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ADMINISTRATION OF MEDICAMENT

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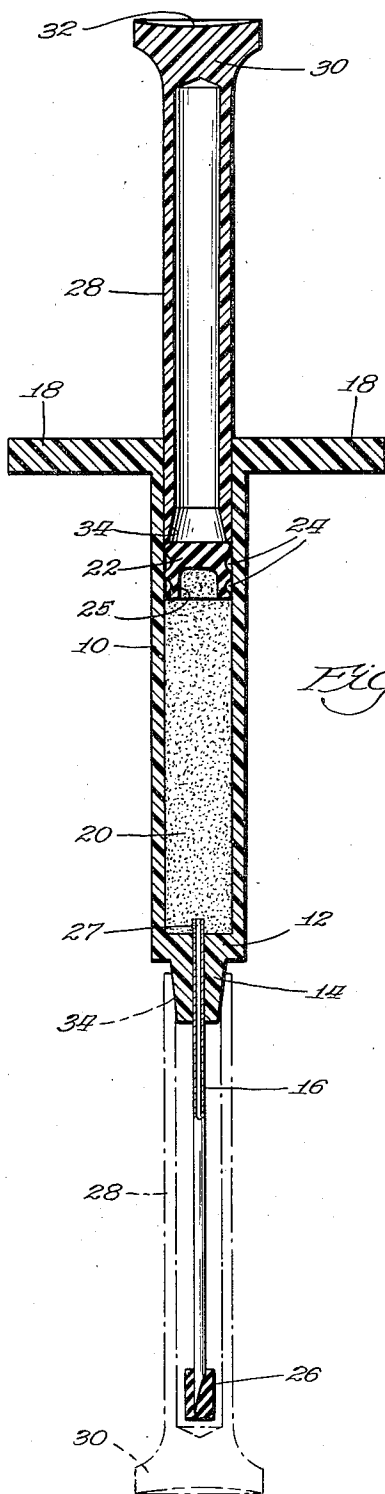


Fig. 2.

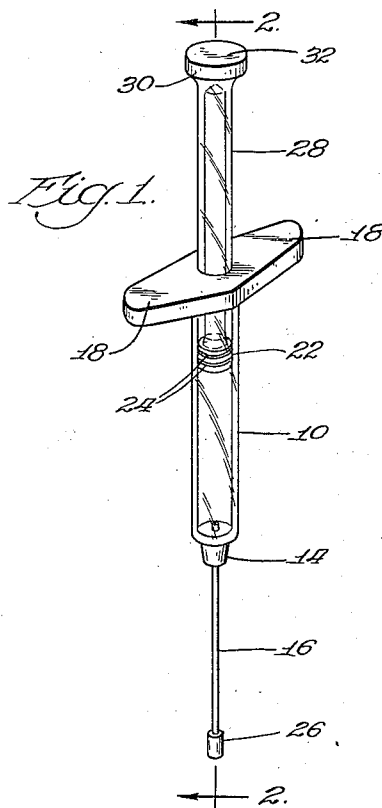


Fig. 1.

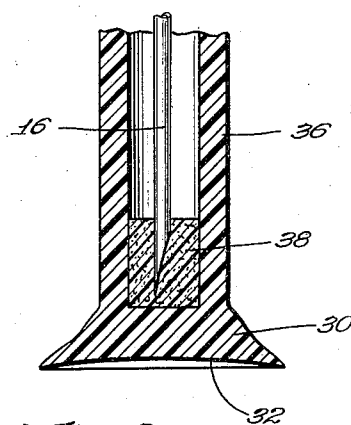


Fig. 3.

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ADMINISTRATION OF MEDICAMENT

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5 Claims. (Cl. 128—218)

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Our invention relates to the administration of medicaments, and includes among its objects and advantages, equipment for parenteral administration of medicament in a form that permits the use of a disposable container and syringe. In the accompanying drawings;

Figure 1 is a perspective view of a syringe according to the invention;

Figure 2 is a longitudinal section of the syringe of Figure 1; and

Figure 3 is a detailed view of a modification.

In the embodiment of the invention selected for illustration, the syringe comprises a cylindrical barrel 10 of transparent plastic. The barrel is closed at its lower end by the bottom 12 from which a central tapered boss 14 projects downwardly a short distance. The needle 16 may be of generally conventional construction and is firmly imbedded in the boss 14 and bottom 12. At the upper end of the barrel 10 we provide oppositely extending arms 18 to function as finger grips, which arms are formed integral with the barrel. In the embodiment of Figures 1 and 2 the syringe is made up at the factory in completely sterile condition, with a charge of medicament 20 in the barrel and a rubber piston 22 provided with relief and lubricant-retaining grooves 24 and a cupped bottom 25, which provides clearance for the inner end 27 of the cannula 16. Because the inner end 27 does thus project, assembly without plugging the cannula is facilitated. The lower end of the needle 16 is imbedded in a sealing block 26 of rubber or plastic. Where the medicament is such that it will not harden in the cannula 16, the factory assembly may be made up with the medicament 20 filling the cannula. But otherwise the cannula is left empty of medicament and the user can fill it very simply just before inserting the cannula.

We also provide a cannula cover and piston rod in the nature of a tube 28 of a size to slide without friction in the barrel 10 and with one end open and the other closed by a bottom 30 having a concave seat 32 to receive the pressure of the user's thumb in making an injection. At the factory these parts are assembled with the cannula cover in the dotted line position of Figure 2 with the cover thrust onto the tapered boss 14 with sufficient pressure to avoid dislodging it by shock during shipping or handling, but easily removable by the intentional exertion of manual force. To provide a desirable permanence for this connection, the inner surface of the open end

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of the tube 28 is slightly bevelled as indicated at 34 in Figure 2.

It will be noted that whereas the inside of the barrel 10 above the piston 22 is not protected and kept antiseptic, there is no possibility of any contamination reaching the medicament 20. Even with fingers that are not at all clean or sterile, the user can take hold of the parts and pull the cover 28 off and insert it in the full-line position of Figure 2 and pull the closure plug 26 off the end of the needle and then insert the needle into the patient without any contact of any part of the needle with unsterile material. The subsequent pressure on the foot 32 can then expel the perfectly sterile medicament into the desired location.

The cover 28 is also made of transparent plastic. Thus the purchaser, as well as the inspector at the place of manufacture, can see the needle 16 as well as the charge 20, and defective units can be more reliably sorted out and discarded.

According to the modification of Figure 3, the solid plug 26 is omitted and the bottom of the modified cover 36 is provided with a plug 38 of transparent plastic of the same general character as that of the cover itself, except that the ingredients are so selected that the plastic remains soft like fresh putty. For instance, a cover of methyl methacrylate resin and a plug of vinyl resin, work very well together. Assembly of the cover with the barrel forces the cannula 16 into the filling 38 to seal the tip and keep it sterile. The modified device is used in the same identical way, except that the manipulation is a little simpler because there is no need for the user to pull the plug 26 off. Because the plug 26 is quite small, there is always a possibility that a very careless user might touch the cannula 16 with the fingers in pulling off the plug. It is easy to remove the plug without doing this, but it is also easy for a careless person to do it, whereas with the modification of Figure 3 there is no occasion for the user to put his fingers anywhere near the cannula 16 at any time.

Others may readily adapt the invention for use under various conditions of service by employing one or more of the novel features involved, or equivalents thereof. As at present advised with respect to the apparent scope of our invention, we desire to claim the following subject matter.

We claim:

1. A disposable medicament syringe comprising a one-piece transparent body including a cylindrical tube of uniform bore; opposed arm

pieces projecting in opposite directions from an open end of said tube; a bottom closure at the opposite end of said tube; a tapered boss coaxial with said tube and projecting outwardly from said bottom closure; said tube, arms, bottom and boss being a single integral piece of plastic material; a cannula firmly imbedded in said boss and bottom coaxial with said tube; the inner end of said cannula projecting above the inner surface of said bottom; the outer end of said cannula having a penetrating point; a solid yielding plug thrust on said penetrating point and sealing the same; a charge of medicament in said tube; a tubular cannula cover coaxial with said tube and thrust on said boss; said cover having a closed bottom or foot beyond the end of said cannula and beyond said plug; said closed bottom extending radially outward to define a pressure foot; a rubber piston fitting snugly in said tube in contact with said charge of medicament at the end remote from said cannula; said piston being cup shaped and opening downwardly; the interior surfaces of said piston, cannula and plug, and of said tube below said piston, being sterile; the interior of said cover and the exterior surface of said boss exposed inside said cover being sterile; said cover having an outside diameter such that it slides easily without friction inside said tube; whereby said cover may be removed and used as a piston rod to move said piston and expel the charge of medicament.

2. A disposable medicament syringe comprising a one-piece body including a cylindrical tube of uniform bore; opposed arm pieces projecting in opposite directions from an open end of said tube; a bottom closure at the opposite end of said tube; a tapered boss coaxial with said tube and projecting outwardly from said bottom closure; said tube, arms, bottom and boss being a single integral piece of plastic material; a cannula firmly imbedded in said boss and bottom coaxial with said tube; the inner end of said cannula extending above the inner surface of said bottom; the outer end of said cannula having a penetrating point; a solid elastic plug thrust on said penetrating point and sealing the same; a charge of medicament in said tube; a tubular cannula cover coaxial with said tube and thrust on said boss; said cover having a closed bottom or foot beyond the end of said cannula and beyond said plug; said closed bottom extending radially outward to define a pressure foot; a rubber piston fitting snugly in said tube in contact with said charge of medicament at the end remote from said cannula; the interior surfaces of said piston, cannula and plug, and of said tube below said piston, being sterile; the interior of said cover and the exterior surface of said boss exposed inside said cover being sterile; said cover having an outside diameter such that it slides easily without friction inside said tube; whereby said cover may be removed and used as a piston rod to move said piston and expel the charge of medicament; said piston lying below the open end of said tube a distance greater than the diameter of said tube, whereby said piston rod may be inserted in and guided by said tube in advance of any displacement of said piston.

3. A disposable medicament syringe comprising a cylindrical tube of uniform bore; arm pieces projecting from an open end of said tube; a bottom closure at the opposite end of said tube; a boss coaxial with said tube and projecting out-

wardly from said bottom closure; a cannula firmly embedded in said boss and bottom coaxial with said tube; the inner end of said cannula projecting above the inner surface of said bottom; the outer end of said cannula having a penetrating point; an elastic plug thrust on said penetrating point and sealing the same; a charge of medicament in said tube; a tubular cannula cover coaxial with said tube and thrust on said boss and held on said boss by friction; said cover having a closed bottom or foot beyond the end of said cannula and beyond said plug; a rubber piston fitting snugly in said tube in contact with said charge of medicament at the end remote from said cannula; the interior surfaces of said piston, cannula and plug, and of said tube below said piston, being sterile; the interior of said cover and the exterior surface of said boss exposed inside said cover being sterile; said cover having an outside diameter such that it slides easily without friction inside said tube; whereby said cover may be removed and used as a piston rod to move said piston and expel the charge of medicament.

4. A disposable medicament syringe comprising a cylindrical tube of uniform bore; arm pieces projecting from an open end of said tube; a bottom closure at the opposite end of said tube; a boss coaxial with said tube and projecting outwardly from said bottom closure; a cannula firmly imbedded in said boss and bottom coaxial with said tube; the inner end of said cannula projecting above the inner surface of said bottom; the outer end of said cannula having a penetrating point; an elastic plug thrust on said penetrating point and sealing the same; a charge of medicament in said tube; a tubular cannula cover coaxial with said tube and thrust on said boss and held on said boss by friction; said cover having a closed bottom or foot beyond the end of said cannula and beyond said plug; a rubber piston fitting snugly in said tube in contact with said charge of medicament at the end remote from said cannula; the interior surfaces of said piston, cannula and plug, and of said tube below said piston, being sterile; the interior of said cover and the exterior surface of said boss exposed inside said cover being sterile; said cover having an outside diameter such that it slides easily without friction inside said tube; whereby said cover may be removed and used as a piston rod to move said piston and expel the charge of medicament; said plug being embedded in the closed end of said cover, whereby it is thrust on said cannula by putting said cover in place and pulled off by removing said cover.

5. A syringe according to claim 3, in which said plug is embedded in the end of said cannula cover and thrust onto said cannula by putting said cover in place.

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