(No Model.)

P. FINOT.

SYRINGE.

No. 553,234. Patented Jan. 21, 1896.

Fig. 1.

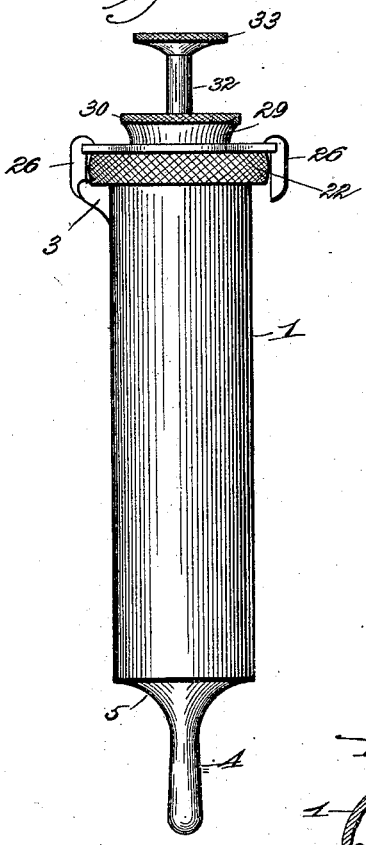


Fig. 2.

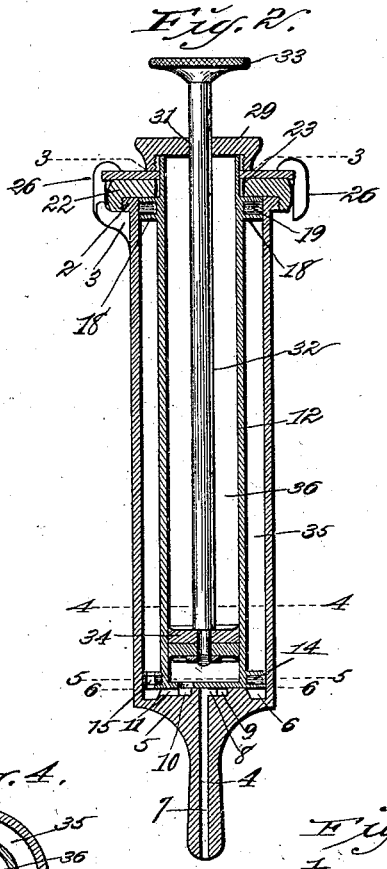


Fig. 3.

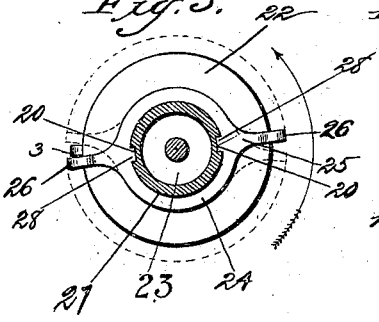


Fig. 4.

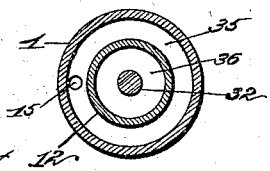


Fig. 5.

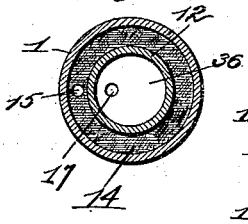


Fig. 6.

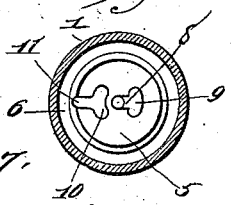
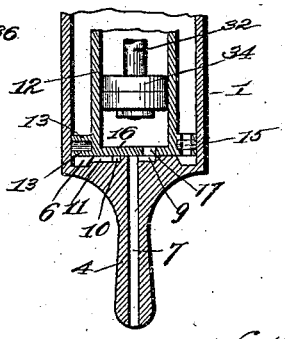


Fig. 7.



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UNITED STATES PATENT OFFICE.

PHILIP FINOT, OF ST. LOUIS, MISSOURI, ASSIGNOR OF ONE-HALF TO JOHN C. LEBRECHT, OF SAME PLACE.

SYRINGE.

SPECIFICATION forming part of Letters Patent No. 553,234, dated January 21, 1896.

Application filed May 6, 1895. Serial No. 548,189. (No model.)

To all whom it may concern:

Be it known that I, PHILIP FINOT, of the city of St. Louis, State of Missouri, have invented certain new and useful Improvements in Syringes, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part hereof.

My invention relates to an improved syringe; and it consists in the novel construction, combination, and arrangement of parts hereinafter described and claimed.

In the drawings, Figure 1 is a side elevation of my improved syringe. Fig. 2 is a vertical sectional view thereof. Fig. 3 is a cross-sectional view, taken approximately on the indicated line 3 3 of Fig. 2. Fig. 4 is a cross-sectional view on the line 4 4 of Fig. 2. Fig. 5 is a cross-sectional view on the line 5 5 of Fig. 2. Fig. 6 is a cross-sectional view on the line 6 6 of Fig. 2. Fig. 7 is a vertical sectional view of the lower end of my improved syringe, the parts being in a reverse position from that shown in Fig. 2.

Referring by numerals to the accompanying drawings, 1 indicates the outer cylinder, the same being provided on its upper edge with the flange 2 that is exteriorly screw-threaded. A stop 3 is formed integral with and projects laterally from the upper edge of said cylinder. Depending from the lower end of said cylinder 1 is a stem 4. In the upper face of the bottom 5 of the cylinder, adjacent the wall thereof, is formed an annular depression 6. Extending vertically through the bottom 5 and through the stem 4 is a bore or passage 7. Formed in the top surface of the bottom 5 and communicating with the bore 7 is a groove or depression 8 that communicates with a channel 9 formed in the top of the bottom 5, and said channel 9 is constructed so as to conform with the curvature of the cylinder 1.

Formed in the face of the bottom 5, on the opposite side of the bore 7 from that in which the channel 9 is formed, is a channel 10, approximately of the same length as is said channel 9, and said channel 10 is constructed in the same curve and as far from the bore 7 as is the channel 9. A channel 11 extends from the channel 10 to the annular groove or depression 6 adjacent the wall of the cylinder 1.

12 indicates the inner cylinder, which is of a smaller diameter than is the outer cylinder, and formed on the periphery and adjacent the lower end of said inner cylinder 12 is a pair of parallel flanges 13, said flanges being of such a diameter as that they will move freely within the outer cylinder 1. Between said flanges is located suitable packing 14.

Extending through these flanges 13 and through the packing 14 is a vertical bore or passage 15, approximately of the same diameter as is the bore or passage 7. Formed in the bottom 16 of this inner cylinder is an aperture 17 that is the same distance from the axial center of the cylinder 12 as are the channels 9 and 10 from the center of the cylinder 1. Thus when said cylinder 12 is rotated the aperture or passage 17 in the bottom thereof will alternately coincide with the channels 9 and 10. Adjacent the upper end of the cylinder 12 and on the periphery thereof is formed a pair of annular flanges 18 of the same size as are the flanges 13. The top of the upper one of these flanges 18 is in horizontal alignment with the top of the outer cylinder 1. Suitable packing 19 is located between the flanges 18.

The portion of the cylinder 12 that extends above the flanges 18 is exteriorly screw-threaded and constructed with a pair of vertically-arranged and oppositely-located grooves 20. A cap 21 is constructed with a downwardly-pending annular flange 22 that is interiorly screw-threaded in order that it may be located upon the exteriorly-screw-threaded flange 2 on the upper end of the cylinder 1. Said cap 21 is constructed with a central aperture 23, through which the screw-threaded upper end of the cylinder 12 projects when said cap is in proper position. The said cap 21 rests directly upon the upper end of the annular flange 2 and upon the top of the upper flange 18.

24 indicates a ring provided with oppositely-arranged horizontally-extending arms 25, from which project downwardly stops 26 that engage against the stop 3 formed adjacent the upper edge of the cylinder 1. Said ring 24 is constructed with a centrally-ar-

ranged aperture 27, through which the screw-threaded upper end of the cylinder 12 passes. Slight projections 28 are formed on the inner edges of this aperture 27 and in alignment with the arms 25, and said projections 28 engage in the vertically-arranged slots or grooves 20 in the upper end of the inner cylinder 12. Thus when the ring 24 is rotated the inner cylinder 12 will also be rotated.

29 indicates a cap having a milled edge 30, said cap being located upon that portion of the screw-threaded upper end of the inner cylinder 12 that projects through the ring 24.

An axial bore or passage 31 is formed through the cap 29.

32 indicates a rod that is provided on its upper end with a disk 33 having a milled edge, and said rod slides freely through the aperture or bore 31. On the lower end of said rod 32 is located a piston 34, and said piston is of such a size as that it will operate freely through the inner cylinder 12. The annular chamber formed between the outer cylinder 1 and the inner cylinder 12 is indicated by the numeral 35, and the chamber in the inner cylinder 12 is indicated by the numeral 36.

The operation is as follows: When the various parts of the syringe are assembled as shown in Figs. 1 and 2, and it is desired to use said syringe, the operator manually engages the ears or stops 26 and turns the same and ring 24 into the position as shown by dotted lines in Fig. 3. This rotates the inner cylinder approximately a half-turn from the position it occupies as shown in Figs. 2 and 3, and when so turned the apertures 17 in the bottom of the inner tube 12 coincide with the channel 9, and thus communication from the chamber 36 to the bore 7 is established. The operator now locates the stem 4 in the proper liquid and by means of the disk 33 withdraws the rod 32 and piston 34. By suction the liquid will be drawn into the chamber 36 through the bore or passage 7, channels 8 and 9 and apertures 17. After the liquid has been drawn into the chamber 36 within the inner cylinder it may be expelled or discharged in the ordinary manner by merely forcing down the rod 32 with the piston 34, located on the end thereof.

Should it be desired to locate the syringe in an instrument-case, or carry the same in the pocket and at the same time retain a charge of liquid in said syringe, the operator after filling the chamber 36 in the inner cylinder 12 with the proper liquid engages the ears or stops 26 and turns the same, together with the disk 34, into the position as shown by solid lines in Fig. 3. This rotates the cylinder 1 approximately a half of a turn, and when so turned the aperture 17 in the lower end of the inner cylinder 12 will coincide with the channel 10, this position being clearly illustrated in Fig. 2. The plunger-rod 32, which has previously been withdrawn to draw the liquid into the chamber 36, is now forced downwardly and with said movement the liquid within the chamber 36 will pass through the aperture 17, channels 10 and 11, annular depression 6, aperture or passage 15, and into the chamber 35 between the inner and outer cylinders. Here said liquid remains until it is desired to expel the same. When it is desired to discharge said liquid, the operator withdraws the rod 32 and piston 34, and in so doing draws the liquid into the chamber 36. The inner cylinder 12 is now turned in the manner as hereinbefore stated to the position as shown by dotted lines in Fig. 3, and the liquid may now be expelled in the manner as previously described.

A syringe of my improved construction may be filled with a charge of proper liquid and carried in an instrument-case, or the pocket, and said syringe is very compact, easily manipulated, positive in action, and possesses superior advantages in point of simplicity, durability and general efficiency.

I claim—

1. In an improved syringe, an outer cylinder, a stem formed integral with the lower end of said cylinder, said stem having a passage therethrough that communicates with a channel formed in the top of the bottom of the outer chamber, said bottom having a second channel formed in its top, an inner cylinder, the bottom of which is provided with an aperture that is arranged to alternately coincide with the channels in the top of the bottom of the outer cylinder, means for rotating said inner cylinder approximately one-half a revolution, caps for said inner and outer cylinders, and a plunger-rod and piston operating within the inner cylinder.

2. In an improved syringe, an outer cylinder having a stem formed integral with the lower end thereof, said stem having a passage therethrough that communicates with a channel formed in the top of the bottom of the outer cylinder, said bottom having a second channel formed in its top, an inner cylinder the bottom of which is provided with an aperture that is arranged to alternately coincide with the channels in the top of the bottom of the outer cylinder, the upper end of the inner cylinder being provided with a pair of vertical grooves, a disk constructed with an aperture through which the upper end of the inner cylinder passes, lugs formed on the edges of the aperture to engage in the vertical grooves, ears or stops formed integral with the outer edges of the disk, caps for the outer and inner cylinders, and a plunger-rod and piston operating within the inner cylinder.

In testimony whereof I affix my signature in presence of two witnesses.

PHILIP FINOT.

Witnesses:
MAUD GRIFFIN,
JOHN C. HIGDON.