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HYPODERMIC SYRINGE.

APPLICATION FILED DEC. 6, 1920.

1,403,020. Patented Jan. 10, 1922.

Fig.2.

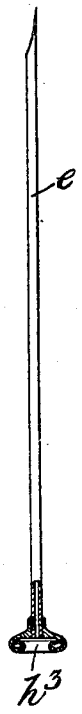
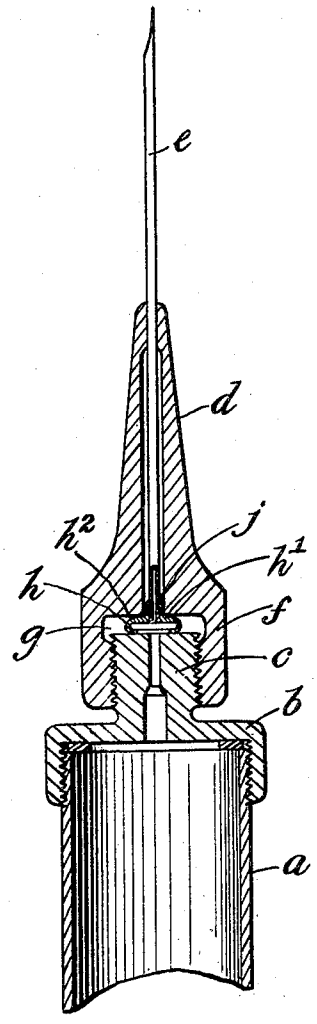


Fig.1



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HYPODERMIC SYRINGE.

1,403,020. Specification of Letters Patent. Patented Jan. 10, 1922.

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To all whom it may concern:

Be it known that I, SAMUEL JAMES EVERETT, a subject of the King of Great Britain, residing at Thornton Heath, in the county of Surrey, England, have invented certain new and useful Improvements in or Connected with Hypodermic Syringes, of which the following is a specification.

This invention relates to improvements in or connected with hypodermic syringes and is particularly concerned with means employed for enabling a needle to be fixed in the nozzle or holder with a liquid tight joint.

Heretofore, soft metal has been used in the so-called heads of these needles, such soft metal having been used in the form of packing rings contained in hard metal casings attached to the inner ends of the needles. The heads of the needles were clamped between the nipple and the nozzle of the syringes by screwing the nozzle down on the nipple, and there was always a danger of accidental removal of this soft metal packing ring from the hard metal casing when unscrewing the nozzle from the nipple. A further danger in the use of soft metal was that, in spreading under pressure, it was frequently possible for it to choke or obstruct the passage through the needle.

One object of the present invention is to dispense with the use of soft metal as packing for the said heads.

A further object is to provide a simple head of relatively hard metal, such as copper, which has sufficient resiliency as to be capable of making a tight joint and of being used over and over again without detriment to the tightness of the joint, whereby the needles have a long life and an important economy is effected.

According to the present invention, the head consists of a hard metal cup or cupped part secured to the needle and adapted to make tight contact by the pressure of its edge or rim portion against the surface of the end of the nipple. Preferably, the rim portion is curled, or the walls of the cup are curved, so that the cup possesses a certain resiliency or flexibility under compression for enabling it to adapt itself under the pressure applied in the making of the joint. Also, the head has preferably a conical or somewhat conical exterior for the purpose of enabling a good seating or joint to be made with the correspondingly shaped surface or shoulder within the nozzle. The hard metal referred to is preferably copper as this metal, while affording the necessary resiliency or flexibility, is not soft enough to spread or flow under the screwing down pressure of the nozzle, as is the case with the soft metal heretofore used for making the heads, or the jointing layers or rings, for hypodermic needles.

In order to enable this invention to be readily understood, reference is made to the accompanying drawing, in which:—

Figure 1 is a central vertical section of a syringe with a needle provided with a head constructed in accordance with these improvements.

Figure 2 is a vertical section of a needle with a slightly modified form of head.

In Figure 1, a is the barrel of the syringe to which is screwed the combined cap b and nipple c. The nozzle d, formed as usual for the reception of the needle e, has a socket f, which screws on to the nipple c and leaves a space g surrounding the head h of the needle. The head h is preferably made of copper and is cupped or cup-shaped and the wall of the cup, or the rim thereof, is curved or curled, preferably inwards as shown, so that the cup is compressible. Other formations are possible, however, for the purpose of attaining this end. The exterior surface of the head is preferably coned at h' so that the shoulder of the nozzle at h^2 may make a good joint with such coned surface, and the head may have a short tubular part at j for affording an increased surface for screwing or holding on the stub end of the needle e. In addition to screwing the head on to the needle e, pressure may be applied for making the attachment secure, or other means such as brazing may be adopted, if desired.

The needle e is inserted into the nozzle d so that the head h lies in the socket f which is thereupon screwed on to the nipple c.

As the nozzle is screwed home, the shoulder h^2 presses upon the coned surface h' of the head h and forces the rim or edge of the latter into intimate contact with the end surface of the nipple c. As the nozzle d is tightened, the pressure on the head will compress the latter so that the rim portion of such head will make a very tight joint with the end of the nipple c, the resilience or flexibility being such that the rim can yield

and conform with any inequalities on the jointing surface against which it is pressed. At the same time a tight joint is made between the coned exterior h' of the head and the shoulder h^2 of the nozzle d.

It will thus be seen that it is possible to make a perfectly tight joint without the aid of soft metal and without any question of clipping or clamping the edge of the head. The jointing is entirely due to the flexible structure of the head and the resiliency or deformability of the rim portion which is pressed against the jointing face of the end of the nipple.

In the modification illustrated in Figure 2, the curl of the rim is more pronounced so that an inwardly curling portion h^3 may be provided which more or less doubles back to the interior wall of the cup.

As stated above, other formations are possible without departing from the spirit of this invention and the scope thereof as defined by the claims hereto annexed.

I claim:

1. A hypodermic needle adapted for clamping in a syringe and comprising a cupped head of metal, the said head presenting a resilient rim which is adapted for being pressed liquid tight against a jointing face of the syringe.

2. A hypodermic needle adapted for clamping in a syringe and comprising a cupped head of metal formed with a curl at its rim, the said rim being adapted by its resiliency for producing a liquid tight joint when pressed against a joint face in the syringe.

3. A hypodermic needle adapted for clamping in a syringe and comprising a cupped head formed with a coned exterior and with a resilient, yielding rim portion adapted to make a liquid tight joint when pressed against a joint surface in the syringe.

4. A hypodermic needle adapted for clamping in a syringe and comprising a cupped head having a screw-threaded central perforation for screwing on to the stub end of the needle, said head presenting a resilient rim adapted for making a liquid tight joint when pressed against a joint surface in the syringe.

5. A hypodermic needle adapted for clamping in a syringe and comprising a cupped head formed with a central and interiorly screw-threaded tubular part for screwing on to the stub end of the needle, said head presenting a resilient rim adapted for making a liquid tight joint when pressed against a joint surface in the syringe.

6. A hypodermic syringe needle comprising a hollow needle part and a hollow cupped head of metal secured on the stub end of said needle by screwing and pressing, said head having a coned exterior and a rim portion of curved section, substantially as and for the purpose set forth.

SAMUEL JAMES EVERETT.