(No Model.)

M. OVERLACH.

SYRINGE.

No. 404,105. Patented May 28, 1889.

Fig. 1.

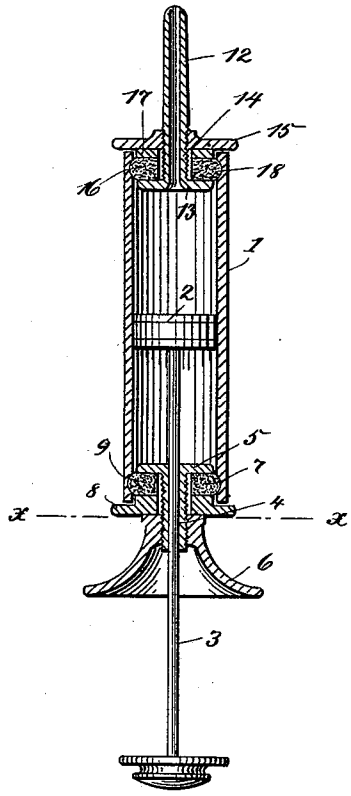
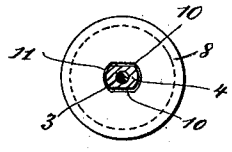


Fig. 2.



WITNESSES.
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SYRINGE.

SPECIFICATION forming part of Letters Patent No. 404,105, dated May 28, 1889.

Application filed March 12, 1889. Serial No. 302,953. (No model.)

To all whom it may concern:

Be it known that I, MARTIN OVERLACH, resident at Frankfort-on-the-Main, Germany, have invented new and useful Improvements in Syringes, of which the following is a specification.

This invention relates to syringes, and has special reference to glass syringes.

The invention has for its object to provide a syringe so constructed that the joints at the ends of the cylinder will be tight, and the difficulties and objections heretofore existing in the manufacture and construction of glass syringes will be obviated.

The invention further has for its object to provide a syringe so constructed in several parts that it may be readily taken apart and effectively cleaned.

Owing to the great difficulty in the wholesale manufacture of syringes of making the glass cylinders of exactly equal diameters and lengths and forming them with straight edges at right angles to the sides of the same, the means heretofore used for forming the joints between the cylinder-fittings and the body of the syringe have the following serious defects: The putty or cement for securing the fittings or ends to the glass cylinders will last only a short time by reason of its contact with the liquids used, and will, moreover, prevent the syringe from being completely dismantled for cleaning purposes. The cutting of a screw-thread upon the ends of the glass cylinder renders the latter very liable to break, and the substitution of a cylinder for a broken one becomes very difficult or impossible if there is the slightest inequality in the glass of the cylinder. The joint at the nozzle end, which is provided with an impregnated leather washer or disk, generally commences to leak very soon. The body of the syringe cannot be hermetically closed by clamping the same between two end caps or plates connected by metal rods and caused to approach each other by means of nuts unless the edges or end surfaces of the glass cylinder are quite straight and at right angles to the sides of the same. This requires accurate work, which is not usually carried on in the wholesale manufacture of syringes. The syringe constructed according to this invention is designed to obviate the aforesaid defects, which are extremely serious, considering the importance of a reliable and absolutely clean instrument. By means of a syringe constructed in accordance with this invention putty or other binding material is dispensed with and the end surfaces of the cylinder do not require to be formed straight and at right angles to the sides of the cylinder. A syringe constructed in accordance with this invention permits the use of glass tubes having absolutely flat walls and no threads, and obviates the necessity for accurate equality in the inside width of the cylinder and in the thickness of the wall of the latter. Furthermore, all the parts can be kept thoroughly clean, because they are all exposed to view, and the syringe is especially advantageous, owing to its simplicity.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar figures of reference indicate corresponding parts in both views.

Figure 1 is a longitudinal section of the invention. Fig. 2 is an end view in transverse section on the line *x x*, Fig. 1.

1 indicates the cylinder of a syringe constructed in accordance with this invention and having open ends. 2 is the piston, and 3 the piston-rod. At the inner end of the cylinder 1 is located a socket-bearing, 4, through which the piston-rod 3 projects, and having at its inner end a circular flange, 5. The socket-bearing 4 is screw-threaded, and engaging therewith is a cap, 6, screwing onto the same. Between the cap 6 and flange 5 are located an elastic packing-disk, 7, and a circular head-plate, 8, against which the cap 6 abuts, the head-plate 8 bearing against the end of the cylinder. The packing-disk 7 and head-plate 8 are slid over the socket-bearing 4, and are compressed by screwing up the cap 6. Adjacent to the periphery of the packing-disk 7 is preferably located a groove, 9, formed in the inner wall of the cylinder, into which groove projects the edge of disk 7. As the cap 6 is screwed up to compress the disk 7 between disk 5 and plate 8 the edge of disk 7 is tightly pressed against the inner wall of cylinder 1, thereby forming a more reliable and tight joint. By having the groove 9,

into which the edge of disk 7 is forced by the compression, the joint is rendered completely tight. To prevent the cylinder 1 from turning in the hand, especially when a glass cylinder is employed, while screwing the cap 6 to place, the screw-threaded socket-bearing 4 is formed with flat sides 10, as shown in Fig. 2, and the opening or passage-way 11 of head-plate 8 is made of a corresponding form to slide upon the socket-bearing 4. By this means the head-plate 8 will be firmly held when the cap 6 is being screwed to place and prevented from turning, thereby keeping the glass cylinder from turning in the hand.

The syringe constructed in accordance with this invention is provided with a detachable nozzle, 12, having at its rear end a circular flange, 13, of less diameter than the interior of cylinder 1, and adjacent thereto a screw-threaded portion, 14, on which screws a head-plate, 15, similar to the head-plate 8. Between the flange 13 and head-plate 15 are located on the nozzle 12 an elastic packing-disk, 16, similar to packing-disk 7, and a disk, 17, the edge of disk 16 projecting into a groove, 18, on the interior wall of cylinder 1. By means of this construction and arrangement of parts the detachable nozzle may be firmly secured in place and a tight joint formed.

It will thus be seen that by means of this invention a syringe is provided which can be readily taken apart to be thoroughly cleaned, and which will have tight joints.

While I have described a specific construction of parts, I do not desire to limit myself thereto, as the parts may be varied without departing from the essential features of the invention.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with the piston and open-ended cylinder of a syringe, of a detachable nozzle with a flange at its inner end, a detachable head-plate mounted on the nozzle and bearing against one end of the cylinder, with a detachable disk, and elastic packing-disk located on the nozzle between the head-plate and the flange of the nozzle, the edge of the packing-disk pressing against the wall of the cylinder, a detachable head-plate, a screw-threaded socket-bearing having an inner flanged end, through which the piston-rod passes, the socket-bearing projecting through the head-plate, an elastic packing-disk mounted on the socket-bearing between its flanged end and the head-plate, and a detachable cap screwing onto the socket-bearing, substantially as described.

2. In a syringe, a cylinder with open ends, a detachable nozzle with a flanged inner end, a head-plate mounted on the nozzle and bearing against the end of the cylinder, and a disk, and elastic packing-disk mounted on the nozzle between its flanged end and the head-plate, the periphery of the packing-disk pressing against the interior wall of the cylinder, substantially as shown and described.

3. In a syringe, a cylinder with open ends, a piston and piston-rod, a detachable head-plate bearing against the ends of the cylinder, a screw-threaded socket-bearing with an inner flanged end, through which the piston-rod passes, the socket-bearing projecting through the head-plate, an elastic packing-disk located on the socket-bearing between its flanged end and the head-plate and having its edge pressing against the inner wall of the cylinder, and a cap screwing onto the socket-bearing, substantially as shown and described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

MARTIN OVERLACH.

Witnesses:

JOSEPH PATRICK,

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