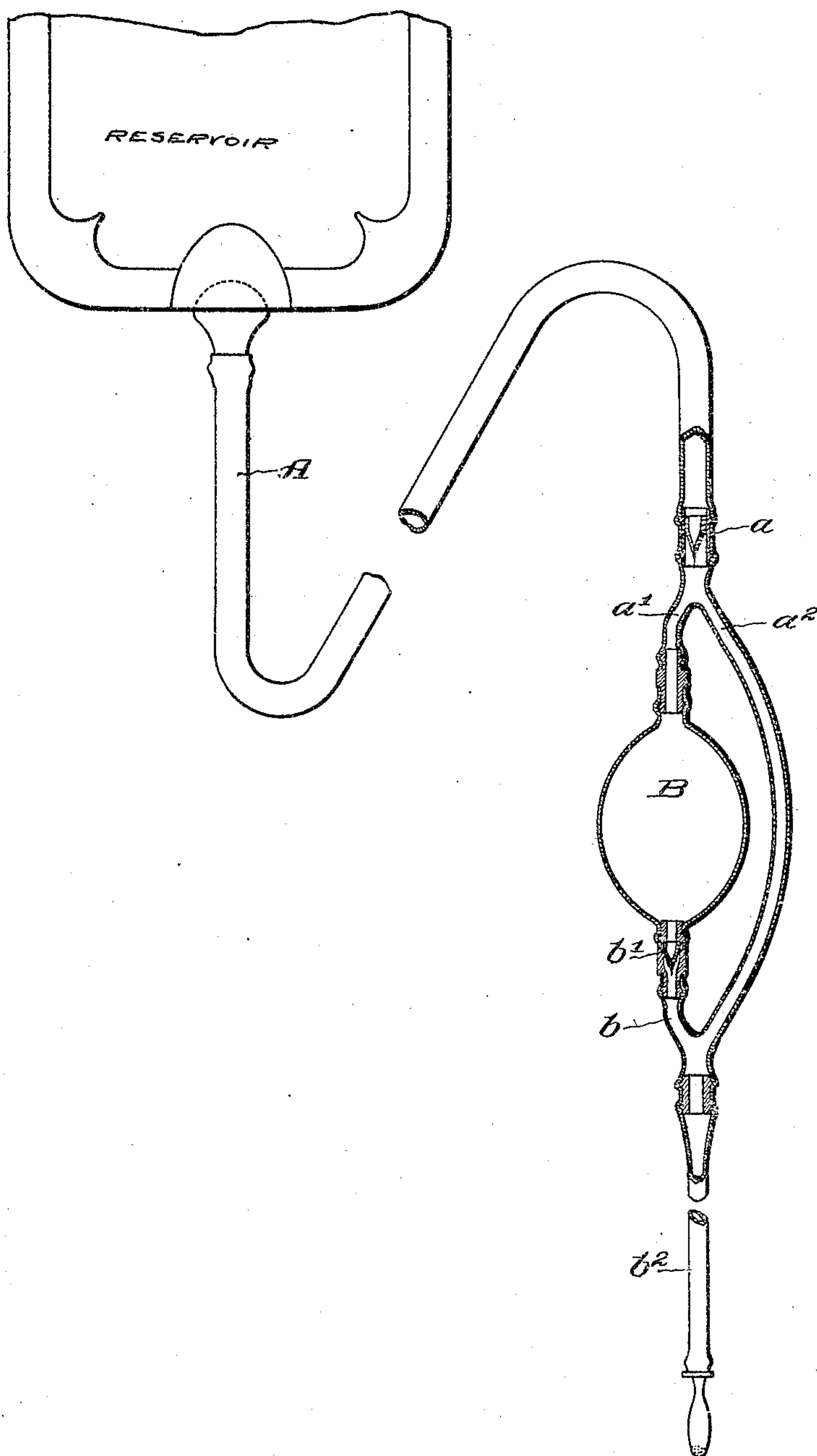


No. 788,176.

PATENTED APR. 25, 1905.

W. F. TRAVES.
SYRINGE.

APPLICATION FILED NOV. 4, 1903. RENEWED SEPT. 22, 1904.



WITNESSES:

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UNITED STATES PATENT OFFICE.

WEBSTER F. TRAVES, OF CLEVELAND, OHIO, ASSIGNOR TO THE DUPLEX RUBBER COMPANY, OF CLEVELAND, OHIO, A CORPORATION OF OHIO.

SYRINGE.

SPECIFICATION forming part of Letters Patent No. 788,176, dated April 25, 1905.

Application filed November 4, 1903. Renewed September 22, 1904. Serial No. 225,459.

To all whom it may concern:

Be it known that I, WEBSTER F. TRAVES, a citizen of the United States, and a resident of Cleveland, county of Cuyahoga, and State of Ohio, have invented a new and useful Improvement in Syringes, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle, so as to distinguish it from other inventions.

My invention relates to syringes, its object being to provide a device of said character in which a continuous flow may be obtained by means of the utilization of the force of gravity and in which means are provided for effecting a force-flow by extraneous manual pressure without interrupting such continuous flow.

Said invention consists of means herein after fully described, and specifically set forth in the claims.

The annexed drawing and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting but one of various mechanical forms in which the principle of the invention may be used.

The figure represents a partial elevational view of a device embodying my invention with portions of the supply and discharge tubes broken away and the manually-operated pressure means and connected parts in axial section.

To the lower end of a reservoir of the ordinary construction is attached a supply-tube A, in the lower end of which is placed a check-valve a of any suitable construction. Below the said valve is formed a fork containing two tubular members a' and a'' , the cross-sectional area of the bore of these two tube members being substantially one-half that of the bore of the supply-tube A. Connected with the lower end of the member a' is an ordinary rubber bulb B, the lower end of which is connected with a tube member b , in which is located a check-valve b' of any suitable construction. The tube member a'' joins with the tube member b below the valve b' , such

joint being connected with the discharge-tube b^2 .

The operation of the above device is as follows: The reservoir having been supplied with the fluid to be injected, it will be seen that a continuous stream of such fluid may be caused to issue from the lower end of the discharge-tube b^2 , the fluid passing through the supply-pipe A, bulb B, and simultaneously through the tube a'' , from thence discharging into the discharge-tube b^2 . Now if it be desired to increase the rapidity of flow due to the operation of gravity in the above-described operation the bulb B is compressed, thereby forcing the fluid from the bulb and through the discharge-tube with such increased rapidity, the valve a preventing an upward flow through the tube A. Upon relaxing the bulb B fluid in the discharge-tube b^2 is prevented from backing into the bulb by the valve b' . Upon such relaxation and while the bulb is regaining its normal form fluid is drawn into the bulb from the tube A. The amount of fluid provided by said tube A is, however, sufficient to feed the bulb B and at the same time permit a portion thereof to continue to flow through the tube a'' . The continuous discharge of fluid from the discharge-tube b^2 is thus permitted to progress without interruption.

It will thus be seen that the above-described arrangement provides means for supplying a continuous discharge of fluid, manually-operated means arranged to force such discharge at an increased rapidity of flow, and means arranged to allow a flow of liquid from the reservoir to the discharge-tube independently of such manually-operated means.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed provided the means stated by any one of the following claims or the equivalent of such stated means be employed.

I therefore particularly point out and distinctly claim as my invention—

1. In a syringe, the combination of a source

of liquid-supply, a discharge-tube, manually-operated means connecting said supply and said tube for forcing liquid from said supply through said tube, and means arranged to allow a flow of liquid from said source into said tube without using said manually-operated means as a part of the passage from said supply to said tube.

2. In a syringe, the combination of a source of liquid-supply, a bulb, a discharging-tube connected with the latter, said bulb arranged to receive liquid from said supply, and means constructed to permit an independent flow from said supply to said discharge-tube, such latter flow not contacting said bulb.

3. In a syringe, the combination of a reservoir, a bulb, a supply-tube connecting said bulb and reservoir, a discharge-tube connected with said bulb, suitable valves intermediate of the interior of the bulb and reser-

voir and the interior of the bulb and discharge end of said discharge-tube and a separate tube connecting said supply and discharge tubes independently of said bulb.

4. In a syringe, the combination of a reservoir, a supply-tube connected with the latter, a discharge-tube, a bulb connected with said supply-tube and arranged to discharge liquid through said discharge-tube, and a separate tube connecting said supply and discharge tubes independently of said bulb, the internal diameter of said supply-tube being greater than that of either said independent or discharge tubes.

Signed by me this 31st day of October, 1903.

WEBSTER F. TRAVES.

Attest:

G. W. SAYWELL,
A. E. MERKEL.