F. WACKENHUTH.

SYRINGE.

APPLICATION FILED NOV. 23, 1915.

1,315,885.

Patented Sept. 9, 1919.

Fig. 1

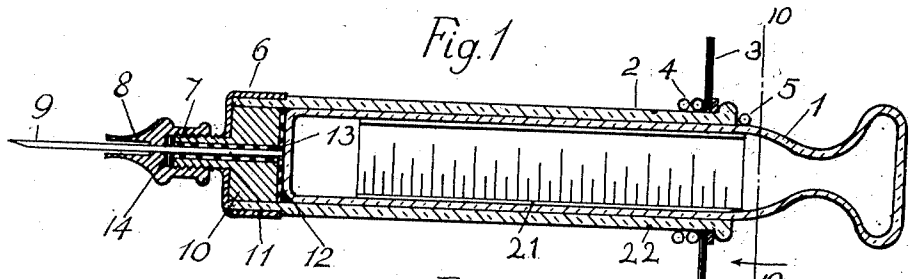


Fig. 2

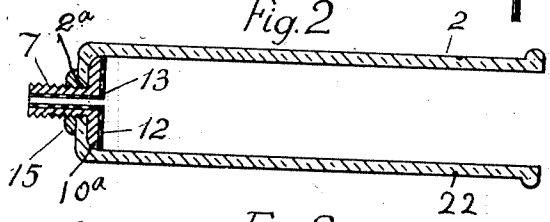


Fig. 3

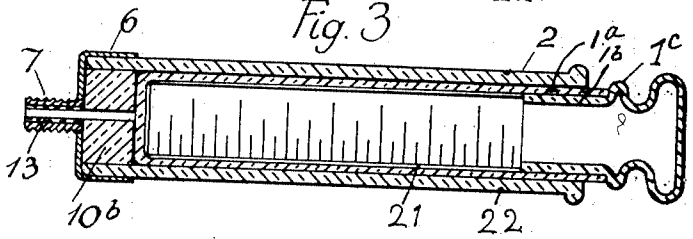


Fig. 4

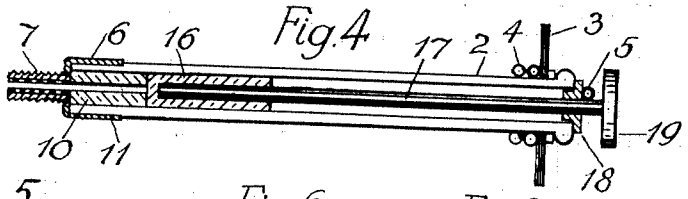


Fig. 5

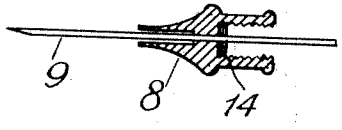


Fig. 6

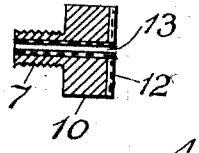


Fig. 7

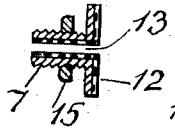


Fig. 8

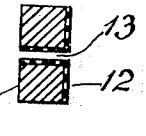


Fig. 9

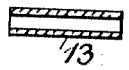


Fig. 10

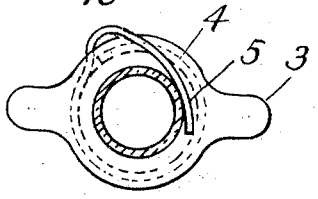
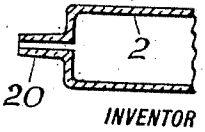


Fig. 11



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SYRINGE.

1,315,885. Specification of Letters Patent. Patented Sept. 9, 1919.

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To all whom it may concern:

Be it known that I, FREDERICK WACKENHUTH, a citizen of the United States, and resident of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improvements in Syringes, whereof the following is a specification.

This invention relates to surgery, and more especially to syringes such as are adapted for giving hypodermic injections; and the objects of the same are to increase the strength and durability of such a device by making its nipple of metal, to prevent contact of the liquid with any metal part by lining the latter with aseptic coating such as glass, to prevent accidental loss of the plunger from the barrel by providing a spring bearing frictionally upon the stem of the plunger, and to provide new means for fastening the scale within the plunger.

Other objects will appear in the following specification, reference being had to the accompanying drawings wherein

Figures 1, 2, 3, and 4 are longitudinal sections of various embodiments of this idea, the plunger being omitted from Fig. 2.

Fig. 5 is a sectional detail of the needle socket.

Figs. 6, 7 and 8 are sectional details of various forms of closures for the lower end of the barrel.

Fig. 9 is a sectional detail of the lining for the nipple.

Fig. 10 is a section on the line 10—10 of Fig. 1.

Fig. 11 is a detail showing the present form of nozzle in glass syringes.

In any embodiment of my invention, the barrel 2 is of glass which is cylindrical throughout its length and open at its upper end, and within the barrel reciprocates a tubular glass piston or plunger 1 having a projecting handle or knob whose shape and size is unimportant. A finger rest 3 encircles the upper end of the barrel and is maintained in position by a coiled spring 4, and as best seen in Figs. 1, 4 and 10, one end of the spring is extended past the finger rest and over the end of the barrel as at 5 and bears frictionally against the plunger to prevent the latter from dropping out and becoming broken, which so often happens with syringes of this kind where no means are present to hold the plunger in place. As seen in Fig. 4, when my invention is applied to tuberculin syringes which are of small diameter and wherein the plunger if entirely of glass is easily broken, I prefer to make the piston proper 16 of glass, and cement into it a metallic rod 17 which passes slidably through a cap 18 on the end of the barrel and carries a knob 19 as shown. In any case, however, the piston portion of the plunger which is of glass will be ground so as to make a leak-proof connection with the interior of the glass barrel.

It is well known that syringes of this kind are sterilized before being used, and if any element is marked on the exterior with fine graduations they soon become effaced or indistinct under the high temperature used in sterilization. Accordingly I have placed graduations on a strip 21 of paper or the like, and the strip is placed within the tubular plunger as indicated in Figs. 1 and 3. While any suitable means may be employed for holding the paper in such position, Fig. 3 shows that the plunger may be made in two parts whereof the outermost 1^a fits closely within the barrel and contains the scale 21, and the innermost 1^b fits telescopically into the otherwise open upper end of the outermost part and may have a bead 1^c abutting against the extremity thereof when the parts are properly assembled and the scale 21 is held in place, and thereafter these parts may be connected with each other in any suitable way.

The lower end of the barrel of any ordinary syringe of this kind is usually reduced into an integral glass nipple as shown at 20 in Fig. 11, and onto this is slipped the needle socket when the device is to be used. But I find that nozzles of this kind are often broken off, and I prefer therefore to use a nozzle or nipple made mostly of metal or entirely of metal excepting for an aseptic lining within its bore. One type of my invention is illustrated in Figs. 1 and 6. Here an externally threaded metal nipple 7 is formed integral with and coaxial with a metal plug 10, the latter fitting closely within the barrel at its lower portion or end, and the nipple projecting beyond the same to receive the open or female end of the needle socket 8 best shown in Fig. 5, packing 14 being employed when the parts are connected. An aseptic lining 13 as of glass extends through the bores of the nipple and plug, and an aseptic lining covers the inner end of the plug as at 12. Thus the needle proper,

9, passes through the packing 14 and the lining elements 13 and 12, and there is no opportunity for the liquid within the barrel to come into contact with any metal other than the needle. For holding this needle-carrying element 7, 10 on the barrel, I may make use of a ferrule or cap 6 having a flat metal body pierced with a hole through which the nipple 7 is soldered, the body extending over the end of the plug and barrel and terminating in a flange or skirt which closely embraces the lower portion of the barrel. The latter may be reduced and ground externally as at 11 so as to make a tight fit within said skirt.

In the type of my invention shown in Fig. 2, the barrel is reduced at its lower end and nearly closed as at 2^a, the same nipple 7 is employed, the same plug 10^a excepting that it is shorter, and the same lining elements; but in this case the nipple projects through an opening in the end of the barrel and is held in place by a nut 15. In Figs. 1 and 2, the metal parts may be secured within the glass parts in any suitable manner, as by means of a leak-proof aseptic cement such as sulfur melted or fused in place.

In the type of my invention shown in Fig. 3, the plug 10^b may be of glass or of material not necessarily integral with the nipple. This view shows the same cap holding the parts in place, and illustrates its skirt fitting closely around the barrel without the latter being ground as at 11.

The type of my invention shown in Fig. 4 may employ any of the details above described, but this view is mainly for the purpose of illustrating the structure of the plunger rod of metal as above described. It also shows the use of a spring for frictionally retaining the plunger, although of course this detail could be used in any type of my invention; and the means for holding the paper scale 21 could be employed in any type of my invention where the plunger is tubular and transparent. The purposes of syringes of this kind are too well known to need further description.

What is claimed as new is:—

1. In a syringe having a barrel and plunger, the combination with a finger rest on the barrel, of a coiled spring fitted around said barrel to maintain the finger rest in position, said spring having an extension over the end of said barrel maintaining pressure against the plunger, for the purpose described.

2. In a syringe, the combination with a glass barrel; of a glass plunger made up of two tubular parts whereof the outer fits within the barrel and is closed at its lower end and the inner part fits telescopically into the upper end of said outer part, and a graduated scale within the outer part and held therein by the inner part when in place, substantially as described.

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Witnesses:

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THEODORE SCHANBACHNER.