

No. 859,533.

PATENTED JULY 9, 1907.

J. WALLACE.
VAGINAL SYRINGE.
APPLICATION FILED NOV. 5, 1906.

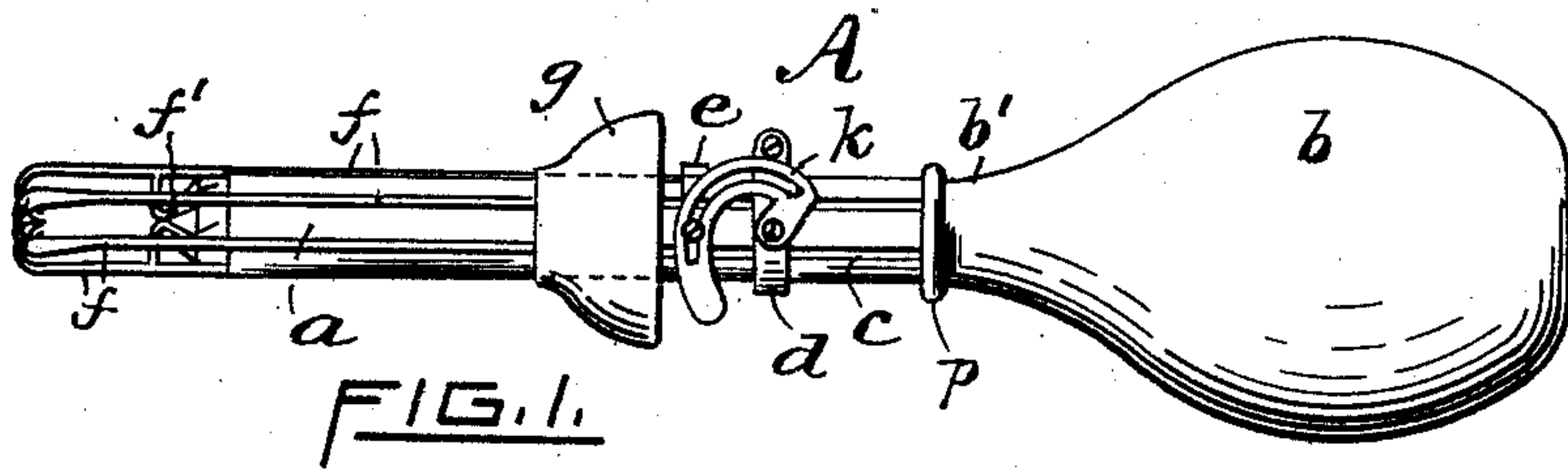


FIG. 1.

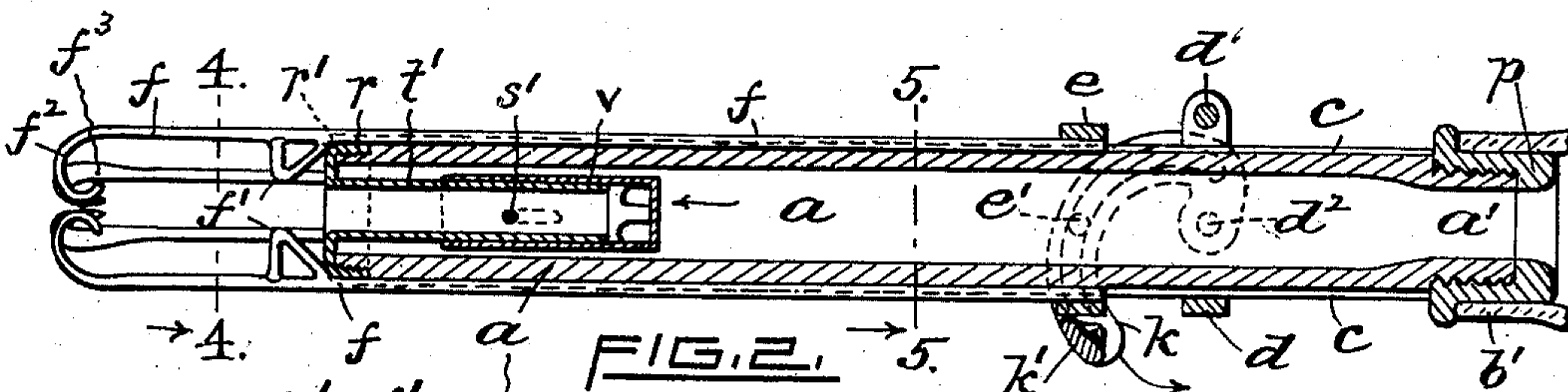


FIG. 2.

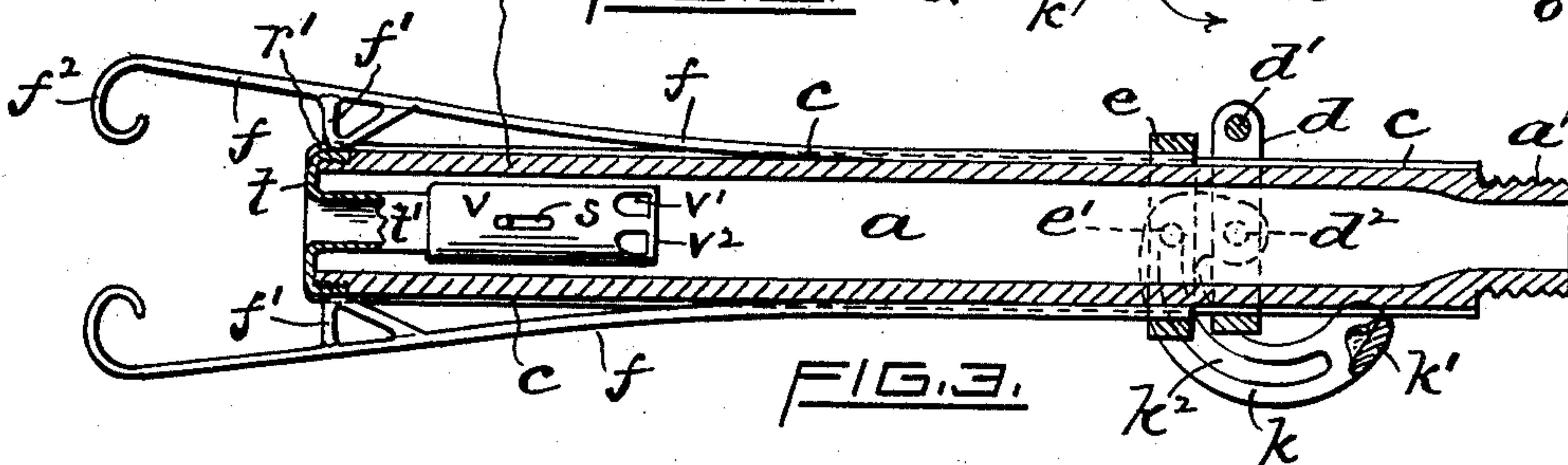


FIG. 3.

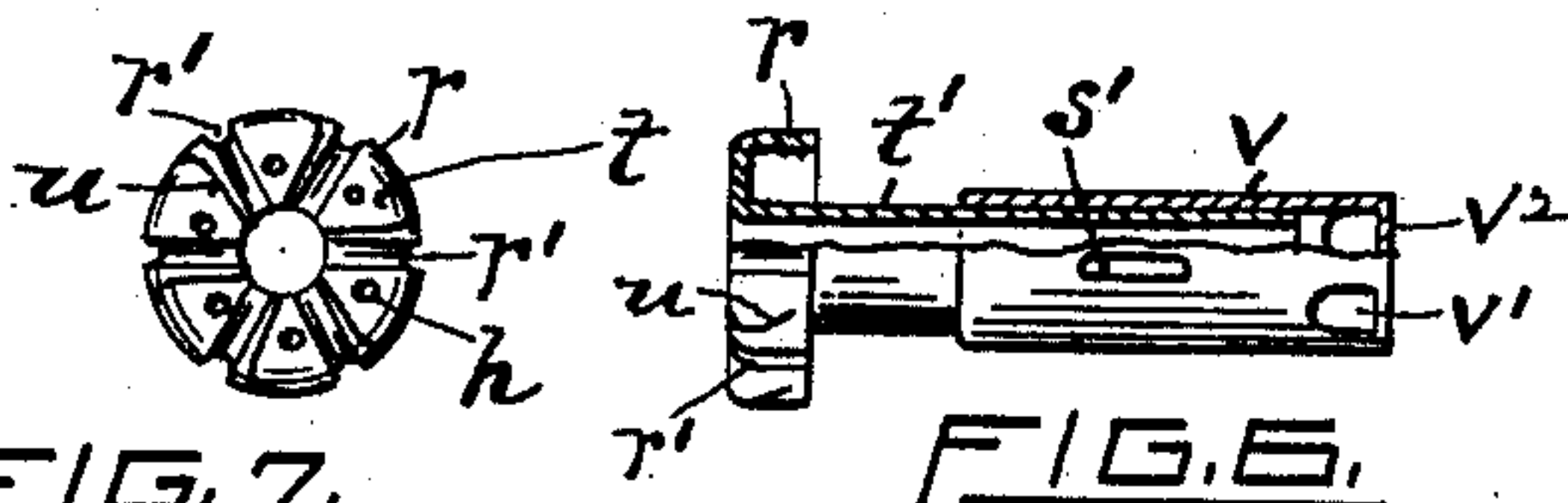


FIG. 4.

FIG. 5.

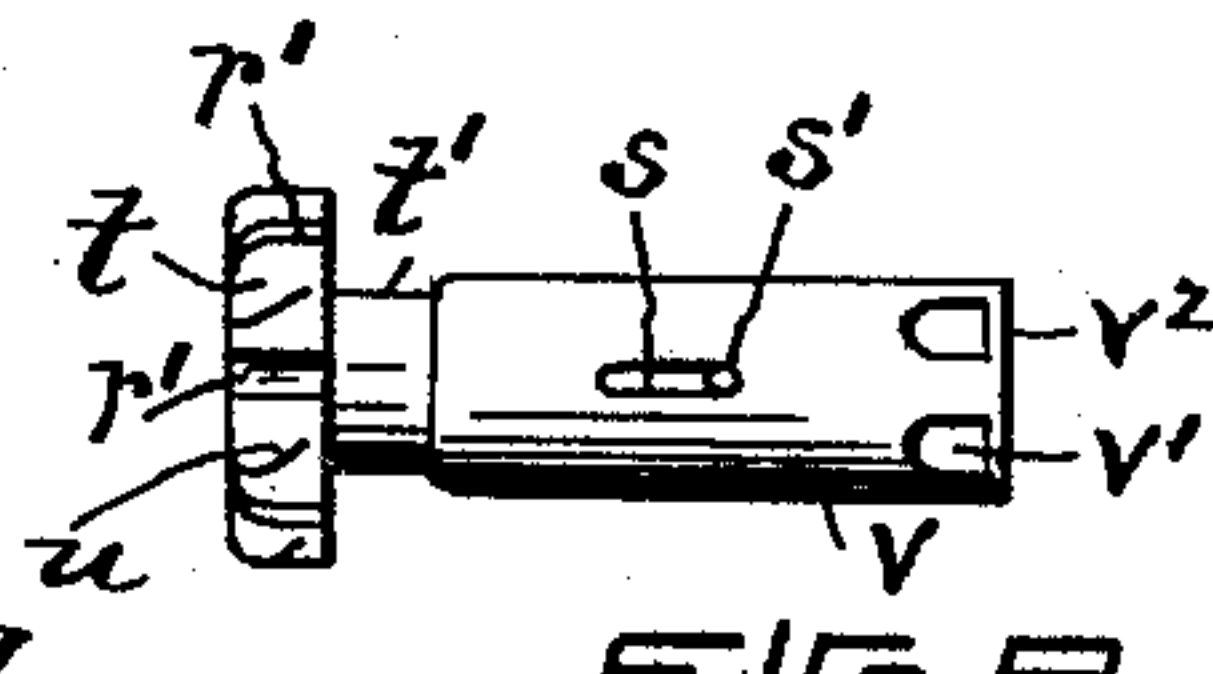


FIG. 6.

WITNESSES.

C. J. Hannigan.
Walter Smith

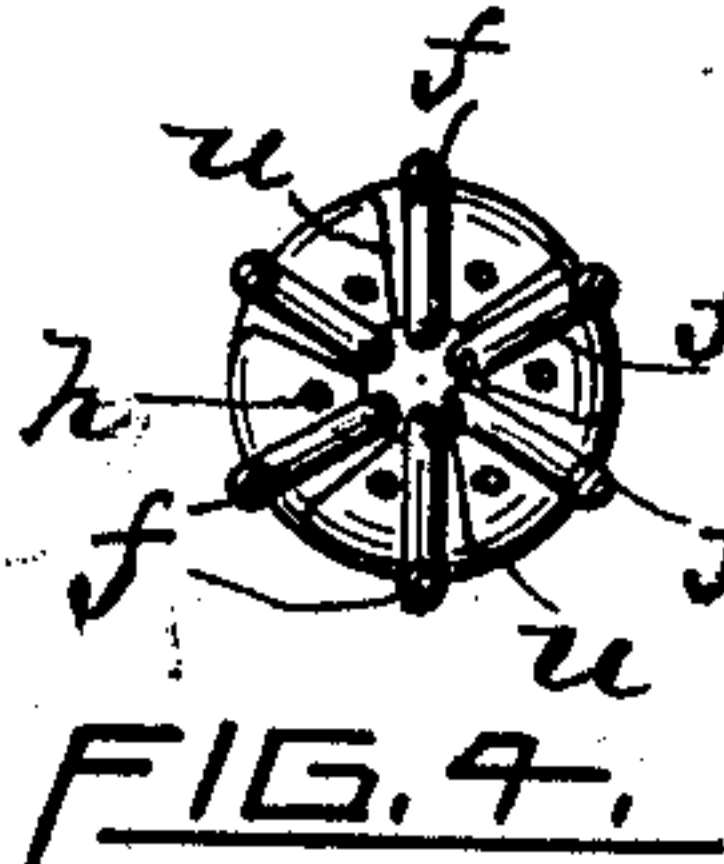


FIG. 7.

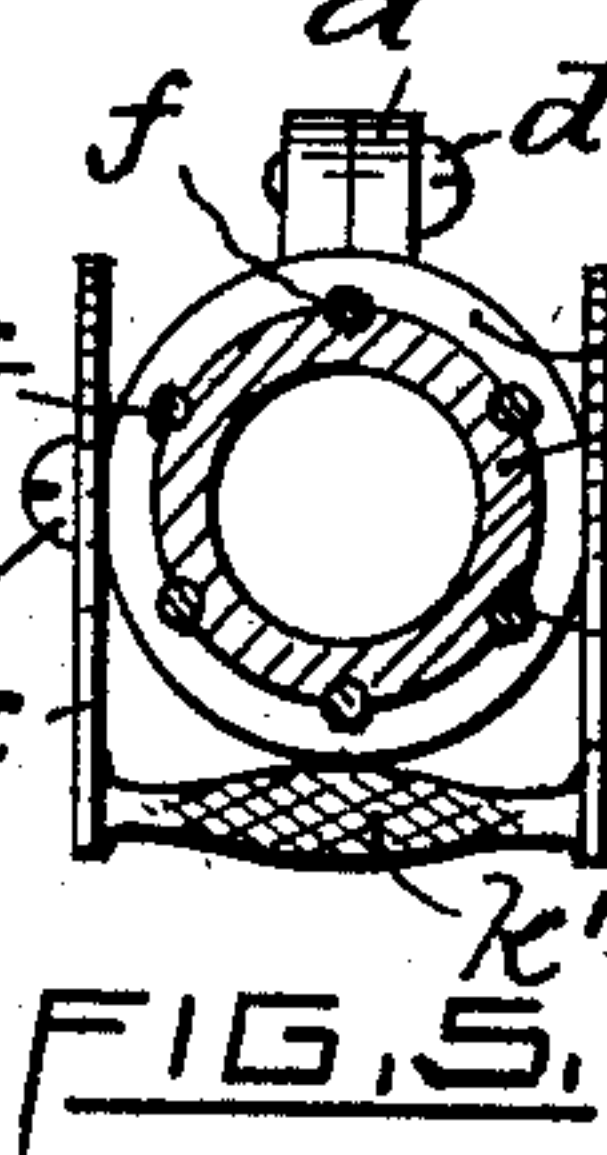


FIG. 8.

INVENTOR.

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By *Geo. H. Remington.*
Att'y.

UNITED STATES PATENT OFFICE.

JAMES WALLACE, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR OF ONE-HALF TO WALTER J. SMITH, OF PROVIDENCE, RHODE ISLAND.

VAGINAL SYRINGE.

No. 859,533.

Specification of Letters Patent.

Patented July 9, 1907.

Application filed November 5, 1906. Serial No. 341,979.

To all whom it may concern:

Be it known that I, JAMES WALLACE, a citizen of the United States of America, and a resident of Providence, in the county of Providence and State of Rhode Island, have invented certain new and useful Improvements in Vaginal Syringes, of which the following is a specification.

My invention relates to improvements in vaginal syringes, so-called.

10 The present device comprises a nozzle member removably secured to a compressible bulb and provided with a series of manually controlled resilient arms or fingers arranged so that when it is properly inserted in the vaginal canal the said fingers are adapted to be
15 expanded in a lateral direction and thus dilate the vaginal cavity preparatory to injecting into the latter the medicament or cleansing fluid, said fluid later returning back through the nozzle into the bulb by gravity.

20 The object I have in view is to provide syringes of the type referred to with means whereby they may be used with greater facility and efficiency, the device being simple in construction and comparatively inexpensive to manufacture and not liable to get out of
25 order.

My invention consists in certain novel construction and combination of parts, all as hereinafter set forth and claimed.

In the accompanying sheet of drawings, Figure 1
30 represents a side elevation of my improved syringe complete and in the normal or closed position. Fig. 2 is a corresponding longitudinal central sectional view of the same, in enlarged scale, the bulb being omitted. Fig. 3 is a sectional view similar to Fig. 2, but showing
35 the dilator fingers in the open or expanded position. The valve in both figures being wide open. Fig. 4 is a cross-sectional view taken on line 4. 4. of Fig. 2. Fig. 5 is a similar view taken on line 5. 5. of Fig. 2. Fig. 6
40 is a side view, in partial section, of the combined tip and valve detached from the syringe, the valve being represented in the normally open position. Fig. 7 is a corresponding front end view of the tip, and Fig. 8
45 is a side elevation showing the valve in its closed position, as for example when the fluid is being discharged from the nozzle.

In my improved syringe device A practically all the members thereof, except the fingers or dilators *f* and the means for actuating them, may be made of suitable rubber. The compressible bulb or liquid-holding res-
50 ervoir *b* and the guard or shield member *g* are composed of comparatively soft rubber substantially as usual.

The straight tube or nozzle member *a* is cylindrical and open interiorly throughout its length, and having the rear end portion *a*¹ adapted to be detachably se-

cured to the rubber bulb *b*. As drawn the said end 55 portion is represented as screwed into a short annular plug or connection *p*, the latter in turn having the neck *b*¹ of the bulb cemented or otherwise fixed to it. See Fig. 2. The nozzle *a* has a number of suitably spaced parallel longitudinal grooves *c* cut in its peripheral 60 surface in which grooves the resilient metal arms or fingers *f*, soon to be described, are slidably mounted.

The front or discharge end of the nozzle is provided with a combined tip and self-opening tubular valve, the latter being located in the center of the bore of the 65 nozzle and extending rearwardly from the front end and forming an ample annular passage-way around the valve for the flow of the treating fluid or other liquid contained in the bulb. The said tip member, *t*, has a downwardly extending internally screw-threaded 70 outer rim or flange *r* arranged to be screwed to the adjacent reduced end of the nozzle. The member *t* is also provided with a central tubular shank *t*¹ integral therewith, the bore being open throughout its length. Freely slidable upon said shank is mounted the short 75 tubular valve *v*, its rear end *v*² being closed; the side walls of the valve, however, are provided with openings *v*¹ located contiguous to said end. In order to limit the valve's endwise movement oppositely disposed longitudinal slots *s* are cut through its shell, in 80 which slots the ends of a transverse pin *s*¹ fixed in said shank *t*¹ extend, all as clearly shown.

The front or disk-like end of said tip member is, as drawn, provided with a series of six radial grooves *r*¹, the same extending past the well-rounded outer edge 85 and longitudinally of the flanged part *r*. These grooves also register with and form a continuation of the said grooves *c* formed in the periphery of the nozzle *a*. The orifices formed in the tip for the out-flow of the liquid may be arranged in any suitable way. As 90 drawn, a series of circularly arranged fine holes *h* alternating with narrow obliquely cut slots *u* are employed. When in service the liquid under pressure, due to the compression of the bulb *b*, is forcibly discharged through the said several openings *h* and *u*, the valve *v* 95 meanwhile being kept closed by reason of the pressure of the liquid against its rear end. The return or back-flow of the fluid passes freely through the unobstructed large central tubular shank *t*¹ and the side openings *v*¹ downwardly into the bulb. It may be added that 100 the valve opens by gravity thereby uncovering the said openings *v*¹. At the same time too the partial vacuum formed in the bulb operates to insure the opening of the valve. The rear ends of the said resilient dilators or fingers *f* are suitably secured to a 105 collar *e* slidable on the nozzle tube *a*. The opposite or free ends *f*² of the fingers are intumed and may be somewhat flattened (see *f*³, Fig. 2) so as to render such

portion more yielding or flexible. At a point adjacent the discharge-end of the nozzle the inner side of each finger is provided with a fixed inclined or cam-shaped member f^1 in sliding contact with the contiguous groove r^1 of the tip t . At a suitable distance below or at the rear of said collar e is located another collar, d , the latter being split and having ears provided with a clamping-screw d^1 . By means of this arrangement the collar may be adjustably secured in proper position with respect to the said slidable collar.

A pair of oppositely disposed thin cam-shaped or bent links k are pivoted at d^2 to the collar d . The bent portion of each link has a slot k^2 through which extends a short pin or screw e^1 fixed in the adjacent side of the collar e and being in alinement with said pivot, as represented in Figs. 1, 2 and 3. The outer or free ends of the two links are united by the interposed flattened transverse tie k^1 , see also Fig. 5. This latter member forms a convenient handle for manipulating the dilators f . As thus constructed it is apparent that upon grasping the tie k^1 between the thumb and fore-finger and swinging the links downwardly (see arrow direction Fig. 2) the resulting action carries the collar e and the several dilators rearwardly from the normal or closed position represented in Fig. 2, to the open or distended and practically locked position shown in Fig. 3; the several cams f^1 working in the guiding grooves r^1 of the tip or cap t at the same time causing the unconfined portion of the members f to spring outwardly in a radial direction, as clearly indicated in the last-named figure.

The longitudinal distance between the outer ends f^2 of the fingers and the end of the nozzle when the fingers are in the normal or closed position exceeds the corresponding distance when the fingers are open or expanded by an amount equal to the movement of the sliding collar e .

From the foregoing description of the construction and arrangement of the several parts or members comprising my improved syringe A it is apparent that after charging the bulb b with suitable treating fluid or medicament and inserting the nozzle and its normally-closed fingers f into the vaginal cavity or passage the desired distance, or as determined by the position of the rubber shield member g , the user next swings the links k downwardly thereby at the same time correspondingly retracting the dilator-fingers and simultaneously opening or expanding them. Now upon compressing the bulb the fluid is forced therefrom into the nozzle and is discharged through the several small tip openings, u and h , in the form of fine jets; the main or central passage meanwhile being kept closed by the pressure of the fluid upon the valve, the area of the rear end of the latter considerably exceeding the combined area of the tip orifices.

Upon relaxing the pressure upon the bulb the valve will automatically open and the previously discharged fluid flow freely through the valve back into the bulb. Obviously the thus described mechanical action of injecting the fluid into the cavity or parts under treatment and withdrawing it therefrom may be continuously repeated if desired. After the completion of the treatment the links are swung back to the normal position, thereby moving the fingers endwise in the grooved seats, the inherent resiliency of the members

f at the same time closing or contracting them while the cams f^1 thereof are sliding along the respective grooves r^1 thereby permitting the shank portion of said fingers to become snugly seated in the grooves c followed by withdrawing the nozzle from the vaginal passage, thus completing the operation.

What I claim as my invention and desire to secure by Letters Patent of the United States, is:—

1. As an improved article of manufacture a syringe of the character described, the same consisting of a suitably tipped central stationary tube or nozzle member, a plurality of resilient dilators movably seated in exterior grooves arranged longitudinally of said tube, a swinging cam-shaped lever adjustably secured to the lower portion of the tube and in operative engagement with the dilators so that the latter may be simultaneously actuated in an endwise direction, and cam-shaped lugs on the inner face of the dilators and in sliding contact with the outer end portion of the tube, substantially as described and for the purpose set forth.

2. As an improved article of manufacture, a vaginal syringe comprising a relatively stationary tubular nozzle having a plurality of longitudinal grooves or flutings formed in its outer peripheral surface, a self-opening valve mounted in the discharge end of said nozzle adapted when in use to be closed by the force of the fluid being discharged from the nozzle, a compressible bulb detachably secured to the nozzle member, resilient dilator fingers guided and seated in said grooves, manually actuated means for simultaneously moving said fingers endwise back and forth in said grooves, and means in frictional contact with the nozzle and connected with the fingers for expanding and contracting the latter in a radial direction during said endwise movement, substantially hereinbefore described.

3. In a device of the character described, the combination with a tubular nozzle provided with suitable inlet and discharge-openings and having a plurality of suitably spaced parallel longitudinal grooves formed in its periphery, of a collar slidably mounted on the nozzle, resilient or yielding fingers movably seated in said grooves and secured to said collar, a device operatively connected with the collar for imparting a limited endwise movement to the latter and said fingers, each finger having a cam or analogous projection on its inner face or side in frictional contact with the respective groove in the nozzle, substantially as described and for the purpose set forth.

4. In a device of the character described, the combination of a nozzle member having a series of parallel longitudinal grooves formed in its barrel, a collar d adjustably secured to the nozzle, a collar e slidably mounted on the latter in advance of the first-named collar, a swinging cam pivoted to collar d and being in operative engagement with collar e , and resilient fingers f mounted in said grooves and rigidly secured to collar e , said fingers adapted to be expanded simultaneously in a lateral direction upon manipulating said cam to retract the fingers from the normally closed position, substantially as described.

5. In a device of the character described, the combination with a tubular nozzle having a series of longitudinal parallel grooves formed in its outer surface, a perforated tip member t secured to the discharge-end of the nozzle provided with grooves r^1 registering with said nozzle grooves and also having a central tubular shank, and a self-opening tubular valve slidably mounted on said shank, of resilient fingers f normally seated in said grooves, each finger having a cam f^1 in frictional contact with its respective groove r^1 , and means for simultaneously sliding the fingers rearwardly in the grooves so that as the working faces of said cams pass downwardly in the grooved tip the fingers are thereby expanded or sprung outwardly for the purpose hereinbefore set forth.

Signed at Providence, R. I., this 3d day of November, 1906.

JAMES WALLACE.

Witnesses:

WALTER J. SMITH,
GEO. H. REMINGTON.