Sept. 4, 1928. **1,683,349**

G. N. HEIN

HYPODERMIC SYRINGE AND MEANS FOR RETAINING SAME

Filed Oct. 4, 1926

Fig. 1.

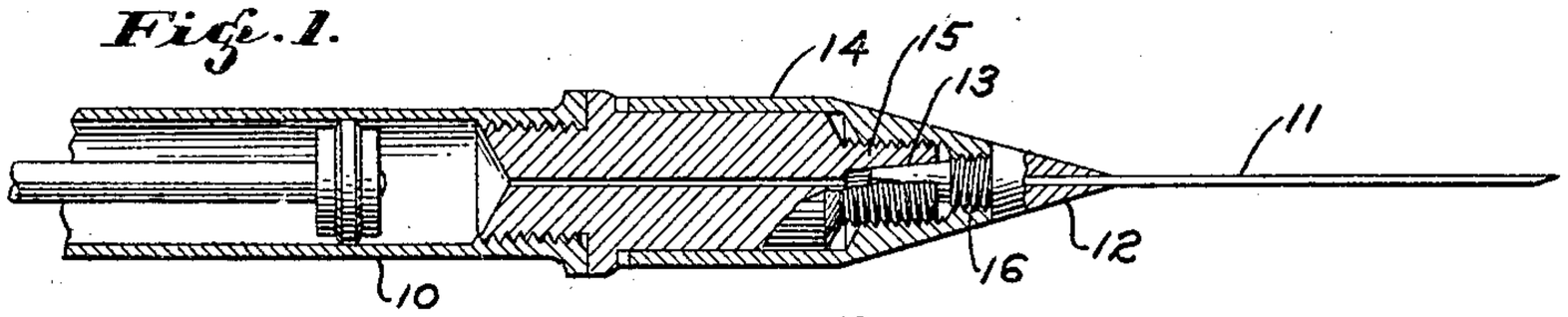


Fig. 2.

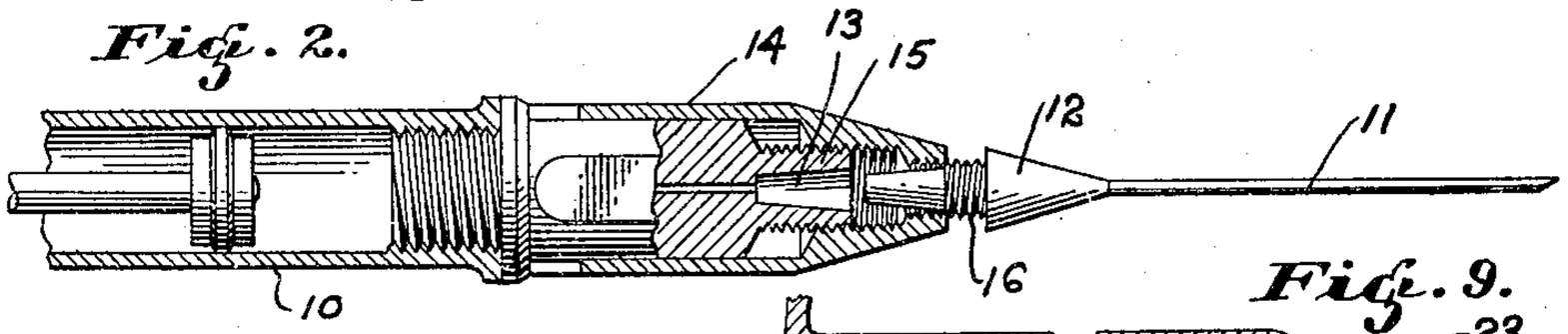


Fig. 9.

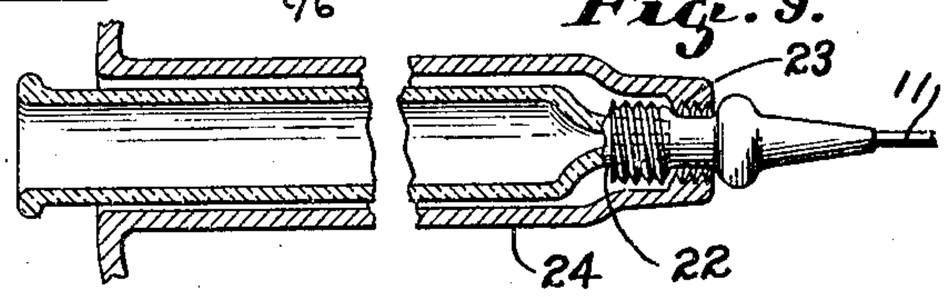


Fig. 3.

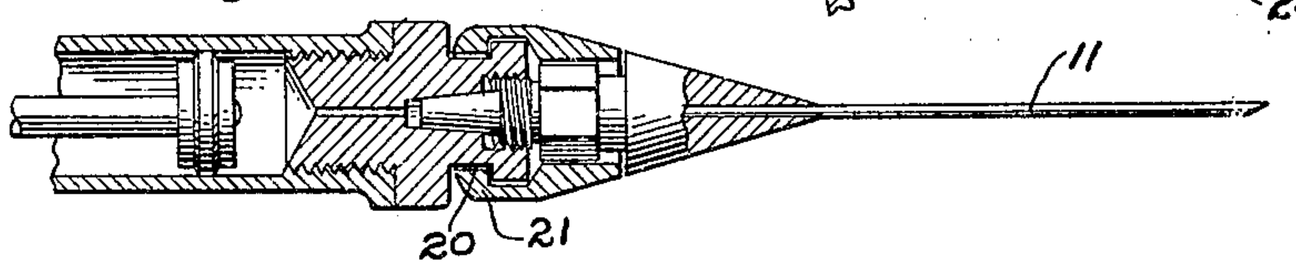


Fig. 4.

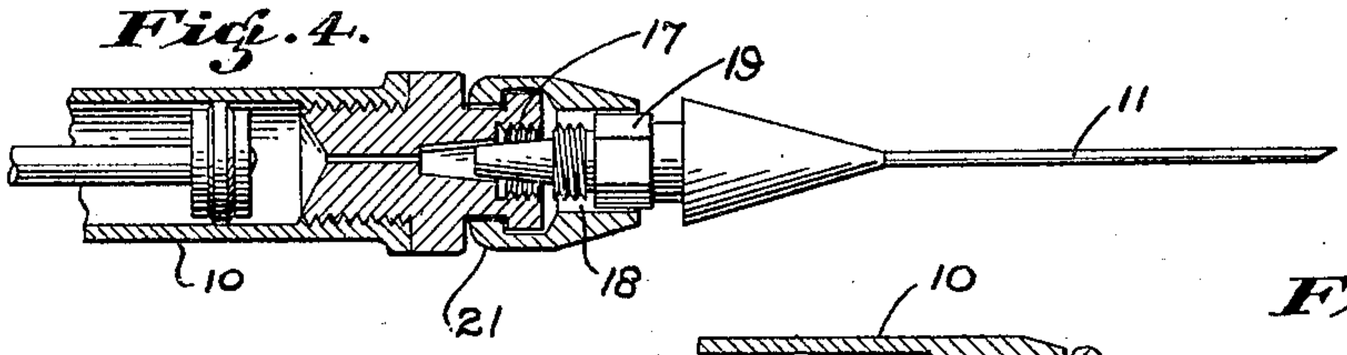


Fig. 8.

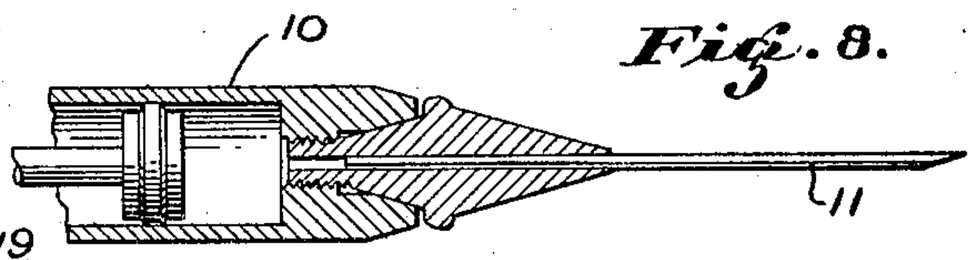


Fig. 5.

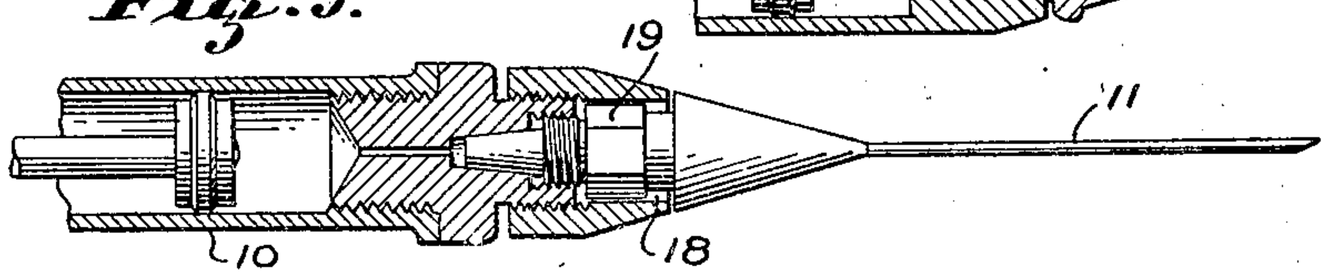


Fig. 6.

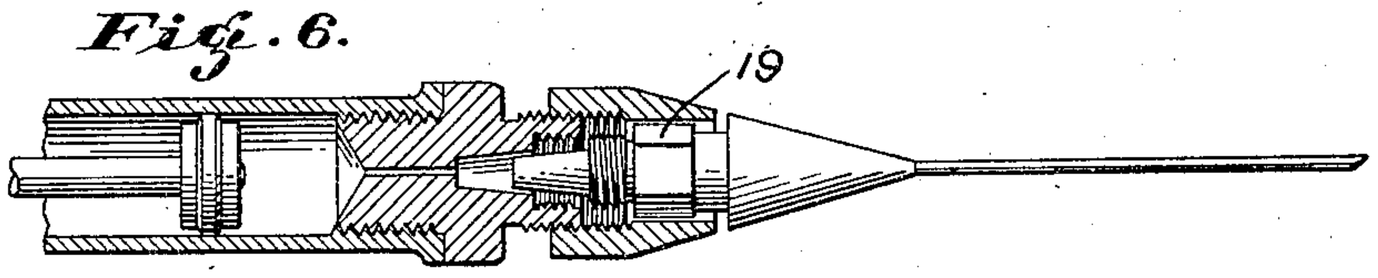
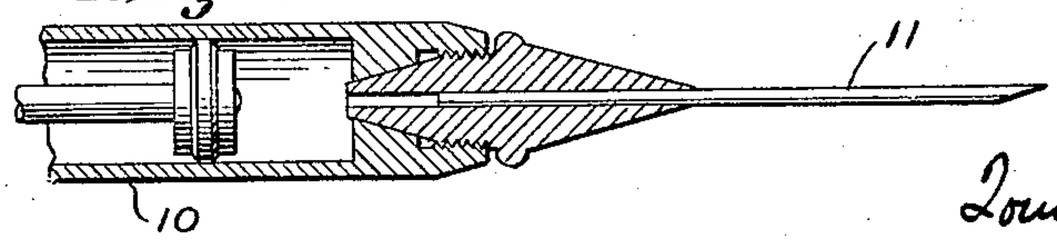


Fig. 7.



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UNITED STATES PATENT OFFICE.

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HYPODERMIC SYRINGE AND MEANS FOR RETAINING SAME.

Application filed October 4, 1926. Serial No. 139,245.

This invention relates to hypodermic needles, and more particularly to a coupling or retaining means for the needle.

The object of this invention is to provide a hypodermic needle that can easily and quickly be attached to a hypodermic syringe, making a leak-proof connection without the use of the present conventional wrench. The construction of this needle is such as to make it unnecessary to provide any depressions or projections on the surface of the needle base to use for tightening purposes, leaving the surface of said needle base smooth and tapering, giving the operator clear vision of his work and making sterilization more easily retained.

Needles now in general use with an adapter require that the adapter be removed to insert the needle, making it necessary to replace the same together on the syringe base. This arrangement is cumbersome and time-wasting, and the needle point is frequently injured when passed through the adapter.

With the present invention, the needle base is quickly and positively inserted into the adapter without necessitating removal of the same from the syringe. A fraction of a turn of the adapter positively seats and locks the needle into place, making a leak-proof joint. To remove the needle, only a slight reverse turn of the adapter is needed. This needle may also be advantageously used directly on the syringe base without an intervening adapter. In this case there is the necessity of a larger thumb-piece on the needle base, making it possible for the operator to not only seat the needle into a leak-proof position, but also locking it positively, preventing any danger of the needle blowing off when pressure is employed through the act of injecting.

In the accompanying drawing,

Figs. 1 and 2 show central longitudinal sectional views of a syringe and needle embodying one form of my invention;

Figs. 3 and 4 show similar views of a modified form;

Figs. 5 and 6 show similar views of a still further modification;

Figs. 7, 8, and 9 show longitudinal central sectional views of various other modifications.

The syringe comprises a barrel 10 and needle 11. The needle shown is of the Luer type, with a conical stem 12 adapted to enter a conical socket 13 on the end of the barrel.

In all such devices of this type it is desirable that the needle be seated with a turn or twist, so as to wipe the joint. At the same time it has to be locked in position to prevent blowing off when the contents of the syringe is ejected.

Locking devices heretofore in use generally require some sort of a wrench, or where a tapered or other locking means is provided, it is generally necessary to completely remove the same, in order to detach the needle.

As shown in Figs. 1 and 2, I provide a barrel with a coupling 14 threaded onto the stem 15 of the barrel. This coupling member has a threaded socket to receive a threaded portion 16 on the base of the needle. The threads on the parts 15 and 16 are oppositely directed, and in operation the needle is first threaded onto the coupling member 14 at a time when the latter is slacked off as shown in Fig. 2. When the needle has been completely threaded onto the coupling member, then the latter is rotated in the opposite direction, so as to thread onto the stem 15, thus carrying the tapered stem 12 of the needle into a close, binding fit with the socket 13.

In Figs. 5 and 6, instead of threading the needle base onto the coupling member 14, I thread the needle onto a socket 17 formed on the stem of the barrel. The coupling member is so constructed that it has an angular socket 18 to receive an angular face 19 on the base of the needle, so that when the coupling member is rotated it will act like a wrench, to thread the needle onto the barrel.

In Figs. 3 and 4 I dispense with the threads between the coupling member and the barrel, and substitute therefor a groove 20 on the stem of the barrel, into which groove is fitted a ring 21 on the end of the coupling member, said ring being formed by beading the end of the coupling member. In other respects the coupling member of Figs. 3 and 4 is similar to the one shown in Figs. 5 and 6.

In Figs. 7 and 8, the needle is threaded directly onto the stem of the barrel.

Fig. 9 shows a needle having threads on the base, the base being formed with a tapered socket to receive a tapered nipple 22 on the end of the syringe barrel. The

threads on the needle base co-operate with threads 23 on a sleeve or guard 24, which surrounds and protects the syringe barrel.

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

1. In a hypodermic syringe, a barrel and a detachable needle therefor, the latter formed with a smooth, tapered stem to enter a tapered socket on the barrel, and a coupling member beween the needle and barrel having means to rotate the needle and cause the tapered stem to seat in the socket with a wiping effect, said coupling device being operative to release the needle without being removed from the barrel.

2. In a hypodermic syringe, a barrel and a detachable needle therefor, the latter formed with a tapered stem to enter a tapered socket in the barrel, and a coupling between the needle and barrel, rotatably received on the latter and having a connection with the needle to rotate the latter when the coupling member is turned on the barrel, the outer end of said coupling member being open to receive the needle base without removing said coupling member from the barrel.

3. A hypodermic syringe having a barrel and a detachable needle, the latter being formed with a smooth, tapered stem to enter a tapered socket on the barrel, and a coupling member having a threaded connection with the barrel and also a threaded connection with the needle, the threads between the coupling member and barrel being oppositely directed to the threads between the coupling member and needle, whereby when the coupling member is screwed onto the barrel, the needle will be rotated, causing the tapered stem to seat in the tapered socket with a wiping effect.

GEORGE N. HEIN.