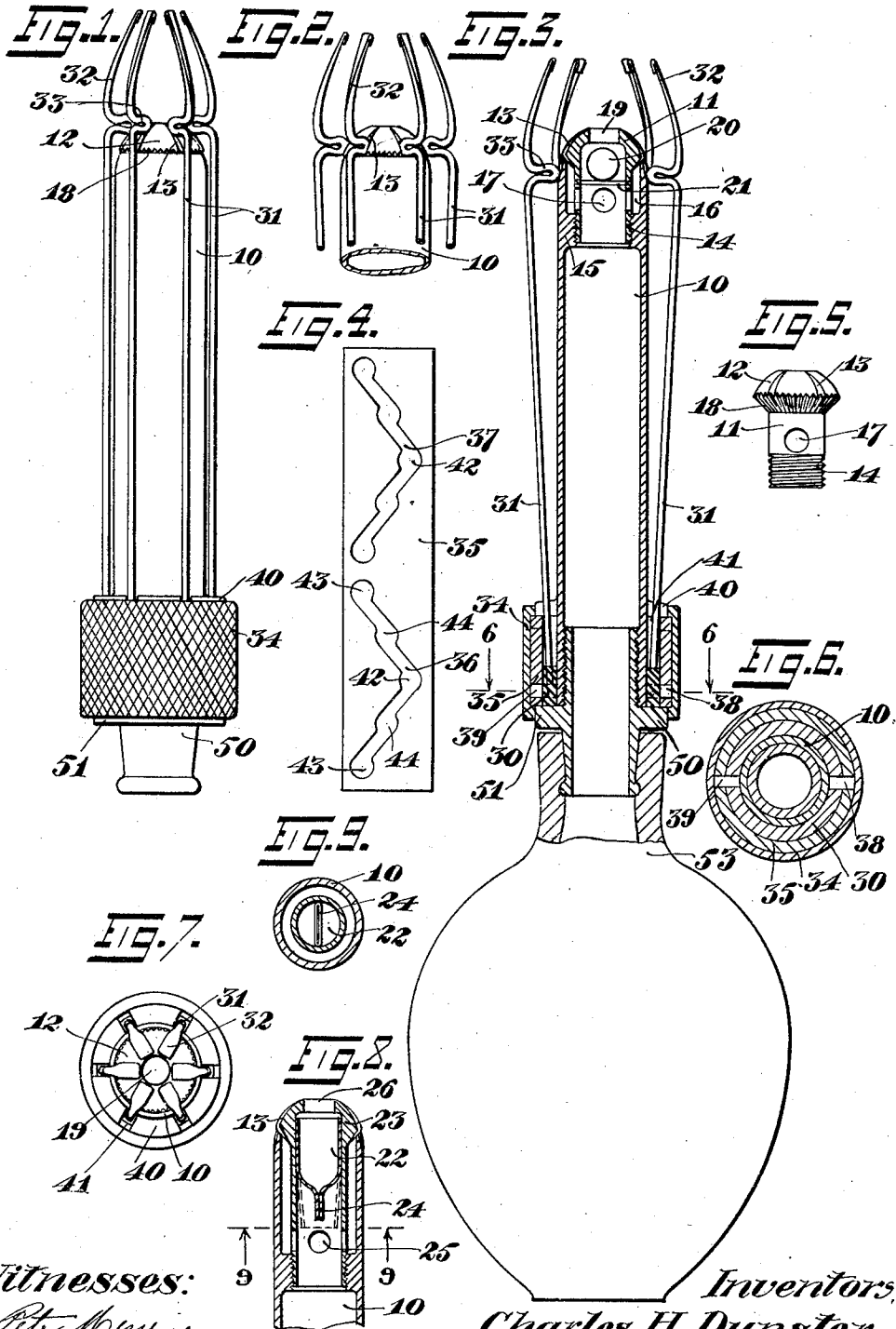


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VAGINAL SYRINGE.

APPLICATION FILED JULY 10, 1912.

1,059,126.

Patented Apr. 15, 1913.



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UNITED STATES PATENT OFFICE.

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1,059,126.

Specification of Letters Patent.

Patented Apr. 15, 1913.

Application filed July 10, 1912. Serial No. 708,561.

To all whom it may concern:

Be it known that we, CHARLES H. DUNSTER, a citizen of the United States, residing at Brooklyn, in the county of Kings and State of New York, and PAUL G. E. GUNKEL, a citizen of the United States, residing at Trenton, in the county of Mercer and State of New Jersey, have invented certain new and useful Improvements in Vaginal Syringes, of which the following is a specification.

This invention relates to vaginal syringes provided with dilators extending along the stem, and has for its object to provide improved means for causing expansion of the dilators.

A further object of the invention is to provide in such an instrument means on the nozzle end for causing the discharge to pass outwardly in the form of a rose, while upon the suction stroke of the syringe the liquid can enter through a central opening in the nozzle.

In the accompanying drawings showing embodiments of our invention, Figure 1 is a side elevation, in the closed position of the dilators; Fig. 2 is a similar view at the nozzle end, showing the dilators in the open position; Fig. 3 is a longitudinal section through the device with the dilators open; Fig. 4 shows the member that contains the cam slots, as developed in a plane; Fig. 5 shows separately the nozzle end portion; Fig. 6 is a transverse section on the line 6—6 of Fig. 3; Fig. 7 is a view of the nozzle end; Fig. 8 is a vertical section through the nozzle end, showing a modified form of valve; and, Fig. 9 is a cross section on the line 9—9 of Fig. 8.

The device is shown as provided with a tubular body portion 10 at one end of which is attached a nozzle member 11, shown separately in Fig. 5. This nozzle member 11 has a conical head portion 12 provided with radial grooves 13. The lower end 14 of the nozzle is threaded and screws into an inner flange portion 15 of the tube, just below the nozzle extremity thereof. By this means the tube member 10 is offset from the nozzle, providing an annular chamber 16 that communicates with the interior of the member 11 by one or more openings 17 beyond the threaded extremity. The head 12 adjacent

the tube is conical on its outer face and ribbed at 18 as shown, which portion engages the extremity of the tube 10 to provide a series of small openings for the chamber 16. This forms a rose outlet for the tube at the nozzle end.

The nozzle may also be provided with a kind of check valve that will prevent the water forced through the tube 10, from passing through the suction inlet 19 of the nozzle member thereby causing the water to pass laterally through the openings 17 into the annular chamber and out through the rose. But this valve on the suction stroke of the syringe, will retreat and permit water to be drawn in through the said suction inlet 19.

In Fig. 3 a ball 20 is shown arranged to engage the opening 19 that is smaller than the diameter of the ball to form a seat. A wire 21 may extend across the tube below the ball to prevent its moving too far away from the seat. When the water is forced out through the tube 10, the ball will be moved against the seat at the opening 19 to close the opening, whereby the water must pass out through the rose, as described. But on the suction stroke of the device, the ball will be drawn back from the seat and permit the water to pass into the tube through the central opening 19.

Another form of valve device is shown in Figs. 8 and 9 comprising simply a tube of soft rubber, secured in the nozzle member 23, the inner end of the tube being flattened as shown at 24, and normally remains in this condition. When the water is discharged it will press the closed end of the tube together closing the central outlet, and pass out of the lateral openings 25 and through the rose. But on the suction stroke, the water will enter through the end opening of the nozzle and will open the compressed soft rubber tube and pass through this tube and into the body 10.

At the rear end of the body, a ring 30 is provided in which are secured the extremities of dilators 31, six of which are shown, that extend longitudinally along the outer portion of the tube 10 from this ring to the nozzle end of the tube or body; and have their extremities 32 bent somewhat inwardly to approach each other when the

dilators lie against the stem 10. Each of the dilators is provided with an inwardly bent portion or lug 33, that extends into the channels 13 in the nozzle member. The dilators are preferably made of flexible wire or rod, and when the ring is moved along the stem to draw the dilators back, the lugs 33 will slide in these channels and cause the dilators to open as indicated in Figs. 2 and 3; the dilators bending to permit such expansion. But when the ring is moved in the opposite direction the dilators will close again to their former position against the body.

Suitable means are provided for causing this movement of the ring 30 on the stem, and to hold it in different positions. A knurled hard rubber sleeve 34 has affixed to its bore, by any suitable means, not shown, a metal ring 35 containing slots 36 and 37 therein. This ring 35 is shown developed in a plane in Fig. 4, and surrounds the ring 30 to which the dilators are secured. Pins 38 and 39, fast in the ring 30, project into the slots 36 and 37, respectively. On the stem 10 is a flange 40 containing slots 41, through which pass the dilators 31 to prevent any turning of the dilators or ring 30 on the stem. When the ring 34 is turned, the inclined walls of the slots 36 and 37 engage the pins 38 and 39 respectively, and cause the ring 30 to be advanced along the stem. It will be seen that each of these slots has an intermediate portion deflected at 42, into which part the pins extend when the dilators are closed and the ring 30 is at the lower position. Upon turning the ring 34 in either direction, this ring being prevented from moving endwise by suitable means, the pins will be engaged by the walls of the slot and advanced to the extremity 43 or 43 of either slot. At the intermediate portion the slot is deflected, as at 44, forming a kind of intermediate stop, whereby the dilators can be expanded to a half-open position, and the bend in the wall will form a kind of abutment to prevent the spring of the dilators returning the ring to allow them to close. At the extremities 43 and 43 of the slots is also a form of abutment in the wall to lock the dilators in the open position. At the inner end of the tube or body 10 is attached a tube 50, screwed into the threaded bore of the tube and provided with a flange 51. The inner ring 35 of the actuating member 34 engages between this flange 51 and the said flange 40 on the tube,

thereby preventing endwise movement of these ring members.

The extension of the tube 50 may be engaged by a suitable bulb 53 of soft rubber to cause inlet and discharge of the syringe in the usual manner. But if desired a rubber hose can be attached at this place for use with a fountain bag or other source of water.

In the use of the device, the tube is inserted into the organ with the dilators in the closed position, as in Fig. 1. When it is desired to expand the dilator arms, it is only necessary to hold the device by the bulb or the hose pipe where it connects with the end of the tube while the fingers simply turn the ring 34 in either direction. The dilators can expand to the intermediate position by a small movement, and a full movement will cause the pins to move to the ends of the slots giving the full expansion of the dilators, and they will remain in either of these two positions by reason of the offset portions of the slots.

While the water flows in through the tube, the valve will close the central opening and the water will pass out in the form of a rose, giving it full access to the walls of the cavity. Where the bulb is used and has been entirely compressed, upon allowing the bulb to expand a suction effect will be produced and the water that has been forced into the organ will now be drawn in through the tube. At this time the valve at the central opening will open and permit free passage of the liquid into the tube of the bulb.

Having thus described our invention, we claim:—

In a syringe of the class described having a tubular portion, a bulb receiving portion removably attached thereto, a flange on said tubular portion, a flange on said bulb receiving portion, a ring member slidably mounted between said flange members, a rotatable sleeve mounted outside of said ring member, means between said ring and sleeve members whereby said ring member is caused to slidably move upon rotation of said sleeve, the same being held in rotative position by said flanges, and a plurality of flexible dilator fingers mounted upon said slidable ring.

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