No. 879,299. PATENTED FEB. 18, 1908.

W. B. MURPHY.

SYRINGE.

APPLICATION FILED FEB. 2, 1905.

Fig. 1.

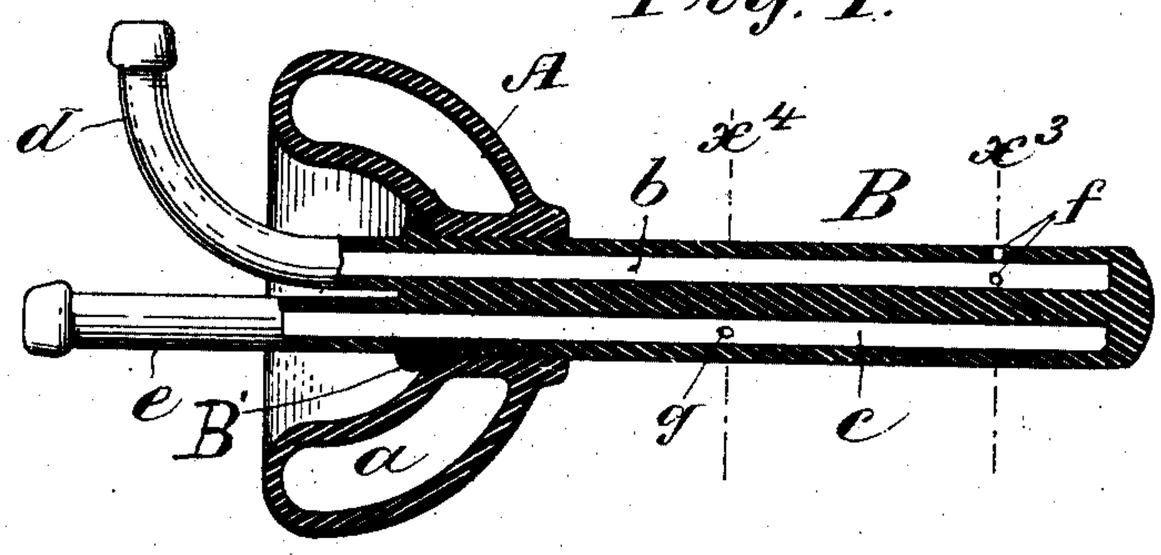


Fig. 3.

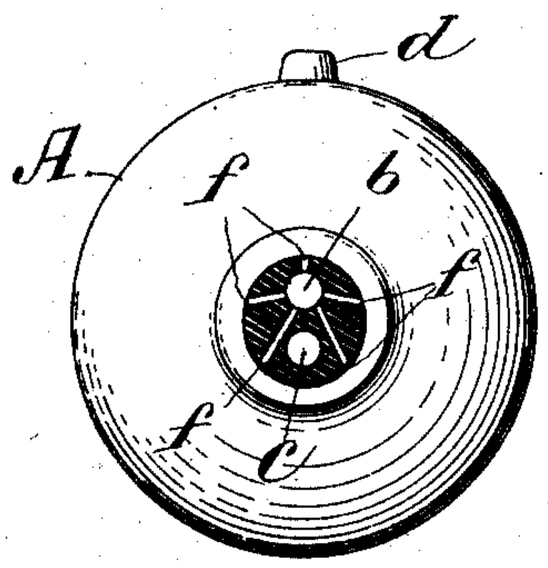


Fig. 4.

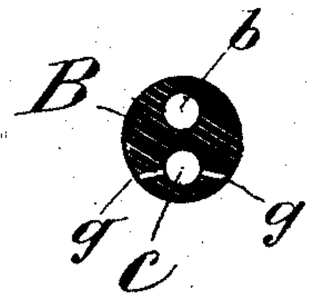


Fig. 2.

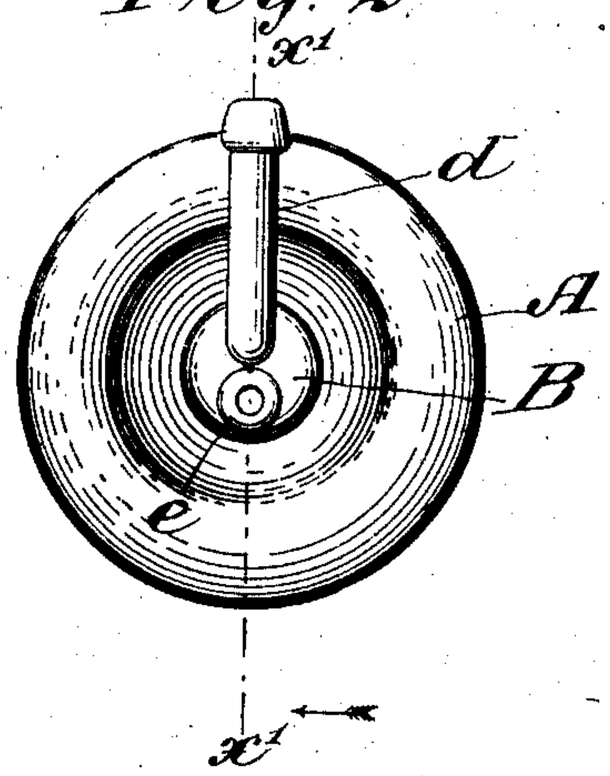


Fig. 5.

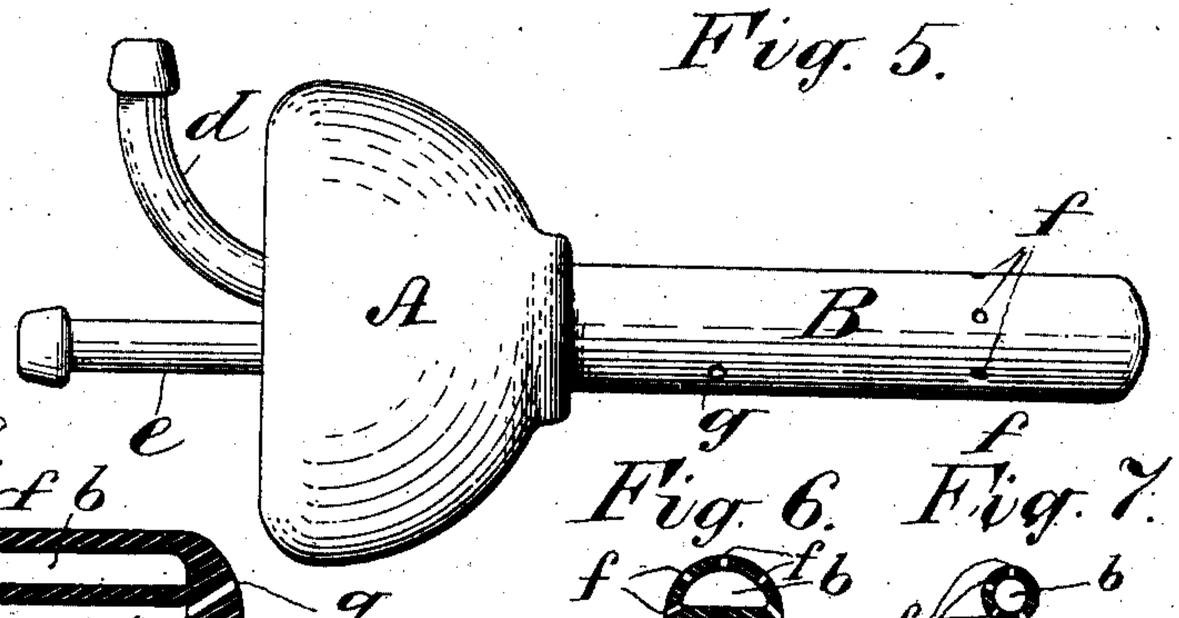


Fig. 8.

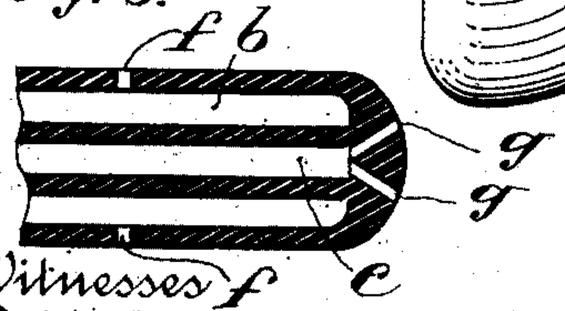


Fig. 6.

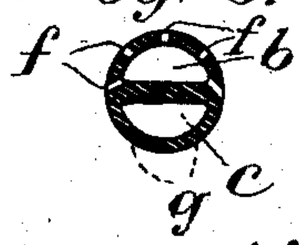
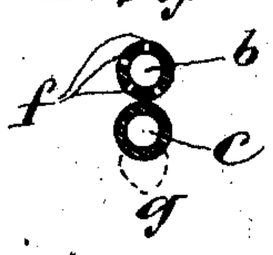


Fig. 7.



Witnesses
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UNITED STATES PATENT OFFICE.

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SYRINGE.

No. 879,299. Specification of Letters Patent. Patented Feb. 18, 1908.

Application filed February 2, 1905. Serial No. 243,843.

To all whom it may concern:

Be it known that I, WILLIAM B. MURPHY, a citizen of the United States, residing in the city, county, and State of New York, have invented certain new and useful Improvements in Syringes, of which the following is a specification.

This invention relates to the general class of syringes, and is especially applicable to the irrigation of cavities in the human body.

The object of the invention is to provide a syringe which will effect thorough irrigation and cleansing of a cavity, and will provide, automatically, without the aid of valves or springs, a pressure of the liquid in the cavity treated, together with a constant outflow of the waste fluid through the instrument.

Other details of the invention will be hereinafter fully described and their novel characteristics carefully defined in the claims.

In the accompanying drawings, which serve to illustrate an embodiment of the invention—Figure 1 is a longitudinal axial section of the instrument at line x^1 in Fig. 2. Fig. 2 is an end elevation, as seen from the left in Fig. 1. Fig. 3 is a transverse section at x^3 in Fig. 1, and Fig. 4 is a transverse section at line x^4 in Fig. 1. Fig. 5 is a side elevation. Figs. 6 and 7 are cross-sections of slightly modified forms of the nozzle of the instrument, which will be hereinafter explained. Fig. 8 is a longitudinal section illustrating another slightly modified form of the nozzle.

Referring primarily to the first five figures of the drawings, A designates a dam of soft vulcanized rubber, rubber compound, or the like, having in it a hollow *a*. This dam may be of circular form, as seen in Figs. 2 and 3. The dam fits snugly on and about a tubular nozzle B, which will be, by preference, of hard rubber. The nozzle B has a circumferential flange B′ at its outer part and whereon the dam or shield A engages to hold said dam in position to close the mouth of the vagina. In this nozzle, which may be cylindrical exteriorly, are two chambers, *b* and *c;* the former connected with the inlet nipple *d*, and the latter with an outlet nipple *e*. Preferably, in order to avoid joints, which are apt to collect dirt and foreign matter, the nipples *d* and *e* will be made integral with the nozzle B, and the chambers in the nozzle will be bores forming continuations, respectively, of the bores in the said nipples.

In the nozzle (seen in Figs. 1, 3 and 4), there are a plurality of somewhat radially disposed jet-apertures, *f*, from the chamber *b;* and a less number of inlet apertures *g*, to the chamber *c*. Fig. 3 shows the preferred arrangement of the jet-apertures *f*, and Fig. 4 shows the preferred arrangement of the inlet apertures *g*. It should be noted that the jet and inlet apertures are in the nature of bores or passages, and that these are radial to the axes of the respective chambers *b* and *c*, and not to the axis of integral nozzle B.

The purpose of this construction will be understood by an explanation of the operation of the instrument. In this operation the nozzle of the instrument is inserted into the cavity—as the vaginal or rectal cavity—and the fluid admitted under pressure, (as from a douche) at the nipple *d*, through the usual rubber tube. The fluid flows into the chamber *b* in the nozzle, from which it escapes at the jet-apertures *f*. As the dam A closes the outlet from the cavity, the waste fluid can escape only through the inlet apertures *g* to the chamber *c*, and flow thence to the outlet nipple *e*, which may also connect with a rubber tube. As the apertures *g* will not permit the escape of the waste fluid from the cavity as rapidly as it flows into the same, it will be obvious that a certain pressure will be produced and maintained in the cavity, and this pressure will be proportioned to the difference between the inlet capacity and outlet capacity for the fluid, and will be maintained automatically, without the aid of springs and valves, or of other extraneous devices which tend to gather and harbor impurities.

Herein the difference in capacity between the inlet and outlet apertures in the nozzle is effected by using holes of about the same size but differing in number, there being five jet-apertures *f* and two waste apertures *g;* but any means for effecting a difference between the total area of the jet-apertures and the total area of the inlets leading to the waste, may be used. The essential feature is the difference in area of the fluid outlet from the nozzle and the area of the fluid inlet in the nozzle leading to the waste.

An important feature of this instrument is

the absence of joints and crevices to collect foreign matter. The dam A may be removed from the nozzle B for cleaning, whenever required; and the instrument consists essentially of only two parts.

In the principal views the nozzle B has in it two cylindrical chambers *b* and *c;* but obviously these chambers *b* and *c* may be of the form shown in Fig. 6, which is a cross-section of the nozzle. Or, the nozzle might be composed of two tubes, as shown in Fig. 7, although the simple cylindrical tube is preferred. In Fig. 7 the two chambers *b* and *c* are the same as in the instrument shown in Fig. 1, but the nozzle is composed of two integrally connected tubes, disposed side-by-side. Of course, it is not essential that the nozzle, whatever its form, shall be of hard rubber. Any suitable hard material will serve.

Preferably the jet apertures *f* will be situated nearer the outer end of the nozzle than the apertures *g*, for the waste fluid. The actual number of apertures, one or more, in the nozzle, is not important to the present invention; the important point is the relative area of the inlet to the outlet. The total area of the fluid supply aperture must be greater than the total area of the waste aperture or apertures.

The dam A may be made hollow and of soft or yielding rubber throughout so that it will form a perfect closure.

Fig. 8 illustrates a form of the nozzle where the waste chamber *c*, is wholly inclosed in the chamber *b*, which is annular. The inlet apertures *g* for the waste are, in this case, in the outer end of the nozzle.

Having thus described my invention, I claim

A syringe comprising a nozzle having parallel passages for the injected and waste fluids, and having apertures in its walls for the discharge and admission of said fluids to such passages, the discharge apertures leading from the fluid injection passage being arranged to radiate therefrom at angles to each other at opposite sides of the waste passage.

In witness whereof I have hereunto signed my name this 31st day of January 1905, in the presence of two subscribing witnesses.

WILLIAM B. MURPHY.

Witnesses:
WILLIAM J. FIRTH,
HENRY G. HOSE.