July 16, 1957 J. SCIURBA 2,799,271

HYPODERMIC SYRINGE

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Fig. 1

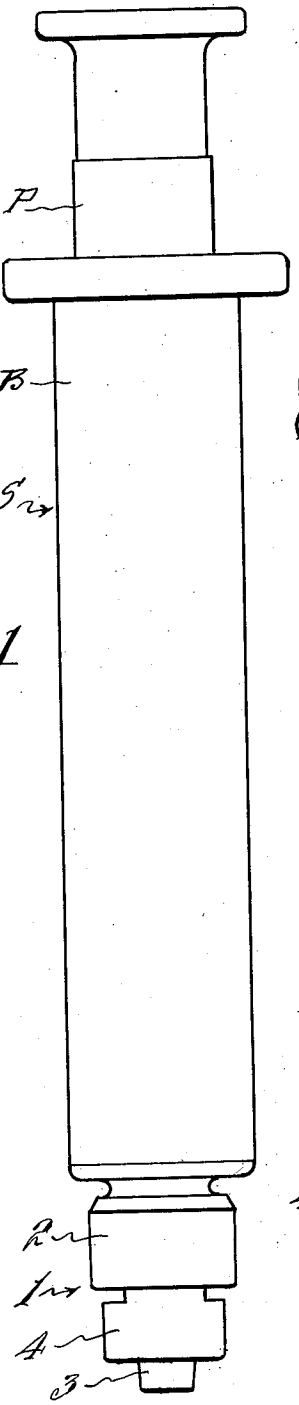
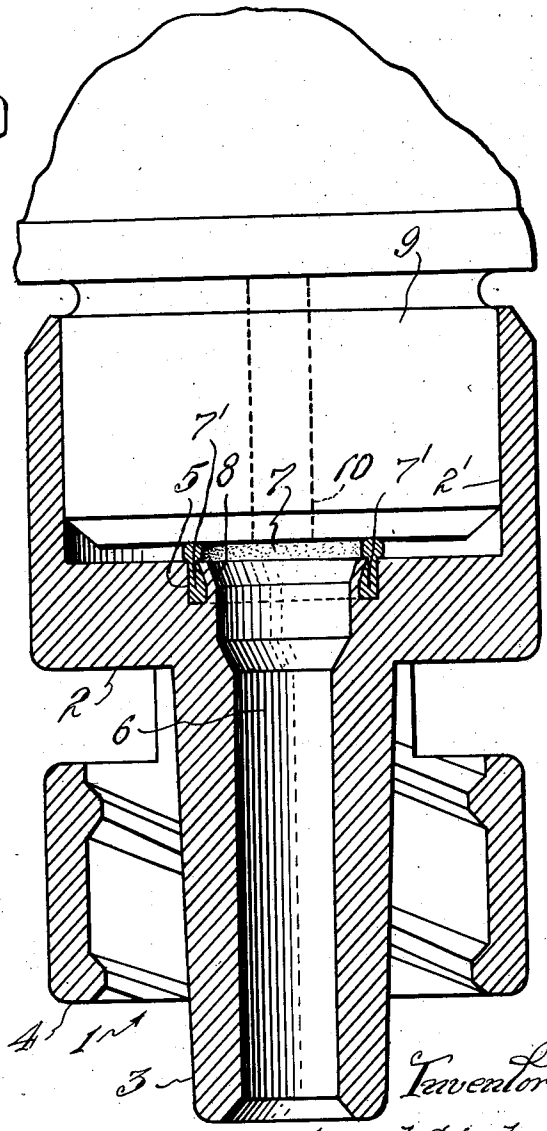


Fig. 2



Inventor:
Joseph Sciurba
By. Chester Sewell
Attorney.

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Fig. 3

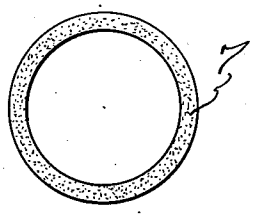


Fig. 5

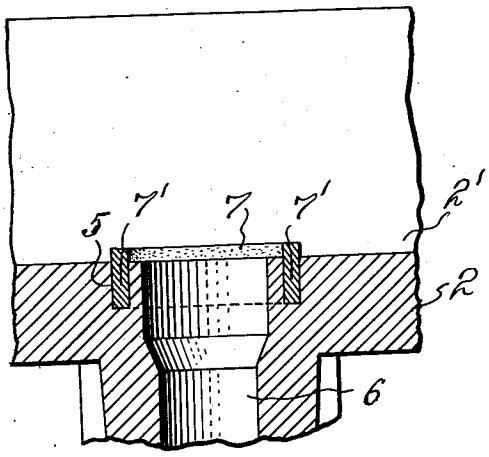
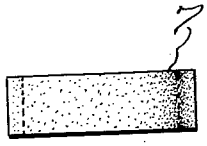


Fig. 4



Inventor:
Joseph Sciurba
By Arthur Mueller
Attorney

United States Patent Office

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HYPODERMIC SYRINGE

Joseph Sciurba, Rutherford, N. J.

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3 Claims. (Cl. 128—218)

This invention relates to a hypodermic syringe and its object is to provide an improved seal between the end of the glass barrel and its metal tip or ferrule.

A further object is to provide a simple, economical, clean and efficient seal for such purpose.

Another object is to provide a seal that may be readily incorporated in a hypodermic syringe and one that will be retained in place even under various conditions of use and of sterilization of the syringe.

Further objects will appear from the description which follows.

Hypodermic syringes in general use consist of a glass barrel, a glass plunger, and a perforated cap permanently fixed to the end of the barrel and to which a hollow needle is attached. The plunger is closely fit within the barrel and its operation permits the barrel to be filled via the needle, or its contents expelled through the needle.

Heretofore, the connection between the perforation in the end wall of the barrel and the perforation in the metal cap has been dependent upon precision finishing of the barrel end and the abutting metal for its tightness. It is extremely difficult to obtain a perfect seal by this means. As a result, liquids escape at this connection and collect between the barrel end and its encasing metal cap. In this location it is impossible to properly clean and sterilize the syringe.

My invention provides a perfect seal and one that is not dislodged or deteriorated under repeated use and sterilization of the syringe and one which prevents contamination of the syringe contents.

The invention is illustrated in the accompanying drawings in which:

Figure 1 is a front elevational view of a syringe barrel with perforated metal cap secured thereto.

Figure 2 is an enlarged cross sectional view of the perforated metal cap showing its sealed connection with the syringe barrel.

Figure 3 is a plan view of the continuous yieldable ring used to form the seal between the syringe barrel and the perforated metal cap.

Figure 4 is an elevational view of the continuous yieldable ring of Figure 3.

Figure 5 is a fragmentary cross sectional view of the perforated, metal cap showing the continuous yieldable ring in position before crimping.

Referring to the drawings in which the same number or letter refers to the same or a similar part, Figure 1 shows hypodermic syringe S, consisting of barrel B with the finger piece of plunger P protruding from its flanged end. At the other end or tip of barrel B is metal tip **1**. Metal tip **1** outwardly exhibits perforated metal cap **2**, lock **4** and needle receptacle **3**.

Figure 2 shows in detail the assembly of metal tip **1**, to glass tip **9** of barrel B. Glass tip **9** is frictionally seated within recess **2'** of perforated metal cap **2**. Perforation **10** extending through the end wall of glass tip **9** gives access to the interior of barrel B. Perforation **6** extends the length of metal tip **1** through perforated metal cap **2** and needle receptacle **3**. Surrounding needle receptacle **3** and an integral part of metal tip **1** is needle lock **4** into which a needle assembly (not shown) may be removably secured.

Circumferential groove **5** in perforated metal cap **2** surrounds the opening of perforation **6** and into this groove continuous yieldable ring **7** is seated, the lower portion **7'** being gripped by crimping with the turned out wall **8** at the perforation opening. The perforated wall of glass tip **9** bears upon the upper edge of continuous yieldable ring **7**.

Continuous yieldable ring **7** is made of a yieldable heat resistant material such as neoprene, nylon, teflon or the like. Many materials now well-known and widely used are suited for the purpose of effecting a sealing engagement. Figures 3, 4 and 5 show the continuous yieldable ring to be collar-like in shape before being crimped in place. Figure 5 shows continuous yieldable ring **7** seated in groove **5** prior to crimping. After crimping continuous yieldable ring **7** metal tip **1** is forced onto glass tip **9** to the position shown in Figure 2.

Various modifications may be made in the construction, shape and method of holding the continuous yieldable ring in place without departing from the spirit and scope of this invention.

The construction herein described is, therefore, illustrative only, and not to be construed as a limitation upon the scope of this invention.

What I claim is:

1. A hypodermic syringe comprising a glass barrel open at one end and terminating at the other end in a perforated wall; a mating glass plunger slidable in the barrel; a perforated cap encasing the walled end of the barrel with its perforation concentrically aligned with the perforation in the wall and having a groove in its inner surface surrounding the perforation; and a continuous yieldable ring seated in such groove and extending beyond the top thereof in sealing engagement with the end of the barrel.

2. A hypodermic syringe comprising a glass barrel open at one end and terminating at the other end in a perforated wall; a mating glass plunger slidable in the barrel; a perforated cap encasing the walled end of the barrel with its perforation concentrically aligned with the perforation in the wall and having a groove in its inner surface surrounding the perforation; a continuous yieldable ring seated in such groove and extending beyond the top thereof in sealing engagement with the end of the barrel; and means for securing the ring in the groove.

3. A hypodermic syringe comprising a glass barrel open at one end and terminating at the other end in a perforated wall; a mating glass plunger slidable in the barrel; a perforated cap encasing the walled end of the barrel with its perforation concentrically aligned with the perforation in the wall and having a groove in its inner surface adjacent to and surrounding the perforation; a continuous yieldable ring seated in such groove and extending beyond the top thereof in sealing engagement with the end of the barrel; and a partition wall between the groove and the perforation in the cap bent outward from the perforation against the ring.

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