

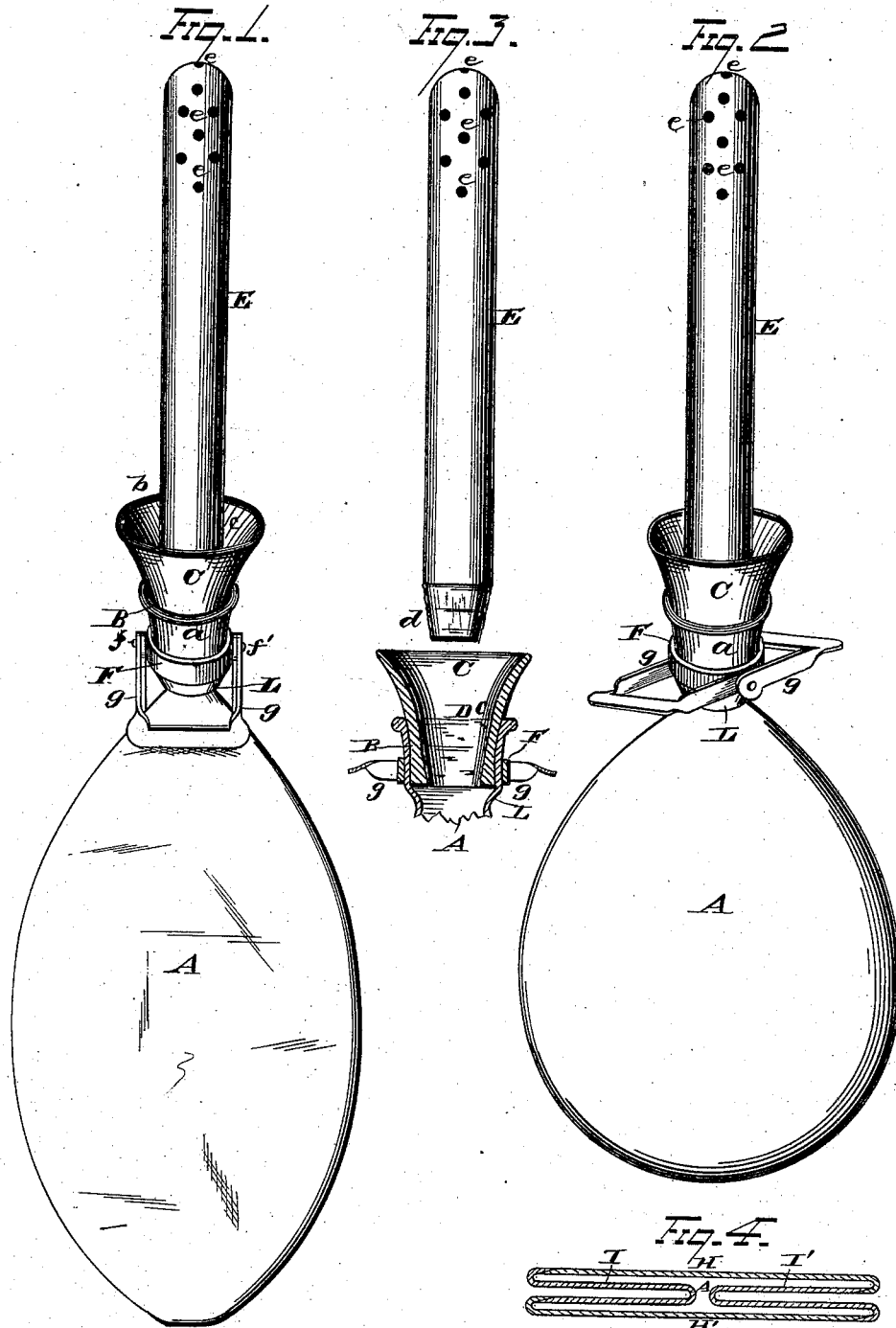
J. L. CONNABLE.

2 Sheets—Sheet 1.

Syringe.

No. 214,552.

Patented April 22, 1879.



WITNESSES
E. J. Nottingham
A. M. Bright

INVENTOR
John L. Connable.
 By *Seagett & Seagett.*
 ATTORNEYS.

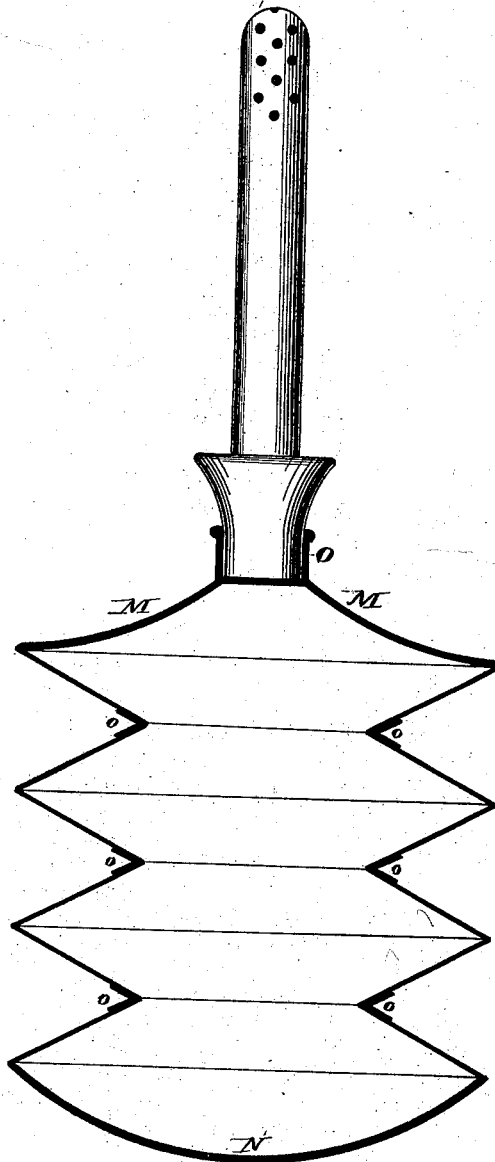
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Fig. 5



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UNITED STATES PATENT OFFICE.

JOHN L. CONNABLE, OF XENIA, OHIO.

IMPROVEMENT IN SYRINGES.

Specification forming part of Letters Patent No. **214,552**, dated April 22, 1879; application filed March 8, 1879.

To all whom it may concern:

Be it known that I, JOHN L. CONNABLE, of Xenia, in the county of Greene and State of Ohio, have invented certain new and useful Improvements in Syringes; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use it, reference being had to the accompanying drawings, which form part of this specification.

My invention relates to an improvement in elastic-reservoir syringes, and is designed to provide an improved syringe which for cheapness of construction, simplicity of operation, durability, and convenience for packing and transportation will surpass all others in use.

My invention consists, first, in an elastic-reservoir syringe, of the combination, with an automatically-folding reservoir or bulb, of a funnel-shaped hand-piece, removably secured to the neck or mouth of said reservoir or bulb, and a delivery-tube formed with a tapering coupling end, whereby the funnel-shaped hand-piece serves the double function of a funnel for the introduction of liquid into the reservoir, and also a friction-joint coupling for the ready and secure attachment of the delivery-tube.

My invention further consists, in an elastic-reservoir syringe, of the combination, with an automatically-folding reservoir, of an exterior and detachable fluid-check, adapted to be attached to the smaller end of the funnel-shaped hand-piece, and provided with arms or wings arranged on either side of the neck of the reservoir, these wings or arms being clamped down by suitable pressure upon the neck of the reservoir, thus regulating the outflow of the fluid, and preventing discharge of fluid from the reservoir when the apparatus is inverted.

Referring to the accompanying drawings, Figure 1 is a view in perspective, showing the reservoir as empty and the fluid-check closed. Fig. 2 is another view in perspective, showing my syringe as ready for use, with the reservoir filled and the fluid-check opened. Fig. 3 is a detail view of my syringe, showing the funnel-shaped hand-piece with clamp attached and the delivery-tube as withdrawn from the

funnel. Fig. 4 shows a transverse section of the reservoir. Fig. 5 shows a modification of elastic reservoir.

A represents the elastic reservoir. (Shown as empty and folded in Fig. 1, and filled and unfolded in Fig. 2.) The mouth *a* of the elastic reservoir A is drawn over the smaller end, B, of the funnel-shaped hand-piece C. The top of this funnel-shaped hand-piece, *b*, is made outwardly flaring, and provides a convenient passage for the fluid into the reservoir.

D is the conical aperture for the reception of the delivery-tube E, the inner walls, *e*, thereof being roughened or left in an unpolished condition, in order to form a close frictional contact with the beveled end *d* of the delivery-tube E. Side and end perforations, *ee*, through which the fluid is ejected, are formed at and near the rounded end of the delivery-tube E.

The fluid-check consists of the metallic ring F, which is clasped or slipped over the smaller end B of the funnel-shaped hand-piece C. At opposite points *f f'* of this ring are pivoted two wings or arms, *g g*, arranged so as to fall on opposite sides of the neck of the reservoir, in manner such that by the application of suitable pressure they are pressed down upon the opposite sides of the neck of the reservoir, thus regulating the flow of the liquid, and preventing its discharge when the apparatus is inverted.

The construction of my automatically-folding reservoir is as follows: Four pear or other suitably shaped pieces of elastic material are taken, two of which, H H', are flat, and two, I I', are folded upon themselves. The folded pieces I I' are placed with their folds back to back, and the flat pieces H H' are then placed one on the upper and one on the under side thereof. The upper edge of the right-hand folded piece, I, is then rolled over and upon the right-hand side of the flat piece H, and the left-hand edge of the flat piece H is rolled under and over the edge of the left-hand folded piece, I'. The under piece, H', is treated in the same way, making in all four seams, which are hermetically sealed in proper manner. These seams, coming together at the top, form the neck L, to which is attached the mouth-piece *a*, which is drawn over the smaller end B of the funnel-shaped hand-piece C.

I would have it understood that I do not limit myself to any one particular size, shape, or material of which to construct the elastic reservoir; nor do I restrict myself to any one peculiar construction of the elastic reservoir, by means of which it shall be automatically folding.

The funnel-shaped hand-piece may be constructed of any suitable material, as rubber, metal, papier-maché, glass, celluloid, wood, &c.; but if wood be employed it should be properly enameled to prevent absorption of the fluid, and consequent warping thereof, and also to enable the syringe to be readily cleaned and present a smooth, uniform surface. If glass be employed, the interior sides of the conical aperture intended for the reception of the delivery-tube should be ground to form close frictional connection with the beveled end of the same.

Instead of forming the lower end of funnel-shaped hand-piece with perpendicular sides, it may be constructed slightly flaring, forming a tighter connection between the funnel and the reservoir, and preventing any possible slipping in case of strain; also, the conical aperture within the funnel-shaped hand-piece is so formed as to permit of several different-sized delivery-tubes being used in connection therewith.

The delivery-tube may be constructed of any suitable material, as rubber, metal, papier-maché, glass, celluloid, wood properly enameled, &c. In instance of using glass, the open and beveled end of the tube should be ground, the same as and for the same purpose as the sides of the aperture intended for its reception in the funnel-shaped hand-piece.

The detachable check-valve may be constructed of any suitable metal. The wings or arms may be made of flat plates of metal; or wire may be used instead, if desired, and its operation be effected either by the hand or by suitably-arranged spring mechanisms.

Heretofore most elastic-reservoir syringes have been constructed with valve mechanism located within the hand-piece. These valve devices are complex in structure, and from a variety of causes—as corrosion, friction, clogging of parts, &c.—are liable to become inop-

erative, and in such case are difficult of repair and inaccessible for ordinary cleaning. All these defects are avoided in my device by placing the fluid-check on the outside of the syringe, and detachable therefrom at the will of the operator.

Fig. 5 shows a modified form of reservoir, which is made similar to and folding like a Chinese lantern. In this construction the top, bottom, and neck pieces, M N O, are to be formed of heavier stock than the other portions of the reservoir, and also at the points of folding, o o, there should be an extra thickness of elastic material, to provide against the greater wear and strain to which these points are subjected.

If desired, instead of forming tight connection between the funnel-shaped hand-piece and the delivery-tube by a friction-joint coupling, a screw-joint may be substituted therefor.

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

1. In an elastic-reservoir syringe, the combination, with an elastic reservoir or bulb, of a removable funnel-shaped hand-piece, formed of rigid material, and secured within the neck of the reservoir by frictional contact therewith, and a delivery-tube constructed with a beveled open end, adapted to fit snugly within the flaring opening in the funnel-shaped hand-piece, substantially as set forth.

2. In an elastic-reservoir syringe, the combination, with an elastic reservoir, of a funnel-shaped hand-piece, and a detachable fluid-check connected with the outside of the syringe, said fluid-check consisting of a metallic ring, at opposite points of which are pivoted two wings or arms, which are arranged on either side of the neck of the reservoir, and adapted to be moved radially to open or close the fluid-passage in the neck of the reservoir.

In testimony that I claim the foregoing I have hereunto set my hand this 28th day of February, 1879.

JOHN L. CONNABLE.

Witnesses:

J. Q. WOLF,
JOHN LITTLE.