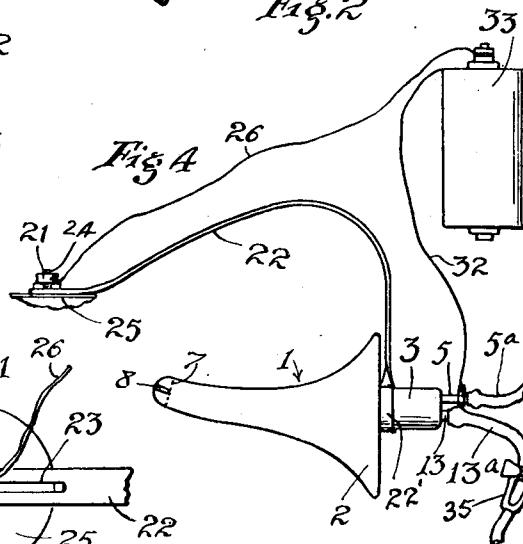
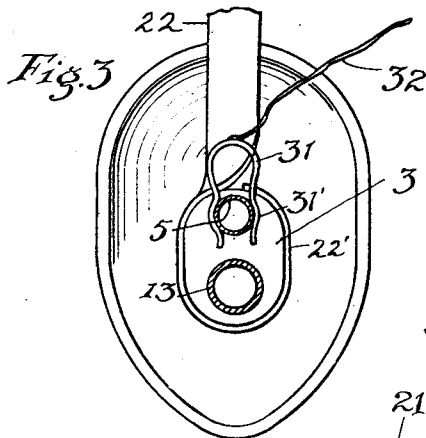
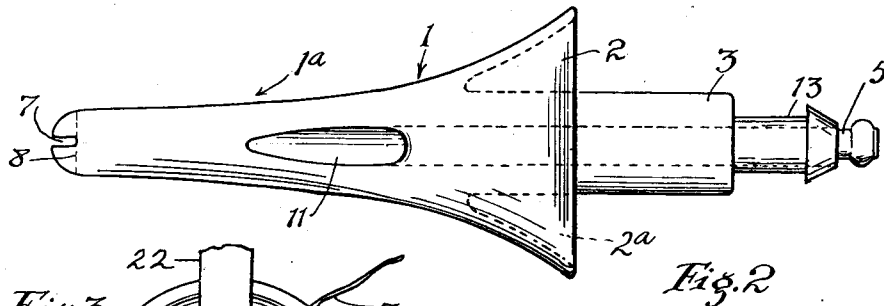
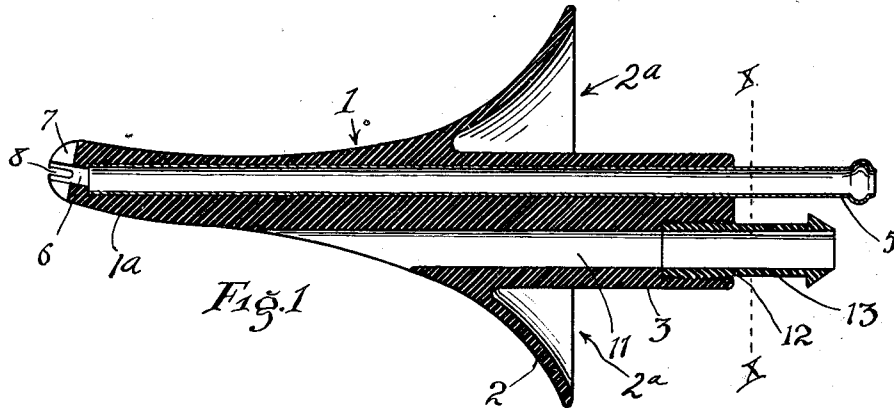


APPLICATION FILED FEB. 16, 1909.

Patented June 25, 1912.



*Fig.5*

Witnesses:  
 Geoffrey Holt  
 Neal J. Barker

By *his* Attorney

Inventor  
Leslie R. Saunders  
at  
Albert H. Merrill.

# UNITED STATES PATENT OFFICE.

LESLIE R. SAUNDERS, OF LOS ANGELES, CALIFORNIA.

## SYRINGE WITH ELECTRIC ATTACHMENT.

1,030,543.

Specification of Letters Patent.

Patented June 25, 1912.

Application filed February 16, 1909. Serial No. 478,315.

*To all whom it may concern:*

Be it known that I, LESLIE R. SAUNDERS, a citizen of the United States, residing at Los Angeles, California, have invented a new and useful Syringe with Electric Attachments, of which the following is a specification.

Objects of this invention are to provide a syringe of the character stated in which the body portion and nozzle of the syringe are so formed that they will not injure the organs, and are combined with means for strengthening the syringe so that it will not be bent out of shape or broken by handling.

Another object is to provide in combination with the syringe proper, means to conduct an electric current into the fluid injected into the vaginal cavity and cause the electric circuit to be completed from such fluid through the body of the patient.

An important object of this invention is to provide means for applying electric current to the entire surface of the vaginal cavity and the organs therein. This object is best accomplished by filling said cavity with liquid and then including said liquid in an electric circuit.

Hitherto attempts have been made to treat female diseases by the use of metal electrodes, but such methods have not been satisfactory by reason of the inaccessibility of the parts.

Among the benefits obtained by passing an electric current through a body of liquid confined to the vaginal cavity are the following:—When the negative pole of the circuit is in contact with the liquid it tends to produce an astringent action on the surface of the membrane. When a medicated solution is added to the liquid and the positive pole connected therewith cataphoresis is produced which adds greatly to the effectiveness of the medicated solution. Also certain abnormal organic conditions of the secretions may be corrected by the electrochemical action of the current.

It is a well known fact that the electric current is a destroyer of disease germs. For this reason the apparatus herein described is of great value in the treatment of infectious diseases.

The syringe is adapted for treatment of rectal and intestinal diseases of both sexes.

Referring to the accompanying drawings, which illustrate the invention embodied in a preferred form,—Figure 1 is a longi-

nal mid-section of the syringe proper. Fig. 2 is a bottom view thereof. Fig. 3 is a vertical section on line  $x-x$  of Fig. 1, showing in addition a portion of the electrical apparatus connected therewith. Fig. 4 is a side elevation of the syringe showing the electrical apparatus connected therewith. Fig. 5 is an enlarged fragmental detail of the device which carries the indifferent electrode.

Referring in detail to the drawing,—the bell-shaped body 1, preferably made of hard rubber, is provided with an expanded flanged portion 2 adapted to seal the entrance to the vaginal cavity, an elongated inwardly projecting nose or nozzle 1<sup>a</sup> and a shank or handle 3 within the flanged portion of the body and projecting outwardly therefrom. Said handle 3 is of unequal dimensions in cross section being desirably approximately elliptical in cross-section. Through the upper portion of said handle extends, longitudinally thereof, the straight inlet conduit or metal tube 5, said tube extending completely through the handle and nearly to the discharge end of the syringe. Said tube forms a suitable support upon which the rubber body of the syringe is molded.

In the treatment of female diseases it is often necessary to use water heated to a temperature that will more or less soften the hard rubber of which it is desirable to construct the syringe. For this reason the metal tube 5 performs an important function by preventing the syringe from being bent or twisted out of shape. The rubber body of the syringe is molded over said tube 5 in the process of manufacture so that said tube is securely embedded in said body forming an integral part thereof throughout the entire portion of the tube within said body. Said inlet tube 5, being incased in the rubber body of the syringe, will not allow the electric current to pass directly into the body of the patient but only through the liquid. At the discharge end of the syringe, the bore into which the tube 5 fits is contracted to form the discharge passage 6 which terminates in the intersecting cross grooves 7 and 8 which distribute the stream laterally cleansing the parts more effectually. Ordinarily when the syringe is in operative position the fluid will discharge from the reduced channel 6 in an unbroken stream from the tip of the

nozzle with considerably increased velocity on account of the cross-sectional opening of the passage 6 being a reduction in size of the passage through the inlet tube 5. If, however, an obstruction be encountered opposite the end of the tip of the syringe the intersecting-grooves 7 and 8 will provide an escape for the fluid, thus preventing the inflow of the stream from being checked by such obstruction. The sudden reduction of the cross-sectional area of the discharge end of the inlet channel causes the fluid to be discharged with greatly increased force. In case the tip of the syringe meets any obstruction, the grooves 7 and 8 afford lateral outlets for the fluid.

The lower portion of the handle and body is provided with the longitudinal outlet passage 11 consisting of a circular bore which opens out at its inner end obliquely to the surface of the lower side of the body of the syringe at an angle of less than forty-five degrees with respect to the surface thereof which surrounds the mouth of said bore, thereby forming in effect at a single operation a tapering groove on the lower side of the body as best shown in Fig. 2. Said passage 11 is provided at its outer end with an enlarged threaded portion 12 into which the tube 13 screws.

The recess 2<sup>a</sup> within the flanged portion of the body of the syringe and around the base of the handle 3 enables the operator to take a longer, firmer hold upon said handle. The body of the syringe is constructed of hard rubber which will take a smooth finish, and there are no mechanical difficulties to its insertion. The curves of the surfaces are so arranged that it will automatically adapt itself to both large and small openings.

This syringe is an improvement upon others of its class in respect to the symmetrical contour of the hard rubber body and nozzle of the syringe. The syringe is molded with curves which conform to the anatomical curve of the vagina, bringing the tip of the syringe into proper relation to the uterus to cleanse the parts most efficiently.

In order to provide for adjusting the position of the indifferent electrode 21 the spring arm 22 is provided with a longitudinal slot 23 near the free end thereof. The screw 24 enters the back of pad 25 and grips the end of arm 22 thus holding the pad 25 adjustably in place and at the same time making good contact for wire 26. Arm 22 is provided with an attaching loop 22' which fits over stem 3 being kept from rotation by the unequal cross-sectional dimensions of said stem to maintain the pad 25 carried by said arm in proper position with relation to the tip of the syringe.

5<sup>a</sup> designates the supply tube which is desirably the flexible rubber tube of a water bag or other elevated source of fluid supply

(not shown). 13<sup>a</sup> is the discharge tube which is fastened to the lower tubular member 13 and has a bore of the same size as passage 11. These tubes are both shown in Fig. 4.

31 is a spring clip from which leads the wire 32 to the battery 33. Said clip 31 is provided with arms having out-bent curves 31' which spring over the tube 5 to make good contact therewith.

35 is a pinch-cock to control the escape of fluid through the drainage tube 13<sup>a</sup>. In treating rectal diseases, the outlet or drainage duct will not be used, but will simply be closed by its pinch-cock, and the indifferent electrode 21 may be detached and applied to whatever portion of the body desired.

The battery 33 may be any one of a variety of medical batteries in general use, but is desirably a light, portable battery.

I claim:

1. In a vaginal syringe, a body of insulating material, said body being provided with a nozzle, an internal reinforcing member united to and forming an internal reinforcement for both said body and nozzle, said reinforcing member being of conducting material and projecting from the end of said body opposite said nozzle, there being an extension of insulating material which projects from said body and surrounds the projecting portion of said reinforcing member, an electrode adapted to engage the body of the patient, and means for supporting said electrode, said supporting means being mounted upon said extension and thereby insulated from said reinforcing member.

2. In a device of the character described, the combination, with the tapering body of the syringe, of a shank extending outwardly from the large end of said body, said shank being provided with an upper inlet passage extending longitudinally therethrough and a lower outlet passage also extending longitudinally of said shank, a metallic tube fitted into said upper passage and projecting outwardly therefrom, an arm carried by said shank, said arm being adapted to engage the body of the patient to aid in holding said syringe in place, an indifferent electrode carried by said arm, said tube in connection with the liquid forming the other electrode, and a means for causing an electric current to flow through said electrodes.

3. In a device of the character described, the combination, with a syringe body having an expanded portion adapted to seal the opening of the vaginal cavity, of a shank extending outwardly from said expanded portion, said shank being provided with a longitudinal inlet passage and longitudinal outlet passage, a conductor in one of said passages, an arm carried by said shank, an indifferent electrode carried by the free end of said arm, and means for causing an elec-

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tric current to flow through said conductor, the liquid and the body of the patient when the syringe is in operative position.

4. In a vaginal syringe, a body provided with a tapering, upwardly inclined tip, a shank projecting outwardly from said body, a spring arm mounted on said shank and thereby held in a position in which the free end thereof is held at the side of the syringe toward which said tip is inclined, an electrode mounted on the free end of said arm, and means for making said electrode part of an electric circuit.

5. In a device of the character described, a syringe body, a shank projecting outwardly therefrom, a spring arm carried by said shank, said shank and body being composed of insulating material, an inlet tube of conducting material extending longitudinally through said shank, an indifferent electrode carried by the free end of said spring arm, said inlet tube being adapted to be connected with one of the terminals of an electric circuit at its outer end, means for passing an electric current through said electrode and tube, and outlet means for the syringe.

6. In a device of the character described,

a syringe body provided with an outwardly extending shank of unequal dimensions in cross section, and an arm provided with an attaching portion adapted to fit over said shank and prevented from rotation thereon by the unequal dimensions thereof, the free end of said arm being adapted to engage the body of the patient to hold the syringe in operative position.

7. In a device of the character described, a body provided with an inwardly tapering portion, said body having inlet and outlet means, said outlet means discharging at the tip end of the said body, there being intersecting grooves occupying the tip portion of said body and communicating with the discharge passage, the stream from the syringe being normally discharged independently of said grooves.

In testimony whereof I have hereunto signed my name in the presence of two subscribing witnesses at Los Angeles, in the county of Los Angeles and State of California, this fifth day of February 1909.

LESLIE R. SAUNDERS.

Witnesses:

ALBERT H. MERRILL,  
FRANK W. HOVEY.