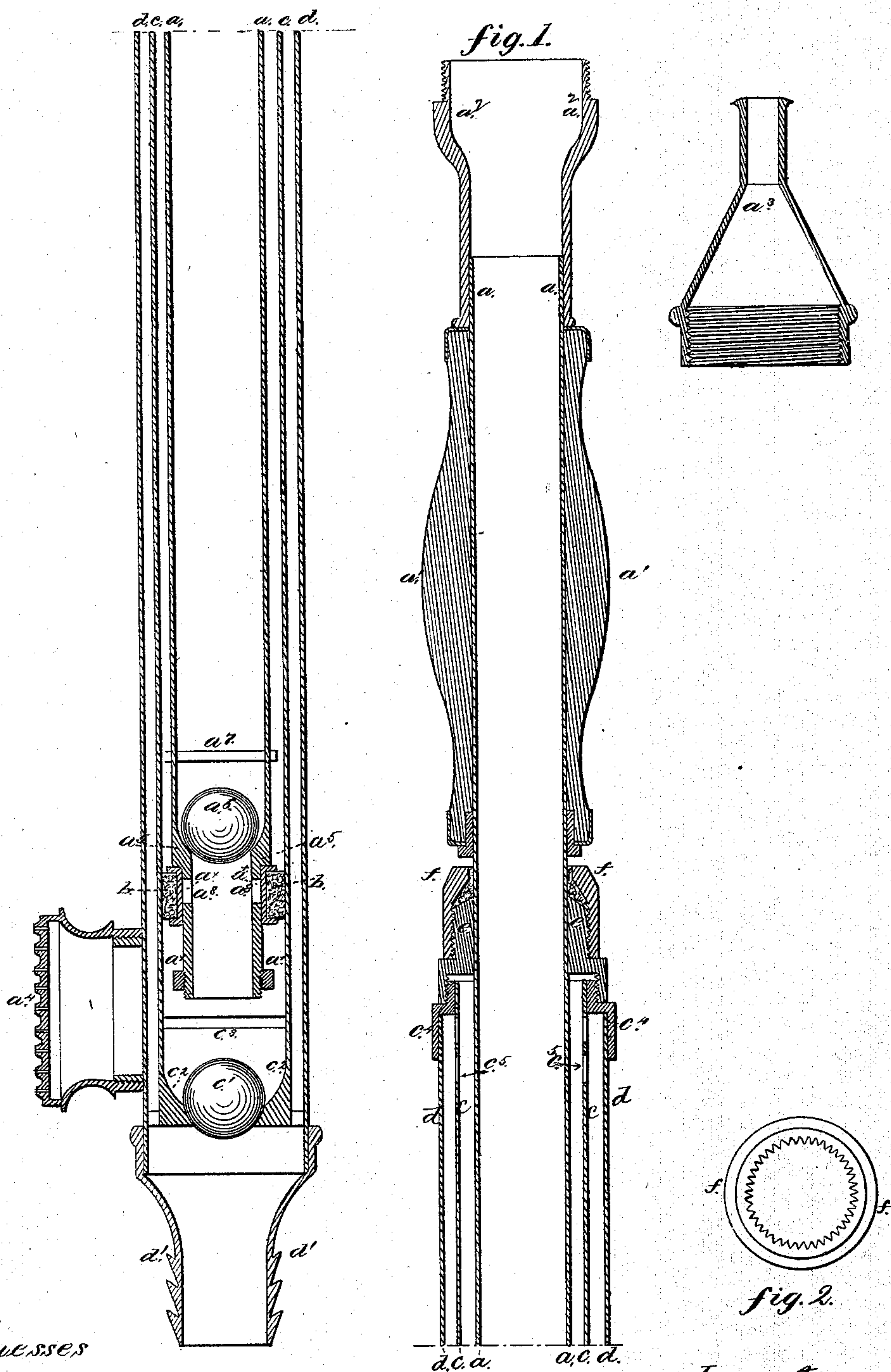


W. B. ROBINS.
Hand-Pumps or Syringes.

No. 139,263.

Patented May 27, 1873.



Witnesses
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UNITED STATES PATENT OFFICE.

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IMPROVEMENT IN HAND-PUMPS OR SYRINGES.

Specification forming part of Letters Patent No. **139,263**, dated May 27, 1873; application filed February 21, 1873.

To all whom it may concern:

Be it known that I, WILLIAM BURNET ROBINS, of No. 17 Richmond Terrace, Shepherd's Bush, in the County of Middlesex, England, a citizen of the United States of America, have invented or discovered new and useful Improvements in Hand-Pumps or Syringes; and I, the said WILLIAM BURNET ROBINS, do hereby declare the nature of the said invention, and in what manner the same is to be performed, to be particularly described and ascertained in and by the following statement thereof—that is to say:

In constructing hand-pumps or syringes I employ three concentric tubes. The innermost tube is the hollow plunger or piston-rod through which the water is delivered to the jet. The delivery-valve is within it, and it carries a piston which is free to slide a short distance on the rod, so that it also acts as a valve, and at the outward stroke it uncovers passages in the hollow rod, by which the water is able to pass it freely. The middle tube is the pump-barrel; it has a suction-valve at its lower end, and at its upper end a stuffing-box through which the plunger or piston-rod works. The outer tube incloses the pump-barrel, and at its lower end it is connected with the suction pipe. There are openings in the side of the pump-barrel immediately below the stuffing-box, so that there is free communication between the upper end of the pump-barrel and the outer tube.

The action of the apparatus is as follows: During the inward stroke the water in the barrel beneath the piston is expelled up the hollow rod and issues by the jet, and at the same time the upper part of the barrel over the piston fills with water which passes up from the suction between the barrel and the outer tube. During the outward stroke the water above the piston passes to the under side, and a further quantity, equivalent to the displacement of the hollow rod, enters the barrel past the suction-valve. The suction of the hand-pump or syringe is thus divided between the inward and the outward strokes, while the whole of the water is expelled at the former. The outer tube is also very useful

in protecting the barrel and in providing an escape for any water which may leak past the piston.

In order that my said invention may be most fully understood and readily carried into effect, I will proceed to describe the drawings hereunto annexed.

Description of the Drawings.

The drawings show a longitudinal section of a hand-pump or syringe constructed according to my invention. *A a* is a hollow piston-rod. Upon it is fixed the tubular handle *a*¹ and the rose or nozzle-holder *a*², which latter receives either the nozzle *a*³ or the rose *a*⁴, as the operator may desire, so that the ejected water passes through the handle; and that the hand of the operator which grasps the handle may also direct the delivery in the desired direction, at the inner end of the rod there is fixed the valve-seat *a*⁵ and the outlet-valve *a*⁶. *a*⁷ is a pin passed through the tube *a* to form a stop for the valve. The piston *b* is able to traverse between the stops *a*⁸ *a*⁸ along the tube *a*, or rather along a prolongation of this tube formed in one piece with the valve-seat *a*⁵, and so the piston alternately covers and uncovers the holes *a*⁸. *c* is a tube forming the barrel in which the piston *b* works. At its lower end is the suction-valve *c*¹ with its seat *c*²; and *c*³ is a pin passed through the tube to form a stop for the valve. At its upper end the tube *c* is fixed into a socket piece, *c*⁴, which is soldered on to the outer tube *d*. *c*⁵ are holes in the tube *c*, immediately beneath the connection of the tube with the socket piece *c*⁴. The outer tube *d* serves two purposes: First, it protects the barrel *c* and prevents its becoming bruised, and so admits of a lighter tube being used; and, second, it provides a free water-passage from the suction to the upper end of the barrel. This outer tube *d* is an important feature in my invention, and it is applicable to syringes which in other respects differ from that shown in the drawing. One end of the tube *d* is fixed into a socket in the piece *d*¹, to which the flexible suction-pipe is attached, and its other end is similarly fixed into the

socket piece c^4 . e is a guide for the hollow piston-rod a , which it loosely fits. This guide is screwed upon the top of the socket piece c^4 , and it is coned; at its upper end it receives a screw cap, f . The hole by which the rod a passes through the cap f is grooved, as is shown separately in plan at Figure 2, and the joint around the rod is packed with worsted. The worsted is wound round the rod for a short distance, and also up the cone at the end of the piece e . The cap f is then forced along the tube a , over the worsted, and it is screwed down into its place. The peculiar construction of the apparatus renders this slight packing sufficient.

I claim as my invention—

1. The combination of the barrel, the outer tube, the hollow piston-rod, and the tubular handle, substantially as before set forth.
2. The combination of the barrel, the outer tube, the hollow piston-rod, the tubular handle, the traversing-piston, and the valves, substantially as before set forth.

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Witnesses:

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