J. A. E. SELLAR.

PRESSURE SYRINGE AND SUBCUTANEOUS NEEDLE.

APPLICATION FILED OCT. 27, 1917.

1,316,394. Patented Sept. 16, 1919.

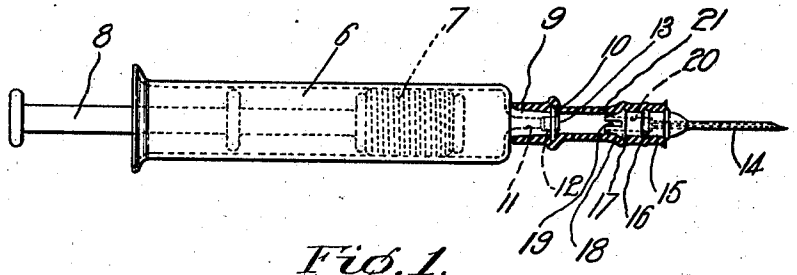


Fig. 1.

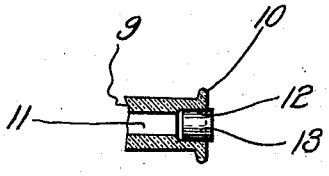


Fig. 2.

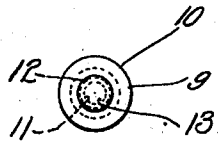


Fig. 3.

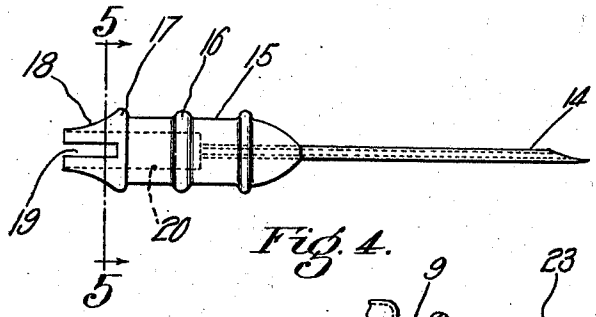


Fig. 4.

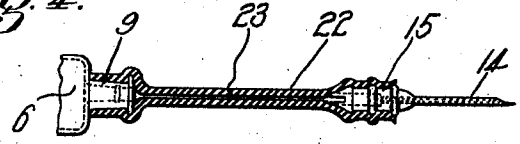


Fig. 6.

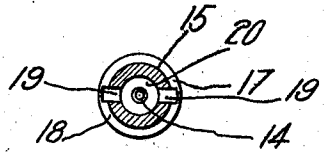


Fig. 5.

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UNITED STATES PATENT OFFICE.

JOHN A. E. SELLAR, OF EVERETT, MASSACHUSETTS, ASSIGNOR TO THE RANDALL-FAICHNEY COMPANY, INC., A CORPORATION OF MASSACHUSETTS.

PRESSURE-SYRINGE AND SUBCUTANEOUS NEEDLE.

1,316,394. Specification of Letters Patent. Patented Sept. 16, 1919.

Application filed October 27, 1917. Serial No. 198,760.

To all whom it may concern:

Be it know that I, JOHN A. E. SELLAR, a citizen of the United States, residing at Everett, in the county of Middlesex and State of Massachusetts, have invented new and useful Improvements in Pressure-Syringes and Subcutaneous Needles, of which the following is a specification.

This invention relates to a prussure syringe and subcutaneous needle.

The object of the invention is to provide a pressure syringe and subcutaneous needle combined and comprising a serum or fluid container which will not leak, which will be absolutely sealed and which can be rendered sterile and free from contamination, but which will be readily adaptable for use by the application of direct pressure upon the piston of the syringe without any danger or possibility of the fingers or of any extraneous or contaminating material coming in contact with the sealing medium or the contents of the container.

The object of the invention is further to provide a device of the character set forth which is entirely free from any possibility of corrosion or climatic or chemical changes.

The invention consists in an improved container constituting a syringe and in the particular manner in which the neck of the container is sealed by means of a stopper which, while being perfectly tight so that no foreign matter can get into the barrel of the container and contaminate the serum or fluid contained therein, still can be immediately ejected by hydraulic or other pressure by means of the piston.

The invention further consists in the construction of the hub to which a hypodermic needle is fastened and in the means for connecting the hub to the container.

The invention finally consists in the combination and arrangement of parts set forth in the following specification and particularly pointed out in the claims thereof.

Referring to the drawings:

Figure 1 is a sectional elevation of my improve syringe and needle.

Fig. 2 is an enlarged detail section of the neck portion of the syringe.

Fig. 3 is an end elevation of the same.

Fig. 4 is an enlarged side elevation of the needle and its hub.

Fig. 5 is a section taken on line 5—5 of Fig. 4.

Fig. 6 is sectional elevation of a portion of a modified form of my improved syringe and needle.

Like numerals refer to like parts throughout the several views of the drawings.

In the drawings, Figs. 1 to 5, inclusive, 6 is the barrel of the syringe, preferably formed of glass and provided with a piston 7 and piston rod 8. The barrel 6 terminates at one end thereof in a neck 9, preferably of less diameter than that of the barrel 6 and having at its outer end one or more annular flanges 10 thereon. The neck 9 is provided with a passage extending therethrough, a portion 11 of which has parallel sides while the outer end 12 of said passage is tapered, or the same may have straight walls or a small portion of the hole may be ground out larger than the body portion of the hole, so that said passage, while being illustrated in the drawings as having parallel sides with the outer end 12 of the passage tapered, may have parallel sides throughout or may have parallel sides and a portion of the passage made of smaller diameter than the rest of the passage so as to form a shoulder.

A stopper 13 fits the taper 12 of the passage and is forced thereinto by a slight pressure. Said stopper is preferably formed of cork or other material of impervious structure, but it may be made of glass or any other suitable material and should be treated with a lubricating compound, such as paraffin, glycerin or any other lubricant capable of being sterilized.

The needle 14 is fast to a hub 15 which has annular flanges 16 and 17 on its periphery. The end of said hub opposite that to which the needle 14 is fastened is tapered at 18, said end being preferably concavely tapered. The hub 15 is provided with slots 19 constituting lateral openings which extend into the duct 20 of said hub, but said lateral openings are not necessarily formed as slots but may be formed as a hole or a plurality of holes extending transversely of the hub and into the duct. Said hub 15 is connected to the neck 9 of the syringe by a tubular member 21, which is preferably formed of rubber and the inside

diameter of which may be the same diameter as that of the stopper 13, or a greater diameter as may be desired.

In the operation of the device, the barrel 6 is filled with serum or other fluid and sealed at the neck 9 by the stopper 13. The hub 15, with the needle 14 attached thereto, is inserted in one end of the flexible member 21. The tube is then pushed onto the neck 9 over the flange 10. The parts being thus assembled the device is ready for use and by a slight pressure on the piston 7, which pressure is easily accomplished by means of the piston rod 8, the fluid in the barrel 6 forces the stopper 13 out of the neck 9 into the tubular member 21 and against the end of the hub 15. The connecting member being elastic and said hub being slotted permits the fluid to flow around the stopper and fill the needle 14. The physician, having by this means expelled any air that may have been under suspension in the fluid or in the syringe, inserts the needle 14 under the cuticle of the patient and by said pressure of the piston causes the fluid to flow freely from the same.

The end of the hub 15 which is inclosed within the flexible tubular member 21, being tapered, and preferably tapered on a concave curve, renders it easy to insert the hub in the tubular member and also assists in the free flow of the liquid from the tubular member into said hub and through the needle when the stopper 13 has been pushed out of the syringe neck and rests against the inner end of the hub 15, as hereinbefore described.

While it is preferable to have the inner diameter of the tubular member larger than the diameter of said stopper, still it is not necessary that such should be the case, as it has been found that when the diameter of the stopper is substantially the same as that of the inside diameter of said tubular member, or even less than the inside diameter of said tubular member, the stopper 13 will be forced out of the neck of the syringe and along the flexible tube, expanding said flexible tube until the stopper abuts against the inner end of the hub 15, and liquid will flow out of the neck of the syringe and, expanding the rubber tube 21 adjacent to the inner end of said hub, will pass between said stopper and tube and through the slots 19 into the duct 20 and through the needle 14.

In Fig. 6 I have illustrated a modified form of my invention, in which the parts are the same as in the form of my invention illustrated in Fig. 1, except that the tubular member 22 has a very much smaller passage 23 therein.

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

1. A hypodermic syringe comprising a barrel, a neck at one end of said barrel having a passage extending therethrough, a stopper held in said passage by frictional contact with said neck and a piston fitting into said barrel, in combination with a tubular hub having a duct extending longitudinally therethrough, a hypodermic needle attached to one end of said hub, the other end of said hub tapered and provided with a lateral opening entering said duct and a tubular member connected to said hub at said last-named end, the other end of said tubular member being connected to said neck.

2. A hypodermic syringe comprising a barrel, a neck at one end of said barrel having a passage extending therethrough, a stopper held in said passage by frictional contact with said neck and a piston fitting into said barrel, in combination with a tubular hub having a duct extending longitudinally therethrough, a hypodermic needle attached to one end of said hub, the other end of said hub being concavely tapered and provided with a lateral opening entering said duct and a tubular member connected to said hub at said last-named end, the other end of said tubular member being connected to said neck.

3. A hypodermic syringe comprising a barrel, a neck at one end of said barrel having a passage extending therethrough, a stopper held in said passage by frictional contact with said neck and a piston fitting into said barrel, in combination with a tubular hub having a duct extending longitudinally therethrough, a hypodermic needle attached to one end of said hub, the other end of said hub having an annular flange thereon and terminating in a tapered end portion, said end portion being provided with a lateral opening entering said duct and a flexible tubular member connected to said hub and inclosing said flange at one end thereof, the other end of said tubular member engaging said neck.

In testimony whereof I have hereunto set my hand in presence of two subscribing witnesses.

JOHN A. E. SELLAR.

Witnesses:
BURT R. RICKARDS,
WM. H. FORREST.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."