tapered tubular part 13, the bore 14 of which is in alinement with the bore 15 of the extension 11.

Considering Fig. 2 of the drawing, it will be noted that a hypodermic needle unit 16 has, at its upper end, a tapered bore 17 to fit snugly on the tapered extension 13 for detachable mounting of the unit 16 with the syringe. Below the tapered bore 17 is a straight bore 18 which forms a chamber 19 in which a stub needle 20 is adapted to be arranged in the manner clearly illustrated. The unit 16 has a large diameter body portion 21 which is preferably of rectangular or other form to facilitate coupling and uncoupling of the unit with the tapered portion 13. The body 21 has a reduced end 22, in the small diameter bore 23, of which is secured the hypodermic needle shown in part at 24 in Fig. 2 of the drawing.

The stub needle 20, in the construction shown in Figs. 1 and 2 of the drawing, comprises a tubular body, the lower end of which is abruptly cutaway, as seen at 25, to form a sharply pointed end 26, which is adapted to pierce the rubber stopper 27 of a vial 28, diagrammatically shown in Fig. 1 of the drawing in the operation of withdrawal of fluid into the syringe, preparatory to injection into the body of the patient.

My invention deals primarily with the handling of heavy fluids, wherein a problem exists in uses with conventional types of syringes. The present practice requires the use of a special needle for coupling with the

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syringe to draw the fluid into the syringe, which needle is then removed and the hypodermic needle attached.

With my improved construction, I provide the syringe with a stub needle structure which constitutes a direct part of the syringe, thus the stub needle can be inserted into the vial, the fluid drawn into the syringe and then in a single operation, the hypodermic needle unit attached to the syringe for discharge of the fluid.

The needle 20 has, substantially centrally thereof, an outwardly extending collar portion 29, which seats upon the outer end of the portion 13, as clearly noted. The outer surface of the collar 29 can be roughened or so shaped as to facilitate attachment and detachment of the needle with the syringe or the ferrule 12 thereon. This attachment and detachment is performed solely when the needle point 26 becomes dull or the needle becomes damaged in any way to interfere with proper use thereof. The collar 29 is so positioned on the needle 20 as to form, between the upper end of the cutaway or bevelled portion 25 and the collar, a short space 30 which is of sufficient length to extend through the rubber stopper 27 to effect an air tight seal of the needle in said stopper. The collar 29 forms a stop, checking movement of the needle into the rubber stopper disc 27.

Beyond the collar 29, the needle has a slightly tapered portion 31 which is so made as to fit snugly, but firmly, in the bore 14 of the ferrule 12 or the tapered portion 13 thereof. This attachment is such as to prevent accidental displacement of the stub needle 20 when the needle is withdrawn from the stopper 27, but as and when required, forcible removal of the needle can be performed for replacement, as above stated.

In the showing of Fig. 2 of the drawing, the upper portion of the needle 20 is shown with clearance in the bore 14 simply to illustrate the taper 31 but, in reality, the needle will fit snugly, but freely, in the bore 14.

In the assemblage of the parts as shown in Fig. 2 of the drawing, it will appear that the needle 20 fits freely within the chamber formed by the bore 18 of the hypodermic unit 16, when said unit is attached to the syringe.

In Fig. 3 of the drawing, I have shown a slight modification of the structure shown in Figs. 1 and 2, wherein a needle 32 is employed which differs from the needle 20 primarily in dispensing with the taper 31 and, in place thereof, the collar portion 33 includes an annular upwardly extending and slightly conical sleeve 34 adapted to fit snugly upon a reduced tapered portion 35 of the equivalent of the tapered portion 13, which is designated by the reference character 13' in Fig. 3. In other words, with the structure shown in Fig. 3 of the drawing, the needle 32 can fit snugly in the bore 14' and frictional engagement for secure mounting of the needle 32 can be established between the tapered sleeve 34 and the tapered surface 35.

The structure of the needle shown in Fig. 3 of the drawing is applicable for use in syringes wherein the body portion of the syringe includes the integral tapered portion 13' and the ferrule 12 is not employed. The only modification required in structures of this type and kind is in modifying the tapered end 13' to the extent of providing the reduced tapered portion 35 and this latter tapered portion can have a firmer engagement than the engagement of the hypodermic needle with the tapered portion 13'. The surface of the collar 33, including the sleeve 34, can be constructed to provide a firm grip or other means to facilitate attachment and detachment of the needle 32, particularly in removal of said needle.

With the construction shown in Fig. 3, it will be noted that the sleeve 34, as well as the collar 33, are set inwardly a sufficient degree to clear the bevelled surface of the portion 13' and, thus, not interfere in any way

with the coupling and uncoupling of the hypodermic needle therewith.

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

1. A stub needle structure for hypodermic syringes of the character described, the syringe having, at one end portion thereof, means forming a tubular externally tapered portion, a hypodermic needle unit detachably mounted with said tapered portion, said unit including a body having a large diameter bore therein, one end of the bore being tapered to fit the tapered tubular end of said syringe, a stub tubular needle mounted in said tubular tapered end of the syringe and having a large diameter collar fitting on the end of said tapered tubular portion, the outer end of the needle being abruptly tapered to form a pointed end, and said needle, adjacent the large diameter collar, having a tapered portion engaging said first named means in retaining the needle against accidental displacement therefrom.

2. A structure as defined in claim 1, wherein the tapered portion of said needle fits snugly in the bore of said tubular tapered portion.

3. A structure as defined in claim 1, wherein the tapered portion of said needle comprises a sleeve frictionally engaging a reduced tapered portion on said first named means.

4. A structure as defined in claim 1, wherein said first named means comprises a ferrule secured to a reduced end of said syringe, and the tapered portion of said needle fits in the bore defined by the tubular tapered portion of said ferrule.

5. A stub needle structure for mounting on hypodermic syringes, said needle comprising a tubular body having an enlarged integral collar centrally thereof, one end portion of the needle being abruptly cutaway to form a pointed end, the cutaway portion of the needle terminating short of and in close proximity to one surface of said collar, that part of the needle between the cutaway portion and collar forming a short air seal portion on the needle adjacent said surface of the collar in insertion of the needle through the rubber stopper of a vial, the other end portion of the needle having a tapered part adjacent the collar portion and spaced from said second end, and said tapered part providing frictional engagement of the needle with a hypodermic syringe.

6. A structure as defined in claim 5, wherein the tapered part comprises a sleeve integral with the collar and disposed in spaced relation to the tubular body of said needle.

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