No. 877,926. PATENTED FEB. 4, 1908.

E. HILKER.

VAGINAL SYRINGE.

APPLICATION FILED MAY 4, 1907.

2 SHEETS—SHEET 1.

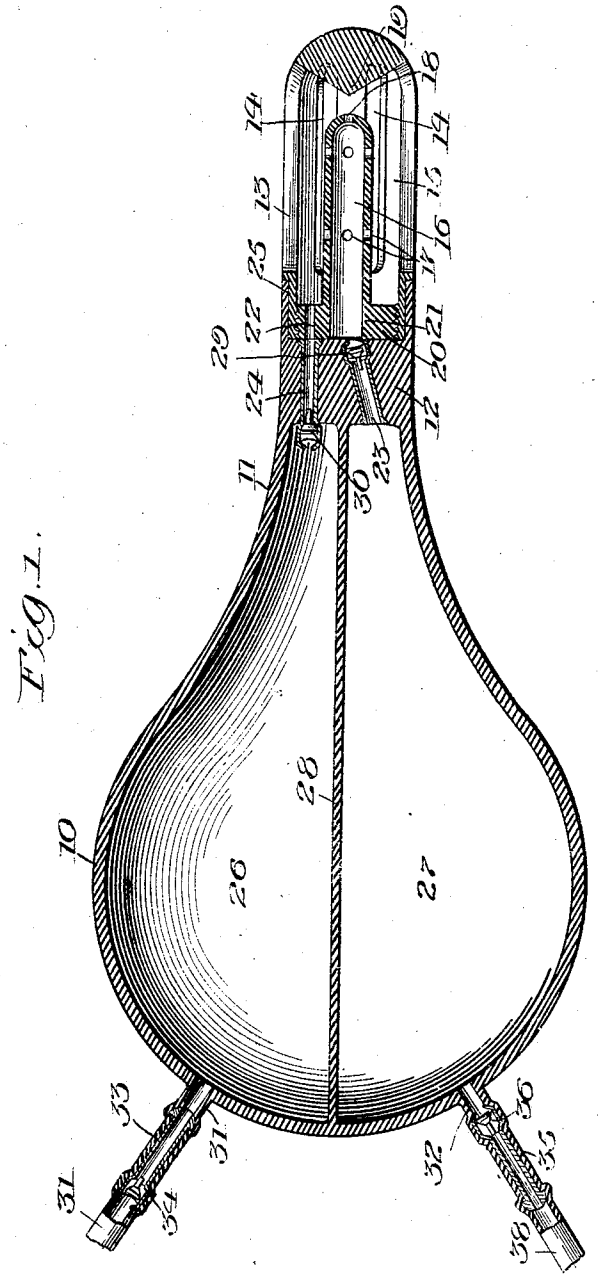

Fig. 1.

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2 SHEETS—SHEET 2.

Fig. 2.

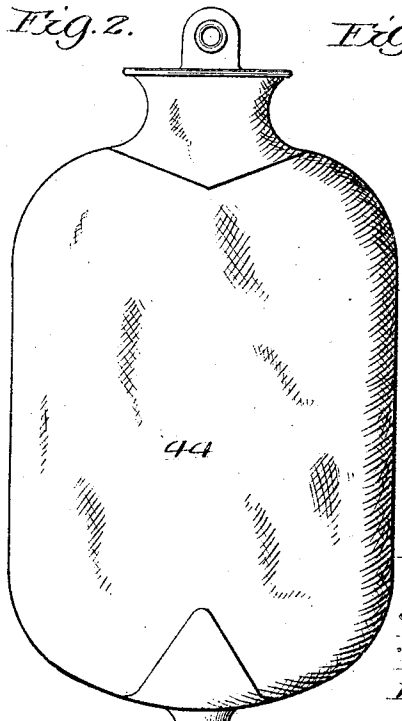


Fig. 3.

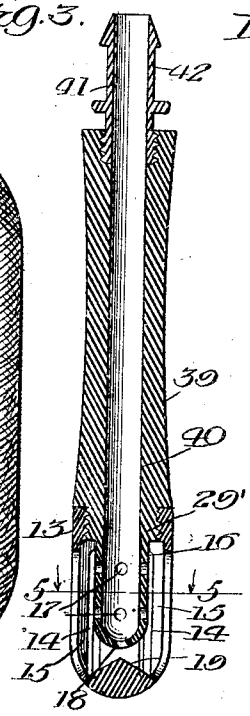


Fig. 4.

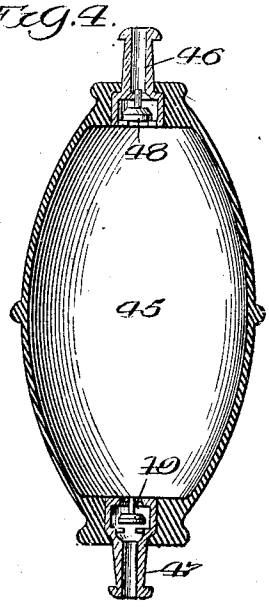
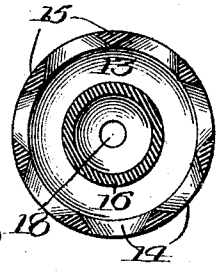
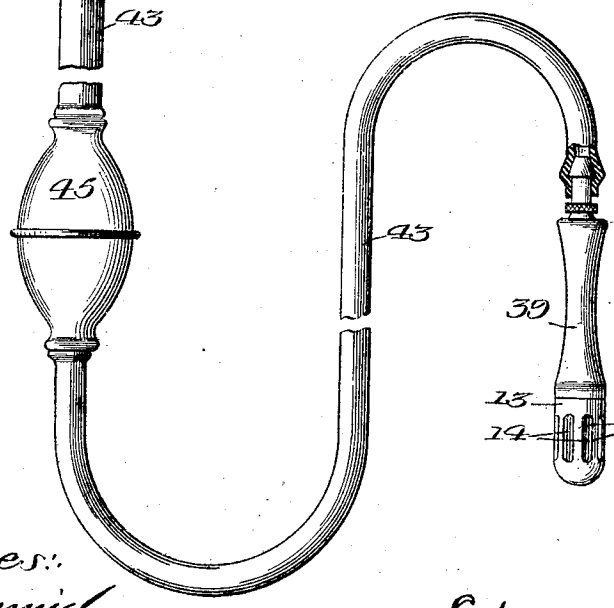


Fig. 5.





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UNITED STATES PATENT OFFICE.

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VAGINAL SYRINGE.

No. 877,926. Specification of Letters Patent. Patented Feb. 4, 1908.

Application filed May 4, 1907. Serial No. 371,798.

To all whom it may concern:

Be it known that I, EDWARD HILKER, 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 Vaginal Syringes, of which the following is a specification.

This invention relates to certain improvements in that type of syringes which are particularly designed for vaginal irrigation, and it consists in certain pecularities of the construction, novel arrangement, and operation of the various parts thereof, as will be hereinafter more fully set forth and specifically claimed.

The object of the invention is to provide an improved and simplified device, of such size, shape and length as to facilitate its introduction into the vagina and prevent injury to the delicate organs, and, further, to so construct the syringe that when placed in position it will seal or close the entrance to the vagina (when desired), so that the liquid introduced will accumulate in the vaginal cavity and will inflate the folds thereof, but promote effective cleansing.

A further object is to so construct the syringe that the walls or folds of the vagina will be held at a distance from the discharging nozzle, so that the discharge of liquid therefrom will be ejected in horizontal jets or small streams, and when the instrument is fully inserted, around the mouth of the womb, but not directly thereagainst, thus preventing injury of a more or less serious nature.

A still further object of the invention is to provide a syringe of such construction that, immediately after the liquid has been injected into the vagina it may be drained from the same, and while the syringe is operated the liquid is alternately injected into and drained from the vagina.

Various other objects and advantages of the invention will be disclosed in the subjoined description and explanation.

In order to enable others skilled in the art to which my invention pertains, to make and use the same, I will now proceed to describe it, referring to the accompanying drawings, in which—

Figure 1 is a central sectional view through a syringe embodying one form of the invention; Fig. 2 is a view in elevation of a combined fountain and bulb syringe, showing the tube thereof shortened for the convenience of illustration, and illustrating a modification in the construction of the head-piece and discharging nozzle carried thereby; Fig. 3 is a central longitudinal sectional view of the head-piece; Fig. 4 is a similar view of the compressible bulb used in the construction shown in Fig. 2; and Fig. 5 is a cross-sectional view of a portion of the head-piece and discharging nozzle taken on line 5—5 of Fig. 3 looking in the direction indicated by the arrows.

Like numerals of reference, refer to corresponding parts throughout the different views of the drawings.

Referring to Fig. 1 of the drawings, the reference numeral 10 designates a bulb or body, which is made of soft rubber and substantially of the shape shown in the drawings—that is—its lower portion is formed almost spherical, but has a tapered extension or neck 11 which is provided near its end with a transverse partition or wall 12, of any desired thickness. The extension or neck 11 projects beyond the wall or partition 12, and is hollow to receive a portion of the head-piece 13, which is preferably made of hard rubber, but may be formed of other suitable material, and is circular in cross-section, or tubular in form, and is provided with a series of longitudinally extending slots 14, whereby a series of bars 15 are produced between said slots, as will be readily understood by reference to Figs. 2 and 5 of the drawings, in the latter of which figures it will be observed that the inner portions of the bars 15 are angular in cross-section, thus presenting their apexes towards the discharging nozzle 16, which is also tubular in shape, and is provided in its wall with a series of openings 17 and at its free or outer end with an opening 18, which openings are for the passage of the liquid from the syringe. As shown in Figs. 1 and 3 of the drawings, the outer end of the head-piece 13 is provided with an inwardly projecting conical and imperforate portion 19, the apex of which is disposed in alinement with the opening 18 in the free end of the nozzle 16, which end of said nozzle is located at a short distance from the conical shaped portion 19 and near the outer ends of the slots 14 in the head-piece. The inner end of the piece 13 is internally screw-threaded to receive a plug 20 which carries the nozzle 16 on its outer surface, and said plug is provided with two channels 21 and 22 to register with valve-casings 23 and 24, respectively, which are located in suitable openings in the par-

tition 12 of the bulb 10, or body of the syringe. The inner portion of the head-piece 13 is annularly reduced as at 25 to fit in the hollow portion of the tapered neck of the body, so as to produce a smooth outer surface, as will be readily understood by reference to Fig. 1 of the drawings. The bulb or body 10 is divided into two compartments 26 and 27 by means of a longitudinally extending partition 28, which is preferably made of soft rubber and integral with the bulb.

The valve-casing 23 communicates at one of its ends with the compartment 27, and at its other end with the channel 21, which leads into the cavity of the nozzle 16, and said casing has seated in its outer end a valve 29, which opens outwardly. The valve-casing 24 communicates at one of its ends with the compartment 26, and at its other end with the cavity of the head 13, and has in its inner portion an inwardly opening valve 30, of any desired kind. That portion of the body or bulb 10 opposite the neck or extension 11 is provided with two tubular extensions 31 and 32, preferably of soft rubber, which communicate with the compartments 26 and 27, respectively. Fitted in the extension 31 is a valve-casing 33, which has seated in its outer portion an outwardly opening valve 34, and located in the tubular extension 32 is a valve-casing 35, which has seated in its inner portion an inwardly opening valve 36, which, as well as the valve in the casing 33, may be of the same construction as those shown in the valve-casings 23 and 24 and above mentioned. Fitted in the outer ends of the casings 33 and 35 are flexible tubes 37 and 38, respectively, the former of which may lead to a receiving vessel and the latter to a supply of water or liquid.

In Figs. 2 and 3 of the drawings, I have shown a modification in the construction of the head-piece 13, and illustrated it in Fig. 2 as applied to a combined fountain and bulb syringe, and in this modification the head-piece 13 is of substantially the same construction as that shown in Fig. 1 and above-described, except that it is considerably shorter, and that the plug 29′, which is secured on the inner end of the head-piece, is provided with a stem 39, of hard rubber or other suitable material, which stem has a longitudinally extending channel 40, which communicates at one of its ends with the cavity of the discharge nozzle 16 and at its other end with a channel 41 in a coupling or nipple 42, to which one end of the tube 43 is secured in a well-known way. The other end of this tube communicates with a receptacle 44, such as a water-bag, which may be supported at a suitable height to cause the liquid to freely flow therefrom. Interposed between the extermities of the tube 43 is a compressible bulb 45, which has valve-casings 46 and 47 in its ends, to which the sections of the tube 43 are connected, and which have valves 48 and 49, of the ordinary or any preferred construction, located therein.

The operation of the syringe is simple and as follows: When a syringe of the form shown in Fig. 1 of the drawings is employed, it is apparent that by compressing the walls of the bulb 10 the air in the compartments 26 and 27 will be forced therefrom through the valve-casings 23 and 35. As soon as the pressure is removed from the bulb the resiliency of the material will cause its walls to expand, which operation will draw a supply of water through the tube 38 and valve-casing 35 into the compartment 27, thus filling or partly filling the same, when the head-piece 13 and neck 11 may be inserted into the vagina until the enlarged portion of the neck closes the entrance thereto, and after which, by again compressing the bulb, the water contained in the compartment 27 will be forced out through the valve-casing 23 and openings 17 and 18 in the discharging nozzle and into the vaginal cavity, when by releasing the bulb it will again expand and withdraw the water or liquid from the vagina through the valve opening 22 and valve-casing 24 into the compartment 26. By again applying pressure to the bulb the valve 30 will be closed and the valve 34 will be opened, thus permitting the used liquid to be discharged into the vessel for its reception, and at the same time supplying the compartment 27 with fresh liquid and discharging the same through the valve-casing 23 and nozzle and head-piece into the vagina.

When the construction shown in Figs. 2, 3 and 4 of the drawings is employed, it is apparent that the operation is very much similar to the above-described, except that the head-piece 13 and its stem 39 will not close the entrance to the vagina, but will permit the water to escape around the same. In this modified construction, as well as that shown in Fig. 1, it is apparent that when the water is discharged from the outer end of the nozzle it will strike the apex of the conical-shaped portion 19 of the head-piece and cause it to be deflected laterally, thus preventing direct discharge against the mouth of the womb. The inner surfaces of the bars 15 being angular in shape, it is obvious that the water discharged through the opening 17 in the nozzle will be permitted to pass freely from the head-piece through the slots therein.

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

1. In a syringe, the combination with a compressible bulb, of a discharging nozzle in communication therewith and having perforations in its wall and an opening in its outer end, controlling valves in said bulb, a head-piece surrounding the nozzle at a distance therefrom and provided with a series

of longitudinally extending and spaced apart bars, the said head-piece having an imperforate inwardly extending conical shaped portion on its outer end, the apex of which is located near the opening in the outer end of the discharging nozzle.

2. In a syringe, the combination with a soft rubber bulb having a neck portion integral therewith and reduced towards its outer end and provided near said end with a channeled transverse wall so as to afford a socket in the outer end of said neck portion, of a partition extending from said transverse wall to the end of the bulb opposite the same and dividing the bulb into two compartments, a head-piece fitted in the socket of the neck portion and having a series of longitudinally extending and spaced apart bars and an imperforate outer end, a perforated discharging nozzle located within the head-piece at a distance from the bars and outer end thereof, an outwardly opening valve in the transverse wall on one side of said partition and an inwardly opening valve therein on the other side of the partition, a tube communicating with each of said compartments, and a controlling valve in each of said tubes.

3. In a syringe, the combination with a two-compartment soft rubber bulb having a neck portion integral therewith and reduced towards its outer end, of a head-piece mounted on the outer end of the neck portion and having a series of longitudinally extending and spaced apart bars and provided at its outer end with an inwardly projecting conical shaped portion, a discharging nozzle located in the head-piece at a distance from the bars and conical shaped portion thereof, an outwardly opening valve in the neck portion of the bulb on one side of the partition thereof and an inwardly opening valve in said portion on the other side of the partition, a tube communicating with each of said compartments, and a controlling valve in each of said tubes.

4. In a syringe, the combination with a two-compartment soft rubber bulb having a neck portion integral therewith and reduced towards its outer end, of a head-piece mounted on the outer end of the neck portion and having a series of longitudinally extending and spaced apart bars, the said head-piece having an imperforate outer end, a discharging nozzle located in the head-piece at a distance from the bars and the imperforate outer end of the head-piece and provided with perforations in its walls and an opening in its outer end, an outwardly opening valve in the neck portion of the bulb on one side of the partition thereof and an inwardly opening valve in said portion on the other side of the partition, a tube communicating with each of said compartments, and a controlling valve in each of said tubes.

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