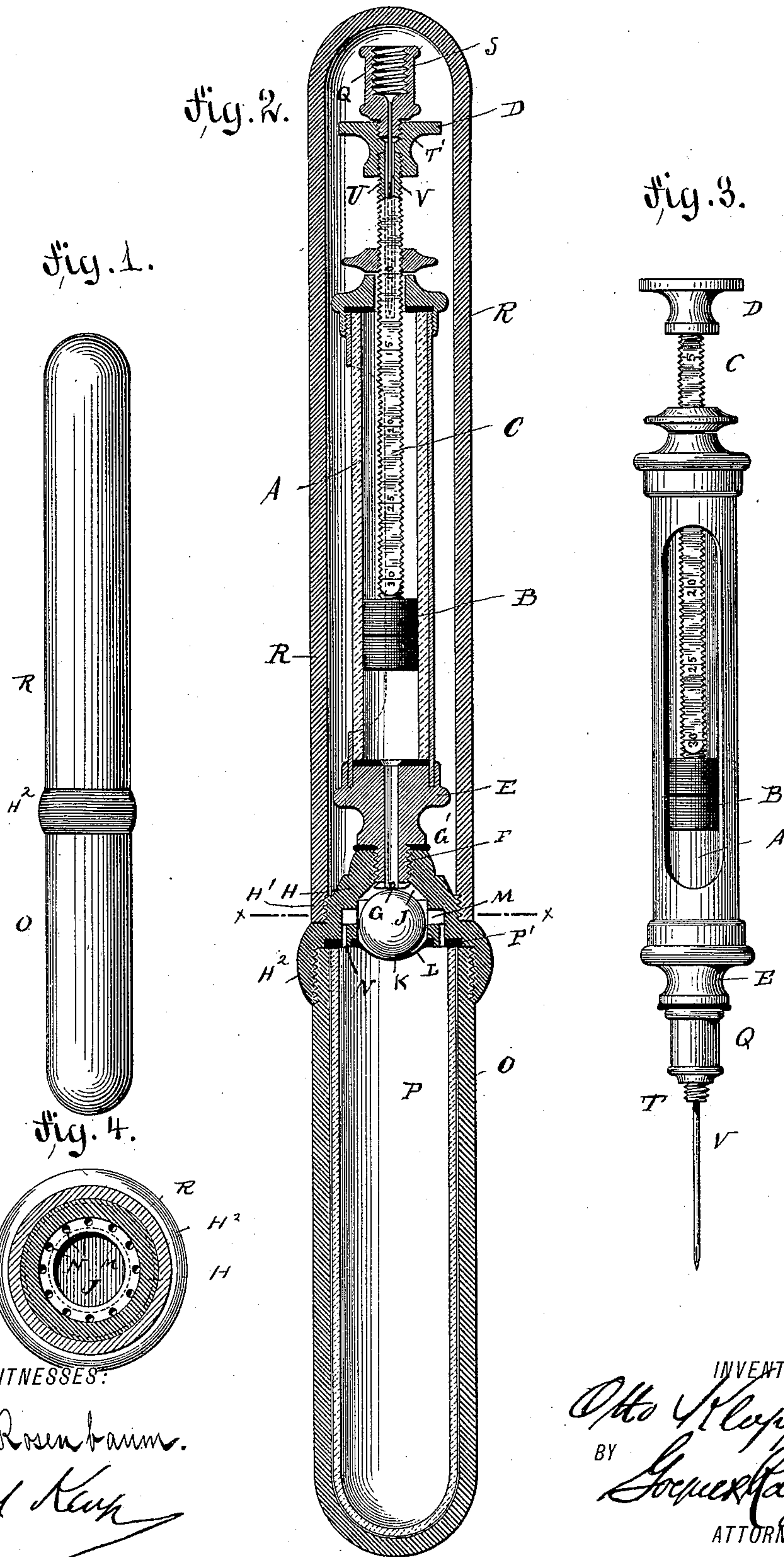


(No Model.)

O. KLOPPE.
SYRINGE.

No. 405,100.

Patented June 11, 1889.



WITNESSES:

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UNITED STATES PATENT OFFICE.

OTTO KLOPPE, OF NEW YORK, N. Y.

SYRINGE.

SPECIFICATION forming part of Letters Patent No. 405,100, dated June 11, 1889.

Application filed October 27, 1888. Serial No. 289,295. (No model.)

To all whom it may concern:

Be it known that I, OTTO KLOPPE, of the city, county, and State of New York, have invented certain new and useful Improvements in Hypodermic Syringes, of which the following is a specification.

The object of my invention is to provide a new and improved hypodermic syringe which is provided with a receptacle for a solution, so that the solution will always be at hand when the syringe is to be used, and in which syringe the tubular needle is protected when not in use.

The invention consists in the construction and combination of parts and details, as will be fully described and set forth hereinafter, and pointed out in the claims.

In the accompanying drawings, Figure 1 is an elevation of my improved hypodermic syringe, the entire device being closed for carrying it in a pocket. Fig. 2 is a longitudinal sectional view of the same on a larger scale. Fig. 3 is an elevation of the syringe removed from the casing; and Fig. 4 is a transverse sectional view on the line *x x*, Fig. 2.

Similar letters of reference indicate corresponding parts.

The syringe is in general of the usual construction, and is composed of a glass cylinder A, containing the piston B, secured to the piston-rod C, which is provided at its upper end with a handle D. At its lower end the cylinder is secured to the head E, having a screw-threaded neck F. A bore E' extends from the top of said head E through to the threaded neck F, said neck being provided at its lower end with one or more notches or recesses G. A washer G' is placed on the shoulder formed on the head E at the base of the neck F, and the said neck F is screwed into an aperture in a cap H, provided with an externally-threaded shoulder H', and below the same with an internally-threaded flange H². The cap H is provided in its under side with a cavity or recess J, the top of which is beveled to form a seat for the ball-valve K, which is supported by a rubber diaphragm L, secured at its edges to the under side of the cap. In the sides of the cavity J an annular groove M is formed, and from the same a series of apertures N extend to the bottom of the cap H. A hard-rubber or other case O, closed at one end and open

at the other, is provided at the open end with an external screw-thread, so as to permit the screwing of said open end into the annular flange H². The glass receptacle P for the solution is placed into the casing O, and at its upper end rests against a washer P' in a recess in the under side of the cap H. A hard-rubber or other casing R, which covers the syringe, is screwed on the shoulder H' of the cap H. The nozzle Q is provided with a screw-threaded aperture S, into which the neck F on the syringe-head E can be screwed, and said nozzle is also provided with an externally-threaded neck T, which can be screwed into a threaded aperture T' in the handle D of the piston-rod C, said piston-rod having a bore or longitudinal aperture U in its upper end for receiving the tubular needle V.

The solution is filled into the vessel P, the cap H screwed on the casing O for the purpose of closing it, and the neck F on the syringe-head is screwed into the top central opening of the cap H. The lower end of said neck presses the ball-valve K down slightly, whereby the diaphragm L is stretched. The nozzle T is unscrewed, the needle is passed into the aperture in the upper end of the piston-rod, and the neck T of the nozzle screwed into the aperture in the head D. The tubular needle is thus well protected, and not apt to become crushed or bent while handling the syringe. The casing R is then screwed on the neck H' and completely covers the syringe, so that the same, with the receptacle containing the solution, can be conveniently carried in the pocket.

To use the syringe, the casing R is removed and the piston moved upward until the desired quantity of solution has been drawn into the syringe-cylinder, the solution passing up through the apertures N, the annular groove M, the cavity J, the notches G, and the bore E' of the syringe-head. The syringe is then unscrewed from the cap H, and the nozzle Q is removed from the handle D and screwed on the neck F, when the syringe can be used. As soon as the neck F of the syringe is unscrewed from the cap H, the elastic diaphragm L presses the ball-valve K upward and against the seat formed in the top of the cavity J, thus effectually closing the solution-receptacle and

preventing the remaining solution from flowing out.

Some of the advantages of my improved syringe are the following: The solution-receptacle
5 contains sufficient solution for eight to twelve injections, and is ready for use at all times. As the air is shut hermetically from the syringe and solution-receptacle, the solution cannot decompose and no impurities can pass into the
10 syringe. Not a drop of solution is lost while filling the syringe. The solution-receptacle can be laid aside without requiring previous corking, as the ball-valve closes it automatically, and as the needle is well protected it is
15 at all times clean. The entire apparatus can easily be disinfected.

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

1. The combination, with a syringe, of a solution-receptacle held on the head of the syringe, and a valve for closing said receptacle when the syringe is disconnected therefrom, substantially as set forth.

2. The combination, with a syringe, of a cap
25 screwed on the head of the same, a solution-receptacle screwed on said cap, and a casing for covering the syringe screwed on said cap, substantially as set forth.

3. The combination, with a cap having a recess or cavity, of a ball-valve in said recess,
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an elastic diaphragm acting on said ball-valve, and a solution-receptacle screwed on said cap, substantially as set forth.

4. The combination, with a syringe, of a cap
35 screwed on the head of the same, which cap is provided in its under side with a recess, a groove communicating with said recess, and apertures extending from the groove to the under side of the cap, a ball-valve in said recess or cavity, an elastic diaphragm for holding
40 said ball-valve in place, and a solution-receptacle screwed on said cap, substantially as set forth.

5. The combination, with a syringe-cylinder
45 having a screw-threaded head and a piston-rod provided with a longitudinal bore in its outer end, of a handle attached to the end of the piston-rod and provided with a screw-threaded recess, a screw-nozzle having an externally-threaded neck, and a tubular needle secured
50 to the nozzle, said nozzle being adapted to be applied to the head or to the piston-rod of the syringe, substantially as set forth.

In testimony that I claim the foregoing as my invention I have signed my name in presence of two subscribing witnesses.
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OTTO KLOPPE.

Witnesses:

OSCAR F. GUNZ,
JOHN A. STRALEY.