

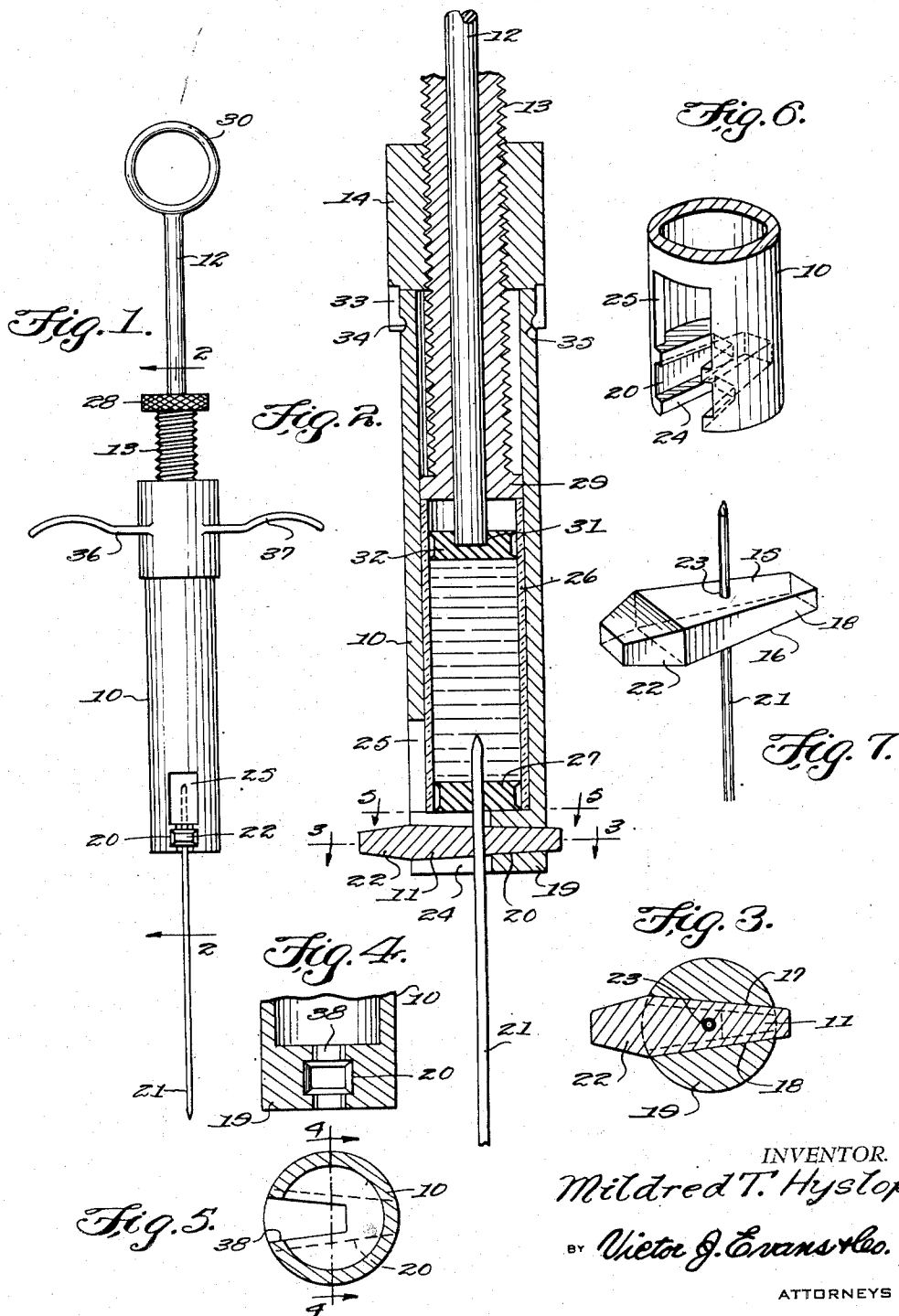
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STERILESS SYRINGE AND AN ADAPTABLE NEEDLE

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STERILESS SYRINGE AND AN ADAPTABLE
NEEDLE

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5 Claims. (Cl. 128—218)

1

This invention relates to syringes of the type used for making injections into patients, and in particular a syringe in which sterilization of the syringe is not required.

The purpose of this invention is to provide an improved method for inserting a needle in a syringe casing in which the needle is inserted with a lateral instead of a longitudinal movement so that it does not come in contact with the parts of a syringe casing or hands of an operator.

In the conventional type of syringe where the needle is inserted in the end by hand it is necessary to sterilize both the needle and holder each time the syringe is used. An object of this invention is to make use of a syringe that need not be sterilized prior to its use, when the cartridge method is used. The present syringes on the market must be sterilized, both the needle and the syringe, before use; the disposable syringes now marketed and needles are already sterile, and are discarded after use. With this thought in mind this invention contemplates a syringe where it is not necessary that the syringe be sterile, and where the syringe may be used repeatedly without sterilization as a sterile needle is placed in the syringe without sterilization and without being made unsterile, because the needle is extended through and carried by a wedge-shaped holder and the syringe casing is provided with a slot in one side through which the needle is inserted with a lateral movement and also a wedge-shaped slot which is positioned to receive the holder in which the needle is carried.

The object of this invention is, therefore, to provide means for installing and retaining a needle in a syringe casing whereby sterilization of the syringe is not necessary, with each use.

Another object of the invention is to provide a syringe casing having a slot in one side to provide means for inserting a needle with a lateral movement and also having means for inserting a cartridge and ejecting fluid therefrom whereby an end of the cartridge is punctured by the needle.

A further object of the invention is to provide an improved method of mounting an injecting needle in a syringe in which sterilization of the syringe is not required and wherein a syringe of a simple and economical construction is provided.

With these and other objects and advantages in view the invention embodies a syringe having a cylindrical casing with a slot extended through one side and the adjoining portion of the base and a wedge-shaped holder whereby a needle carried by the holder may be positioned in the end of the casing with the holder secured in a slot of the casing and whereby the needle is positioned to puncture the end of a cartridge, the opposite end of which is positioned to be engaged by a plunger extended inwardly through the opposite end of the casing.

Other features and advantages of the inven-

2

tion will appear from the following description taken in connection with the drawing wherein:

Figure 1 is a side elevational view illustrating the improved syringe with the needle extended therefrom and with the plunger in the extended position.

Figure 2 is a vertical section on an enlarged scale through the casing of the syringe taken on line 2—2 of Figure 1.

Figure 3 is a cross section taken on line 3—3 of Figure 2 showing the needle holder in a slot in the end of the casing.

Figure 4 is a detail showing a section through the lower end of the casing taken at a right angle to that shown in Figure 2 and taken on line 4—4 of Figure 5.

Figure 5 is a cross section through the lower end of the casing taken on line 5—5 of Figure 2.

Figure 6 is a perspective view showing the lower end of the casing of the syringe.

Figure 7 is a similar view showing the wedge-shaped needle holder with a needle held therein.

Referring now to the drawings wherein like reference characters denote corresponding parts the improved syringe of this invention includes a tubular casing 10, a needle holder 11, a plunger 12, a bushing 13, and a closure cap 14, the plunger, bushing and closure cap being of conventional design.

The needle holder 11 is wedge-shaped in two directions having inclined upper and lower surfaces 15 and 16 with similarly shaped edges 17 and 18 and a base 19 on the end of the casing 10 is provided with a similarly shaped slot 20 providing a socket whereby in positioning a needle 21 in the syringe the tapering end of the holder is inserted in the slot 20 and the needle is secured in operative position as illustrated in Figure 2.

The outer end of the holder 11 is provided with an extension, also wedge-shaped in both vertical and horizontal planes and this extension, which is indicated by the numeral 22 provides means for gripping the holder by hand and also provides a handle to facilitate holding the device with forceps and other tools. The holder 11 is also provided with an opening 23 through which the needle 21 extends and with the needle positioned in the holder it is readily installed in the syringe by placing the holder in a slot 24 in the base 19 with the upper end or point of the needle passing through a slot 25 in the side wall of the casing.

At the time the needle is inserted the cartridge, as indicated by the numeral 26, is not in position in the casing, so that the slot in the lower end of the casing is open and the needle may be inserted or removed with a lateral movement instead of the conventional longitudinal movement. The needle may, therefore, be inserted in the syringe without being engaged by the fingers of a nurse or other attendant and without coming in contact with nuts, bushings or other parts of a syringe.

With the needle in position, as illustrated in

3

Figure 2, a cartridge, such as the cartridge 26 is inserted from the upper open end of the casing, the plunger, bushing and cap being removed, and as the cartridge is inserted a disc 27, forming the lower end of the cartridge is punctured by the end of the needle as the needle passes through the disc and upwardly into the interior of the cartridge.

The cartridge is forced downwardly in position whereby the disc 27 is punctured by the needle, by the bushing 13 which is threaded in the cap 14 and which is provided with a knurled flange 23 on the upper end and also with a flange 29 on the lower end, the flange 29 being positioned to engage the end of the shell of the cartridge.

The plunger 12, which is provided with a single loop 30 on the upper end, is positioned to extend into a recess 31 in the upper surface of a disc 32, similar to the disc 27, and which provides a closure for sealing the upper end of a cartridge. The end of the plunger 12 may be formed as illustrated in Figure 2, or the end may be threaded into the disc 32 or secured thereto by other means as may be desired.

The closure cap 14 is provided with downwardly extended spring fingers 33, the lower ends of which are provided with inwardly extended projections 34 snapped into an annular groove 35 in the outer surface of the casing 10, for securing the cap in position on the casing. The cap may also be provided with arms 36 and 37 that are provided with arcuate outer ends which are positioned to bear against the fingers of a hand with the thumb of the hand extended through the loop 30.

As illustrated in Figure 5, the wedge-shaped slot 28 extends through the sides of the slot 24, and a slot 39 extends from the slot 29 to the interior of the casing.

With the parts arranged in this manner the slot 29 provides a retaining socket in which the wedge-shaped holder is rigidly held whereby the needle 21 is secured in the end of the syringe and adapted to receive the contents of a cartridge.

After use the needle may be discarded or may be removed and sterilized independent of the syringe.

It will be understood that modifications may be made in the design and arrangement of the parts without departing from the spirit of the invention.

What is claimed is:

1. A syringe having a cylindrical casing with a base providing a closure in one end and with a longitudinally disposed slot in one side and extended into the base, said base having a laterally positioned socket with tapering side and end surfaces therein and said socket positioned in the side of the base opposite to that in which the slot is positioned, and a needle holder having tapering side and end surfaces and having a needle receiving opening therethrough removably mounted in the socket of the base and positioned whereby a needle held therein is inserted in the casing with a lateral movement and whereby with the holder secured in the socket the needle is positioned on the center line of the casing and is extended through the slot in the base thereof.

2. A syringe having a cylindrical casing with a base providing a closure in one end and with a longitudinally disposed slot in one side and extended into the base, said base having a socket therein and said socket positioned in the side of the base opposite to that in which the slot is positioned, and a needle holder having a needle receiving opening therethrough removably mounted in the socket of the base and positioned whereby a needle held therein is inserted in the casing with a lateral movement and with the holder nested in the socket the needle is positioned on the center line of the casing and extends through the slot in the base thereof, said needle holder having a wedge-shaped outer end with tapering side and edge surfaces providing a finger and forceps gripping handle.

4

3. In a syringe, the combination of which comprises a cylindrical casing having a base providing a closure in one end and having a longitudinally disposed slot in one side and extended into the base, said base having a wedge-shaped socket therein and said socket having tapering side and edge surfaces positioned in the side of the base opposite to that in which the slot is positioned, a needle holder having corresponding side and edge surfaces and also having a needle receiving opening therethrough positioned in the socket of the base and having a handle with side and edge surfaces extended therefrom, a cap removably mounted on the end of the casing opposite to that in which the base is positioned, a bushing threaded through the cap and extended into the casing of the syringe, and a plunger slidably mounted in the bushing and having an eye on the outer end and mounted with the inner end positioned to extend into a cartridge positioned in the casing, the opposite end of which is adapted to be punctured by a needle extended through the holder positioned in the said socket.

4. A syringe having a cylindrical casing with a base providing a closure in one end and with a longitudinally disposed slot in one side and extended into the base, said base having a socket with converging side surfaces therein and said socket positioned in the side of the base opposite to that in which the slot is positioned, and a needle holder having a needle receiving opening therethrough removably mounted in the socket of the base and positioned whereby a needle held therein extended through the slot of the base also extends into the cylinder and is positioned to puncture a cartridge in the cylinder.

5. A syringe having a cylindrical casing with a base providing a closure in one end and with a longitudinally disposed slot in one side and extended into the base, said base having a socket therein and said socket positioned in the side of the base opposite to that in which the slot is positioned, and a needle holder having a needle receiving opening therethrough removably mounted in the socket of the base and positioned whereby a needle held therein is inserted in the casing with a lateral movement and with the holder nested in the socket the needle is positioned on the center line of the casing extending through the slot in the base thereof, and is also extended into the cylinder and positioned to puncture a cartridge therein.

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