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2,699,168

SYRINGE

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Fig. 1.

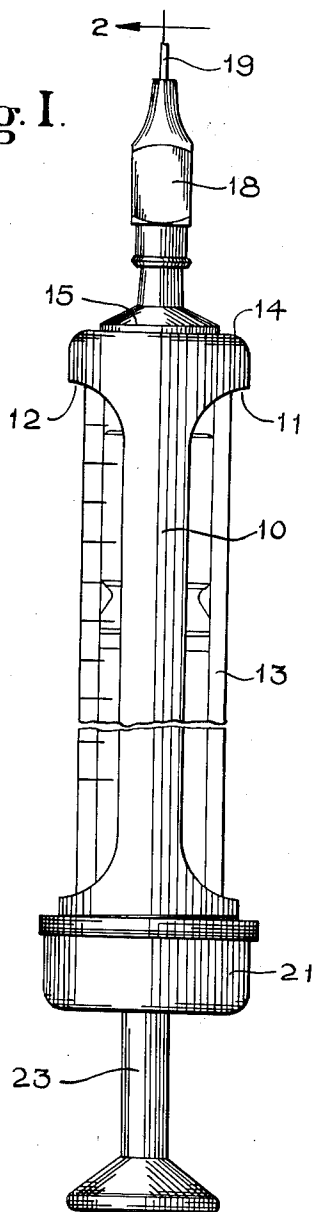


Fig. 2

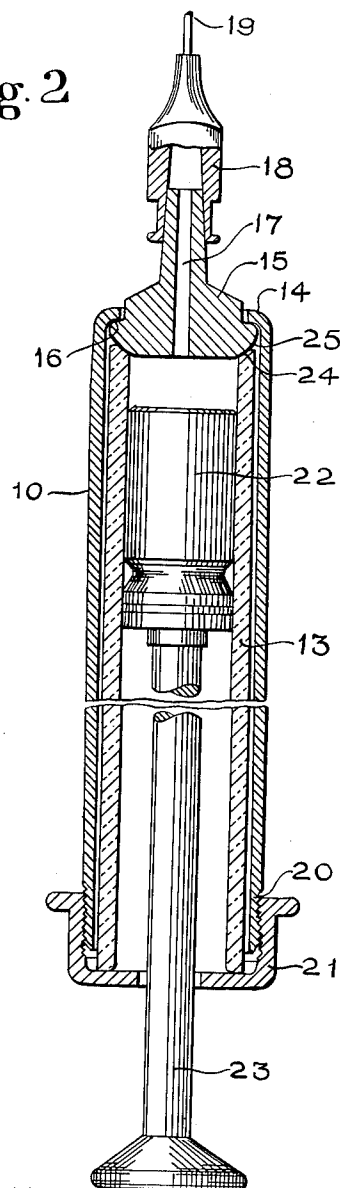
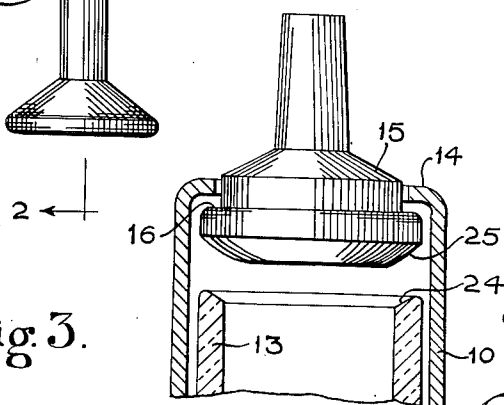


Fig. 3.



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1

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5 Claims. (Cl. 128—218)

The present invention relates to hypodermic syringes and embodies, more specifically, an improved syringe structure utilizing separate and replaceable parts. Conventional syringes are usually formed of unitary structure, the glass syringe barrel being fragile and, as a result, when broken, the entire syringe structure is lost. In accordance with the present invention, it is proposed to provide a syringe structure wherein the glass barrel is a separate and independent part of the entire structure and is easily replaceable, at the same time preserving an effective seal between the barrel and the needle holder which is in communication with the interior of the barrel.

The foregoing and other objects are attained by providing a body member formed of metal or other unbreakable material, the body member being adapted to receive the glass barrel and maintain it in sealed relationship with the needle supporting structure, the sealing surfaces between the barrel and the needle supporting structure being formed of mating configurations, one of the surfaces being conical or frustro-conical, and the other of the surfaces being of spherical curved profile.

In order that the invention may be more fully understood, the invention is described in greater detail in connection with the accompanying drawings, wherein

Figure 1 is a view in front elevation showing a hypodermic syringe constructed in accordance with the present invention;

Figure 2 is a longitudinal section, taken on the line 2—2 of Figure 1, and looking in the direction of the arrows; and

Figure 3 is an enlarged partial view showing the mating sealing surfaces of the barrel and needle holder.

With reference to the above drawings, the hypodermic syringe is shown as being formed of a metallic body member 10 preferably having oppositely disposed openings 11 and 12 formed therein in order that a glass barrel 13 may be readily viewed. The barrel 13 is formed of appropriate size, the body member preferably being slightly larger than the barrel in order that the latter may find its proper position within the body member, as will be presently described.

The upper end of the body member 10 is flanged over at 14 and is adapted to receive a needle holder 15, which is formed with a peripheral flange 16 seated against the flange 14.

The needle holder 15 is provided with an axial passage 17 communicating with the shank 18 of a hypodermic needle 19, all of which is of conventional structure.

The lower end of the body member 10 is threaded at 20 and is adapted to receive a cap 21 to engage the

2

adjacent end of the barrel 13 and seat the barrel effectively against the needle holder 15. A piston 22 of suitable structure is received within the barrel 13 and operated by a plunger 23 in conventional fashion.

An effective seal is provided between the barrel and needle holder, the structure of the seal being illustrated in detail in Figure 3. As will be seen in Figure 3, the upper end of the barrel 13 is provided with an inwardly tapering frustro-conical surface 24, preferably ground concentrically with respect to the barrel 13. Cooperating with the surface 24 is a convex surface 25 formed upon the needle holder 15. Obviously, the profile of the convex surface 25 may be other than spherical. By providing a slight amount of play between the barrel 13 and the body 10, the former is permitted to adjust itself in seating against the surface 25 so that an effective line contact is provided at all circumferential portions of the upper end of the barrel 13. With properly ground surfaces 24 and 25, this contact will be fluid-tight and, as a result, an effective syringe structure is provided.

While the invention has been described with specific reference to the accompanying drawings, it is not to be limited save as defined in the appended claims.

I claim:

1. A hypodermic syringe comprising a metallic body member, a metallic needle holder in one end of the body member, a glass barrel mounted within the body member, a piston in the barrel, means to secure the barrel in the body member, a frusto-conical sealing surface on said barrel, said sealing surface tapering inwardly toward the axis of said barrel, and a sealing surface on said needle holder having a profile which curves convexly outwardly.

2. A hypodermic syringe, comprising a supporting element, including a body member having annular collars at each end, a needle holder detachably mounted in one of said collars, a barrel mounted in the body member and extending into said collars, a piston in the barrel, means to secure the barrel in the body member, a first sealing surface on the supporting element, and a second sealing surface on the barrel engaging the first sealing surface, one of said first and second sealing surfaces being frusto-conical and tapering inwardly toward the axis of the barrel and the other of said surfaces being outwardly convexly curved in cross section.

3. A device according to claim 2, wherein the first sealing surface is on the needle holder and the second sealing surface is on the barrel.

4. A hypodermic syringe, according to claim 2, wherein the barrel is of a diameter slightly less than the internal diameter of the body member to afford a degree of play therebetween.

5. A hypodermic syringe, according to claim 1, wherein the barrel is of a diameter slightly less than the internal diameter of the body member to afford a degree of play therebetween.

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