

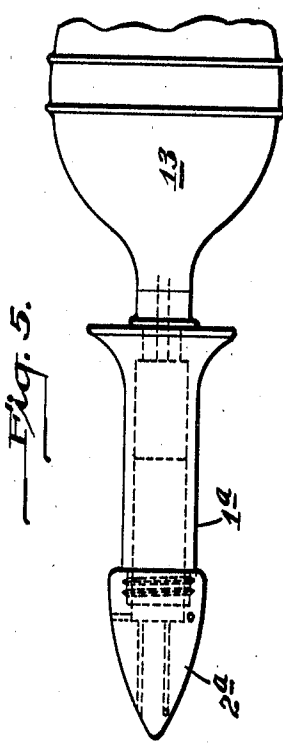
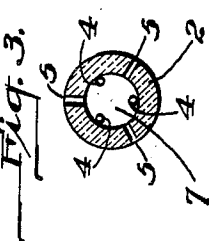
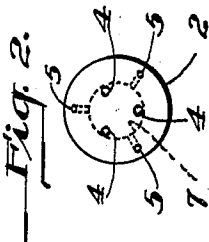
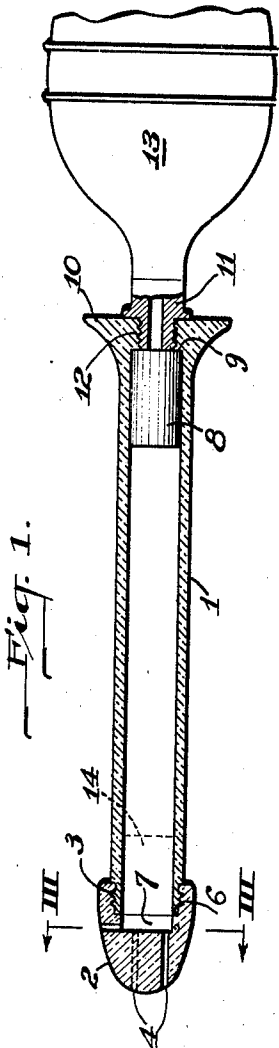
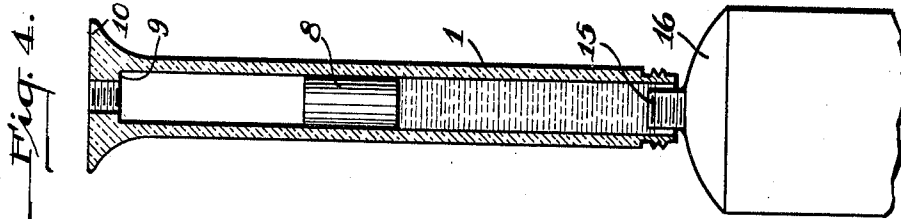
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1,923,409

OINTMENT APPLYING SYRINGE

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OINTMENT APPLYING SYRINGE

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1 Claim. (Cl. 128—239)

This invention relates to the application of ointments to the surfaces of body canals or cavities, and it is among its objects to provide syringes for efficiently and easily supplying and wholly covering such surfaces with ointments and the like non-liquid medicaments, which are simple in construction and effective in operation, are adapted for use in medicating all such body canals, and do not require skilled technique in their use.

Ointment media are commonly used for medication of body surfaces, for example in applying antiseptics and other medicaments. These ointments are easily applied and spread with the fingers on exposed surfaces. This procedure is difficult, or cannot be applied at all, where the surfaces to be medicated lie within cavities such as the nasal or anal canals, or the vagina. Generally speaking, effective medication within those regions depends upon application of the ointment to every portion of the surface.

Medication of the vagina for various purposes, as to allay inflammation or infection, is commonly attempted by means of ointments and suppositories. However, when closed this cavity is largely an aggregation of folds, so that a very limited portion of it is covered with melted suppository material, and it has been difficult to insure complete coverage of the vaginal walls by this or other means available prior to the present invention.

The invention may be described in connection with the accompanying drawing, in which Fig. 1 is a longitudinal sectional view through a syringe embodying the invention and adapted for application of ointment to the vagina; Fig. 2 an elevational end view of the tip of the syringe shown in Fig. 1; Fig. 3 a cross section through the tip taken on line III—III, Fig. 1; Fig. 4 a longitudinal section through the barrel of the syringe shown in Fig. 1 illustrating the preferred mode of preparing the syringe for use; and Fig. 5 a plan view of a modified form of the syringe adapted for application of ointment to the anal canal.

The present invention provides means for conveniently and effectively applying ointment to the entire surface of body canals and cavities in a simple manner and more efficiently than has been possible heretofore. In accordance with the invention the ointment is applied by means of a syringe having a tubular barrel provided at one end with a perforated tip shaped for easy entry into the cavity to be treated, and also provided with a floating piston adapted to be impelled forwardly by air pressure to expel ointment from the barrel through the tip. The tip is removably connected to the barrel for a purpose presently referred to. It is provided preferably with a plurality of perforations so disposed as most efficiently to apply the expelled ointment to and

distribute it over the surface being treated, most suitably by arranging the surface outlets so that the ointment is expelled in all directions and is spread uniformly upon moving the barrel and tip backward and forward within the cavity. Most suitably air pressure is applied by means of an ordinary rubber bulb of the type used with atomizers.

The invention may be explained further with reference to the accompanying drawing which represents its preferred embodiment. The syringe shown in Figs. 1 to 3 comprises an elongate tubular barrel 1 formed of a material which will not be damaged when disinfected, boiled, or otherwise cleaned. Suitable materials are glass, hard rubber, and molded plastics, for instance those of the phenol-formaldehyde condensation type. At its forward, distal, end the barrel is provided with a tip 2 removably connected thereto, as by means of screw threads 3. The tip also is formed of resistant material. It is provided with one or more bores for conducting ointment from within the barrel to the body surface, and in most instances it is preferred to provide a plurality of bores as explained hereinabove, arranged to completely cover the surfaces with ointment. In the preferred practice of the invention this is accomplished by disposing the outlets of the bores in staggered relation in two or more planes transverse to the longitudinal axis of the tip.

One such arrangement found by experience to be suitable is shown in Figs. 1 to 3. The tip is provided with three longitudinal bores 4 of small diameter which terminate in openings spaced peripherally around the tip close to its end and lying approximately in the same plane. Another series of small diameter bores 5 extend laterally of the tip, and as shown in Figs. 2 and 3 these terminate at the side surface of the tip in a plane behind that of bores 4, and are staggered with relation thereto. Feeding of ointment to these bores is accomplished most suitably by positioning them in a counterbore in the tip ahead of the barrel. As shown in Fig. 1 barrel 1 seats against an internal shoulder 6 surrounding an offset recess 7 in the base and walls of which bores 4 and 5 are formed as shown. Preferably bores 5 are formed through the side wall of counterbore 7 substantially flush with its base, as seen in Fig. 1. In this manner ointment expelled from the barrel enters recess 7 and is uniformly fed to the two series of bores, and complete expulsion of the charge is effected.

Mounted within the barrel for movement longitudinally between its ends is a free, or floating, piston 8. The tip acts as a stop at the inner end, and preferably the outer end of the barrel is provided with a stop shoulder 9. In the preferred embodiment the outer end of the barrel is also

provided integrally with an outwardly extending flange 10 which acts as a shield and also to limit movement of the barrel inwardly into the cavity being treated. Piston 8 makes a close sliding fit interiorly of the barrel so that when impelled forwardly against a charge of ointment within the barrel it expels the ointment through the tip, and prevents leakage of the ointment backwardly around its sides.

The piston is impelled forwardly in the barrel by means of air pressure, and for this purpose the outer, proximal, end of the barrel is provided with a fitting 11 provided with screw threads 12 which engage similar threads cut in the outer end of barrel 1. Where compressed air is available, as in hospitals and offices, the supply tube may be slipped over this fitting in the manner customary with atomizers and the like. For most purposes, however, the pressure created by an ordinary rubber atomizer bulb 13 suffices to force piston 8 forwardly in the barrel.

In the use of the syringe a charge of ointment is placed in the barrel ahead of the piston, and tip 2 is slowly inserted into the opening of the cavity to be treated. When it has penetrated the desired distance, e. g. when the bore outlets are enclosed by the walls, the bulb is compressed slowly to urge the piston forwardly and expel ointment through bores 4 and 5, which direct it to all portions of the wall surfaces. At the same time the inward movement of the barrel into the cavity is continued. The shape of the tip and the separation of its bore outlets induces a wiping action which applies the ointment to the entire wall surfaces. When the barrel has reached the inner limit of its travel it is slowly withdrawn. The rate of expulsion of the ointment is controlled by the rate at which the piston travels, e. g. by rate at which the bulb is compressed, and it is preferred that this be regulated so that the ointment is expelled continuously during the inward and outward movements of the syringe. That is, the charge of ointment contained in the barrel is exhausted just prior to withdrawal of the barrel from the cavity. Most suitably the inward and outward movements of the syringe are repeated several times, the tip being shifted in position or turned, for example after each stroke cycle.

Expulsion of the contents of the barrel in the manner described moves the piston longitudinally of the barrel so that it seats against the tip, and when thus emptied the piston occupies the dotted line position 14, Fig. 1. The syringe is used as follows. Bulb 13 is removed, preferably by unscrewing fitting 11, to provide a clear view of the opening in the barrel at its outer end. Tip 2 is also removed, thus exposing the piston at the inner end of the barrel. Neck 15 of a collapsible tube 16 containing ointment is then inserted in the inner end of barrel 1, as shown in Fig. 4, and upon squeezing the tube ointment is forced into the barrel, urging the piston 8 longitudinally thereof toward its outer seat 9. As ointment is forced into the barrel the latter is gradually filled and when the piston reaches the outer end the barrel is charged with a predetermined dose and ready for re-use upon connecting the tip and bulb. In general it is preferred to fill the barrel by holding it in a vertical position and forcing the piston upwardly therethrough. In this manner the piston is held by gravity against the rising oint-

ment surface, and air bubbles in the barrel are avoided.

The syringe is particularly useful in medicating the anal canal and the vagina. Particularly effective results are obtained, both because the shape of tip permits easy entry, and because the tip and barrel separate the walls and effectively produce coverage of every part of the surfaces to be treated. The shape of tip shown in Fig. 1 is particularly suitable for vaginal treatments. For rectal treatments it is preferred that the tip be of a more elongate and pointed contour and of somewhat less diameter, such as tip 2a shown in Fig. 5. For rectal and anal treatments barrel 1a may be shorter than that used for vaginal medication, but otherwise the construction is like that just described. The dosage of ointment may be controlled by the capacity of the barrel, this being indicated in the forms shown in Figs. 1 and 5, that of Fig. 1 having a large capacity, and that of Fig. 5 having a smaller capacity, as usually desired for medication of these two regions. With a barrel of any given capacity the dosage may also be regulated by the use of pistons of varying length. Thus with a piston longer than that in Fig. 1 the dosage is reduced. Because these pistons float within the barrel they may be interchanged as desired. Also, if desired, a single barrel may be used with interchangeable tips shaped for various purposes, such as vaginal, nasal and ano-rectal medication.

According to the provisions of the patent statutes, I have explained the construction and mode of use of my invention and have illustrated and described what I now consider to represent its best embodiment. However, I desire to have it understood that, within the scope of the appended claim, the invention may be practiced otherwise than as specifically illustrated and described.

I claim:

A syringe for supplying and covering the walls of a body cavity with viscous ointment, comprising a rigid tubular barrel provided with a bore of substantially uniform diameter from end to end, a tip shaped to readily enter said cavity removably connected to the distal end of said barrel, the tip having a counter-bored recess formed adjacent the barrel of substantially the diameter of the barrel bore, said tip being provided with a plurality of ointment outlet conduits of relatively large diameter extending longitudinally of the tip from the base of said recess to points spaced peripherally about the end of the tip, and being provided also with a series of lateral ointment outlet conduits of relatively large diameter radiating from the sides of said recess to the side of the tip with their outer ends offset with respect to the outer ends of said longitudinal conduits, the conduits directing ointment in a plurality of directions from the tip for uniformly covering the cavity walls, a floating piston disposed in the bore of said barrel for movement from its proximal end into said recess for substantially complete expulsion of an ointment charge through said conduits, and means connected to the proximal end of the barrel for supplying one-way air pressure rearwardly of the piston to impel it forwardly therein and forcibly expel the contained ointment through the tip.

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