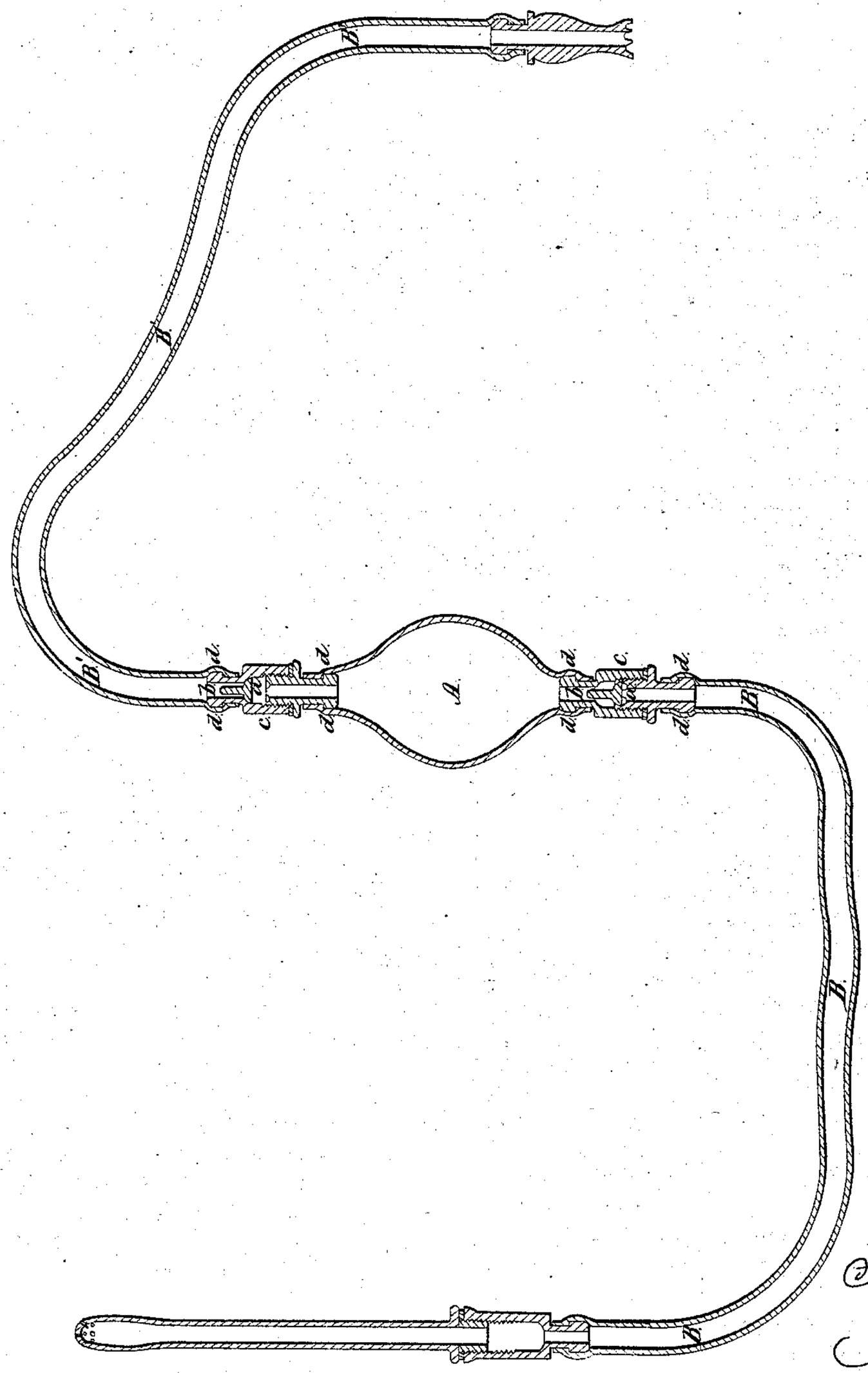
F. M. Shepard,

Syringe.

No. 43,158. Patented June 14, 1864.



Witnesses.
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UNITED STATES PATENT OFFICE.

F. M. SHEPARD, OF NEW YORK, N. Y., ASSIGNOR TO HIMSELF AND W. A. SHEPARD.

IMPROVEMENT IN INDIA-RUBBER SYRINGES.

Specification forming part of Letters Patent No. **43,158**, dated June 14, 1864.

To all whom it may concern:

Be it known that I, F. M. SHEPARD, of New York, in the county and State of New York, have invented certain new and useful Improvements in Syringes; and I hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawing, which represents, in sectional elevation, a syringe constructed in accordance with my invention.

My invention relates to syringes composed of an elastic bulb, with which are connected, by means of a suction and a forcing valve, two flexible tubes, so that by alternately compressing the bulb the liquid to be injected is drawn from the reservoir by one tube and ejected or forced through the other. These syringes were heretofore made of two materials—that is to say, the bulb and tubes were made of soft vulcanized rubber, while the "trimmings," such as the valves, valve-boxes, injection tube or nozzle, and suction-piece, were made of metal. Great objections to these syringes were urged on account of the liquid remaining in the syringe in contact with the metal, corroding it or forming with it, particularly if an acid or alkaline solution be used, (as is often the case for medical purposes,) poisonous salts. Minor objections are suggested, such as the weight and cost. Now, the object of this invention is to remedy this evil by the construction of a syringe of the character described in which metal is entirely or in great measure dispensed with, producing a lighter and cheaper article unattackable by acids or alkalies such as would be used for purposes of injection; and my invention consists in forming the trimmings of bulb syringes—such as valves, valve boxes, and other parts heretofore made of metal—of hard rubber or vulcanite.

In the drawing, A is the bulb, made, of vulcanized india-rubber, in the form of an egg, having at the small ends the india-rubber tubes B B′, connected therewith by means of valve chambers C. These are made of vulcanite or hard rubber, a substance at once light, durable, more easily worked than metal, and not liable to corrode. They are composed of two parts—*i. e.*, the valve proper and the valve chamber. The former may or may not be made of rubber; and it consists of a disk, *a*, convex on one side and plane surfaced on the other, and provided on the convex side with a stem, *b*, whereby it is guided in its up- and down play. The valve chamber or box is composed of two parts screwed together. The interior of the one is concave in conformity with the convexity of the valve, forming the valve-seat to intercept communication between either pipe and the bulb, and the interior of the other is indented, so as to allow the liquid to pass through the opening or indentation when the valve is off its seat. A valve-chamber with its valve is attached to either end of the bulb by simply distending the elastic rim over the shoulder *d*, so as to clasp over and under it. The two valves are arranged on the bulb in opposite directions for inverse action, so that when one, by the compression of the bulb, is closed, the other will, actuated by the same cause, be opened. In this, and in some other particulars, the syringe operates substantially in the same manner as those heretofore in use.

Having now described my invention, and the manner in which the same is or may be performed, I claim as a new article of manufacture—

An elastic india-rubber bulb syringe in which the trimmings—*i. e.*, the valve-cases and other non-elastic parts—are made of vulcanite or hard rubber, in contradistinction to metal, of which they were heretofore made.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

F. M. SHEPARD.

Witnesses:

GEO. SIMMONS, JR.,

GEO. W. FROST.