

May 4, 1954

G. BARRADAS
PLASTIC INJECTION DEVICE

2,677,373

Filed May 19, 1952

2 Sheets-Sheet 1

FIG. 1.

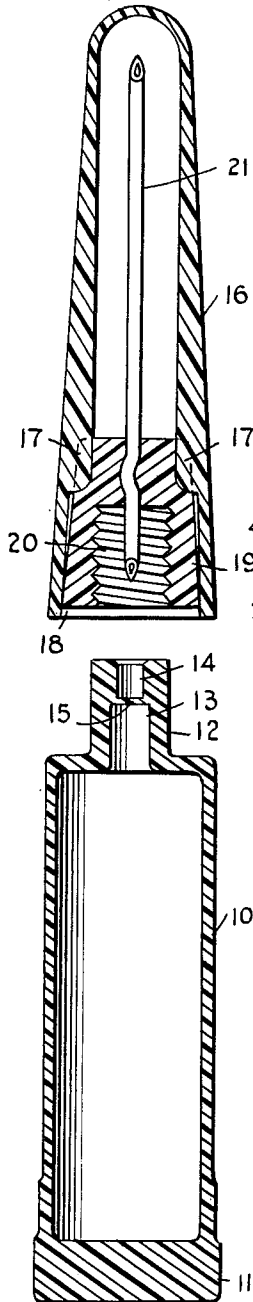


FIG. 2.

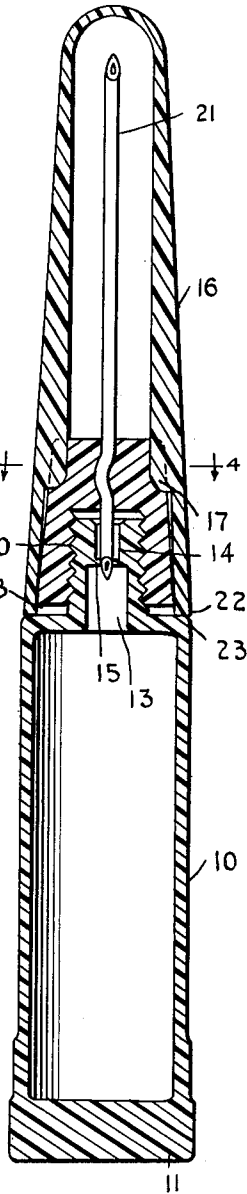


FIG. 3.

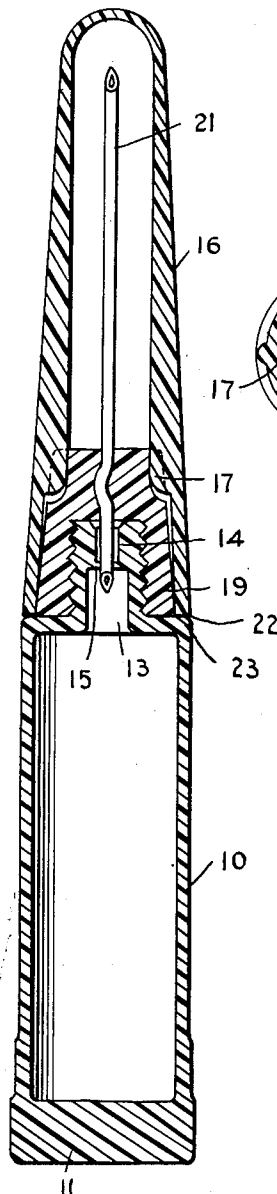
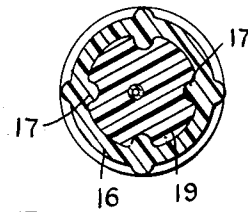


FIG. 4.



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2 Sheets-Sheet 2

FIG. 5.

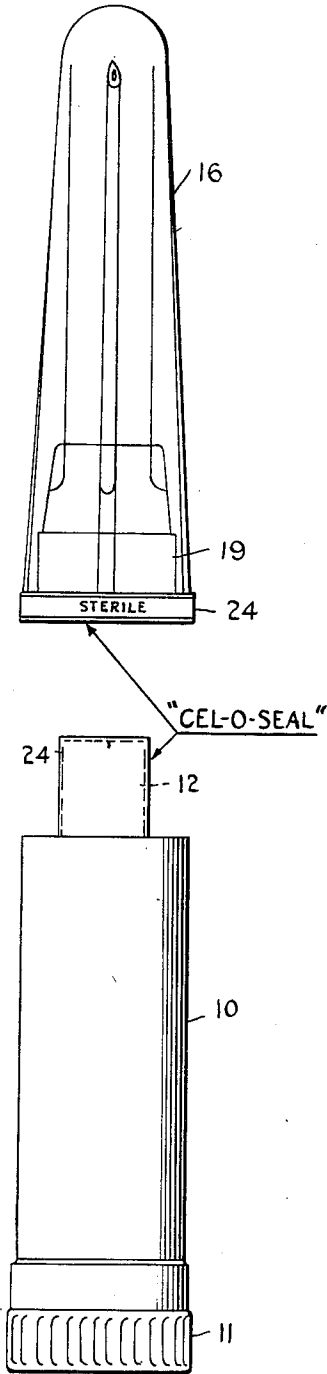


FIG. 6.

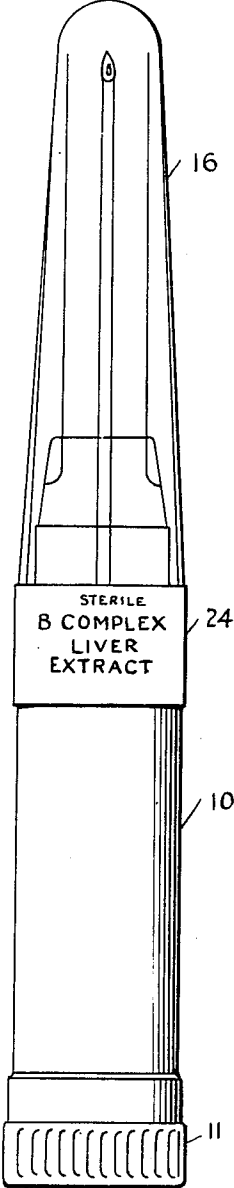
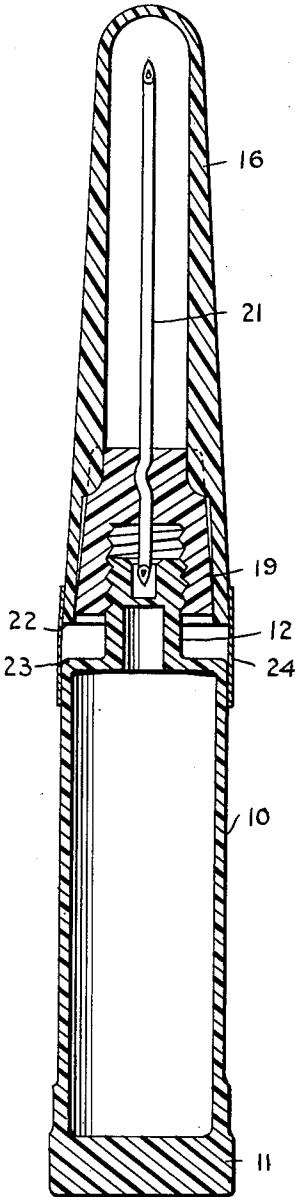


FIG. 7.



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PLASTIC INJECTION DEVICE

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8 Claims. (Cl. 128—216)

1

This invention relates to hypodermic injection devices, particularly to hypodermic devices that are adapted to be furnished filled and sealed as sterile units to be stored until used, containing such substances as medicines, antitoxins, opiates and the like, so that these substances can be quickly and efficiently administered.

It is an object of this invention to provide a unit containing a single dose of the medicine sealed within a plastic container, said unit being sterilized and maintained in a sterile condition.

It is a further object of this invention to supply a needle assembly that is sterilized and maintained in a sterile condition, such that the needle assembly may be readily attached to the body portion in such a manner that there will be no possibility of thread discrepancies.

The present invention comprises a body portion made of a soft, pliable plastic material, that would be compatible with the medical solution, such as polyethylene, having a neck on one end thereof and being filled and heat sealed at the other end thereof and this neck being provided with an axial conduit therein and a diaphragm within this conduit to retain the contents of the tube until such a time as it is desired to use the same. The neck is also covered with a thin material to retain the same in a sterile condition. Such cover may be aluminum foil, "Saran" film or Cel-O-Seal.

The needle portion containing a needle cast in a methacrylate hub is covered and protected by a polystyrene hood. This assembly is also protected by the same means as is the body portion.

The invention will be described in detail in connection with the accompanying drawings wherein:

Figure 1 is a sectional view showing the body portion and the needle portion before assembly;

Figure 2 is a sectional view showing the body portion and the needle portion partially assembled;

Figure 3 is a sectional view showing the body portion assembled and the hood released ready for removal.

Figure 4 is a sectional view on line 4—4 of Fig. 2.

Figure 5 is a plan view of the assembled device ready for shipping.

Figure 6 is a plan view of an alternative method of assembling the device.

Figure 7 is a sectional view of the assembled device as shown in Figure 6.

Referring to the drawings, the body portion

2

10, shown in Fig. 1 is sealed at end 11 thereof after the contents have been introduced. This body portion has a neck 12 in the upper end thereof, this neck having conduits 13 and 14 separated by the diaphragm 15. This neck on the body portion is made of the same material as the body portion and may have no thread molded thereon, but is capable of being assembled into the threaded part of the hub of the needle portion. The needle portion shown in Fig. 1 comprises a hood 16 having flanges 17, 17 molded thereon. These tongues 17, 17 shown in Fig. 4 fit into their grooves in the hub and hold the same in position, thereby causing the hub to rotate when the head is rotated. This hood 16 is long enough to completely enclose the needle and the hub within the hood and will have a free space 18 between the bottom of the hub and the bottom of the hood. The purpose of this free space will become apparent when the method of assembly is described. The hood itself is made of any type of material, preferably of a thermoplastic nature such as polystyrene. The hub 19 is molded from a harder material than the body portion 10, such a material being methacrylate resin. This hub portion is molded so as to contain the threaded conduit or bore 20, at the base thereof and having a double ended needle 21 molded therein with the short end of the needle projecting into the threaded portion of the base and the long end of the needle spaced from the hub and having grooves in the sides thereof to take the tongue molded on the hood. The hood and base referred to above are molded so that the tongue is on the head and the corresponding groove is in the base. It may be desirable to reverse these parts and have the tongue on the base and the corresponding groove in the head and this invention should therefore not be limited by the position of the various parts. This invention includes any method of rotating the hood and hub together by means of interlocking parts and should not be limited to the tongue 17 and the corresponding groove. The hood is assembled with the base so as to cover the needle as shown in Fig. 1. This is then sterilized and its open end sealed by means of a seal of the type which may be removed just prior to use. This is shown in Fig. 5. An alternative method is to sterilize the body portion and the needle portion and partially assemble the same as shown in Figs. 6 and 7 wherein the hub 19 is partially fastened on to the neck 12 and the open space between the shoulder 23 and the end of the hub 22 as shown in Figure 7 is sealed by

means of a removable seal 24 shown in Figs. 6 and 7. These removable seals are of a foil type such as aluminum foil, tin foil, or a film type such as "Saran" or "Cel-O-Seal" but it is clear that any thin removable material may be used to seal these openings to maintain them in a sterile condition until such a time as it is desired to completely assemble the parts for use.

The method of assembling this apparatus comprises the removal of the seals on the needle portion and the body portion, the introduction of the neck 12 of the body portion into the threaded recess 20 of the needle portion and rotating one assembly relative to the other in such a manner that the threaded recess will cut threads on the neck and the short end of the needle will pierce the diaphragm 15 as shown in Fig. 2. When the end of the hood 22 comes in contact with the shoulder 23 of the body portion the threads will then have at least one or more turns to make on the neck of the body portion. This allows the gap 18 shown in Figs. 1 and 2 between the hub 19 and the shoulder of the body portion. Then the hood and the hub 19 are rotated through one or more turns so that the hub 19 is seated on the shoulder 23 of the body portion. The hood 16 is forced upwardly on the hub and the flanges 17, 17 are loosened in their respective grooves. This will allow the ready removal of the hood from the assembly which is then ready for use.

While in the above examples the hub portion is made of harder material and contains the thread, it is within the scope of this invention to have the neck portion made of a harder material than the hub portion in which case the neck portion is molded with the thread on the exterior surface thereof.

While the above examples are given for purposes of illustration, many variations of this invention are readily seen by a person skilled in the art.

What is claimed is:

1. A hypodermic injection device comprising a body portion combined with a needle portion detachably secured to said needle portion, the said body portion having a neck containing a central conduit and a diaphragm sealing the latter, said needle portion comprising a hub having an axially threaded recess engaging and cutting threads on the exterior of said neck on the body portion, said hub having a double-ended needle molded therein with one end of the needle in said threaded recess, said hub being composed of a harder material than the neck part of the body portion, and a hood enclosing the portion of the needle projecting beyond said hub, said hood having at least one tongue force-fitted into corresponding grooves in said hub, the end of the hood projecting beyond the bottom of said hub being engageable with the body portion, when the hub is screwed thereon, before bottom of the hub is seated on the body portion, and said hood being released when the hub is seated on the body portion.

2. A hypodermic injection device comprising a polyethylene body portion combined with a needle portion detachably secured to said needle portion, the said body portion having a neck containing a central conduit and a diaphragm sealing the latter, said needle portion comprising a methacrylate hub having an axially threaded recess engaging and cutting threads on the exterior of said neck on the body portion, said hub having a double-ended needle cast therein with one end of the

needle in said threaded recess, and a polystyrene hood enclosing the portion of the needle projecting beyond said hub, said hub having at least one tongue force fitted into corresponding grooves in said hub, the end of the hood projecting beyond said hub being engageable with the body portion, when the hub is screwed thereon, before the end of the hub is seated on the body portion, and said hood being released when the hub is seated on the body portion.

3. A hypodermic injection device comprising a body portion combined with a needle portion detachably secured to said needle portion, the said body portion having a neck containing a central conduit and a diaphragm sealing the latter, said needle portion comprising a hub having an axially threaded recess engaging and cutting threads on the exterior of said neck on the body portion, said hub having a double ended needle cast therein with one end of the needle in said threaded recess, said hub being composed of a harder material than the neck part of the body portion, and a hood enclosing the portion of the needle projecting beyond said hub, the end of the hood projecting beyond said hub being engageable with the body portion, when the hub is screwed thereon, before the end of the hub is seated on the body portion, and said hood being released when the hub is seated on the body portion.

4. A hypodermic injection device comprising a collapsible tube of relatively soft material having a neck closed by a readily pierceable diaphragm in combination with a hub having a bore partially mounted on said neck, the bore of the hub being internally threaded and said hub being of a relatively harder material and adapted to cut threads on the neck of the tube when axially rotated with respect to the tube and thereby becoming readily assembled thereon, a double pointed needle fixed in the hub with one point spaced from the hub and the other projecting into the bore of said hub and a hood slidably mounted on the hub and enclosing the spaced point of the needle.

5. A hypodermic injection device comprising a collapsible tube having a neck closed by a readily pierceable diaphragm in combination with a hub having a bore partially mounted on said neck, the hub and neck being adapted to become rigidly assembled on relative axial rotation, a double-pointed needle fixed in the hub with one point spaced from the hub and the other projecting into the bore of said hub, and a hood slidably mounted on the hub and enclosing the spaced point of the needle, the inside of the hood conforming with the hub so that on axial rotation of the hood the hub also rotates, in which the hub and collapsible tube are bridged by a removable sealing material adapted to exclude contaminants and prevent relative axial rotation of the hood and tube.

6. A hypodermic injection device comprising a collapsible tube having a neck closed by a readily pierceable diaphragm in combination with a hub having a bore partially mounted on said neck, the hub and neck being adapted to become rigidly assembled on relative axial rotation, a double-pointed needle fixed in the hub with one point spaced from the hub and the other projecting into the bore of said hub, and a hood slidably mounted on the hub and enclosing the spaced point of the needle, the inside of the hood conforming with the hub so that on axial rotation of the hood the hub also rotates, in

5

which the hood extends beyond the end of the hub, said hood end contacting the tube on rotation before the hub and the neck become rigidly assembled.

7. A hypodermic needle component adapted for association with a collapsible tube having a neck closed by a readily pierceable diaphragm, essentially comprising a hub having an internally-threaded bore, a double-pointed needle fixed in the hub with one point spaced from the hub and the other projecting into the bore of said hub, and a hood slidably mounted on the hub and enclosing the spaced point of the needle, the inside of the hood conforming with the hub so that on axial rotation of the hood the hub also rotates.

8. The hypodermic needle component defined by claim 7, in which the end of the hood extends beyond the end of the hub.

6

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