Sept. 1, 1936. E. M. CARUSO 2,052,868

ANTRUM SPRAY

Filed Oct. 24, 1934 2 Sheets-Sheet 1

Fig. 1.

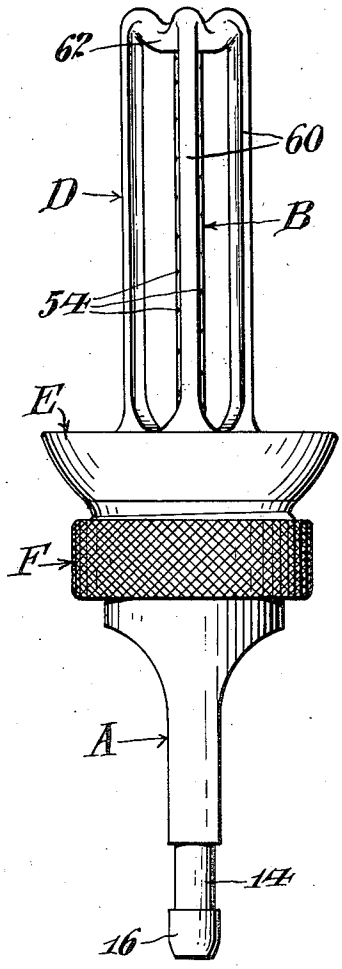


Fig. 2.

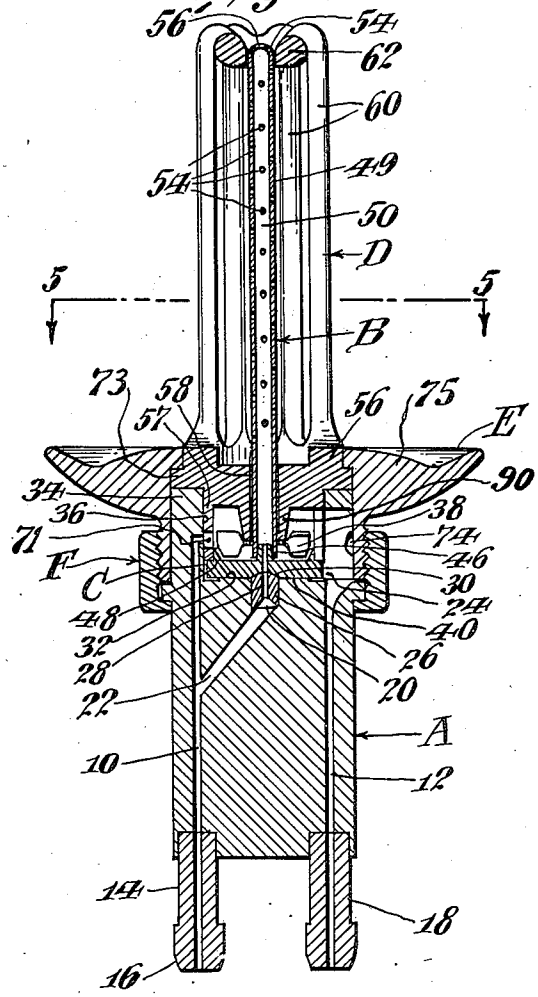
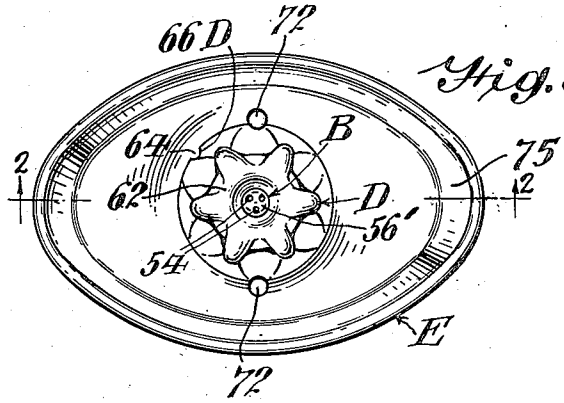


Fig. 3.



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Filed Oct. 24, 1934 2 Sheets-Sheet 2

Fig. 4

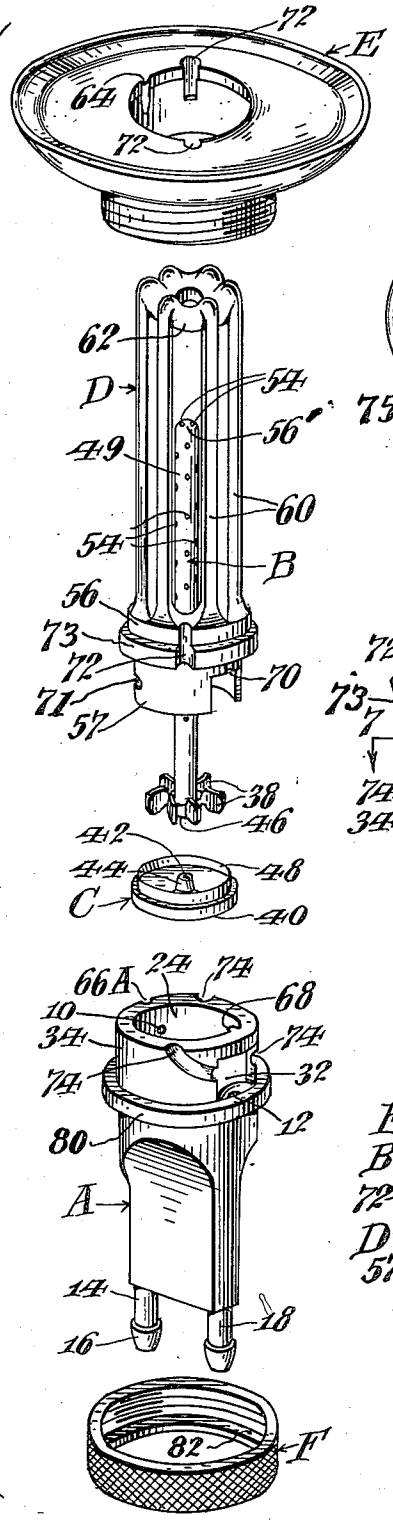


Fig. 5.

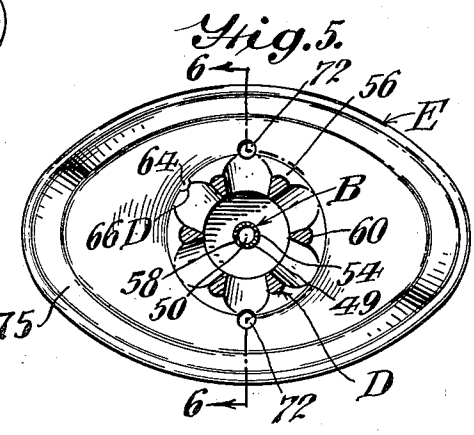


Fig. 6.

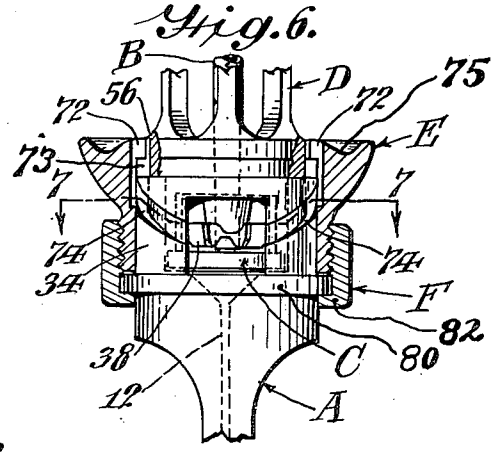
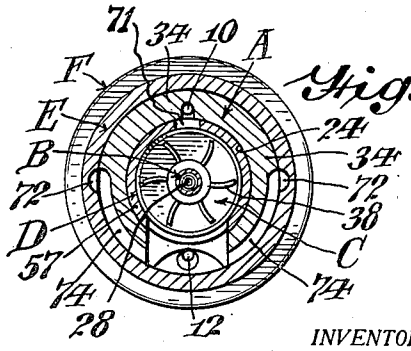


Fig. 7.



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ANTRUM SPRAY

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Application October 24, 1934, Serial No. 749,719

9 Claims. (Cl. 128—244)

My invention relates to a syringe and particularly relates to a vaginal syringe of the type adapted for use in irrigating and distending the vagina for treating irritated and diseased tissue therein.

Heretofore, sprays have been used wherein the fluid emerging from the nozzle openings impinges directly upon the same area which is subjected to the spray or treatment. This action results in irritation and even shock to the subject treated. Since irritation of the area results, the subject must be treated for brief intervals of time to obviate excessive irritation or shock.

It is an object of my invention to provide a continuously rotatable spray of fluid to be applied to sensitive surfaces without in any way causing irritation or sting to the subject under treatment.

It is, also, an object of my invention to provide a spray whereby the irrigating fluid may be applied for a longer period of time because of the elimination of irritation.

Another object of my invention is to provide a spray of the type that may be easily disassembled for sterilizing purposes and which may be easily and accurately assembled by a person whether skilled or unskilled in the handling of such instruments.

Another object of my invention is to construct a syringe that is light in weight and sturdy in construction.

Another object of my invention is to provide a syringe wherein the fluid utilized for irrigating purposes may also provide a turning moment upon the rotatable nozzle.

Another object of my invention is to provide a guard for preventing the sensitive portion of the organ to be sprayed from contacting the rotatable nozzle of the syringe.

Other objects of my invention are to provide an improved device of the character described, that is easily and economically produced on a manufacturing basis, that is sturdy in construction, and the efficiency of which is very high.

With the above and related objects in view my invention consists in the details of construction and combination of parts as will hereinafter be more fully described and which will be more readily understood when the description is read in conjunction with the accompanying drawings, in which:—

Fig. 1 is a side elevational view of a vaginal syringe embodying my invention.

Fig. 2 is a sectional view taken on the line 2—2 of Fig. 3.

Fig. 3 is a plan view of the syringe embodying my invention.

Fig. 4 is an exploded view showing the various elements of my invention.

Fig. 5 is a sectional view taken on the line 5—5 of Fig. 2.

Fig. 6 is a sectional view taken on the line 6—6 of Fig. 5.

Fig. 7 is a sectional view taken on the line 7—7 of Fig. 6.

Referring in greater detail to the drawings, I show in Fig. 1 a spray mainly comprised of cast aluminum or other similar low density metal or non-metallic substance that will not rust or corrode, and which renders the completed device, light in weight; the rotatable nozzle, however, is comprised of non-corroding metal. The spray comprises a base portion, generally designated as A, of aluminum, which has an inlet passageway 10 and an outlet or discharge passageway 12 longitudinally therethrough. At one end of the passageway is a hollow cylindrical member or tube 14 which has an enlarged outer surface 16 to receive a rubber tube (not shown). A second tube 18, similarly constructed and functioning similarly as the tube 14, has its opening in alignment with the discharge passageway 12.

Centrally located in the upper central portion of the base A is a terminal opening 20 of a nozzle inlet passageway 22 that joins the inlet passageway 10. The passageways 10, 12 and 22 terminate at one end in a recess 24, as shown in Fig. 4, located in the upper portion of the base A in order that the fluid may have a continuous circuit. Inserted within the base at the central opening is a hollow plug 26, whose opening 28 is aligned with the opening 20 but which is comparatively restricted in cross sectional area in order to increase the velocity of the liquid passing that opening. The plug is conically shaped on its uppermost surface, as at 30, so that the portion of the cone 30 extends above a flat surface 32 forming a portion of the recess 24.

A cylindrical wall 34, integrally formed with the base A, has the inlet passageway 10 terminate in its inner curved wall 36 above the flat surface 32 of the recess 24. The purpose of locating the inlet passageway, as above described, is to have the fluid discharge upon vanes 38 mounted upon a rotatable nozzle, generally designated B, and hereinafter further described in detail.

A disc-like member, generally designated as C, is mounted within the central recess 24 in the base. The disc-like member C has a flat lower surface 40 which is adapted to be placed adjacent

the flat surface 32, and the member C, also, has a central aperture 42 therethrough. The metal adjacent the aperture 42 is extruded so that the lower surface has a slight recess to fit over the cone 30, and the upper portion is extruded as at 44 to serve as a guide bearing or pedestal for one end 46 of the nozzle. A thin annular rim 48 is formed upon the upper surface of the disc-like member C close to the curved edge.

The rotatable nozzle B, comprised of non-corrosive metal, has a curved bounding surface 49 and a central passageway 50 longitudinally extending from the end opening. A plurality of small openings 54 extend through the curved bounding surface and the tip 56' of the nozzle. The small openings 54 permit the discharge of the hygienic fluid.

It is to be observed that the openings 54 are not located in the same horizontal plane, the openings being located so that the stream of fluid will not be concentrated on one point, thereby overcoming the irritation or pricking of the surface under treatment. By the above arrangement of staggering the openings, the spray may be used upon the subject for a longer time and it, also, eliminates any shock to the subject.

A combined dilator and guard, generally designated as D, and comprised of aluminum, has a base 56 and a hollow cylindrical flange 57 which extends downwardly and is adapted to fit into the recess 24 so that the outside wall of the flange 57 and the inside curved wall 36, that partially defines the recess, contact one another. A portion of the inner curved surface of the flange 57 also is engaged by the rim 48 of the disc-like member in order to hold the disc-like member in a definite position, whereby irrigating fluid may pass through the disc-like member. A central opening 58 through the base 56 is of a sufficient diameter to permit the rotatable nozzle to rotate freely therein and in addition the opening allows some of the discharged fluid to flow into the discharge passageway.

From the base 56 of the guard D are a plurality of vertically extending rails 60, the corners of which are rounded to prevent the users or the operators of the spray from cutting themselves. The rails are merged together by the metal 62 at their upper end, but a slight opening remains. The central opening does not permit the body of the rotatable nozzle to pass therethrough, but does permit fluid to be sprayed therethrough. The metal surrounding the central opening serves as a journal bearing for the nozzle.

A notch 70, as illustrated in Fig. 4, is cut on the outer curved surface of the guard D to cooperate with a lug 68 positioned to extend radially inward of the inner curved surface 36 of the cylindrical member 34 of the upper portion of the base A. The purpose of having an interfitting lug and recess is to align the guard D and base A in a predetermined relationship whereby an opening 71 in flange 57 will be in alignment with the terminal opening 10 for fluid to pass therethrough. Such arrangement eliminates any possibility of the elements being assembled in any position but the correct position, irrespective of whether the person is skilled or unskilled in the handling of instruments.

A horizontally extending annular flange 73 is on the base of the guard to permit a retaining member, generally designated as E, to retain the base A, and the guard D in aligned relationship.

The retaining member E is comprised of aluminum, and its main body portion 75 is of an elliptical shape when viewed from the top, as is illustrated in Fig. 3, and slightly cup-shaped in cross-sectional view, as shown in Fig. 4. Emerging downwardly from the elliptical portion is a tubular portion which is externally threaded in order that an internally threaded coupling member F may be coupled thereto.

A lug 64 radially extending on the member E engages the notch 66D of the member D and also, engages a notch 66A of the base A. By the arrangement hereinbefore described, ports 72 are aligned with the angularly disposed slots 74, 74 on the cylindrical member 34. The continuous passageways described serve to guide the spent fluid, that has passed from the nozzle, to the exhaust outlet.

A flange 80 on the base A is engaged by an inwardly radially extending portion 82 on the coupling F, so that when the coupling is screwed to unite with the retaining member E, all of the elements hereinbefore described will be in correctly aligned and operable position.

Located upon the surface of the guard member and the retaining member that are in engagement are a plurality of vertically extending cut away segments forming passageways that terminate in the recess 24. The passageways serve as conduits to the exhaust outlet for spent fluid that has passed from the nozzle.

A recapitulation of the operation of my invention is as follows:—

When the device is assembled and connected to a source of irrigating fluid under pressure, the fluid passes through the inlet passageway 10 and the opening 71 and impinges upon the vanes 38 of the nozzle B thereby rotating the nozzle. A portion of the fluid passes to the branch passageway 22, through the restricted orifice 28, where the velocity of the fluid is increased and passes directly through the nozzle passageway 50 where the fluid has egress through the ports or openings 54. The spent fluid may find its way back to the exhaust passageway 12 through the ports 72, 74 and the opening 58 on the guard base D.

When the instrument is disassembled as for purpose of sterilization, the coupling F is unscrewed by turning the knurled portion of the coupling; the elements A, B, C, D and E then may be separated. To assemble the instrument, the disc-like member C is placed within the recess 24, and the rotatable nozzle B is placed within the dilator D. The dilator D is then placed so that the flange 57 comes within the recess 24. The flange will not fit into the recess properly unless the lug 68 and the recess 70 interfit. When the lug 68 and the recess 70 interfit, the retainer E is positioned over the dilator D so that its lug 64 fits into the slot 66A on the base A. The second interfitting lug 64 and slot 66A also aligns the dilator D and the retainer E. The coupling F is then placed in position and turned until the instrument is held securely in assembled position.

A tapered extension 90 protruding downwardly from the flat surface of the base 56 of the guard D has its edge adapted to engage the upper side of the hub to which the vanes 38 are attached. This extension 90 serves as a journal bearing for the rotatable nozzle and, also, limits the movement of the nozzle in one direction.

It is, also, within the contemplation of my invention to use hard rubber or "bakelite" for various elements of my spray.

Although the invention has been described in considerable detail, the description is intended

as illustrative rather than limiting, as the invention may be variously embodied, and the scope of the invention is to be determined as claimed.

I claim as my invention:—

1. In a vaginal spray comprising a base having an inlet, a passageway branching from said inlet, a rotatable nozzle having vanes at one end thereof adapted to be engaged by a fluid emerging from said inlet and said branch adapted to permit the passage of fluid to the interior of the spray, and an exhaust passageway in said base.

2. In an antrum spray having in combination a base, inlet and outlet passageways within said base, a branch outlet from said inlet passageway, a restricted opening at the branch passageway outlet, a rotatable nozzle having a longitudinal opening in alignment with the restricted opening, vanes on nozzle which are located adjacent a terminal of said inlet passageway, a dilator enveloping said nozzle, and means for detachably retaining said elements in alignment.

3. A vaginal spray comprising a rotatable nozzle having a plurality of small openings and a longitudinal opening therein, a plurality of vanes mounted upon said nozzle, a protruding member to limit the transverse movement of said nozzle, and a member engaging a portion of the vanes to serve as a bearing for the nozzle and, also, to limit the movement of the nozzle in one direction.

4. A vaginal spray comprising a base including inlet and exhaust passageways therein, a branch passageway joining said inlet passageway, a disc having a restricted opening in alignment with said branch opening, a nozzle adapted to have its opening in alignment with said restricted opening, and means secured to said nozzle to be rotated by a portion of incoming fluid.

5. A vaginal spray comprising a base having inlet and exhaust passageways therein, a cavity defined by an upwardly extending flange on the upper portion of said base wherein there are two termini for the inlet passageway, and one terminus for the exhaust passage, a dilator having a flange complementary to the flange on said base, a nozzle having a plurality of vanes thereon, said vanes positioned adjacent said inlet terminus whereby incoming fluid will move said vanes, and passageway on said base flange whereby the portion of the fluid that passes through the nozzle as well as the portion of the fluid that rotates said nozzle by way of said vanes may have access to the exhaust passageway.

6. A vaginal spray comprising a base having inlet and exhaust passageways therein, a flange on the upper portion of said base wherein there is a terminus for each of said inlet and exhaust passageways, a dilator having a flange complementary to the flange on said base, a rotatable nozzle, a retainer adapted to engage said dilator to hold it in operative position, and a complementary coupling adapted to engage said base and to detachably secure the retainer in position.

7. A vaginal spray comprising a base having inlet and exhaust passageways therein and a branch passageway joining the inlet passageway, a vertically extending flange on the upper portion of said base wherein there is a terminus for each of said inlet and exhaust passageways, a dilator having a vertically extending flange that interfits with said base flange and said flange having an opening therein, means for aligning said flanges in a predetermined relationship whereby the opening in the dilator flange will be in alignment with the inlet terminus passageway, a rotatable nozzle having a plurality of small openings and vanes thereon, said vanes located adjacent said inlet passageway terminus, a plurality of rails on said dilator adjacent said nozzle, a retainer for holding said dilator, and a detachable coupling for holding said base, and means whereby said retainer and said coupling may be held together.

8. A vaginal spray as described in claim 7 having a passageway that joins the exhaust passageway.

9. A vaginal spray comprising a base having an inlet passageway therein and a branch passageway connected to the inlet passageway, a rotatable nozzle, a plurality of vanes on said nozzle, said vanes adapted to be impinged upon by liquid issuing from said inlet passageway, said nozzle comprising an enclosed wall having a central passageway therein and a plurality of small openings through the wall thereof thereby communicating with said central passageway, said branch passageway and said nozzle central passageway intercommunicating, and a dilator spaced from said rotatable nozzle said dilator having journal bearings therein, wherein said nozzle is arranged to freely rotate.

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