

(No Model.)

A. MOLINARI.
SYRINGE.

No. 544,512.

Patented Aug. 13, 1895.

Fig: 2.

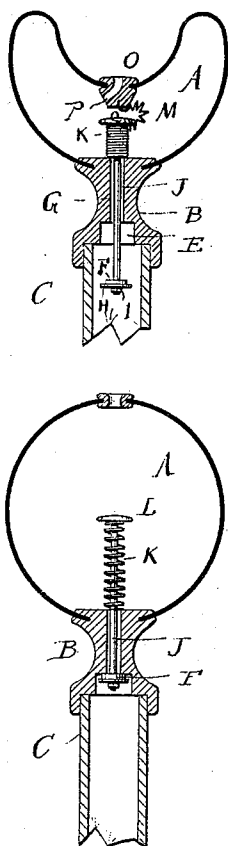


Fig: 1.

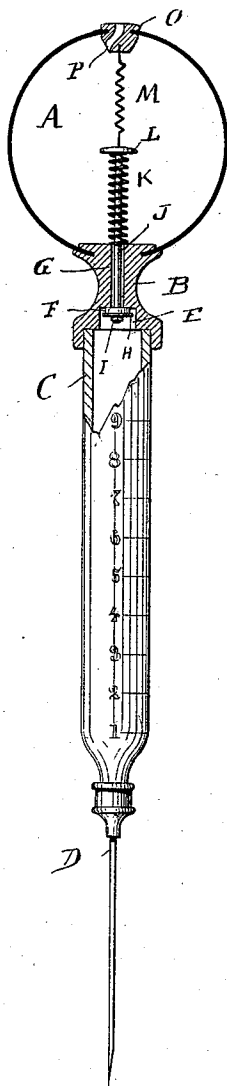


Fig: 3.

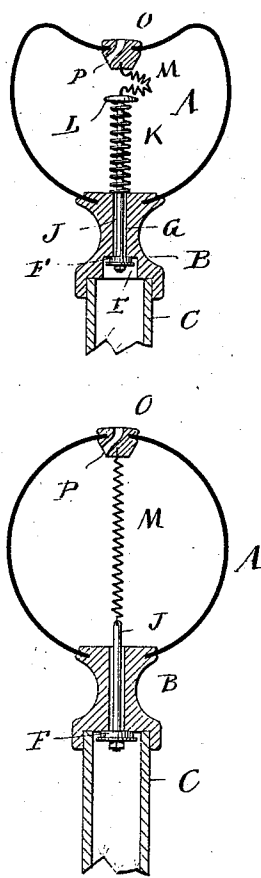


Fig: 4.

Witnesses
D. Pepi-Palmed.
H. Laurant

Fig: 5.

A. Molinari Inventor
By his Attorney Oscar F. Tunn

UNITED STATES PATENT OFFICE

ANTON MOLINARI, OF WOOD RIDGE, NEW JERSEY.

SYRINGE.

SPECIFICATION forming part of Letters Patent No. 544,512, dated August 13, 1895.

Application filed March 12, 1895. Serial No. 541,437. (No model.)

To all whom it may concern:

Be it known that I, ANTON MOLINARI, a citizen of the United States, and a resident of Wood Ridge, in the county of Bergen and State of New Jersey, have invented a certain new and useful Improvement in Bulb Syringes, of which the following is a specification.

This invention relates to improvements in bulb syringes.

The object of my invention is to provide a new and improved syringe of this kind which is so constructed as to automatically shut off all communication between the bulb and the barrel or tube when the desired quantity of liquid has been drawn in the barrel or tube by suction, thus preventing any of the liquid from passing into the bulb and also preventing an overcharge of liquid being taken into the syringe.

The invention consists in the combination, with a compressible bulb, of a barrel connected with the same and in communication therewith, a valve for automatically closing the communication between the barrel and the bulb, and a spring within the bulb for holding the valve on its seat.

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

In the accompanying drawings, forming a part of this specification, and in which like letters of reference indicate like parts in all the views, Figure 1 is a vertical longitudinal sectional view of the preferred construction of my improved bulb syringe, the parts being in elevation and the bulb being expanded and the communication between the bulb and barrel closed. Figs. 2 and 3 are similar views of the bulb, showing parts in different positions. Figs. 4 and 5 show modifications of the device for operating the valve.

The bulb A, made of soft rubber, is attached at its bottom to a metal or hard-rubber neck B, which is provided in its bottom surface with a seat for the upper end of a graduated glass tube or barrel C, fastened to said neck in any well-known manner. A hypodermic needle D, of any approved construction, is fastened to the lower end of the tube or barrel C.

The bottom of the neck B is provided with

a central recess E, forming a seat for a rubber or leather valve F for closing the lower end of a channel or bore G extending longitudinally through the neck B, and which bore establishes communication between the bulb and the barrel. The valve F rests upon a metal disk H, which in turn rests upon a nut I, which is screwed on the lower threaded end of the valve-stem J, passing through the bore G. A helical spring K, surrounding the valve-stem J between the top of the neck B and the top plate L on the upper end of the stem, presses said stem upward and holds the valve on its seat. A helical spring M has one end secured to the top of the valve-stem J, and the upper end of said spring is fastened to the bottom of a metal plug O, held in the top of the bulb and having a vent-channel P.

When the syringe is empty, the parts are in the positions shown in Fig. 1.

To fill the syringe the top of the bulb A is depressed by means of the thumb until the central top part of the bulb depresses the stem J, whereby the spring K is compressed, as shown in Fig. 2, and the valve F is moved off its seat, so as to establish communication between the bulb A and the barrel C, the channel P in the plug O being closed by the thumb. If the needle D is immersed in the liquid to be injected—for example, anti-toxin or Dr. Koch's lymph—and the pressure on the bulb gradually decreased, the bulb expands and the liquid is drawn into the barrel, the valve F being gradually moved toward its seat. By the time that the barrel is filled the valve F is moved up against its seat by the spring K and all communication between the bulb and barrel is interrupted, thus preventing the passage of any liquid into the bulb. The parts are then approximately in the position shown in Fig. 3, the bulb not having fully expanded. Then the thumb is removed to permit the bulb to expand fully, the air entering through the channel P, as more air is required to eject the liquid than was displaced before drawing it in.

The spring M is bent to one side when the bulb is compressed, and when the bulb expands the elasticity of said spring M and of the bulb assists in holding the valve against its seat.

As shown in Fig. 4, the spring M may be

dispensed with, although I prefer to use it in all cases.

As shown in Fig. 5, the cap-plate L and the spring K are dispensed with and I rely upon the spring M and the elasticity of the bulb to close the valve. In this construction the valve is opened automatically by the compressed air when the bulb is compressed.

In all constructions the valve is closed automatically as soon as the barrel is filled and before the bulb has fully expanded, so as always to give the excess of air in the bulb required for ejecting the liquid.

The valve can easily be adjusted by means of the nut I to fit well and tightly on its seat.

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

1. In a hypodermic bulb syringe, the combination with a compressible bulb, of a neck secured on the same, which neck is provided with a longitudinal bore, a barrel having one end fastened in said neck, a spring controlled valve having a seat in said neck, and opening in the direction from the bulb and a hypodermic needle on that end of the barrel opposite the one connected with said neck, substantially as herein shown and described.

2. In a hypodermic bulb syringe the combination with a compressible bulb, of a neck on the same, a barrel having one end secured on said neck, a valve for closing a bore in said neck, and opening in the direction from the bottom of the neck, a spring within the bulb for holding said valve on its seat, and a hypodermic needle on the opposite end of the bulb, substantially as herein shown and described.

3. In a bulb syringe, the combination with a compressible bulb, of a neck on the same, a barrel having its end secured on said neck, a valve seating in said neck and closing in the direction toward the bulb, a spring within the bulb for holding said valve against its seat and a plug in said bulb, which plug is provided with an air channel, substantially as herein shown and described.

In testimony that I claim the foregoing as my invention I have signed my name, in presence of two witnesses, this 28th day of February, 1895.

ANTON MOLINARI.

Witnesses:

W. SOLDKYZYK,
CHARLES WITKOWSKI.