

Improvements in vaginal irrigators / [Henricus Wallace Westlake].

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COMPLETE SPECIFICATION.

"Improvements in Vaginal Irrigators"

I, HENRICUS WALLACE WESTLAKE, of Rooms 1 and 2 Stowell Block, in the City of Los Angeles and County of Los Angeles, State of California, one of the United States of America, Physician and Surgeon, do hereby declare the nature of this invention and in what manner the same is to be performed, to be particularly
5 described and ascertained in and by the following statement:—

This invention relates to syringes or other forms of irrigators by means of which to cleanse the vaginal cavity, to remove impurities therefrom and to apply medicinal preparations to the parts affected.

An object of my invention is to provide means for applying the liquids directly
10 to the affected parts with an effective force, but in such a manner that there will be no deleterious results, but the cleansing will be perfect.

It is an object of my invention to avoid any regurgitation and to immediately remove from the cavity all of the vitiated fluids.

My invention relates to the nozzle-head by which the application of the
15 liquid is made and also relates to the construction of the appliance with relation to the immediate removal of the liquid from the cavity without any regurgitation.

I have discovered that the difficulty heretofore experienced in cleansing all of the parts of the cavity by means of a syringe or other form of irrigator arises largely from the fact that the irrigators heretofore used have been so constructed
20 that the action of the liquid on those parts which are most subjected to disease and which are most usually affected, is mainly reflex and is not direct.

So far as I am aware no vaginal syringe has heretofore been provided that could make a continued application of the liquid directly to the external os, the neck and lower portion of the womb to remove the impurities therefrom. On
25 the contrary the expediency of the use of such a syringe has heretofore been considered doubtful. These parts are peculiarly sensitive, but they are also peculiarly exposed to and subject to affection, and an object of my invention is to provide a vaginal syringe by means of which these delicate parts can be thoroughly cleansed. In some syringes of which I am aware it has been proposed to per-
30 forate the ends of the nozzle so that a stream is thrown directly forward, the body of the syringe rearward of the nozzle being enlarged and thereby forming an obstruction to the immediate discharge of the liquid, thus causing a damming up of the liquid within the cavity sufficient to obstruct the direct action of the forwardly directed streams whereby the retained liquid affords a measurable
35 protection to the delicate parts but at the same time prevents their absolute cleansing. In order to provide for a perfect cleansing of the cavity, any damming up of the liquid must be avoided and I provide against any deleterious action of the cleansing streams by so constructing my nozzle-head as to produce extremely fine and delicate though forcible streams or jets of liquid from the end
40 of the nozzle. This I produce by so constructing the nozzle as to combine hydrostatic action with great frictional resistance. That is to say, my newly invented nozzle-head is provided with comparatively very thick walls with very fine discharge-outlets therefrom, the same being minute tubular ducts, the length of which is over three times the diameter, and these issue from an enlarged

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chamber within the head which is supplied through an inlet of less diameter than the chamber and of greater cross-sectional area than the combined cross-sectional area of the outlets. By this means the liquid is supplied to the outlets under hydrostatic pressure. That is to say the liquid in the chamber is practically undisturbed, and there are no cross currents within the chamber to interfere with the even and constant supply of the liquid to any and every outlet. Then the liquid in passing through each of the outlets is subjected to great friction so that the issuing stream is much finer than can be produced by any means other than my device so far as I am aware; but such streams may be made to issue with great velocity and a consequent considerable force which is ample to effectively remove the impurities from any diseased surface within the cavity, but the streams do not have such momentum as to prove deleterious. It is insufficient for the purpose of my invention that the fine perforations be used without an hydrostatic supply, for it is important for the purpose of my invention that the streams while fine so as to have but little momentum, shall have comparatively great velocity and any cross currents or eddies at the inner mouths of the discharge-outlets would prevent the desired effect.

My syringe is also provided with a thin case surrounding the supply-tube rearward of the nozzle-head, a chamber being provided between the supply-tube and the case, and inlets being provided into said chamber, which inlets are large and spirally arranged all around the tube so that the liquid finds immediate exit therethrough from all sides and without being dammed up within the cavity. The case is of the same diameter as the nozzle-head to form a straight cylinder therewith and the use of all tampons are dispensed with so that there is no obstruction to the outflowing liquid and I avoid all regurgitation and all retention of any impurities.

My invention is a notable departure from all vaginal irrigators heretofore known in that by means of it, it is possible to safely and without shock, discomfort or inconvenience to the patient, apply all liquids (with a force effective to remove all impurities direct in front of the nozzle to cleanse the external os, the neck and the lower portion of the womb, at the same time removing all impurities from the entire vaginal cavity. The nozzle-head is so constructed and the discharge perforations or outlets are such that the cleansing and medicinal liquids are thrown direct forwardly and also laterally in individual and very fine, forcible jets which project themselves against the parts named, so that all such parts are acted on by the freshly injected jets of the liquid before such liquid has come into contact with other diseased parts or impurities therefrom, and the force of each jet can be sufficient under a convenient pressure by bulb or fountain, to cleanse where it strikes and yet be so gentle as to cause no inconvenience to the patient. The perforations are mere pin-holes in diameter and are arranged very close together. The head which I have used is circular and is $\frac{5}{8}$ inch in diameter; the perforations are $\frac{1}{32}$ inch in diameter and pass through walls $\frac{5}{32}$ inch thick from a chamber $\frac{5}{16}$ inch in diameter which is supplied through a circular inlet which is $\frac{3}{16}$ inch in diameter. With these dimensions I have used 33 and 34 perforations successfully. Care must be taken that the aggregate capacity of the outlets is less than the capacity of the inlet which supplies the expanded chamber.

My irrigator differs from all previous forms in that the head of the irrigator has numerous very fine and closely arranged discharge-passages the aggregate capacity of which is less than the capacity of the supply-opening into the head; and said passages are promiscuously arranged, that is to say, in spiral or staggered rows, and not in longitudinal series, and they open from a chamber in the head, which chamber is of larger cross-sectional area than the inlet; and the length of the bore of said passages is much longer than the diameter so as to give direction to the issuing streams, and to project such stream as individual jets, to a considerable distance under a gentle pressure. The length of each

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outlet is preferably equal to form four to five times the diameter thereof so that the friction of the walls upon the issuing stream modifies such stream and causes it to be very fine and gentle, though effective in its cleansing action, so that direct application can be made to thoroughly cleanse tender parts which heretofore could be cleansed only by local treatment.

The promiscuous spiral or staggered arrangement of the outlet-openings of the head causes the issuing jets to operate more effectively in cleansing the cavity than if the outlets were arranged in series (*i.e.* in straight rows) longitudinally along the head. If arranged in straight rows extending lengthwise of the head, the space between the rows of jets will not be so effectively cleansed, the action of the rows of jets being much as though the liquid were discharged through parallel slots, thus failing to cut up and wash away the impurities lying between the lines where the discharge is effective.

By means of the direct method of application, which is made possible by my invention, inflammation of the uterus, vaginal walls, including the anterior wall of the rectum, the external os, neck, and in cases of prolapsus, the lower part of the womb, can be reduced and the parts perfectly cleansed by the direct application of hot water or solution. This is not possible with any of the irrigators heretofore known. The endwise perforations of the head are virtually and actually forward extensions of the bore of the injecting-tube; and the cavity of the head is expanded beyond the inlet and is, in the expanded portion, so large compared with the inlet as to give the effect of hydrostatic pressure to force the liquid through the fine perforations, and to avoid forming any currents across the inner mouths of the perforations. That is to say my nozzle-head is so proportioned and constructed that the streams are thrown with equal and even force from all the perforations alike under any given pressure.

My irrigator comprises the combination with an inner injecting-tube and an outer discharge-tube or case, a discharge-chamber being provided between such tubes and said tubes terminating in about the same plane; of a nozzle-head of the same circumference as the tube and having an expanded chamber with comparatively thick walls, with fine perforations, a short neck, externally and internally screw-threaded; the injecting-tube being screwed into the neck and the neck screwed into the case. These members are easily taken apart and cleansed. The internal chamber of the head is of comparatively large size, its cross-section being substantially equal to or slightly greater than the entire cross-section of the injecting-tube, and consequently considerably larger than the bore of such tube; and when the head is unscrewed, it can be readily cleansed and made aseptic.

A novel feature of the case or tube which conducts the impure liquid out of the cavity is in the peculiar form of the inlets into such case; which inlets constitute the outlets through which the impurities pass from the vaginal cavity; said inlets are elliptical extending along the case and with outwardly flaring mouths, gently sloping at the inner or front margins and rising more abruptly and bulging outward slightly at the rear margins; also a staggered or spiral arrangement of these holes along the case is employed to facilitate collecting the impure matter.

The accompanying drawings illustrate my invention.

Figure I is a fragmental view of the irrigator.

Figure II is an elevation of the irrigator viewed from the top of Figure I showing a fragment of the discharge-tube.

Figure III is an axial section.

Figure IV is an enlarged fragmental section detail to illustrate the case-inlets.

In this view and in Figure III the inlets c c^2 are cut by the line of section as indicated by the lines $c-c$ c^2-c^2 , respectively, in Figure VI.

Figure V is an enlarged fragmental detail of the head.

Figure VI is an enlarged fragmental perspective detail illustrating one of the inlets into the case.

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Figure VII is an enlarged axial sectional detail of the nozzle-head.

A indicates an injecting-tube which is adapted at one end *a* for attachment to the rubber-tube 1 through which the liquid medicament is forced into tube A. The other end, *a*¹, of tube A is screw-threaded for attachment to the perforated discharge-nozzle-head B which is provided with a neck *b* screw-threaded externally and internally and with an expanded chamber *b*¹¹ with discharge-outlets *b*¹ therefrom which are three or more times greater in length than diameter, so that the friction thereof will reduce the streams to an extreme fineness. The tube A is screwed into the neck. C indicates an outer tube which forms a case surrounding the tube A and is screwed onto the neck and provided along its body with inlets *c* and also provided at the rear or outer end with a branch or outlet *c*¹ which is a tube on which a rubber-tube 2 may be fastened to conduct the outflowing liquid away without soiling the garments of the user. The case C is contracted at the outer end as with an inwardly projecting collar *c*¹¹ which fits upon the tube A to close the end of the chamber 3, between the case C and the tube A. The inlets *c* are arranged in spiral rows and the liquid passing outward from the nozzle-head B will find its way into the chamber 3 through the inlets. The inlet-openings *c* are provided with flaring rounded mouths to facilitate the collection of the liquid and its introduction into the chamber between the case and the tube. The front margins 4 of the flaring mouths slope inward gently and the rear margins 5 are more abrupt than said front margins, so that the liquid passes into the openings, freely over the front margins, and the rear margins intercept the liquid, thus to direct it in and prevent it from passing the openings along outside the walls. The openings are elliptical, their greatest length being lengthwise the case.

The thick-walled nozzle-head is rounded at front and cylindrical at the rear and the inlet-tube 2 which is screwed into the neck has an internal cross-sectional area less than that of said chamber and a capacity greater than the aggregate capacity of the ducts so that the chamber is expanded as compared with the inlet thereinto and the liquid will be forced through the ducts under the influence of hydrostatic pressure. The tubular case is thin-walled and is screwed onto said neck and forms with the cylindrical rear portion of said head, a straight cylindrical body so that there is no obstruction which will prevent the outward movement of the liquids after they have impinged upon the vaginal walls; and the outlet-openings in the case are oval shaped and spirally arranged so that the liquid is collected with the greatest facility and is conducted through the outlet *c*¹.

In cases where miscarriages have taken place one great difficulty a physician has to meet with is poisoning, and to remove that poisonous substance makes the operation very complicated; and heretofore in such cases, anesthetics, such as chloroform or ether, have been used, often with fatal results. Such difficulties are overcome by using this syringe.

In practical operation the medicated liquid is forced through the tube by some suitable means, such as by a rubber-bulb, or by gravity, and issues from the nozzle-head B in numerous streams through the radiating perforations *b*¹ which are bored through the thick walls of the head and which perforations are of comparatively great length to give direction to the issuing streams and by the friction of the walls reduce the streams to very fine delicate but distinct and effective jets. The chamber in the head being of greater diameter than the interior of the inlet-tube, avoids the production of currents across the mouths of the perforations, and gives greater force to the issuing streams in accordance with the laws of hydrostatics, thus forcibly applying the liquid to the affected parts and washing and cleansing the parts with great efficiency. The liquid introduced is free from any contaminations until it has reached the parts desired; and the outflowing liquid passing along the case enters the inlet-openings and flows out from the outlet *c*¹. Arrows in Figure III indicate the course of the liquid.

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The outlet-tube c^1 also serves the purpose of a handle. The instrument may be made of metal, hard rubber, or any other suitable material.

Having now particularly described and ascertained the nature of my said invention, and in what manner the same is to be performed, I declare that what I claim is:—

1. A vaginal-irrigator which comprises an outer tube, an inner tube and a head; the walls of the outer and inner tubes being thin and the diameters of the tubes being such that a chamber is formed between the outer and inner tubes; the walls of the head being thick and forming a closure for one end of such chamber and having a cavity which forms a laterally enlarged continuation of the bore of the inner tube; perforations being provided through the end-wall of the head, laterally and endwise, and being of extreme fineness and of comparatively great length as set forth for the purpose of producing a frictional resistance to reduce the size of the streams issuing through said perforations; and a tube through which liquid may be forced into the inner tube for producing hydrostatic pressure in the cavity of the head to force the liquid out laterally, obliquely and endwise, in streams of extreme fineness, but of considerable force; and the outer tube being furnished with comparatively large side-inlets and with a discharging-tube; the end of the cavity between the outer and inner tubes being closed opposite the head and the outer tube and head forming a slender straight cylinder, substantially as and for the purpose set forth.

2. A vaginal-irrigator which comprises an outer tube, an inner tube and a head; the walls of the outer and inner tubes being thin and the diameters of the tubes being such that a chamber is formed between the outer and inner tubes; the walls of the head being thick and forming a closure for one end of such chamber and having a cavity which forms a laterally enlarged continuation of the bore of the inner tube; perforations being provided through the end-wall of the head, laterally and endwise, and being of extreme fineness and of comparatively great length as set forth for the purpose of producing a frictional resistance to reduce the size of the streams issuing through said perforations; and a tube through which liquid may be forced into the inner tube for producing hydrostatic pressure in the cavity of the head to force the liquid out in streams of extreme fineness, but of considerable force; and the outer tube being furnished with comparatively large side-inlets and with a laterally projecting tube c^1 to serve as a discharging-tube and also as a handle for manipulating the instrument; the end of the cavity between the outer and inner tubes being closed opposite the head by a wall c^{11} , and the outer tube and head forming a slender straight cylinder, substantially as and for the purpose set forth.

Dated this 13th. day of January 1902.

W. P. THOMPSON & Co.,
Of 6 Lord Street, Liverpool, Agents for the Applicant.

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17 2-10-1902

The first of the series of lectures on the history of the world was given on the 10th of February 1902. The lecturer was Mr. J. H. P. [?]. The lecture was very interesting and well attended. The subject was the history of the world from the beginning of time to the present day. The lecturer dealt with the various stages of human civilization and the progress of the world. He also dealt with the various religions and philosophies of the world. The lecture was very well received and the lecturer was highly praised for his clear and concise presentation of the subject.

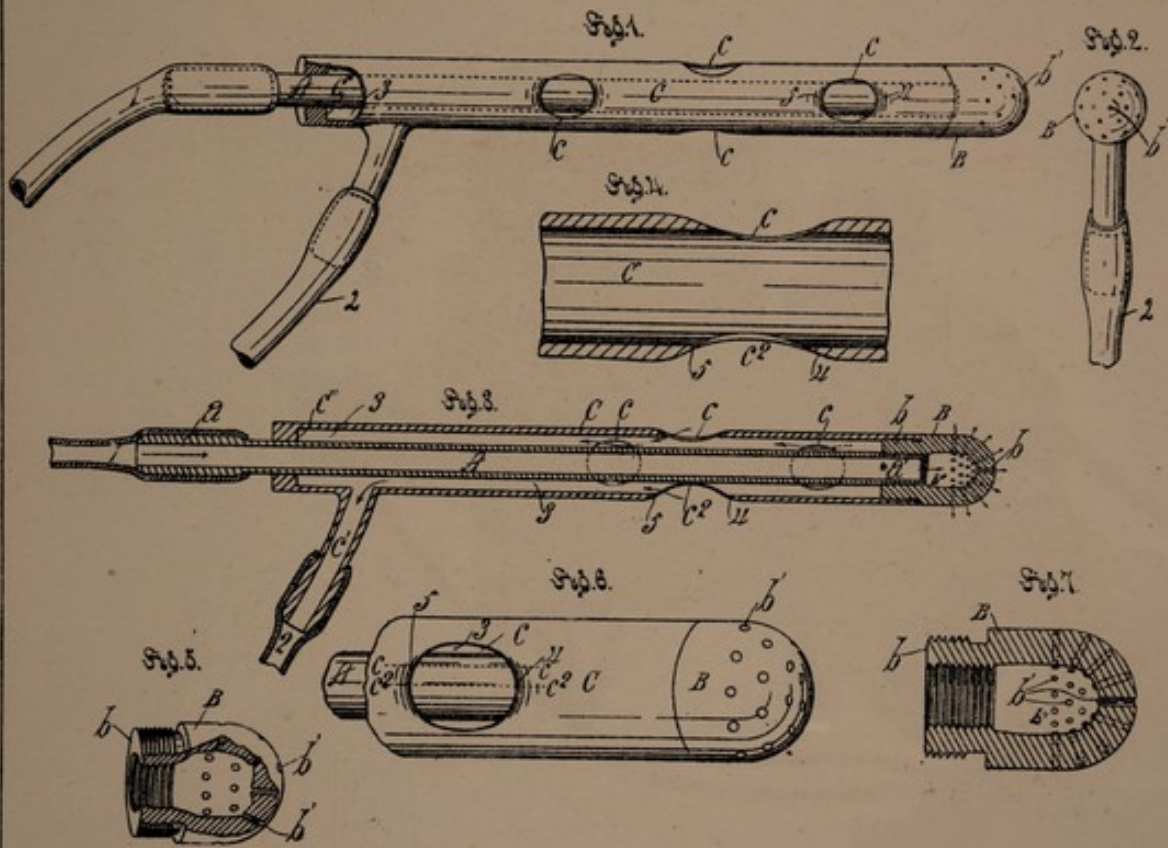
The second lecture was given on the 17th of February 1902. The lecturer was Mr. J. H. P. [?]. The lecture was very interesting and well attended. The subject was the history of the world from the beginning of time to the present day. The lecturer dealt with the various stages of human civilization and the progress of the world. He also dealt with the various religions and philosophies of the world. The lecture was very well received and the lecturer was highly praised for his clear and concise presentation of the subject.

The third lecture was given on the 24th of February 1902. The lecturer was Mr. J. H. P. [?]. The lecture was very interesting and well attended. The subject was the history of the world from the beginning of time to the present day. The lecturer dealt with the various stages of human civilization and the progress of the world. He also dealt with the various religions and philosophies of the world. The lecture was very well received and the lecturer was highly praised for his clear and concise presentation of the subject.

The fourth lecture was given on the 3rd of March 1902. The lecturer was Mr. J. H. P. [?]. The lecture was very interesting and well attended. The subject was the history of the world from the beginning of time to the present day. The lecturer dealt with the various stages of human civilization and the progress of the world. He also dealt with the various religions and philosophies of the world. The lecture was very well received and the lecturer was highly praised for his clear and concise presentation of the subject.

The fifth lecture was given on the 10th of March 1902. The lecturer was Mr. J. H. P. [?]. The lecture was very interesting and well attended. The subject was the history of the world from the beginning of time to the present day. The lecturer dealt with the various stages of human civilization and the progress of the world. He also dealt with the various religions and philosophies of the world. The lecture was very well received and the lecturer was highly praised for his clear and concise presentation of the subject.

The sixth lecture was given on the 17th of March 1902. The lecturer was Mr. J. H. P. [?]. The lecture was very interesting and well attended. The subject was the history of the world from the beginning of time to the present day. The lecturer dealt with the various stages of human civilization and the progress of the world. He also dealt with the various religions and philosophies of the world. The lecture was very well received and the lecturer was highly praised for his clear and concise presentation of the subject.



[This Drawing is a reproduction of the Original on a reduced scale]

