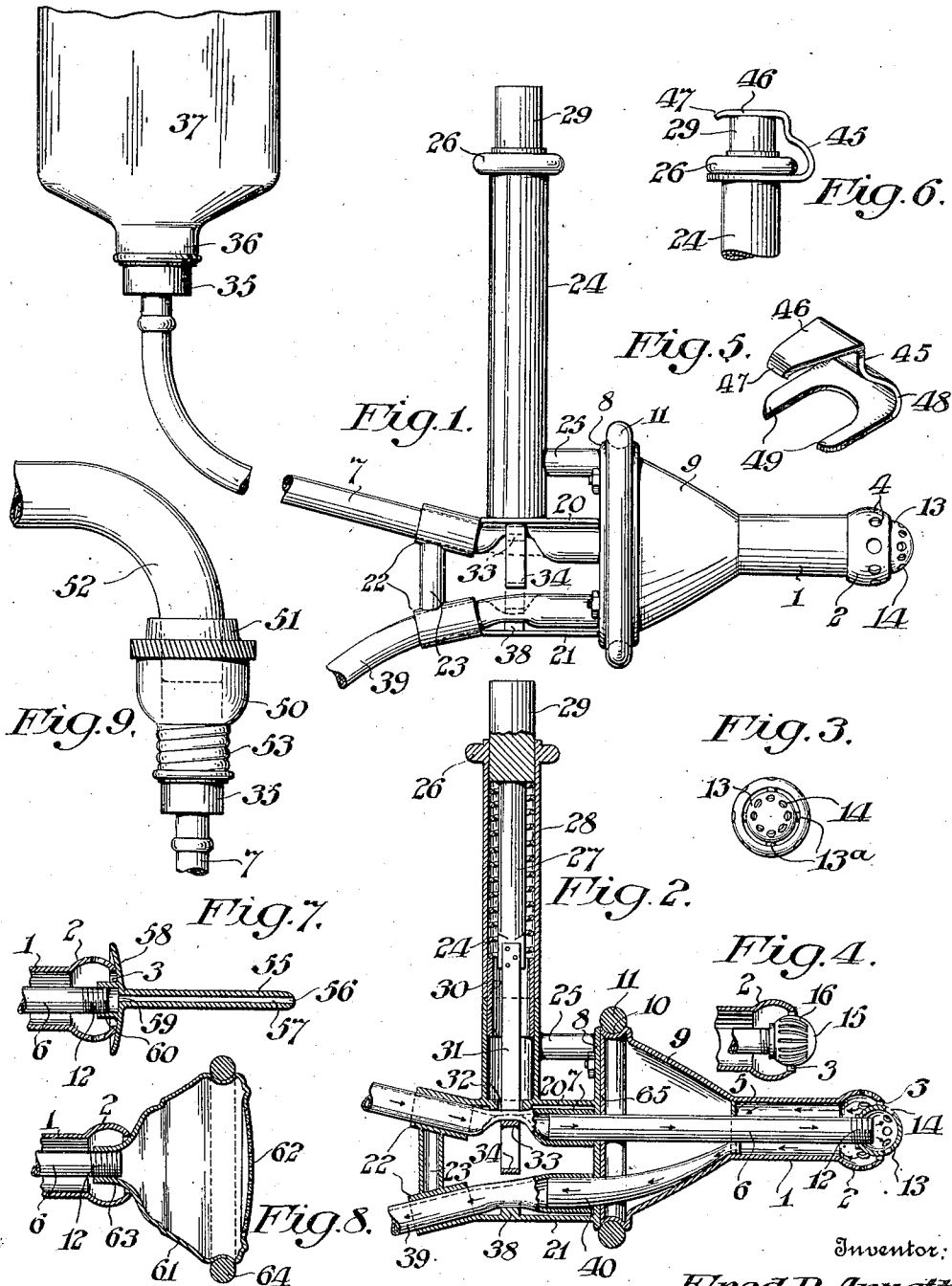


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 SYRINGE.
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SYRINGE.

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To all whom it may concern:

Be it known that I, FRED R. ARNETT, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Syringes, of which the following is a specification.

The object of this invention is to provide a fluid-conveying and controlling device embodying several auxiliary parts, which, when employed respectively with the principal member of the device, operate according to the individual characteristics of as many implements.

Thus, when the principal element is used in combination with one of said parts or attachments, it is operable in an improved manner to perform every function of a syringe for cleansing the vaginal cavity by means of any form of suitable douche; again with another combination of parts it fulfils all of the demands of a rectal syringe; and still again may be so combined as to possess all of the attributes of the better types of portable shower-bath devices, and more.

In cleansing the vagina, and in fact the uterus when such is also desirable, it is quite generally necessary to assume a sitting posture over a suitable vessel, as the ordinary syringes on the market comprise only a nozzle and tubular means for conducting a fluid by way of said nozzle into the cavity, whence it runs therefrom with as little and certainly no positive control, or is taken back into the source of supply. Furthermore, with such devices it is practically impossible to contain a douche sufficiently long to permit it to expand and enter the interstices of the membranes in order to thoroughly antisepticize or sterilize them.

On the other hand, the shape and natural position of the vaginal cavity and the uterus therein demands that for complete sterilization only the prone position of the body will suffice as lying out upon a bed or couch, and it is therefore one of the objects of this invention to provide for the application of a douche while a person is thus reclining in a horizontal position; to this end to convey liquid from a suitable source, as a hot-water or common syringe "bottle", or a faucet into the cavity; to provide means to retain said liquid therein until the area of the cavity is enlarged to the extent desired by

the fluid pressure; and to provide a valve-action, or the equivalent thereof, adapted by virtue of a slight pressure upon a suitable portion thereof to operate the mechanism which closes the supply-tube and opens a drainage-tube, which latter tube is adapted to convey the used fluid to any desired place or receptacle for disposal, or, by an intermediate position of said valve-action, to permit the fluid to pass continuously from a source through the supply-tube into the cavity and thence therefrom by way of said drainage-tube.

To facilitate the foregoing operation, an auxiliary attachment is provided for the usual cold- and hot-water mixing faucet, or in fact any type of faucet commonly in use, to which same the supply-tube terminal member may in turn be attached, exactly as when said tube is connected to a hot-water or a syringe "bottle".

Another object of the invention is to provide a substitute for the nozzle used in the above case which is adapted to administer a rectal douche, and also, instead of the mentioned member to equip the main portion of the device with the spray-nozzle for the purpose of creating a shower for use in the bath of that type.

With these and other objects in view, the invention consists in numerous details of construction and operation, all of which are fully and clearly brought out in the following specification, when read in conjunction with the accompanying drawings, in which Figure 1 is a side elevation of the preferred embodiment of the invention connected to a suitable reservoir fluid supply and provided with the particular nozzle designed for use in administering a vaginal douche; Fig. 2 is a vertical longitudinal sectional view of the same without including the fluid supply; Fig. 3 is a front elevation of a slightly modified form of nozzle used for the same purpose; Fig. 4 is a side elevation of still another form of nozzle used for this purpose; Fig. 5 is a perspective view of a clip used to maintain the valve-action in intermediate position; Fig. 6 is a side elevation of the same applied to the uppermost end of portion of the device, as illustrated in Fig. 1; Fig. 7 is a longitudinal sectional view of the discharge end of the device equipped with a special nozzle designed to be used in administering a rectal

douche; Fig. 8 is a similar view of the same end of the device equipped with a nozzle for creating a spray as used in the shower-bath; and Fig. 9 is a side elevation of an attachment for any type of faucet, to which the intake end of the fluid supply-tube, instead of the reservoir shown in Fig. 1.

Referring to the drawings, the essential elements of the construction of the preferred embodiment of this invention are clearly illustrated in Figs. 1 and 2, which show the device as comprising a tubular portion 1 flared outwardly and then reversely at its forward portion 2, forming a mutilated spherical terminal provided with an opening 3 of substantially the same size as the inner diameter of the tube 1, said terminal being also provided circumferentially with spaced apertures 4.

The rear end of the tube 1 is closed by a wall 5, through the center of which extends, and is securely positioned, an inner tube 6 which projects rearwardly of said wall for a distance at least as great as the length of said first-named tube, while to its rear end is adapted to be attached a flexible fluid supply-tube 7. The tube 6, adjacent to its rearmost end portion, passes centrally through and is maintained in fixed position by a disk 8 extending in a plane perpendicular to the tube's longitudinal axis, while the peripheral portion of said disk is connected to the rear end of the tube 1 by an imperforate bell-shaped metallic section 9, said section being turned or spun at its larger end in such manner as to form a circumferential groove 10, in which is maintained by its own resiliency a circular protective rubber gasket 11.

The tube 6, extending through the tube 1, terminates slightly short of the free end of the latter in an exteriorly threaded portion 12, to which may be removably secured a cylindrical member 13 provided with spaced apertures 14, preferably formed in a single circle substantially half-way between the center of the forward exposed portion of this last-named member and the adjacent edge portion of the terminal 2 of the tube 1.

In lieu of the member 13, the spherical member 15, shown in Fig. 4, may be attached to the tube 6, and in this case instead of being provided with spaced holes, such as those shown in Fig. 3, is provided with parallel circumferentially positioned saw-cuts 16, however, leaving the frontal portion imperforate as in the former instance. This being for the particular reason that to aperture this portion of the nozzle-attachment would very probably cause injurious results to the membranous lining of the vaginal cavity as by abrasion of the same by the edges of said apertures, as well as presenting numerous recesses into

which certain changes of temperature and fluid pressure might readily cause adjacent membranes to be sucked.

The member 13 may also be provided with three or more spaced projecting lugs 13^a, as shown in Fig. 3, for cooperation with the sides of the aperture 3 in the end of the tube 1, for the purpose of providing a second rigid support for the tube 6, with respect to said tube 1, in addition to its being unitarily secured to the partition 5. The substitute nozzle, shown in Fig. 4, is also provided with similar lugs in position and of a number as may be deemed best.

Secured to the rear face of the disk 8 is a frame comprising parallel rearwardly extending members 20 and 21, each terminating rearwardly in a hollow bushing 22 and connected by a frame-section 23 adapted to maintain this last-named structure rigid as a unit. Rearwardly secured to the member 20 and extending upwardly therefrom is a tubular member further maintained rigid with respect to the disk 8 by a bridge 25. The upper end portion of the tube 24 is preferably provided with a peripheral flange 26, while positioned within said tube is a plunger 27, surrounded by a coil-spring 28, and terminating upwardly in an enlarged head 29 which projects beyond the free end of the tube. The said spring 28 at one end cooperates directly with said head and at its inner end with a sleeve 30 secured to the inner face of said tube in any suitable manner, the whole thus operating to yieldingly maintain said plunger in uppermost position as shown in Figs. 1 and 2.

Said plunger 27 has secured to its lower end a rod 31 which passes downwardly through an aperture 32 in the frame-member 20, and below said aperture it is provided with a pair of transversely extending members 33 and 34. In its spring-pressed uppermost position the member 33 pinches against the lower face of the member 20, the opposite sides of the tube 7 being connected to the tube 6 at one end and extending rearwardly through the upper bushing 22 to a hollow externally threaded plug 35, which is adapted to be secured into the open end 36 of a reservoir 37 of such type, for instance, as the usual rubber hot-water bottle or rubber-bag which accompanies the usual syringe sets.

However, when pressure is applied by the thumb to the head 29, the plunger 27 is forced downwardly, thus permitting the member 33 to release the tube 7, and by continuing the movement of said plunger downwardly the member 34 is caused to cooperate with a projection or offset 38 carried by the frame-member 21, for the purpose of pinching together the opposite sides of a tube 39 which, at its innermost end, is secured to a metal tube 40 passing through the

disk 8 and bell 9, and leading into the interior of the tube 1 by means of an opening in the partition 5, said tube 39 at its opposite end being adapted to convey a fluid from the tube 1 to a suitable point of disposal.

There is preferably provided as an auxiliary attachment with this improved syringe a clip such as is shown in Figs. 5 and 6, for the purpose of maintaining the members 33 and 34 in a position intermediate of their positions in which they respectively close the supply-tube 7 and drainage-tube 39. This clip preferably comprises a shank 45 having an integral upwardly and forwardly extending tongue 46 adapted to cooperate with the plane free surface of the head 29, and yieldingly prevent it from being slidably displaced therefrom by means of a downwardly depending lip 47, while the shank 45 downwardly is enlarged at 48 and bifurcated forwardly to form spaced parallel fingers 49 adapted to cooperate with the lower side of the flange 26 of the tube 24. An attachment such as is shown in Fig. 9 is provided, the same comprising a hollow bell-shaped member 50, lined with a rubber-gasket 51, and adapted to yieldingly surround the discharge end of a fluid supply-pipe 52 as, for instance, the usual bath or sink faucet. The member 50 terminates downwardly in an interiorly threaded extension 53, into which may be secured the hollow plug 35 hereinbefore described, and from which leads the fluid supply-tube 7. Thus the terminal member 35 of said last-mentioned tube may be just as readily attached to a faucet, affording a continuous supply of water, by means of the member 50, as by directly connecting said terminal member to the open end of the usual flexible bag-reservoir before referred to.

Referring to Fig. 7, there is illustrated a nozzle which is particularly adapted for administering a rectal douche, and the same comprises a relatively slender tubular member 55, knotted at its free end 56, and provided with a bore 57 of relatively small diameter. The rear end of said tube is unitarily secured to a substantially radially extending disk 58, having a central opening 59 in axial alinement with and forms a continuation of the bore 57, said disk being slightly concaved upon the surface opposite to said tube, and thus adapted to slightly surround and positively cooperate with the outer edge portion of the member 2 adjacent to the central aperture 3, to rigidly position the tube 55, with respect to the tube 1, and thereby indirectly create a solid support for the tube 6, in addition to its being supported by the partition 5, by the threaded cooperation of a short tube section 60 carried by the disk 58 with the end portion 12 of said tube 6.

Quite similarly in Fig. 8, a well-known type of shower-bath spray-nozzle is illustrated as comprising a hollow bell-shaped member 61, closed at its larger end by a perforated disk 62, and internally threaded at its rearmost restricted end portion 63 in order to cooperate with the threaded portion 12 of the tube 6, and to screw upon said portion a sufficient distance such as to cause the positive cooperation of the side walls of the portion 61 with the edge portion surrounding the aperture 3 in the substantially spherical portion 2 of the tube 1, thus in this case also firmly supporting the tube 6 with respect to the tube 1 at a point other than the partition 5. As a further detail in the preferred embodiment of this particular attachment, the same is provided with a peripheral resilient gasket 64, similar to the gasket 11 hereinbefore described, and for the purpose of protecting the adjacent structure against mutilation or becoming dented upon being knocked by or permitted to come in contact with other objects.

In the operation of this device as a syringe for douching the vaginal cavity, the tube 1 is inserted through the vaginal orifice until said orifice comes into direct contact with and is completely closed by the bell-shaped section 9. With either of the ball-nozzles, shown in Figs. 2 and 4, used as a part of the device, and the supply-tube 7 connected to a suitable source for any fluid solution, such as the reservoir 37, or for a continuous supply of clear water, such as the faucet terminal 52, the thumb is used to press downwardly upon the head 29 of the valve-operating mechanism, while the hand of the user may readily grip the tubular extension 24, by gripping which a positive and delicate regulation of the valve mechanism may be attained, as well as making it possible to comfortably and easily support the device in any desired position for operation. When thus positioned, the fluid may be permitted to flow through the tubes 7 and 6 and nozzle 13 into the vaginal cavity, and thence downwardly by means of the tubes 1 and 40 into the discharge-tube 39 by maintaining the valve-head 29 in intermediate position, which same may be facilitated for an extended period by the use of the clip as shown in operative position by Fig. 6.

On the other hand, if it is desired by the user or attendant to more completely and efficiently douche the particular cavity in question than is possible in the first instance, the valve-head 29 is held in lowermost position as shown in dotted lines in Fig. 1, thus pinching and closing the discharge-tube 39 and preventing any fluid from leaving the cavity, while fluid from the source of supply continues to flow into the said cavity and by its pressure expands the walls

thereof and opens the interstices of the surrounding membranes, thus subjecting them to the cleansing action of said fluid. When sufficient fluid has entered to accomplish the desired result and before becoming painful, the valve-head 29 is released completely, thus closing the supply-tube 7 and opening the discharge-tube 39, permitting the free discharge of the used fluid from the cleansed cavity. This operation may, of course, be performed intermittently as many times as may be desired and with numerous variations such as will be readily suggested by the user to meet the requirements of the case.

When using this device with the nozzle shown in Fig. 7, the flow of fluid may be controlled intermittently by actuating the valve-head 29, as hereinbefore described, by maintaining said valve-head in intermediate position by means of the clip 45, also as hereinbefore described. Likewise, the same operation may be used with respect to the shower-nozzle illustrated by Fig. 8, though it is presumed in most instances it would be preferable to maintain a continuous flow of water by the use of the said clip, rather than an intermittent flow as is desirable in other instances.

One exceedingly valuable characteristic of the device hereinbefore described arises from the fact that the space between the supply-tube 7 and the bell-shaped flared portion 9 of the tube 1, after first being closed at one end by the partition 5, is subsequently closed adjacent to the larger end by means of a partition 65 which is soldered in place except for a relatively small opening, after which the device, and particularly the said enlarged portion, is heated to the highest feasible temperature in order to expand the air or other gas therein. Then, while still heated and the gaseous contents of this chamber are thus rarefied, the sealing of the latter partition or closure 65 is completed.

With this construction, it is obvious that a vaginal douche may be used in which water is conveyed to the vaginal cavity by means of the supply-tube and nozzle thereon, the water being of a temperature which, while bearable, when in contact with the interior organisms would be extremely painful in direct contact with the membranes at the immediate mouth of the vagina, as well as those exterior parts of the body adjacent thereto.

For, while heat from the supply-tube will eventually raise the temperature of the flared portion of the discharge tube by contact through the tube's partitions-supports of the first-mentioned tube, this rise in temperature will require a sufficient period of time before the usual application of a douche will be completed and said flared portion becomes unbearably warm, or else the body

in contact with said flared portion will have become gradually accustomed to the rise in heat and thereby preventing the danger of causing excessive pain.

Having thus described my invention, what I claim and desire to protect by Letters Patent of the United States is:—

1. A syringe, comprising a drainage-tube, a supply-tube extending therethrough, flexible tubes connected to each of said first tubes, and means attached to said first tubes, and operative in extreme positions to close said second tubes selectively.

2. A syringe, comprising a drainage-tube, a supply-tube extending therethrough, one of said tubes being adapted to detachably receive interchangeable nozzles, flexible tubes connected to each of said first tubes, and means attached to said first tubes, and operative in extreme positions to close said second tubes selectively.

3. A syringe, comprising a tube flared at one end, a second tube extending through said first tube, and means carried by said flared portion operative to close either of said tubes.

4. A syringe, comprising a tube flared at one end, a second tube extending through said first tube, and spring-actuated means carried by said flared portion operative to yieldingly close one of said tubes, and manually operative against the spring pressure to close the other of said tubes.

5. A syringe, comprising a tube flared at one end, a second tube extending through said first tube, a plate closing the larger end of said flared portion, and spring-actuated means carried by said plate operative to yieldingly close one of said tubes, and manually operative against the spring pressure to close the other of said tubes.

6. A syringe, comprising a tube, a second tube passing through said first tube and supported at one point by said first tube, and a nozzle adapted to be attached to one of said tubes and to support the same with respect to, by coöperating with, the other of said tubes.

7. A syringe, comprising a drainage-tube, a supply-tube passing through said first tube and supported at one point by said first tube, and a nozzle adapted to be attached to said supply tube and to support the same with respect to, by coöperating with, said drainage-tube.

8. A syringe, comprising a tube, a second tube passing through said first tube and supported at one point by said first tube, and interchangeable nozzles adapted to be attached to one of said tubes and to support the same with respect to, by coöperating with, the other of said tubes.

9. A syringe, comprising a tube, a second tube extending through said first tube, a hollow handle carried by said first tube, and

manually-actuated means extending into said handle and operative to close the flow of fluid through said tubes.

10. A syringe, comprising a tube flared at one end, a closure for said flared portion, a tube extending through said first portion, said flared portion, and said closure, a hollow handle secured to said closure, and manually-actuated means extending into said handle and operative to control the flow of fluid through said tubes.

11. A syringe, comprising a tube flared at one end, a closure for said flared portion, a tube extending through said first portion, said flared portion, and said closure, a hollow handle secured to said closure, and spring-actuated means extending into said handle operative to yieldingly close one of said tubes, and said means being manually operative against the spring pressure to close the other of said tubes and to open the first.

12. A syringe, comprising a tube flared at one end, a closure for said flared portion, a tube extending through said first portion, said flared portion, and said closure, a flexible tube attached to each of said first tubes, a hollow handle secured to said closure, and spring-actuated means extending into said handle operative to yieldingly close one of said flexible tubes, and said means being manually operative against the spring-pressure to close the other of said flexible tubes and to open the first.

13. A nozzle, comprising a tube, a second

tube extending through a portion of said first tube and forming a chamber between said tubes and between spaced imperforate walls connecting said tubes, the air within said chamber being rarefied before sealing the same.

14. A nozzle, comprising a tube having an enlarged portion, a second tube extending through said enlarged portion, and walls extending between and sealing the space between said tubes to inclose a partially vacu- ated chamber.

15. A nozzle, comprising a tube having an enlarged portion, a second tube extending through said enlarged portion, and walls extending between and sealing the space between said tubes at each end of said enlarged portion to inclose a rarefied gas, heat-insulating chamber.

16. A syringe, comprising a discharge-tube having an enlarged portion, a supply-tube extending through said first tube and spaced therefrom by walls at each end of said enlarged portion, the space between said tubes within said portion containing rarefied gas to decrease the conductivity of heat from the inner tube to said enlarged portion.

In testimony whereof I have affixed my signature in the presence of two witnesses.

FRED R. ARNETT.

Witnesses:

MERRILL T. CRAMER,
DOUGLAS LEAKE.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."