

F. W. LAMBDEN.  
 MEANS FOR CONTROLLING THE FLOW AND DELIVERY OF LIQUID FOR SURGICAL,  
 MEDICINAL, AND OTHER PURPOSES.

APPLICATION FILED JULY 16, 1909.

1,071,062.

Patented Aug. 26, 1913.

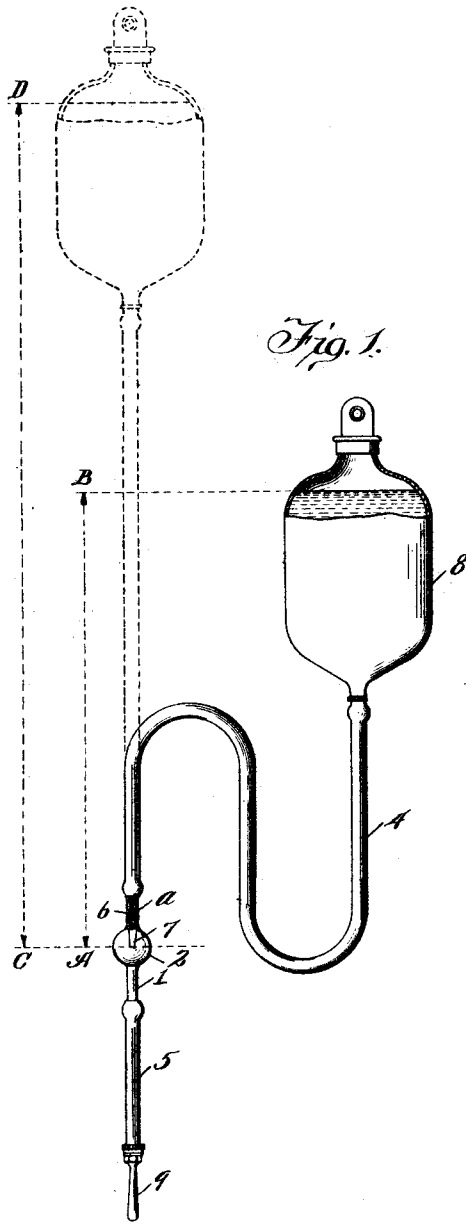


*Fig. 1.*

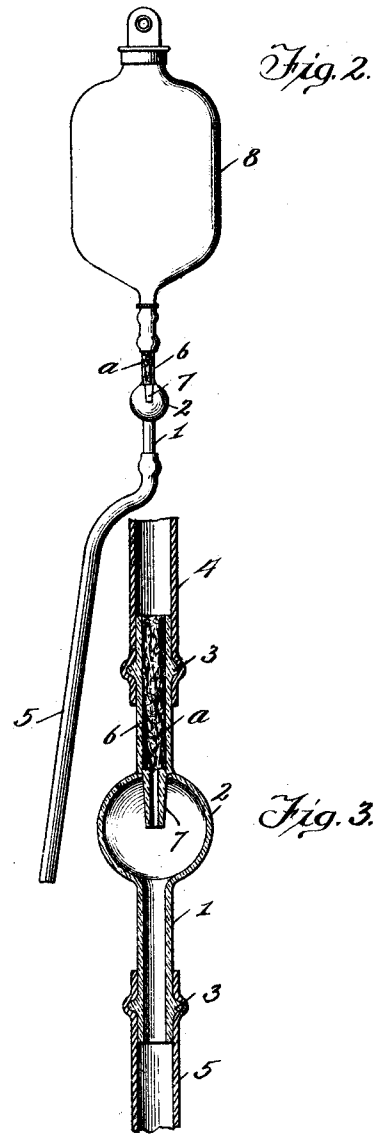


*Fig. 2.*

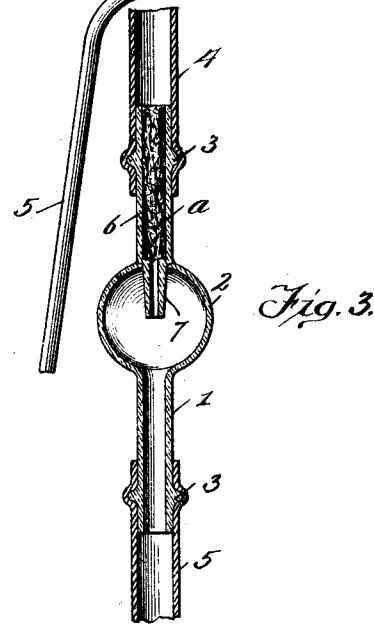


*Fig. 3.*

Witnesses:

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# UNITED STATES PATENT OFFICE.

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MEANS FOR CONTROLLING THE FLOW AND DELIVERY OF LIQUID FOR SURGICAL, MEDICINAL, AND OTHER PURPOSES.

1,071,062.

Specification of Letters Patent.

Patented Aug. 26, 1913.

Application filed July 16, 1909. Serial No. 507,937.

*To all whom it may concern:*

Be it known that I, FRANK W. LAMBDEN, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Means for Controlling the Flow and Delivery of Liquid for Surgical, Medicinal, and other purposes, of which the following is a description.

My invention is particularly adapted for the purpose of controlling the flow and delivery of a liquid, for surgical or medicinal purposes such, for example, as a saline solution, now very generally used by the medical profession. In the preferred form shown, it is illustrated as being employed in connection with an ordinary fountain syringe, and as adapted for controlling the delivery of such a solution into the large bowel by way of the rectum, which is becoming recognized as a desirable method of employing such a solution. It is also adapted for use in any case where it may be desired to control the delivery of a fluid, either for surgical, medicinal or any other purpose. The main controlling features may also be employed with other forms of devices than those shown.

To this end my invention consists in the novel construction, arrangement, and combination of parts herein shown and described, and more particularly pointed out in the claims.

In the drawings, wherein like reference characters indicate like or corresponding parts; Figure 1 illustrates my invention as employed in connection with an ordinary fountain syringe, Fig. 2 is a somewhat similar view indicating a difference in position only of my improvement in relation to the receptacle; and Fig. 3 is a vertical section particularly illustrating the preferred form of my invention.

In the preferred form shown in the drawings, 1 represents a transparent glass tube of suitable length which is enlarged at a point between its ends as at 2, and provided with suitable ribs 3—3 near its ends for the purpose of engaging the ends of the resilient or elastic tube 4, 5, employed therewith. The upper section 6, of the tube extends downward into the enlargement 2 as indicated at 7 so that the liquid passing there-through will drop from the end of the part

7 thus providing visible means for ascertaining the rate of flow. The lower end of the part 7 is preferably reduced in size so that a permeable body *a* such as absorbent cotton or the like may be retained in the tube, through which the fluid shall percolate. The cotton also serves to restrict the opening in the tube and thus aids in controlling the discharge of fluid therethrough. The tube is preferably of glass or other transparent material so as to practically form a sight glass by means of which the surgeon or party using it can readily determine by observation the rate at which the fluid is being delivered.

8 is the ordinary fluid receptacle provided with the tube 4 which is separated or cut, with the tube 1—6 frictionally engaging the free ends thereof, as shown.

9 is a suitable nozzle which may be employed, for illustration, as in the use of saline solution in intestinal treatment, for the introduction of such fluid into the intestine or large bowel.

It is obvious that the pressure brought upon the permeable material *a* as shown in Fig. 1, will depend upon the height of the fluid above the tube. For example, as shown in full lines in Fig. 1, the height of the column of fluid is as from A to B, while, if shown in dotted lines, the height of the column would be as C to D, thus regulating the pressure.

By my improved device I am able to deliver the fluid as desired. That is, it may if desired, be drop by drop, and the number of drops per minute may be regulated by the pressure, as above stated, taking into consideration the character and the manner in which the permeable material *a* is packed into the end 6 of the tube. I have, in practice, had no difficulty whatever in delivering the fluid at the rate of 30 drops per minute for example, while in other cases I have with the same apparatus, increased that rate sometimes threefold and fourfold.

As shown in Fig. 2, the tube is arranged near the receptacle 8 for convenience. Obviously, the pressure cannot be controlled to the same extent as in the form shown in Fig. 1.

Having thus described my invention, it is obvious that it may be modified to a considerable extent without sacrificing any of the

valuable features referred to, and hence I do not wish to be limited to the exact form and construction shown.

What I claim as new, and desire to secure by Letters Patent is:—

1. In a liquid dropping apparatus, a liquid receptacle, a nozzle, an imperforate transparent bulbous member, provided with inlet and outlet tubes extending therefrom, the inlet tube being in axial alinement with the outlet tube and the lower end thereof extending downwardly into the bulbous member and terminating in a downwardly opening restricted outlet, a flexible tube connecting the inlet tube and the liquid receptacle, and a flexible tube connecting the outlet tube and the nozzle.

2. In a liquid dropping apparatus, an imperforate transparent bulbous body portion, an outlet tube extending downwardly therefrom, and a downwardly extending inlet tube having its lower end projecting into the bulbous body portion, and reduced at its extremity to form a restricted outlet in axial alinement with the outlet tube, and a filling of permeable material in the inlet tube above the restricted end thereof.

In testimony whereof, I have hereunto signed my name in the presence of two subscribing witnesses.

FRANK W. LAMB DEN.

Witnesses:

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CHARLES I. COBB.