

Oct. 17, 1939.

L. W. CHALMERS

2,176,391

VAGINAL SEAL

Filed April 2, 1935

2 Sheets-Sheet 1

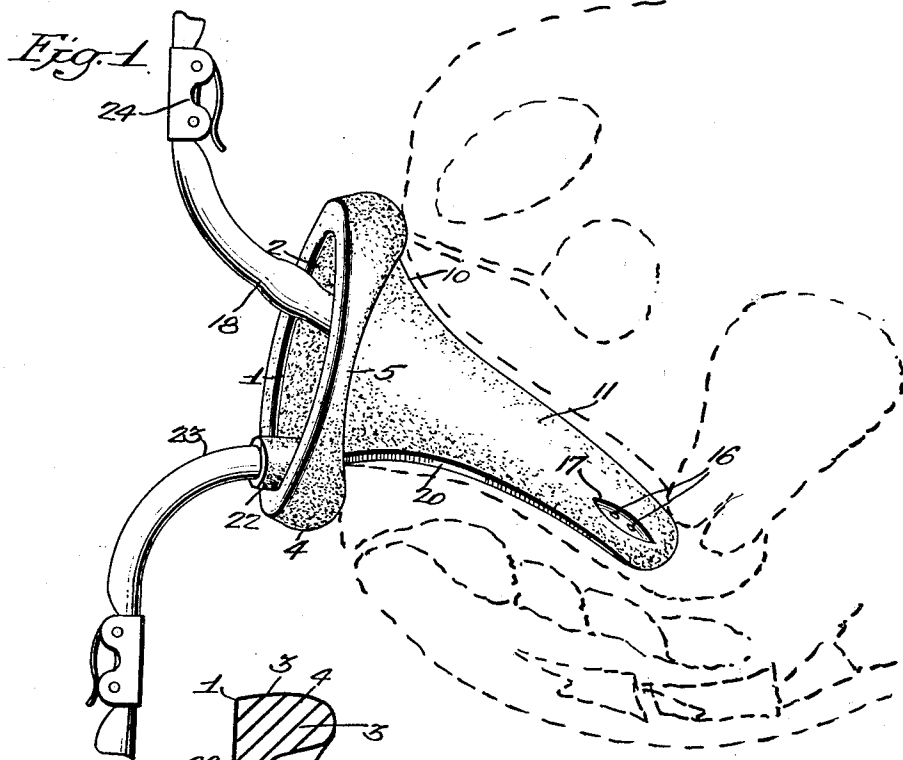
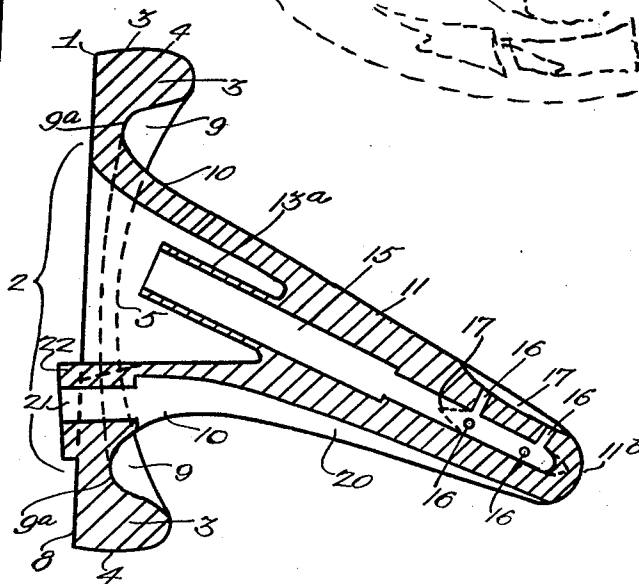


Fig. 2.



Inventor:
Leona W. Chalmers.
by her Attorneys.
Houson & Houson.

Oct. 17, 1939.

L. W. CHALMERS
VAGINAL SEAL

2,176,391

Filed April 2, 1935

2 Sheets-Sheet 2

Fig. 3.

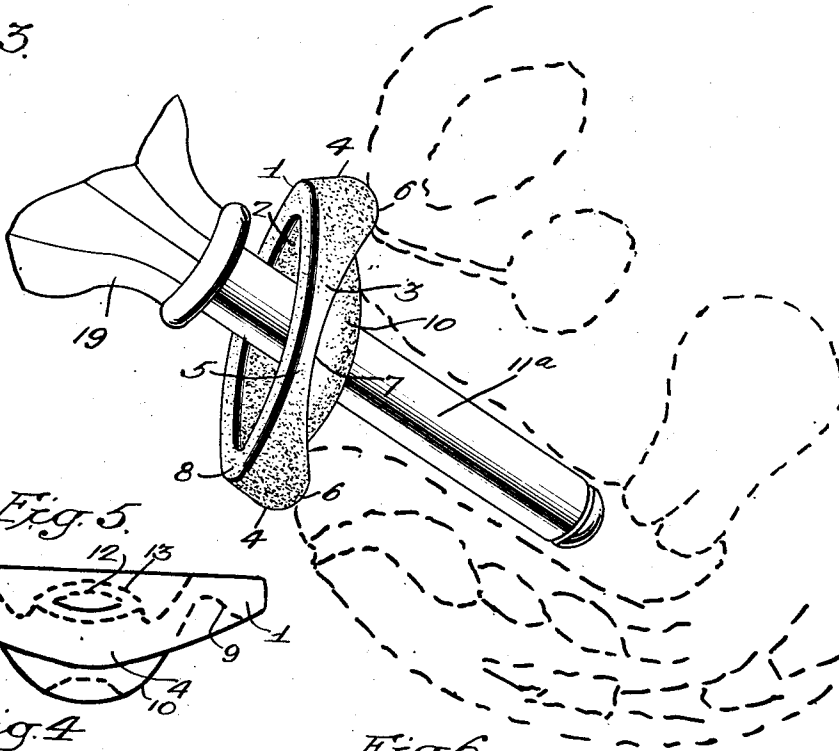


Fig. 5.

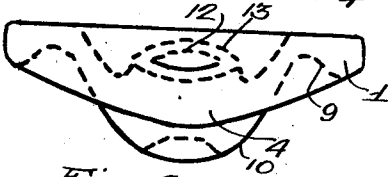


Fig. 4.

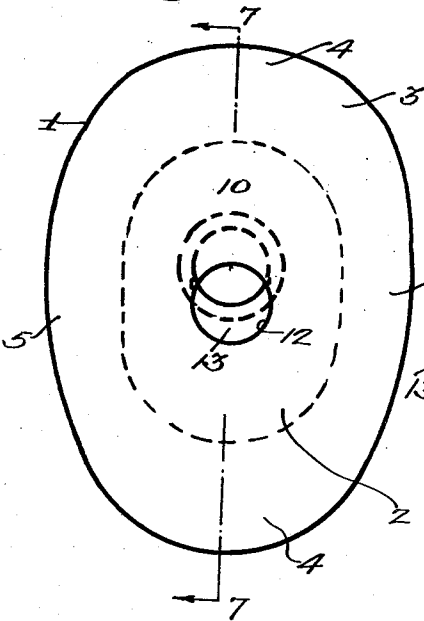


Fig. 6.

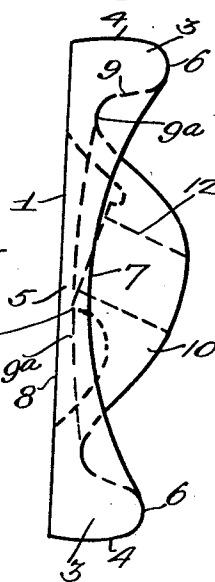
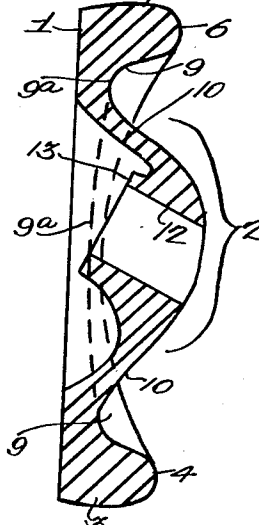


Fig. 7.



BY *Inventor*
L. W. Chalmers.
By her Attorneys
Howson & Howson.

UNITED STATES PATENT OFFICE

2,176,391

VAGINAL SEAL

Leona Watson Chalmers, Philadelphia, Pa.

Application April 2, 1935, Serial No. 14,351

6 Claims. (Cl. 128—251)

This invention relates primarily to vaginal seals for douche sprays and nozzles adapted for prophylactic or therapeutic treatment of the female sex organs.

5 The principal object of the invention is to provide a seal designed to conform to the anatomical structure of the vaginal region in such a manner that the treating solution will be so efficiently retained that thorough distension of the vaginal vault will be insured by and under such pressure of the solution as may be applied by the draining thereof from an elevated container or by use of a hand bulb, whereby flushing of the entire vaginal mucosa including the folds, furrows and 10 formices is effectively accomplished.

15 Another object of the invention is to provide a seal of the type above noted which may be used with either a permanently attached nozzle or with a relatively adjustable nozzle, by which in the latter case the treating fluid may be applied at any point inwardly between the mouth of the vagina and the cervix of the uterus whereby, in particularly sensitive cases, as inflammation gradually diminishes as a result of successive 20 treatments, the discharge end of the nozzle may be gradually inserted to a greater extent until the cervix is reached.

25 Another object of the invention is to provide a discharge outlet through the diaphragm or flange of the seal at a point rearwardly of or downwardly from the inlet as normally used with the subject in an upright, knee-chest, or reclining position, whereby the discharge or return flow will be carried away from the device in a manner to avoid interference with the efficient operation 30 of the nozzle.

35 Another object of the invention is to construct the seal with a relatively firm though yieldable elliptical flange around a central convexed dome or concavo-convex diaphragm, with the flange at the longer axis of the ellipse having a lesser degree of flexibility than at the shorter axis of the ellipse, whereby the flange of the seal will be made to conform more readily to the curvature of the 40 body in the region surrounding the external orifice of the vagina for retaining the convexed dome or diaphragm in position to function as a closure for the external orifice of the vagina and to form an additional seal around said orifice for 45 effecting the above noted efficient retention of the treating solution.

50 Another object of the invention is to provide the seal with a relatively deep channel inwardly adjacent the marginal flange of the device for creating a retaining vacuum between the device

and the entrance of the vagina, whereby the escape of the solution is frustrated.

Another object of the invention is to construct the device with the longitudinal axis of the integral nozzle or the nozzle opening for the adjustable nozzle disposed at a declining angle to the 5 base plane of the seal, and to make the diaphragm in the region surrounding the nozzle or the nozzle opening of such a soft resilient character as will permit of the nozzle following and assuming the natural course or angle of the vagina while permitting the flange of the seal to be seated firmly and uniformly about the mouth of the vagina, without causing the nozzle to bear with any objectionable degree of pressure against the wall of 10 the vagina or causing any one part of the flange to be pressed more deeply into the flesh than any other part.

The construction of the device will be fully disclosed hereinafter, reference being had to the 20 accompanying drawings, of which:

Figure 1 is a perspective view illustrating the seal with a permanently attached or integral nozzle as being used on a patient in a reclining position, with the treating solution being drawn 25 from a relatively elevated container and the discharge or return flow disposed below the nozzle inlet;

Fig. 2 is a longitudinal sectional elevation of the device illustrated in Fig. 1; 30

Fig. 3 is a view similar to Fig. 1 and illustrating the seal as being used with a relatively adjustable nozzle equipped with a hand bulb;

Fig. 4 is a face view of the seal shown in Fig. 3; 35

Fig. 5 is a plan view of the seal as illustrated in Fig. 4;

Fig. 6 is a side elevation of the seal shown in Fig. 4, and

Fig. 7 is a longitudinal sectional elevation taken on the line 7—7, Fig. 4. 40

As shown in Figs. 1, 2, 3, 6 and 7, the seal 1 comprises a central body portion 2 and a surrounding flange 3. The diametrically opposed end portions 4, 4 of said flange disposed on the longer axis of the ellipse are relatively broader 45 and thicker than the diametrically opposed side portions 5, 5 disposed on and adjacent the shorter axis of the ellipse. The inner edge 6 of the flange, from the ends 4, 4 through the sides 5, 5 thereof is disposed substantially on an arc of a circle, the 50 center of which is located in a plane perpendicular to the base plane 8 of the seal and substantially coincident with the plane of the shorter axis of the ellipse.

Immediately adjacent and inwardly disposed 55

with respect to the flange 3, the seal 1 is provided with a relatively deep elliptical channel 9, the base 9a of which is disposed substantially midway between the inner edge 6 of the flange 3 and the base plane 8 of the seal, uniformly throughout the length of the longer axis of the seal. As the edge 7 of the flange is pressed into the flesh of the subject adjacent the mouth of the vagina, the channel 9 receives the lips of the vagina and provides more or less of a suction action between the seal and the flesh which causes the seal to adhere firmly to the flesh, effectively creating a seal around the mouth of the vagina which frustrates the escape of the treating solution.

Inwardly of and immediately adjacent the elliptical channel 9, the seal is provided with a relatively thin soft pliable diaphragm or wall 10, at substantially the center of which is disposed either the permanently attached nozzle 11, shown in Figs. 1 and 2, or a nozzle-receiving opening 12, as shown in Figs. 3 to 7, for the reception of the relatively adjustable nozzle 11a. In either case, the nozzle is of a rather rigid construction as to provide for its being readily inserted in the vaginal canal.

In the case of the adjustable nozzle, the central portion of the diaphragm 10, around the nozzle opening 12, is rounded outwardly with respect to the base 8 of the seal in a concavo-convex form for seating firmly in the mouth of the vagina, and in the concaved side thereof is provided with a centrally located boss 13 in and through which the nozzle opening 12 is formed.

The opening 12 provides an axial sliding bearing for the adjustable nozzle 11a. The nozzle-encircling outer portion of the boss 13 grips the outer cylindrical surface of the nozzle 11a with sufficient firmness to prevent leakage of the treating medium around said nozzle. As a result of this relative axial adjustability, the nozzle may be inserted to any desired extent without affecting the seal produced by the flange 3 as and for the purpose above noted.

In the case of the permanently attached nozzle shown in Figs. 1 and 2, the exterior of the nozzle 11 is somewhat conical in form and the outer surface thereof blends into the outwardly curving surface of the central diaphragm 10.

In either case, the diaphragm is of such a pliable nature that the nozzle may follow and assume the general angle or course of the vaginal cavity, while the body of the seal 1 remains uniformly seated against the area surrounding the vaginal opening.

The nozzle 11 is provided with a longitudinal central channel 15, the inner end of which terminates adjacent the closed end 11b of said nozzle. Communicating with the channel 15, adjacent the closed end 11b of the nozzle, is a series of laterally directed spray openings 16 which communicate at their inner ends with the bore 15 and at their outer ends with longitudinally extending grooves 17, 17 formed in the outer surface of the nozzle 11 inwardly spaced from the closed end 11b thereof.

The opposite end of the central channel 15b is formed in an elongated boss 13a, which projects from the concaved side of the diaphragm 10 into the recess of the base 1 and affords attachment for the fluid delivery tube 18 illustrated in Fig. 1, or for the neck of a hand bulb similar to the bulb 19 illustrated in Fig. 3.

The under side of the nozzle 11 is provided with a groove or channel 20 which extends substantially from the outer closed end 11b of the

nozzle into the diaphragm 10 of the seal, said groove progressing in depth from the former toward the latter. The deeper end of the channel 20 communicates with an opening 21 formed in and extending through a boss 22 provided in the seal in the lower part of the diaphragm 10, immediately adjacent the deep elliptical suction channel 9, said opening 21 affording a connection for a discharge tube 23, as illustrated in Fig. 1.

The connections for the tubes 18 and 23 or hand bulb with the bosses 13a and 22 respectively may be made in the usual manner by means of metallic, hard rubber, or glass fittings (not shown).

With the device shown in Figs. 1 and 2, the relative arrangement of the inlet and outlet is such as will permit a woman assuming an upright, reclining or knee-chest position to readily press the flange 3 uniformly into firm sealing contact with the flesh and to control the discharge opening 21 with the one hand while operating the hand bulb or tube-collapsing element 24 with the other hand.

When the device is being used by doctors or others on a patient in a reclining position, the arrangement of the discharge opening 21 is such that drainage from the vagina through said discharge opening or tube connected thereto may be readily controlled without interfering with the operation of the inlet control 24.

Obviously the seal for the adjustable nozzle 11a may also be provided with a discharge opening with or without the drainage tube; and the adjustable nozzle 11a may be readily connected to the delivery tube 18 without departing from the essential features of the present invention.

I claim:

1. A one piece single walled vaginal seal comprising a firm marginal flange with a suction producing and maintaining channel inwardly adjacent said flange, and a diaphragm of concavo-convex form formed as a continuous integral part of said flange and extending laterally beyond the channeled face of the seal and provided with a central enlarged boss on the concaved side thereof, said boss having a nozzle-receiving opening extending through from the concaved to the convexed face of the protuberance, said opening being of such diameter relative to the diameter of the nozzle as to grip the nozzle with sufficient force to form a liquid seal between the outer surface of the nozzle and the inner surface of the opening while permitting longitudinal adjustment of the nozzle relative to the diaphragm.

2. A one piece single walled vaginal seal comprising a firm marginal flange with a suction producing and maintaining channel inwardly adjacent said flange, and a diaphragm of concavo-convex form formed as a continuous integral part of said flange and extending laterally beyond the channeled face of the seal and provided with a central enlarged boss on the concaved side thereof, said boss having a nozzle-receiving opening extending through from the concaved to the convexed face of the protuberance with its axis disposed at an acute angle to the plane of the seal, said opening being of such diameter relative to the diameter of the nozzle as to grip the nozzle with sufficient force to form a liquid seal between the outer surface of the nozzle and the inner surface of the opening while permitting longitudinal adjustment of the nozzle relative to the diaphragm.

3. A one piece single walled vaginal seal com-

prising a firm marginal flange of progressively increasing thickness from diametrically opposite side points of the seal toward the oppositely disposed ends respectively of the seal with a suction producing and maintaining channel inwardly adjacent said flange and with the base of the channel disposed substantially midway between the opposite faces of the flange substantially uniformly from end to end of the seal, and a convex dome formed as a continuous integral part of said flange and extending laterally beyond the channeled face of the seal and encircled by said channel and provided with a nozzle-receiving opening extending through the seal between the opposite faces thereof, said opening being of such diameter relative to the diameter of the nozzle as to grip the nozzle with sufficient force to form a liquid seal between the outer surface of the nozzle and the inner surface of the opening while permitting longitudinal adjustment of the nozzle relative to the diaphragm.

4. A one piece single walled vaginal seal comprising a firm marginal flange of progressively increasing thickness from diametrically opposite side points of the seal toward the oppositely disposed ends respectively of the seal with a suction producing and maintaining channel inwardly adjacent said flange and with the base of the channel disposed substantially midway between the opposite faces of the flange substantially uniformly from end to end of the seal, and a convex dome formed as a continuous integral part of said flange and extending laterally beyond the channeled face of the seal and encircled by said channel and provided with a nozzle-receiving opening extending through the seal with the axis of said opening disposed at an angle to the plane of the seal, said opening being of such diameter relative to the diameter of the nozzle as to grip the nozzle with sufficient force to form a liquid seal between the outer surface of the nozzle and the inner surface of the opening while permitting longitudinal adjustment of the nozzle relative to the diaphragm.

5. A one piece single walled vaginal seal comprising a firm marginal flange of progressively increasing thickness from diametrically opposite

side points of the seal toward the oppositely disposed ends respectively of the seal with a suction producing and maintaining channel inwardly adjacent said flange and with the base of the channel disposed substantially midway between the opposite faces of the flange substantially uniformly from end to end of the seal, and a diaphragm of concavo-convex form formed as a continuous integral part of said flange and extending laterally beyond the channeled face of the seal and provided with a central enlarged boss on the concaved side thereof, said boss having a nozzle-receiving opening extending through from the concaved to the convexed face of the protuberance, said opening being of such diameter relative to the diameter of the nozzle as to grip the nozzle with sufficient force to form a liquid seal between the outer surface of the nozzle and the inner surface of the opening while permitting longitudinal adjustment of the nozzle relative to the diaphragm.

6. A one piece single walled vaginal seal comprising a firm marginal flange of progressively increasing thickness from diametrically opposite side points of the seal toward the oppositely disposed ends respectively of the seal with a suction producing and maintaining channel inwardly adjacent said flange and with the base of the channel disposed substantially midway between the opposite faces of the flange substantially uniformly from end to end of the seal, and a diaphragm of concavo-convex form formed as a continuous integral part of said flange and extending laterally beyond the channeled face of the seal and provided with a central enlarged boss on the concaved side thereof, said boss having a nozzle-receiving opening extending through from the concaved to the convexed face of the protuberance with its axis disposed at an acute angle to the plane of the seal, said opening being of such diameter relative to the diameter of the nozzle as to grip the nozzle with sufficient force to form a liquid seal between the outer surface of the nozzle and the inner surface of the opening while permitting longitudinal adjustment of the nozzle relative to the diaphragm.

LEONA W. CHALMERS.