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J. J. SULLIVAN
HYPODERMIC SYRINGE
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2,735,427

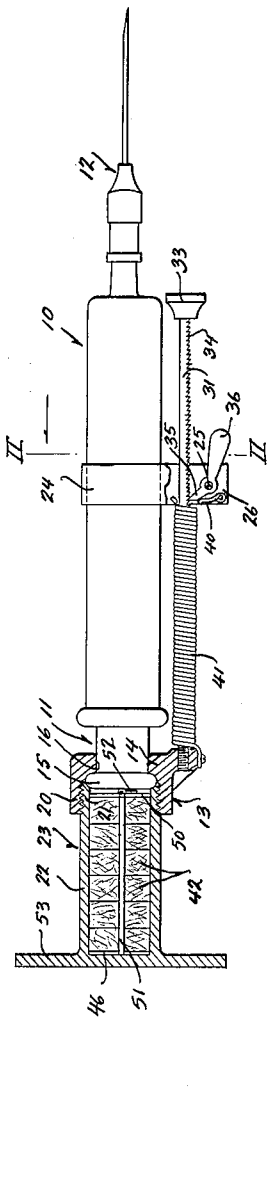


Fig. 1.

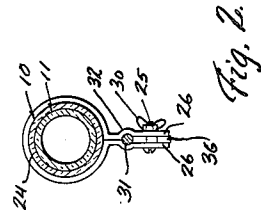


Fig. 2.



Fig. 4.



Fig. 5.

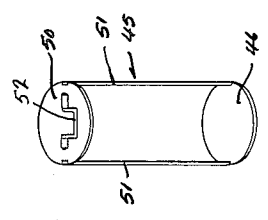


Fig. 3.

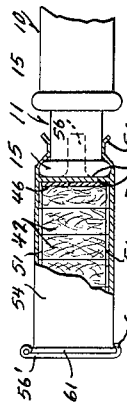


Fig. 6.

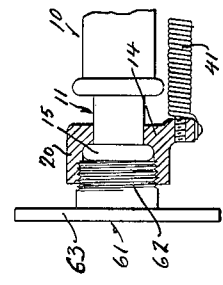


Fig. 7.

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1

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HYPODERMIC SYRINGE

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9 Claims. (Cl. 128—218)

My invention relates in general to hypodermic syringes, and in particular to an attachment for a hypodermic syringe.

The principal object of my invention is to provide an attachment for use with a hypodermic syringe which makes it possible for the operator to manipulate the syringe with one hand only, thereby avoiding wobbling of the needle, which is painful to the patient.

Another object is to provide an attachment which may be used with any standard syringe.

Another object is to provide means whereby a hypodermic syringe may be successfully used by a patient in the self-administration of a hypodermic injection.

A further object is to provide means whereby the leakage of medicine from a filled hypodermic syringe may be avoided, and whereby the syringe may be placed upon a supporting surface in a vertical position, thereby preventing the needle from becoming contaminated by touching the surface.

Moreover, my invention is such that a hypodermic injection may be conveniently given in any desired position.

Moreover, my invention permits the use of a hypodermic syringe at places where means of sterilization are not available.

Furthermore, my invention avoids the spilling and wasting of expensive serums.

The above objects and advantages have been accomplished by the device shown in the accompanying drawings, of which:

Fig. 1 is a side sectional elevation of my device as applied to a standard syringe;

Fig. 2 is a sectional view taken on line II—II of Fig. 1;

Fig. 3 is a perspective view showing a frame for mounting and carrying the sterilizing means of my invention;

Fig. 4 is a sectional view of one of the cotton packs constituting the sterilizing means;

Fig. 5 is a plan view thereof;

Fig. 6 is a fragmentary sectional view of a modified form of sterilizing kit; and

Fig. 7 is a fragmentary sectional view of a modified form of attachment.

In the drawings 10 represents the barrel of any standard hypodermic syringe, and 11 the plunger thereof. The usual type needle 12 is shown attached to the barrel.

My device comprises a coupling collar 13 having a shoulder 14 for engagement with the bead 15 of the plunger 11 of the syringe. The shoulder 14 is formed with a bore 16 for passage over the plunger 11 of the syringe. The collar is formed with a screwthreaded portion 20 for engagement with the screwthreaded end 21 of the casing 22 of a sterilizing kit 23, to be hereinafter described. When the threaded end 21 of the casing is engaged with the coupling collar, the bead 15 will be tightly clamped in position between the shoulder 14 and the end 21 of the casing.

A barrel clip 24 is provided with my attachment and this is clamped to the barrel at a point preferably where

2

the spring gives the proper action. Suitable clamping means are provided for the clip, comprising a bolt 25 for passage through the tabs 26 of the clip, and a wing nut 30 carried by the bolt.

5 An actuating shaft 31 is passed between bearing portions 32 formed in the tabs 26 of the clip. This shaft extends outwardly toward the needle end of the barrel 10 so that when the plunger is in its innermost position, the actuating button 33 is near the outer end of the barrel. The inner end of the actuating shaft is preferably screwthreaded and attached thereby to the coupling collar 13, whereby the plunger may be withdrawn from the cylinder by axial movement of the shaft. The side of the actuating shaft adjacent the bolt 25 is preferably formed with ratchet teeth or serrations 34 for engagement by a ratchet pawl 35 mounted between the tabs 26 of the clip. The ratchet pawl is carried by an actuating arm 36 which is pivotally mounted upon the bolt 25. A suitable spring 40 is provided for maintaining the ratchet pawl in position against the teeth of the ratchet.

A helical retracting spring 41 is mounted about the inner end of the actuating shaft 31 and has one end attached to the clip 24 and the other end to the coupling collar 13, whereby when the plunger has been withdrawn from the barrel by axial movement of the actuating shaft, it will be retracted or forced into the barrel when released and thereby discharge the medicine under pressure produced by the spring.

As is well known to those skilled in the art, and particularly by patients who have to take self-administered hypodermic treatments, an injection must be given many times at places where means for sterilizing the needle are not readily available. My invention, therefore, contemplates the use of a sterilizing kit which forms a part of the attachment. This kit comprises the hollow casing 22, hereinbefore referred to, which, together with the coupling collar 13, forms means for clamping the attachment to the plunger of the syringe. This casing contains a plurality of cotton packs 42 which are disposed within the casing and which are preferably arranged one on top of the other. Each of these packs is made preferably of cotton batting in the form of a disc 43 in which is imbedded a capsule 44 preferably of a soft flexible material and containing a quantity of alcohol or other suitable sterilizing solution. These packs are preferably disposed in a frame 45 comprising a base 46 and a top 50 joined by two side members 51. The top 50 is provided with a bale 52 by which the frame may be readily removed from the casing. The casing of the sterilizing kit is preferably formed with a base flange 53 which is considerably larger than the casing and which may be used as a support for the syringe when placed in a vertical position. It will be obvious that when so supported the needle of the syringe will be kept out of contact with the supporting surface whereby contamination thereof will be avoided.

In Fig. 6 I show a modified form of sterilizing kit for use upon a standard hypodermic syringe either with or without the spring tension portion of the attachment. In this form of device the casing 54 is formed with a bottom 55 for engagement with the bead 15 of the plunger 11. A number of spring clips 56 are carried by the bottom 55 of the casing and are designed to snap around the bead 15 of the plunger and to resiliently hold the casing in position thereon. This form of device is opened at the outer end where a pivotally mounted lid or cover 56' is provided. This lid is formed with a spring catch 60 for engagement with the bead 61 formed at this end of the casing.

Should it be desired to use my attachment without the sterilizing unit 23, I provide a cap 61, shown in

Fig. 7, to clamp the coupling collar to the bead 15 of the syringe plunger. The cap is formed with a reduced threaded portion 62 for threaded engagement with the coupling collar and with a base flange 63 for supporting the syringe in a vertical position.

From the foregoing, it will be obvious that when a hypodermic syringe equipped with my invention is filled, the syringe may be supported by the flange 63 in a vertical position in which position the point of the needle will be prevented from touching the supporting surface and becoming contaminated thereby. Furthermore, when being administered, the medicine is forced out of a syringe equipped with my invention under spring tension when the ratchet pawl is released from the teeth of the actuating shaft, thereby administering the medicine under steady regulated flow and relieving the operator of the necessity of forcing the medicine into the body tissue, thereby avoiding unsteady movement or wobbling of the needle. The steady manipulation of the syringe made possible by the use of my invention also avoids breakage of the syringe needles.

Should a patient find it necessary to administer a hypodermic injection where means of sterilization are not readily obtainable, one of the cotton packs may be easily and quickly removed from the sterilizing kit, and the needle readily sterilized by piercing the pack and rupturing the capsule which causes the cotton to be impregnated with the sterilizing liquid, thereby making the needle ready for immediate use.

The sterilizing kit of Fig. 6 is shown as applied to a standard hypodermic syringe without the retracting spring and actuating shaft. Should, however, it be desired to use this form of sterilizing kit with the other portions of the attachment, it is only necessary that the casing 54 be provided with a lug (not shown) for the reception of the threaded end of the actuating shaft 31 and for the attachment of the inner end of the spring 41. These and other modifications of the details herein shown and described may be disclosed without departing from the spirit of my invention or the scope of the appended claims.

I claim:

1. An attachment for a hypodermic syringe having a barrel, a plunger slidable within the barrel and having a bead thereon, and a needle carried by the barrel, said attachment consisting of a sterilizing kit comprising a casing, a cover for the casing, means for demountably securing the casing to the bead of the plunger, and a plurality of sterilizing units carried by the casing.

2. An attachment for a hypodermic syringe having a barrel, a plunger slidable within the barrel and having a bead thereon, and a needle carried by the barrel, said attachment consisting of a sterilizing kit comprising a casing, a cover for the casing, means for demountably securing the casing to the bead of the plunger, and a plurality of sterilizing units carried by the casing, each of the sterilizing units consisting of a disc of absorbent material and an ampoule imbedded in the disc and containing a sterilizing fluid.

3. The combination with a hypodermic syringe having a barrel, a beaded plunger slidable within the barrel, and a needle carried by the barrel, of an attachment comprising a clip for clamping to the barrel of the syringe, an actuating shaft slidably carried by the clip, a sterilizing kit, means for securing the sterilizing kit and the forward end of the actuating shaft to the bead of the plunger, and a retracting spring secured at one end to the clip and at the other end to the last named means.

4. The combination with a hypodermic syringe having a barrel, a beaded plunger slidably carried by the barrel, and a needle carried by the barrel, of an attachment comprising a clip secured to the barrel of the syringe,

bead-engaging means carried by the plunger of the syringe, an actuating shaft slidably carried by the clip and having its forward end secured to the bead-engaging means, a helical spring mounted about the shaft and having its ends connected to the clip and to the bead-engaging means, and a sterilizing kit comprising a casing secured to the bead-engaging means and urging the same into engagement against the plunger bead, and a plurality of sterilizing packs carried by the casing.

5. An attachment for a hypodermic syringe having a barrel, a beaded plunger slidably carried by the barrel, and a needle carried by the barrel, said attachment comprising a clip adapted to be secured to the barrel of the syringe, bead-engaging means adapted to be carried by the plunger of the syringe, an actuating shaft slidably carried by the clip and having its forward end secured to the bead-engaging means, a helical spring mounted about the shaft and having its ends connected to the clip and to the bead-engaging means, and a sterilizing kit secured to the bead-engaging means and comprising a casing, and a plurality of sterilizing packs carried by the casing, each pack consisting of a cotton disc and an imbedded capsule containing sterilizing liquid.

6. An attachment for a hypodermic syringe having a barrel and a plunger with a bead thereon slidable in the barrel, comprising a coupling collar carried by the plunger of the syringe and engageable with the bead thereof, means for clamping the collar to the bead of the plunger, a clip secured to the barrel of the syringe, an actuating shaft carried by the clip and attached to the collar, and helical spring means connecting the collar to the clip.

7. An attachment for a hypodermic syringe having a barrel and a plunger movable lengthwise of the barrel, the plunger having a bead thereon, comprising a coupling collar carried by the plunger of the syringe and engageable with the bead thereof, a sterilizing kit screw-threaded to the collar for clamping the latter to the plunger bead, a clip secured to the barrel of the syringe, an actuating shaft slidably carried by the clip and attached to the collar, and helical spring means connecting the collar to the clip.

8. An attachment for a hypodermic syringe having a barrel and a beaded plunger movable lengthwise thereof, comprising a coupling collar carried by the plunger of the syringe and engageable with the bead thereof, means for clamping the collar to the bead of the plunger, a clip secured to the barrel of the syringe, an actuating shaft slidably carried by the clip and attached to the collar, spring means connecting the coupling collar to the clip, and means for releasably retaining the actuating shaft in position, whereby the spring may be temporarily maintained under tension.

9. The combination with a hypodermic syringe having a barrel, a plunger slidably carried by the barrel, and a needle carried by the barrel, of an attachment comprising a clip secured to the barrel of the syringe, a coupling collar secured to the plunger of the syringe, an actuating shaft carried by the clip and having its forward end secured to the collar, a helical spring mounted about the shaft and having its ends engageable with the clip and the collar, and a sterilizing kit secured to the collar, the kit comprising a casing, and a plurality of sterilizing packs carried by the casing.

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