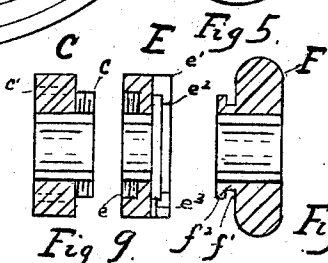
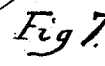
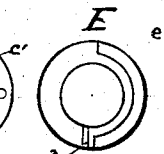
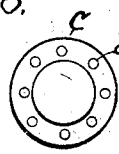
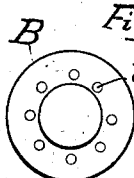
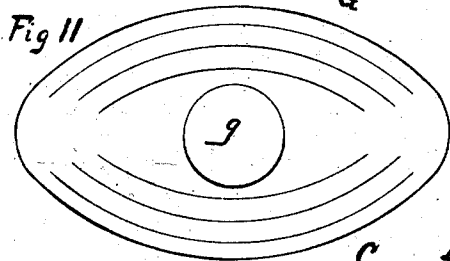
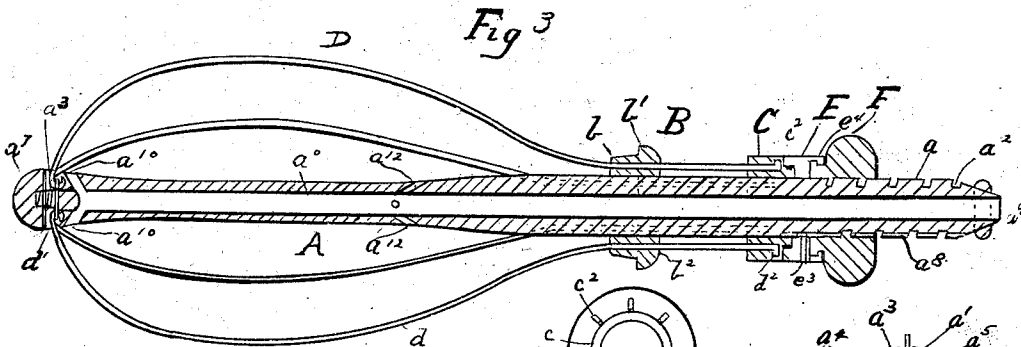
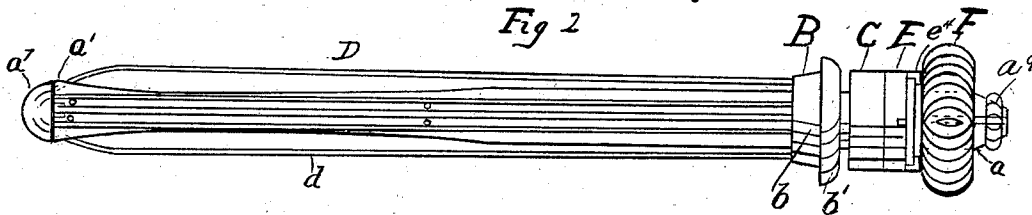
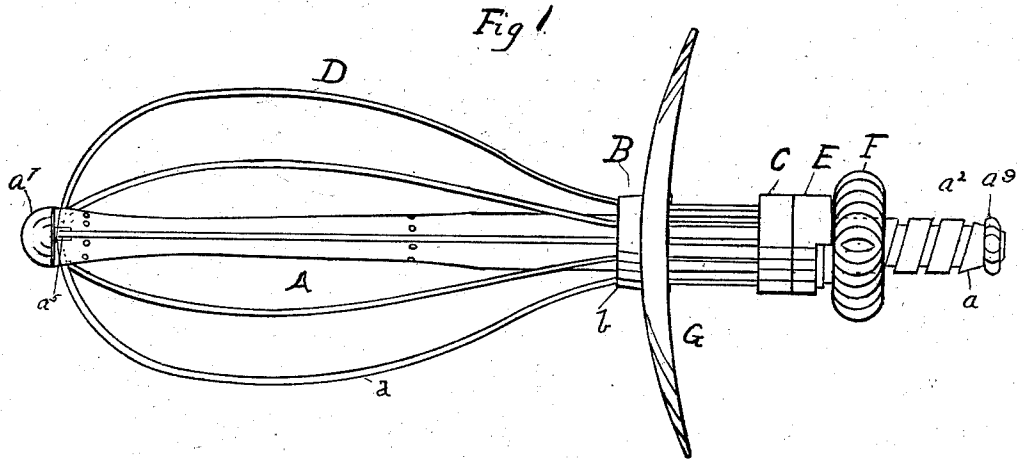


C. I. BUSH.
SYRINGE.

(Application filed June 1, 1901.)

(No Model.)



Witnesses.

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UNITED STATES PATENT OFFICE.

CORYDON I. BUSH, OF KANSAS CITY, MISSOURI.

SYRINGE.

SPECIFICATION forming part of Letters Patent No. 698,447, dated April 29, 1902.

Application filed June 1, 1901. Serial No. 62,679. (No model.)

To all whom it may concern:

Be it known that I, CORYDON I. BUSH, a citizen of the United States of America, residing at Kansas City, in the county of Jackson and State of Missouri, have invented certain new and useful Improvements in Syringes; and I do hereby declare that the following is a full, clear, and exact description of the invention, such as will enable others to make and use the same, reference being had to the accompanying drawings, forming a part of this specification.

The object of my invention is, first, a syringe for vaginal uses which will admit of the distention of the parts without injury thereto and which also may be employed in wounds of the body, whereby medicated solutions may be readily applied and the allaying and healing of inflammation expedited; second, to effect the enlargement of the syringe in a greater or lesser degree in an outward direction of the stem; third, to prevent torsion in the outward extension of the springs of the syringe; fourth, to retain the medicated solutions applied by the syringe in vaginal applications; fifth, to irrigate or medicate the parts of the body entered by the syringe by the backflow of the solutions, and, sixth, to enable the outwardly-extensible springs to be readily detached from the stem of the syringe.

The invention consists in the novel construction and combination of parts, such as will be first fully described and then specifically pointed out in the claims.

In the drawings, Figure 1 is a side view of the syringe, showing the shield or dam and the springs on the syringe-stem distended. Fig. 2 is a view of the syringe with the dam removed and showing the outwardly-extensible springs in a closed position. Fig. 3 is a vertical sectional view of the invention as shown in Fig. 1. Fig. 4 is a view of the outer end of the syringe-nozzle with the cap removed. Fig. 5 is an end view in detail of the perforate adjusting-collar for the outwardly-extensible springs of the syringe-stem. Fig. 6 is a view in detail of the forward end of the collar with which the inner ends of the springs of the syringe-stem are connected. Fig. 7 is a detail view in perspective of the collar keyed on the threaded end of the stem of the

syringe-stem, showing the grooved annular flange. Fig. 8 is a rear end view of the collar, as shown in Fig. 6. Fig. 9 shows sectional views, respectively, of the collars as seen in Figs. 5 and 6. Fig. 10 is a detail sectional view of the nut on the threaded end of the stem operating the collars. Fig. 11 is a plan view of the shield.

Similar letters of reference indicate corresponding parts in all the figures of the drawings.

Referring to the drawings, A represents a longitudinal hollow stem or tube for conducting fluids, in which is a longitudinal opening a^0 , extending through the end a and to within a short distance of the end a' . The outer surface of the stem A is cylindrical in form and of corresponding thickness from its inner end a to a point intermediate its inner and outer ends, from which point the stem gradually decreases in thickness, and at the outer end a' said stem is enlarged to nearly the circumference of its inner end.

In the outer surface of stem A is a spiral groove a^2 , which extends from a point near the inner end of said stem part way toward the outer end of said stem.

Upon stem A is a longitudinal movable wire-clamping collar B for adjusting the position of the wire springs of the syringe. From the forward end of collar B the annular surface b is reduced in size about two-thirds of the distance toward the outer end, the remaining rear end of the collar extending outwardly a short distance to form an annular shoulder b' , which also presents a surface to be grasped by the fingers in operating the collar. The annular surface b of the collar is slightly inclined inwardly from the shoulder b' for attachment of the dam, hereinafter described. Extending longitudinally through the collar B are perforations b^2 , which are spaced at equal distances apart concentrically with tube A and correspond in numbers to the wire springs employed.

C represents the slidable collar with which the inner ends of the wire springs of the syringe-stem are connected and which is arranged upon the stem A in rear of the collar C. Upon the rear end of collar B is an externally-screw-threaded neck c , which is smaller in size than said collar. Extending longitu-

dinally through said collar are perforations c' , corresponding in position and in number to the perforations b^2 in the collar B. In the rear end of collar C, between the neck c and the outer surface of said collar, are radial depressions c^2 , extending from the perforations toward the neck.

D represents the expanding device, which consists of separate wire springs d , composed, preferably, of silver, the number of springs employed being such as to afford convenient attachment to the stem A. The wire springs d in length are somewhat shorter than the length of stem A. The outer ends of the wire springs d are extended through the perforations c' of collar C from the direction of the rear end of said collar and thence through the perforations b^2 in collar B in the direction of the forward end of stem A. Extending from the forward end a' of the tube or stem A, which for a short distance rearwardly is closed, is a screw a^3 . Concentric with said screw and within the end a' of the stem is a depression a^4 , and extending outwardly from said depression to the outer side of the stem are radial depressions a^5 , which are increased in depth to that of the depression a^4 . In the depression a^4 is a ring a^6 . The outer ends of the wire springs d are extended within the depressions a^5 in the end a' of stem A and bent over the ring a^6 to form a hook d' , by means of which the outer ends of the wire springs are pivotally and also removably connected with the ring. Upon the end a' of the stem A is an internally-screw-threaded cap a^7 , which is fitted to the screw a^3 , and thereby prevents the accidental displacement of the wires d . The outer surface of the cap a^7 describes an outwardly-curved plane from the sides of the end a' of the stem A. The inner ends of the wire springs d are bent at right angles in an outward direction from stem A to form stops d^2 and said bent portions inserted in the depressions c^2 in the rear end of collar C.

E represents a binding-collar, which is arranged on stem A in the rear of collar C and which binds the bent ends d^2 of the wire springs d in the recesses c^2 of said collar. In the forward end of collar E is an internal screw-thread e , which receives the screw-threaded neck c on collar C. Upon the rear end of collar E is a rearwardly-extended annular flange e' , which extends half-way the distance around said end and is then bent inwardly a short distance to form the groove e^2 . The binding-collar E is turned upon the neck c of collar C and is slidable on the stem A in the following manner: In the threaded end of stem A is a longitudinal groove a^8 . In the rear end of the collar E, near one end of the annular flange e' , is a depression e^3 , in which is inserted snugly a small stop or key e^4 , slightly less in width than the longitudinal groove a^8 , the inner end of which stop is bent at right angles and extended within the groove a^8 .

F represents the operating-nut, which is

larger in size than the collar E and arranged on the threaded end a^2 of the stem in rear of said collar and which is provided with internal threads which engage with the threads a^3 of the stem A. On the forward end of the nut F is a neck f' , upon which neck is an annular outwardly-extended flange f^2 , which extends within the groove e^2 of the collar E. The outer surface of the nut F is milled so as to be readily turned by the hand. In the arrangement of the collar E and nut F upon the stem A the flanged end of the nut is first placed within the groove e and both collar and nut are placed simultaneously on the stem and the collar E turned on the shoulder c of the collar C, after which the key e^4 is inserted in the depression e^3 of the collar E, thus preventing the rotation of the said collar. Upon the extreme rear end of the stem A is an annular projection a^9 , over which may be placed the end of the rubber hose connected with a bulb of a syringe. In the side of the tube or stem A near its foremost end are the outwardly-inclined orifices a^{10} , which lead from the longitudinal passage a^0 . In the side of the tube or nozzle A, at a point about half-way between the outer and inner ends of the tube, are rearwardly-inclined orifices a^{12} , which lead from the passage a^0 .

G represents the dam, which is made from a plate of hard rubber and elliptical in form. The central portion of the dam is concave, and in said portion is an opening which is of the proper size to fit the inclined annular surface b of the collar B and abut against the shoulder b' , the convex side of the dam being directed toward the forward end of the stem A.

In operation, the parts being in the position as in Fig. 2, the collar B is seized by the fingers of the left hand and the nut F grasped by the fingers of the right hand and rotation imparted to the nut, which moves forward on the stem A, forcing the collars C and E forward toward the forward end of said stem. This action causes the wire springs d of the syringe-stem to extend in curved lines outwardly from the stem A. In order to increase the lines of curvature at the forward end of the stem A, the collar B is pushed forward by the fingers as far as necessary. The forward ends of the wire springs being pivoted, the wires in rear of the collar are brought into a parallel position with the stem and an enlargement of the device effected in a greater or less degree as the collar is pushed forward. In vaginal treatment the syringe-stem is inserted in the position as seen in Fig. 2 and then expanded. The forward movement of the collar B, with the dam G, carries said dam to the point of entrance, and during the application of medicated solutions through the stem or nozzle A the dam prevents the escape of the solutions, which pass outwardly through the orifices a^{10} and also discharged in returning through the orifices a^{12} .

For the treatment of wounds of the body

the invention enables a more uniform distention of the wound and a more effectual treatment of the ruptured parts and without the danger of incision in the application to the natural passages of the body when otherwise applied.

The dam G when pushed in position in the collar B is given a close connection and without leakage.

10 With the removal of key e^4 from the collar E and cap a^7 the outwardly-extensible springs are readily detached from the stem A for cleansing and repair, thus affording an instrument of great utility and which may be
15 connected with any source of fluid-supply for irrigation or the application of medicaments in surgical operations. The springs d may be made from steel silver-plated or from such other material as may be preferred.

20 Such modifications may be employed as are within the scope of the invention.

Having fully described my invention, what I now claim as new, and desire to secure by Letters Patent, is—

25 1. A syringe-stem having a longitudinal groove at its inner end, a series of outwardly-extensible springs connected at their outer ends with the forward end thereof, a slidable collar on said stem with which the inner ends
30 of said springs are connected and a separate non-rotatable slidable collar keyed to said stem and rigidly connected with the collar supporting said springs and a slidable spring clamping device upon said stem, substantially as described.

35 2. A syringe-stem and a series of outwardly-extensible springs pivotally connected at their forward ends with the forward end of said stem, a perforate spring clamping-collar through which the springs extend, and a
40 separate non-rotatable sliding perforate collar, and stops on the inner ends of said springs, and means for retaining said stops in the perforations of said collar.

45 3. A syringe-stem having a longitudinally-grooved inner end and a series of outwardly-extensible springs pivotally connected at their outer ends with the forward end of said stem, a perforate spring clamping-collar on said
50 stem through which the springs extend, sepa-

rate perforate non-rotatable, slidable collars on said stem, with which the inner ends of said springs are connected and a key upon one of said collars extending within the groove of said stem.

55 4. A syringe-stem having an externally-screw-threaded inner end, and a longitudinal groove in said end, a series of outwardly-extensible springs pivotally connected at their outer ends with the forward end of said stem, 60 a perforate spring clamping slidable collar on said stem through which said springs extend, a separate sliding collar with which the inner ends of said springs are connected, and a key preventing the rotation of said collar, 65 extending within said longitudinal groove, a nut on the threaded end of said stem and a swivel-joint connecting said nut and collar.

5. A syringe-stem having an externally-screw-threaded inner end and a longitudinal 70 groove in said end, a series of outwardly-extensible springs pivotally connected at their outer ends with the forward end of said stem and stops upon their inner ends, a perforate spring clamping, slidable collar on said stem; 75 through which said springs extend, separate, slidable spring holding and binding collars upon said stem in rear of said clamping-collar, one of which is perforated to receive the inner ends of said springs, and provided with 80 depressions in its rear end to receive the stops on said springs, and a key upon the other collar extending within said longitudinal groove, a screw-joint connecting the said spring holding and binding collars and a nut 85 upon the screw-threaded end of said stem and a swivel-joint connecting said nut with the binding-collar.

6. In a speculum, a syringe-nozzle having discharge-openings, a series of outwardly-ex- 90 tensible springs connected at their outer ends with the forward end of said nozzle, a collar with which the inner ends of said springs are connected having an inclined outer surface and a shoulder, and a concave, perforate plate 95 on said collar.

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Witnesses:

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