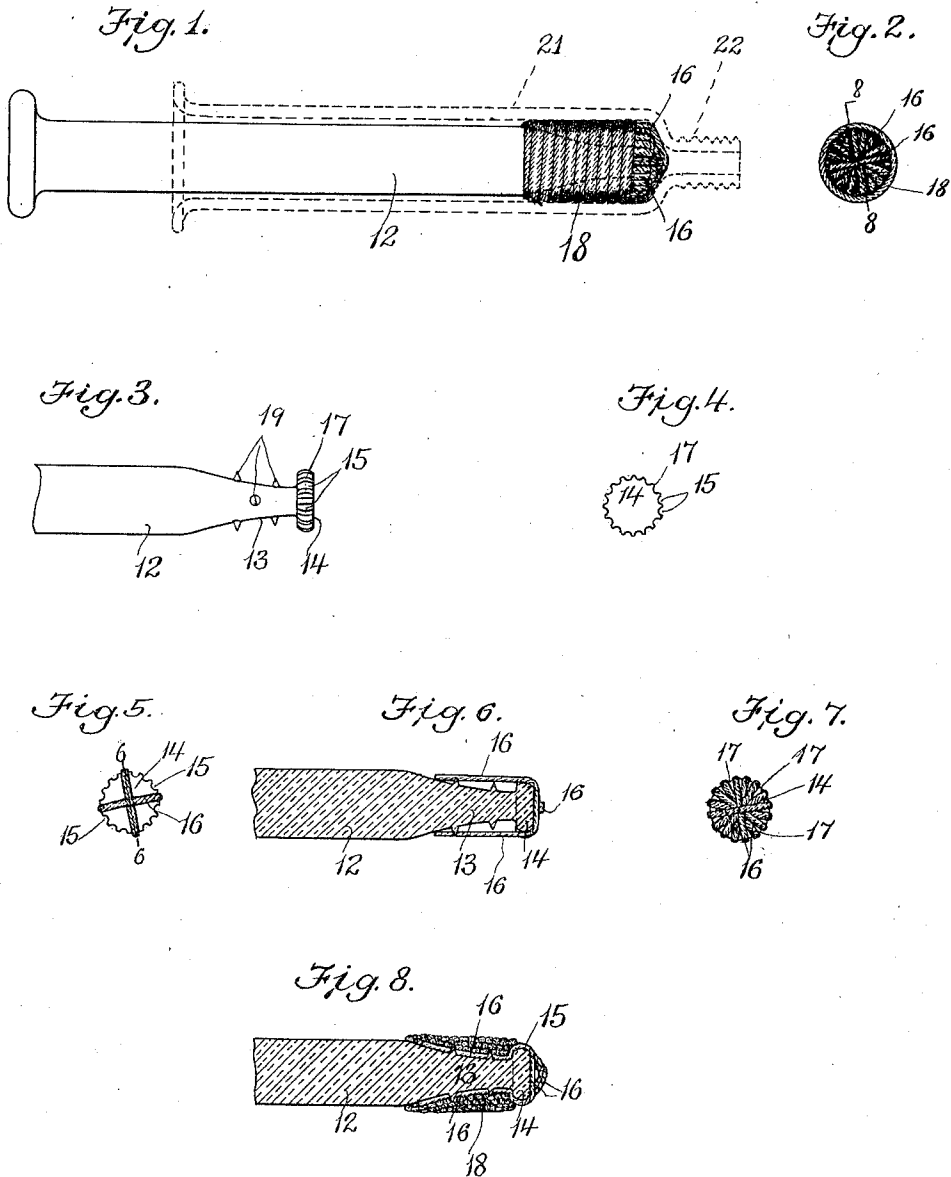


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 PISTON FOR HYPODERMIC SYRINGES, &c.
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Witnesses:
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UNITED STATES PATENT OFFICE.

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PISTON FOR HYPODERMIC SYRINGES, &c.

1,036,672.

Specification of Letters Patent.

Patented Aug. 27, 1912.

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To all whom it may concern:

Be it known that I, PATRICK J. McELROY, a citizen of the United States, and a resident of Cambridge, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Pistons for Hypodermic Syringes, &c., of which the following is a specification.

This invention relates to a hypodermic syringe piston of aseptic character and composed of a rod of glass or other vitreous material, and a compressible packing of refractory material such as asbestos, adapted to be sterilized by contact with a flame.

A piston of this character is shown by Letters Patent of the United States No. 788,059, dated April 25, 1905, said piston comprising a rod or stem provided with confining abutments and a compressible refractory packing filling the space between the abutments. Asbestos buffer threads are secured to the outer abutment and extend across the outer side of the same, said threads being intended to prevent injurious impact of the rod with the outlet end of the glass barrel of the syringe. They have not, however, been heretofore arranged to form a continuous buffer adapted to protect all the vitreous surfaces at the outer end of the rod from contact with a sterilizing flame, the buffer being of skeleton form having numerous openings which expose portions of the vitreous surfaces, these being liable to be fused or broken by the insertion of the piston in a flame. Moreover, said openings form pockets which retain portions of the liquid with which the barrel is charged, so that the entire charge of liquid cannot be ejected, and entire accuracy in the administration of toxins and serums, which is very desirable, and in many cases highly important, cannot be obtained, a few minims of the liquid, the exact quantity of which is uncertain, remaining in the barrel after the piston has ejected all that is possible.

The present invention has for its object to provide a piston of the character stated having a buffer which is not only adapted to prevent injury to the vitreous rod by a sterilizing flame, but also to insure the ejection of all the liquid from the syringe barrel.

To these ends the invention consists in the

improvements which I will now proceed to describe and claim.

Of the accompanying drawings:—Figure 55 1 represents a side elevation of a syringe piston embodying my invention. Fig. 2 represents an end view of the same. Fig. 3 represents a side view of the outer end portion of the piston rod, the packing and buffer being removed. Fig. 4 represents an end view of the rod as shown by Fig. 3. Fig. 5 represents a view similar to Fig. 4 showing the commencement of the operation of forming the buffer. Fig. 6 represents a 65 section on line 6—6 of Fig. 5. Fig. 7 represents a view similar to Fig. 5 showing the operation of forming the buffer further advanced. Fig. 8 represents a section on line 8—8 of Fig. 2. 70

The same reference characters indicate the same parts in all the figures.

In the drawings: 12 represents a piston rod of glass having a reduced end portion 13, and a flange 14 forming a packing abutment at the outer end of the reduced portion 13. 75

The flange 14, which is integral with the rod 12, is provided with a plurality of closely spaced transverse notches 15. The 80 flange 14 constitutes an abutment for the compressible packing and a seat or support for the compressible refractory buffer next described.

The buffer is preferably composed of asbestos threads 16 applied in the manner indicated by Figs. 5 and 6, each thread being placed against the outer side of the abutment 14 and bent over the periphery thereof. In forming a continuous buffer free 90 from pockets or openings, I apply the threads 16 so that portions cross each other at the center of the abutment 14 and radiate from said center. The notches 15 engage bent over portions of the threads 16 first 95 applied and confine said threads against lateral movement on the periphery of the abutment 14. These threads are arranged as shown by Fig. 7, the portions which extend across the abutment being slightly separated from each other. The depth of the notches 15 is less than the thickness of the asbestos thread employed, so that the threads first applied project from the pe- 100

riphery of the abutment and are separated by recesses 17 (Fig. 7) adapted to engage the subsequently applied threads. When the last-mentioned threads are applied they alternate with the first-mentioned threads and fill the spaces shown by Fig. 7 between the same, a continuous buffer being thus formed, covering the entire outer surface and periphery of the abutment 14.

10 The end portions of the threads 16 extend lengthwise of the portion 13 of the rod, as indicated by Figs. 6 and 8, and are confined thereon by a helically wound asbestos thread or threads forming the packing 18. 15 Said packing secures the buffer to the rod and is confined against endwise movement by the abutment 14, the portion of the periphery of the rod between the body portion 12 and the reduced portion 13, and by spurs 20 19 formed on the reduced portion 13. Said spurs also prevent the packing from turning on the rod.

The packing and buffer are adapted to be quickly sterilized by holding them briefly in the flame of a gas burner. The continuous buffer protects the outer side and periphery of the abutment 14 from injury by the flame, and the packing and the longitudinally extending end portions of the threads 30 16 similarly protect the reduced portion of the rod and the inner side of the abutment. The intersecting, or crossing portions of the buffer threads impart a crowning form to the outer surface of the buffer, which has a central protuberance and is sufficiently yielding to conform closely to the inner surface of the outlet end of the usual glass barrel 21, so that the buffer, when pressed against said outlet end, expels all the liquid from the 40 barrel and projects into the outlet 22, as in-

dicated by Fig. 1. The operator is therefore enabled to administer the exact quantity of liquid desired.

It is obvious that my invention may be embodied in a syringe piston rod which is made of other than vitreous material. 45

I claim:—

A syringe piston comprising a rod having a reduced portion and a circular packing abutment at the outer end of the rod, the periphery of said abutment being provided with closely spaced transverse notches, a refractory buffer sterilizable by flame, and composed of intersecting asbestos threads extending radially across the outer side of the abutment and across the notched periphery thereof, some of said threads being engaged with the said notches while others are interposed between the engaged threads, so that the buffer covers the entire outer side surface and the periphery of the abutment and is adapted to protect said surfaces from a sterilizing flame, portions of the buffer threads being laid longitudinally on the reduced portion of the rod, and a refractory compressible packing surrounding said longitudinal thread portions and securing the buffer to the rod, the buffer formed by the intersecting radial threads being compressible and adapted to conform 70 to the interior of the outlet end of a syringe barrel, and eject all the liquid therefrom, and having a central protuberance adapted to project into the barrel outlet.

In testimony whereof I have affixed my signature, in presence of two witnesses. 75

PATRICK J. McELROY.

Witnesses:

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