

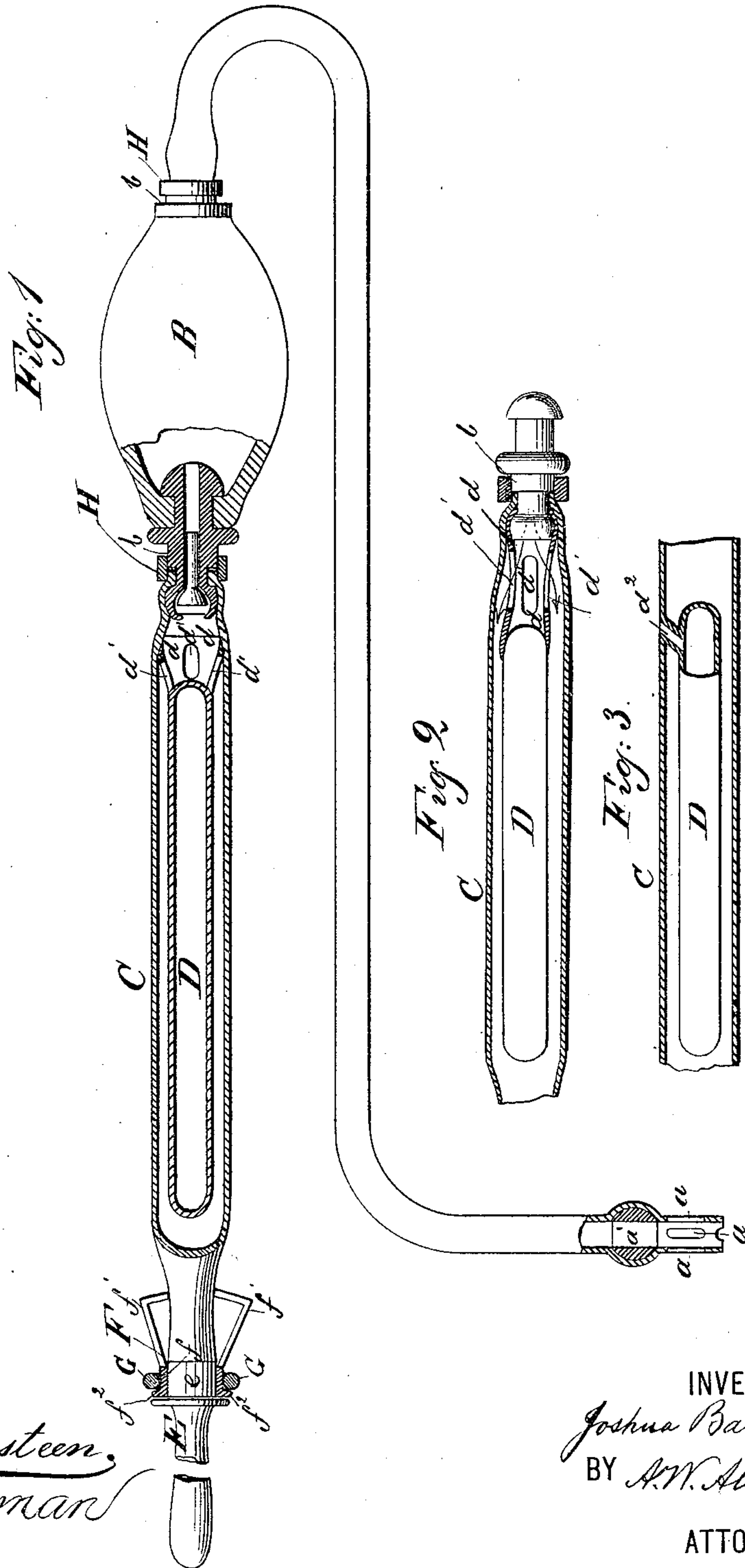
(No Model.)

J. BARNES.

SYRINGE.

No. 353,528.

Patented Nov. 30, 1886.



WITNESSES:  
*Helmer Westeen,*  
*J. M. Crossman*

INVENTOR  
*Joshua Barnes*  
BY *A. W. Almqvist*  
ATTORNEY

# UNITED STATES PATENT OFFICE.

JOSHUA BARNES, OF BROOKLYN, NEW YORK.

## SYRINGE.

SPECIFICATION forming part of Letters Patent No. 353,528, dated November 30, 1886.

Application filed August 21, 1886. Serial No. 211,466. (No model.)

*To all whom it may concern:*

Be it known that I, JOSHUA BARNES, a citizen of the United States, and a resident of Brooklyn, in the county of Kings and State of New York, have invented certain new and useful Improvements in Syringes, of which the following is a specification.

My invention relates to syringes, and has for its object to provide improved means for maintaining a continuous or uninterrupted flow with only one bulb or single-acting pump.

The invention will be hereinafter fully described, and specifically pointed out in the claims, reference being had to the accompanying drawings, in which—

Figure 1 represents a general view of my improved syringe complete, partly broken out in longitudinal central section. Fig. 2 is a detail longitudinal section showing a modification in the manner of securing the air-chamber. Fig. 3 is a sectional detail showing a modification in the construction of the air-chamber.

A is the inlet tube or conduit, preferably made of rubber, as usual. In order to sink it without noise when using, I provide for sinker simply a metallic ring, *a'*, pushed into the tube A to a little distance above the end, as shown in the drawings. Below the sinker *a'* side openings, *a*, are made in the tube for use in suspending the syringe for drying.

B is the bulb or pump, which is single-acting, as usual, provided at each end with a valve-nipple, *b*, and operating the syringe on the compression of the bulb, the bulb refilling in expanding, as usual.

C is the outlet tube or conduit, attached at one end to the valve-coupling *b*, and provided at the other end with the ordinary discharge-nozzle, E. In order to prevent the tube C from getting off the coupling *b*, I provide upon the latter a rigid or non-flexible ring, H, which ring may be slid upon the coupling and over the end of the tube, to compress it in the circular groove of the coupling, as shown in Fig. 1.

Within the conduit C, I arrange an elastic air-chamber, D, preferably made of a soft-rubber tube, the object of which is to produce a continuous flow, which is accomplished in the following manner: When the conduit C, surrounding the air-chamber D, is full of water

or other liquid and the bulb B compressed to operate the syringe, the chamber D is compressed or contracted by the pressure of the surrounding liquid, and when the pressure is withdrawn from the bulb B, to allow it to expand and refill, and consequently the pressure upon the chamber D is released, the said chamber expands, and thus forces the liquid out through the nozzle, thereby keeping up a continuous flow just as effectually as a double-acting pump, the compression of the bulb B and the expansion of the chamber D acting alternately to maintain uninterrupted flow.

The chamber D may be either closed, as in Figs. 1 and 2, or communicating with the outer air, as in Fig. 3. When entirely closed, any air-tight flexible material may be used, the acting power being then the expansion of compressed air; but if the chamber D is communicating with the outer air the material itself should be elastic, preferably of rubber, so as to resume its normal shape—that is, expanding by its own elasticity, the elasticity of the material itself in that case effecting the pressure.

In order to retain the chamber D in place within the conduit C, it may either be fastened to the said conduit itself, as in Fig. 1, or to the coupling *b*, as in Fig. 2. In either case the closed chamber has a tubular extension, *d*, provided with side openings, *d'*, through which the water from the bulb and coupling enters the conduit C, as indicated by arrows in Fig. 2. The said extension *d* may be cemented to the conduit C, as in Fig. 1, or it may be expanded over the end of the coupling *b* before attaching the end of the conduit upon the coupling, as shown in Fig. 2.

In Fig. 3 is shown a small vent or pipe, *d<sup>2</sup>*, which connects the interior of the chamber D through the side of the conduit C with the outer air, the outer end of the little vent-pipe *d<sup>2</sup>* being, of course, cemented or secured to the conduit in an air and water tight manner. When the said pipe or vent is used, as in Fig. 3, there is no necessity for the extension *d* or other fastening to keep the chamber D in place.

F is a normally-open spring-clasp, whose arms *f'*, having inward-bent ends, may be pressed toward each other to flatten the tube, and thus stop the flow, and kept so compressed, if desired, by pushing a ring, G, over them. I lay no



claim to the said clamp F, nor to the noiseless  
sinker above described, nor to the side open-  
ings, *a*, below the sinker. I am aware, also,  
that it is not new to provide an uninterrupted  
5 flow in a syringe having only one bulb or pump.

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

1. A syringe or like article having in its out-  
10 let-conduit a flexible air-chamber contracting  
under pressure and expanding on cessation of  
pressure from the bulb or pump, for the pur-  
pose set forth.

2. In combination with the outlet-conduit of

a syringe or like article, an elastic tube or 15  
chamber placed within the said conduit, and a  
vent connecting the said elastic chamber with  
the outer air, substantially as and for the pur-  
pose set forth.

In testimony that I claim the foregoing as 20  
my invention I have signed my name, in pres-  
ence of two witnesses, this 14th day of August,  
1886.

JOSHUA BARNES.

Witnesses:

A. W. ALMQVIST,  
HELMER WESTEEN.