June 14, 1927. 1,632,541

A. J. D. CORTES

DOUCHE NOZZLE

Filed June 29, 1926

Fig. 1.

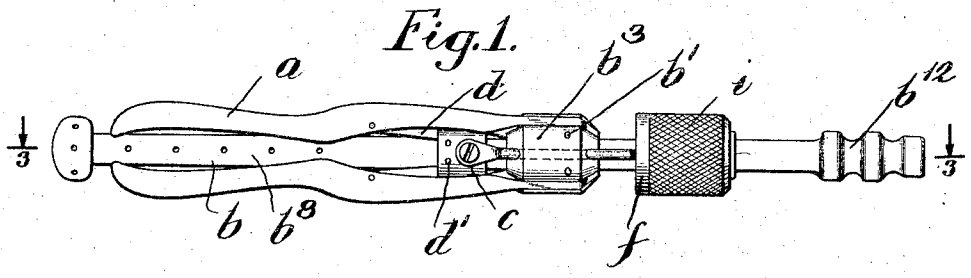


Fig. 2.

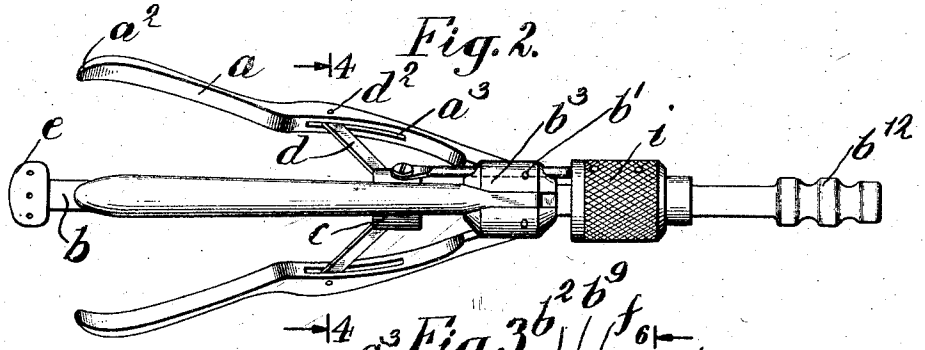


Fig. 3.

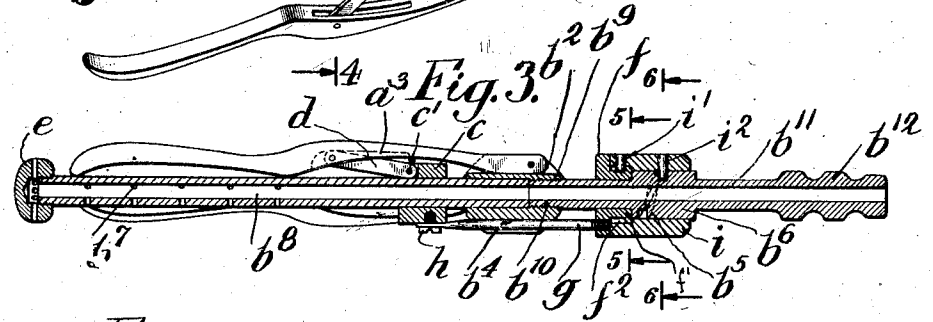


Fig. 4.

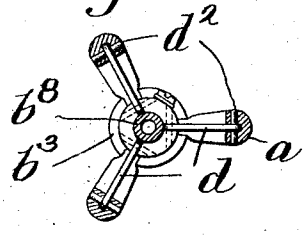


Fig. 5.

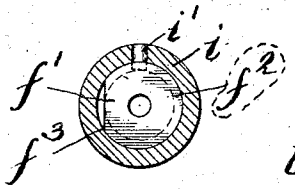
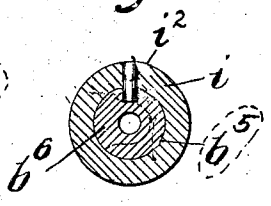


Fig. 6.



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UNITED STATES PATENT OFFICE.

AUGUSTO J. D. CORTES, OF NEW YORK, N. Y.

DOUCHE NOZZLE.

Application filed June 29, 1926. Serial No. 119,270.

This invention relates to improvements in douche nozzles intended for the cleansing and irrigation or the conveyance of liquid medications to the interior of the vaginal cavity. More particularly, the invention relates to douche nozzles of the kind having expansible arms, manually operable, to dilate the vagina for the purpose of removing or opening out the wrinkles or folds of the membranes which form its enveloping walls and expose the entire membranous surface to the injected fluid leaving no pockets within which pus or other matter may be enfolded.

The invention seeks to provide a douche nozzle which may be safely and efficaciously used even by the inexperienced without harm to the delicate membranes of the vagina or distress or discomfort to the user. To this end the dilating arms are so formed and actuated that when closed the douche nozzle may be easily inserted into the vagina and when expanded, gently and quickly distend and open up the enveloping walls by a simple movement of short duration; there being, once the douche nozzle is in position, no movement of translation of the induction tube during the act of spreading the dilating fingers which might tend to bring it into contact with and close the cervical opening in the uterus and prevent the inflow of fluid therein and no translation of the dilating fingers likely to cause an abrasion or puncture of the tender membranous covering of the vaginal cavity. The invention also has for its object a douche nozzle which is practical from the standpoint of use and manufacture. Its overall diameter, when unexpanded, is small and even when expanded affords no obstruction to the free eduction of fluid. It is easily cleaned and rendered sterile since it is separable into its component parts in a simple manner and being of metal may be subjected to a sterilizing heat without deleterious consequences. In detail, the douche nozzle, preferably comprises a separable tube, one section of which is perforate and carries the dilating fingers fulcrumed thereon and linked to a reciprocal annulus actuated from a swiveling composite annulus having a movement combined of rotation and translation located near the outer extremity of the tube and disposed ordinarily outside of the vaginal cavity.

These and other objects of the invention and the means for their attainment will be more apparent from the following detailed description taken in connection with the accompanying drawings illustrating a preferred embodiment thereof, in which:

Figure 1 is a view in side elevation showing the douche nozzle according to the present invention with the dilator fingers in closed or unexpanded position.

Figure 2 is a view similar to Figure 1 showing the dilating fingers in expanded position.

Figure 3 is a longitudinal sectional view taken in the plane indicated by the line 3—3 in Figure 1, looking in the direction of the arrows and showing the actuating mechanism in detail.

Figure 4 is a transverse sectional view taken in the plane indicated by the line 4—4 in Figure 2, looking in the direction of the arrows and showing the links extending between the reciprocal annulus and the dilator arms to effect the expansion and contraction thereof.

Figure 5 is a transverse sectional view taken in the plane indicated by the line 5—5 in Figure 3, looking in the direction of the arrows and showing the composite annulus manually movable and capable of a combined movement of translation and rotation.

Figure 6 is a transverse sectional view taken in the plane indicated by the line 6—6 in Figure 3 and showing details of construction of the actuating mechanism.

The nozzle according to the present invention when in closed position as shown in Figure 1 is of comparatively small diameter so that it may be readily inserted within the vaginal cavity without discomfort. When in position the arms a lie closely positioned with respect to the axial induction tube b. After insertion to the proper position the dilating arms a, which are pivoted as at b' within slots b^2 to an enlarged fulcrum portion b^3 carried with the tube b are expanded by sliding the ring or annulus c to the left as shown in Figure 2, the links d, pivotally carried by the annulus c as at d' and pivotally carried at their opposite ends as at d^2 to the arms, cause the movement in outward direction of the arms. It will be observed from an inspection of the drawings that the arms are curved and are formed with relatively blunt ends a^2 while the induction tube b is provided with a perforated cap e lying outwardly of the ends when in closed position so that there are no points

presented during the insertion of the instrument likely to injure the tender membranous covering of the walls of the cavity. Since the arms are pivoted to the tube at the inner ends there is no relative motion of translation between the arms and the induction tube and in consequence no likelihood of closing the cervical opening in the uterus to the admission of fluid as might occur were the induction tube relatively movable during the expansion of the dilators and no possibility of injury as by puncture or abrasion of the walls of the cavity, since not only are the ends a^2 blunt and inwardly directed but again there is no movement of translation of the arms in expansion.

To permit the operation of the device in a convenient manner from without the body the reciprocation of the sleeve c is effected from a reciprocal annulus f disposed near the outer end of the induction tube over which is slipped the flexible piping, say, conducting fluid to the nozzle. To insure corresponding motion of the annuli f and c they are linked together by a rod g secured at its inner end by means of the screw h to the sleeve c and threaded at its outer end in the annulus f, the rod having a bearing within a passage b^4 formed in the fulcrum b^3.

It is desirable that the arms open with a positive and easy movement of relatively quick duration and to effect this movement the annulus f is releasably secured to a knurled sleeve i in the following manner. The annulus f is formed outwardly, that is, to the right as viwed in Figure 3 with a portion f' of reduced diameter having an annular groove f^2 formed therein, one edge of the outer wall being cut away as shown at f^3 in Figure 5 to permit the pin i' on the sleeve i to enter the groove f^2. To effect a movement of translation of the annulus f in a simple manner the sleeve i is also provided with a pin i^2 entering a helical groove d^5 in an enlarged portion d^6 formed on the tube b. Thus by a motion of rotation of short duration the sleeve is advanced toward the nozzle end of the tube effecting a simple movement of translation of the annulus c.

A copious flow of fluid to the interior is assured by the perforations b^7 formed in that portion of the induction tube about which are disposed the dilating levers while the rapid egress of the fluid is not obstructed materially in view of the fact that the construction permits the annuli f and c and fulcrum b^3 to be of comparatively small diameter. A further feature which contributes to the compactness of the device when closed is the provision of grooves a^3 in the inner side of the arms a within which portions of the links d may extend as shown in dotted lines in Figure 3 and similarly the other extremities of the links are disposed within recesses or slots c' formed in the sleeve c.

To permit ready assembly and disassembly of the parts the induction tube is formed in two sections one of which b^8 carries on its end opposite the perforate tip e the fulcrum enlargement which extends rearwardly beyond the end of the tube and is inwardly threaded as at b^9 to receive the threaded end b^{10} of the tube section b^{11} which is serrated as at b^{12} for the reception of flexible tubing.

It is thought that the operation of the device is readily apparent from the foregoing description. It is disassembled into its component elements by rotating the tube section b^{11} with respect to the tube section b^8 thus unscrewing the connection between the threaded end b^{10} and the fulcrum element b^3. As the section b^{11} is rotated and retracted the sleeve i turns relatively thereto until the pin i' is opposite the cut-away portion of the flange forming the groove f^2. Further retraction of the tube section b^{11} permits the pin to leave the groove and causes the separation of the annuli f and i.

It will thus be seen that a vaginal douche has been provided which may be closed to a compact form for easy insertion within the vaginal cavity and which may be manipulated conveniently from without the body by a simple movement of short duration. The dilator arms are so formed as to expand sufficiently to gently open out the folds or wrinkles generally assumed by the wall of the vaginal cavity, there being no movement of translation either of the arms or induction tube which would tend to cause injury or render the maximum cleansing or flushing effect unobtainable. Furthermore, the construction permits perforations over an extended surface whereby a large volume of fluid may enter the cavity and offers no obstruction to the egress of fluid.

Various modifications may be made in the form and disposition of the component elements going to make up the structure as a whole without departing from the spirit and scope of the invention and no limitation is intended by the phraseology of the foregoing description or illustrations except as indicated in the accompanying claims.

What is claimed is:

1. In a douche nozzle, in combination, a fluid tube, dilators pivoted on the tube, an annulus slidable on the tube, links between the dilators and the annulus, an annulus slidable on the tube on the opposite side of the pivots of the dilator from the first annulus, means to connect the two annuli and a sleeve on the tube, swiveled on the last named annulus and having an inwardly directed lug engaged in a helically shaped groove formed in the tube.

2. In a douche nozzle, in combination, a fluid tube formed with a tip, an annular boss

on the tube, a plurality of dilator arms pivoted on the boss, a ring slidable on the tube between the boss and the tip, links pivotally connecting the boss with the arms, respectively, an annulus slidable on the tube on the opposite side of the boss from the ring, a link slidable in a passage formed in the boss and connecting the ring and annulus, a thimble reciprocal on the tube and having a swivel connection with the annulus and operative connections between the thimble and the tube to permit combined rotation and translation therebetween.

3. In a douche nozzle, in combination, a fluid tube formed with an enlarged perforate tip, an annular boss formed on the tube, said tube being perforate between the boss and the tip, a plurality of dilator levers fulcrumed on the boss, a ring slidable on the tube between the boss and the tip, a plurality of links pivotally connected with the boss and with the arms, respectively, a peripherally grooved annulus slidable on the tube on the opposite side of the boss from the ring, a link connecting the ring and annulus and slidable in a passage formed in the boss, a sleeve slidable on the tube and having an inwardly directed lug for engagement in the peripheral groove in the annulus and another inwardly directed groove engageable in a helically curved slot formed in the tube.

4. In a douche nozzle, in combination, a fluid tube formed with an enlarged perforate tip, an annular boss formed on the tube, said tube being perforate between the boss and the tip, a plurality of dilator levers fulcrumed on the boss, a ring slidable on the tube between the boss and the tip, a plurality of links pivotally connected with the boss and with the arms, respectively, a peripherally grooved annulus slidable on the tube on the opposite side of the boss from the ring, a link connecting the ring and annulus and slidable in a passage formed in the boss, a sleeve slidable on the tube and having an inwardly directed lug for engagement in the peripheral groove in the annulus, another inwardly directed groove engageable in a helically curved slot formed in the tube, the wall of the groove in the annulus adjacent the sleeve being cut away to permit the passage of the first named lug.

5. In a douche nozzle, in combination, a sectional fluid tube, one section of said tube being formed with a perforate tip, an annular boss formed on the end of the tip section opposite to the tip, threaded means to connect the tube sections, said tube section being perforate between the boss and the tip, a plurality of convexly curved dilator levers pivoted to the boss, a ring slidable on the perforate section, a plurality of links pivoted to the boss and to the dilator levers, respectively, said levers being grooved, inwardly, to receive the links in closed position, a peripherally grooved annulus slidable on another tube section, a link connecting the ring and annulus and slidable in a passage formed in the boss, a sleeve slidable on the tube overlying the groove in the annulus, a lug carried inwardly of the sleeve and entering the groove, a portion of the wall of the groove adjacent the sleeve being cut away.

This specification signed this 8 day of June A. D. 1926.

AUGUSTO J. D. CORTES, M. D.