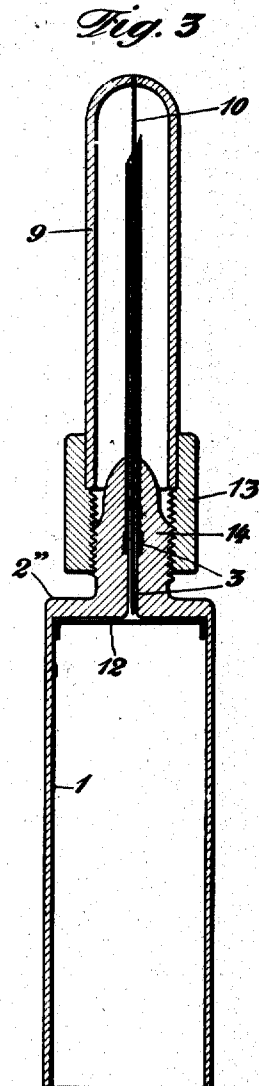
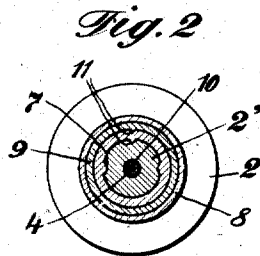
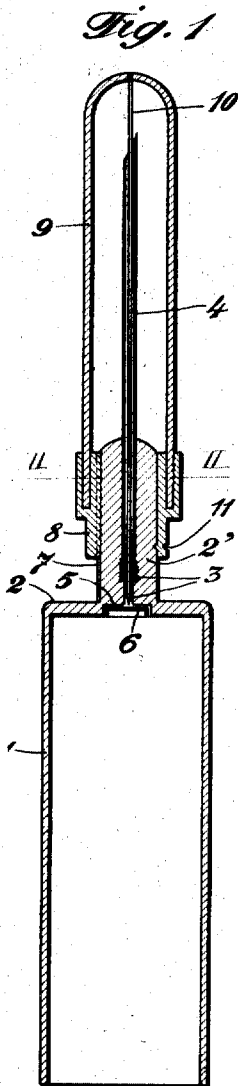


W. FITTING
HYPODERMIC SYRINGE AND THE LIKE.
APPLICATION FILED OCT. 18, 1916.

1,279,530.

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Inventor:
William Fitting
by *Arthur L. Smith*
att.

UNITED STATES PATENT OFFICE.

WILLIAM FITTING, OF LAUSANNE, SWITZERLAND.

HYPODERMIC SYRINGE AND THE LIKE.

1,279,530.

Specification of Letters Patent. Patented Sept. 24, 1918.

Application filed October 18, 1916. Serial No. 126,246.

To all whom it may concern:

Be it known that I, WILLIAM FITTING, a citizen of the Swiss Confederation, and residing at Lausanne, Switzerland, have invented certain new and useful Improvements in Hypodermic Syringes and the like, of which the following is a specification.

My invention relates to hypodermic syringes and the like.

10 Hypodermic syringes known heretofore intended to be used only once, in which a stiletto projects through a plastic mass into the container holding the medicament, have various defects. Particularly when a large
15 number is used it is a difficult and troublesome matter to sterilize the syringe together with the plastic mass, because the latter is liquefied at the sterilizing temperature. The plastic mass thus does not constitute a permanent closure member, and the stiletto generally made of steel may be oxidized where it is contacted by the medicament.

A primary object of my invention is to provide an improved hypodermic syringe intended to be used only once in which the above noted defects are not present. In my improved syringe the needle and stiletto do not normally pass through the end of the container for the medicament, the hole in
30 the end wall of the container being separated from the interior of the container by a thin layer of metal which is perforated by pushing the stiletto forward only when the syringe is used, so that when the stiletto is
35 moved backward a perforation corresponding to the thickness of the latter is left in the said layer of metal for the passage of the medicament.

To these ends the invention consists in the construction arrangement and combination of parts described hereinafter and pointed out in the claims.

One illustrative embodiment of the invention and a modification thereof are represented by way of example in the accompanying drawing, wherein:—

Figure 1 is a longitudinal section, and

Fig. 2 is a transverse section taken on the line II—II in Fig. 1 showing one form of
50 syringe according to the invention, and

Fig. 3 is a longitudinal section of a modified form.

The container 1, which may be made of compressible material, *e. g.* tin, has an end
55 wall 2 having a central boss 2' which is traversed by a hole 3 of varying diameter.

The blunt end of the hollow hypodermic needle 4 fits tightly in the wider part of this hole and, as clearly shown, does not pass through the wall 2 into the interior of the container 1.

In the syringe shown in Fig. 1 the end wall 2 of the container is provided on the inside with a shallow recess 5. A sheet 6 of tin foil has been pressed into this recess and constitutes a permanently tight closure member between the interior of the container 1 and the narrow part of the hole 3. The boss 2' is cylindrical externally and has two longitudinal grooves 7. A sleeve 8, whose
70 one end has two walls, is slipped with a sliding fit over this boss. The open end of a guard 9, preferably made of glass, is carried in the annular space between the said two walls of the sleeve and is preferably
75 held airtight therein by means of cement. The stiletto 10 which passes through the needle 4 and the narrow part of the hole 3 into proximity of the tin foil 6 is fastened directly into the crown of the guard 9. In
80 order that this guard can neither be turned nor be axially displaced unintentionally the sleeve 8 carries springs which take into the grooves 7 and it is held by means of points 11 made by pressure, so, however, that the
85 guard and the sleeve can be readily pushed with one hand toward the container 1 in order to perforate the sheet 6 of metal by the stiletto when the syringe shall be used.

In the modification shown in Fig. 3 the
90 end of the hole 3 nearest the container 1 is closed airtight by means of a piece of tin foil 12 which covers the whole inner end of the container and has a turned up edge making
95 a good joint. In this form also the stiletto 10 normally does not contact with the sheet of tin foil 12. The guard 9 carrying the stiletto is mounted airtight in a sleeve 13
100 screwed on the threaded boss 14 on the end wall 2' of the container 1. When it is desired to use the syringe it is only necessary to screw the sleeve 13 toward the container until the stiletto has perforated the tin foil. The sleeve 13 is then turned in the opposite
105 direction until it is detached from the boss 14 whereupon the guard and stiletto can be removed and the syringe can be used.

If desired the tin foil may be entirely omitted and instead thereof the hole 3 may be made so long that only a very thin layer of
110 material is left which can be perforated by the stiletto. As a rule the end wall 2 or 2'

will preferably be integral with the side wall of the container which may be made of tin.

The syringe described and illustrated can be sterilized, when filled, in boiling water, for example, or dry in any position and therefore in any desired number at a time, which is not possible in the case of hypodermic syringes comprising a plastic jointing material. In the improved syringe the 10 stiletto is always out of contact with the medicament before use and, owing to the guard being closed airtight, there is no danger of the stiletto or the needle becoming 15 oxidized and therefore non-sterile. As the chamber in the container, is separated from the bore of the needle by a layer of metal there is also no danger of the medicament leaking out and flowing into the guard even 20 in hot climates, so that spoiling of the medicament and consequent uselessness of the syringe are avoided with certainty.

I claim:—

1. In a hypodermic syringe of the type 25 described, the combination of a container, a hollow needle axially mounted on the end wall thereof, a stiletto movable in the needle and a guard carrying the stiletto and mounted to move airtight on the container, the end 30 wall of the container having an axial hole connected at one end to the bore in the needle and normally closed at the other end, the stiletto being adapted to open the latter end of the hole when the guard is moved toward the container.

2. In a hypodermic syringe of the type described, the combination of a container, a hollow needle axially mounted on the end 40 wall thereof, a stiletto movable in the needle a guard carrying the stiletto and mounted to move airtight on the container, the end wall of the container having an axial hole connected at one end to the bore in the needle, and a piece of metal foil normally 45 closing the other end of the hole, the stiletto being adapted to perforate the metal foil when the guard is moved toward the container.

3. In a hypodermic syringe of the type 50 described, the combination of a container, a hollow needle axially mounted on the end wall thereof, a stiletto movable in the needle, a guard carrying the stiletto and mounted to move airtight on the container, the end wall 55 of the container having an axial hole connected at one end to the bore in the needle

and a piece of metal foil normally closing the other end of the hole, said foil lying against the side walls of the container and covering the end wall thereof, the stiletto 60 being adapted to perforate the metal foil when the guard is moved toward the container.

4. In a hypodermic syringe of the type described, the combination of a container, a 65 hollow needle axially mounted on the end wall thereof, a stiletto movable in the needle, a guard carrying the stiletto and mounted to move airtight on the end wall of the container, the end wall of the container having 70 an axial hole connected at one end to the bore in the needle and opening at the other end into a shallow recess in the inner face of the end wall, and a piece of metal foil in said recess normally closing the latter 75 end of the hole, the stiletto being adapted to perforate the metal foil when the guard is moved axially toward the container.

5. In a hypodermic syringe of the type described, the combination of a container, 80 the end wall thereof having an axially projecting boss constituting a support, a hollow needle axially mounted on this support, a stiletto movable in the needle and a guard 85 carrying the stiletto and movable airtight on the support, said support having an axial hole connected at one end to the bore in the needle and normally closed at the other end, the stiletto being adapted to open the latter 90 end of the hole when the guard is moved toward the container.

6. In a hypodermic syringe of the type described, the combination of a container, the end wall thereof having an axially projecting cylindrical boss constituting a sup- 95 port a sleeve movable axially on this support, a hollow needle axially mounted in the support, a stiletto movable in the needle, and a guard carried by the sleeve and carrying the stiletto, said support having an axial 100 hole connected at one end to the bore in the needle and normally closed at the other end, the stiletto being adapted to open the latter end of the hole when the guard is moved toward the container.

In testimony whereof I affix my signature 105 in the presence of two witnesses.

Dr. WILLIAM FITTING, D. D. S.

Witnesses:

ROBERT MONNESON,
MAX ROTH.