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DILATOR

Filed June 9, 1960

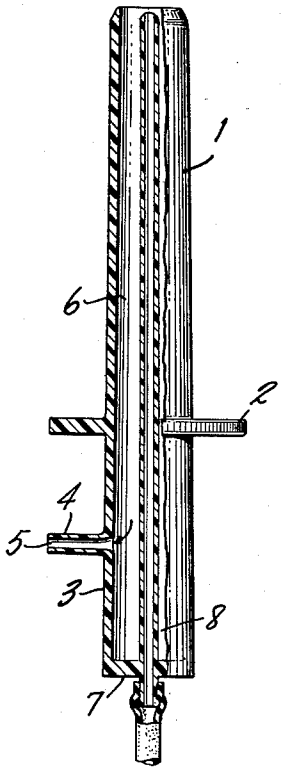


FIG. 1.

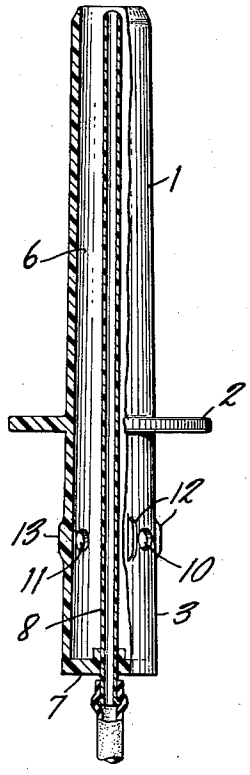


FIG. 2

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DILATOR

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This invention relates to a dilator useful in the injection and distribution of medicaments, antiseptics, contraceptives, cleansing preparations and other materials in liquid, mist, foam, stream, spray, jelly, powder or any other physical form into body cavities. More particularly, the invention comprises an improved dilator, molded in one piece, and particularly adapted for injection of material into the vagina.

The new device is adapted for ready and simple self-use, ensures a proper distribution of the material throughout the body cavity, protects against a too deep insertion of the device into the cavity, and at the same time prevents entrapment of gases in the cavity. The device may be designed for coupling to the known different types of medicament, therapeutic and cleansing material containers, such as syringes, hot water bottles, bags, squeeze bottles, and aerosol containers.

The new device comprises a tubular structure one end of which is open and comprises the dilator portion, which is to be inserted into a body cavity. The tubular structure is molded in one piece, and comprises a dispensing tube which extends axially within the space enclosed by the tubular enclosure to a point adjacent the opening. The dispensing tube is of an outer diameter substantially less than the internal diameter of the tubular structure, to provide an annular chamber therebetween. The end of the tubular enclosure surrounding the annular chamber which extends beyond the body cavity when the dilator is inserted therein is provided with one or more openings through which gases and surplus injected material may escape from the body cavity via the annular chamber.

The dispensing tube desirably but not necessarily projects beyond the tubular enclosure, and is adapted to be connected at this point to an aerosol or syringe or other type of container of material to be injected into the body cavity.

FIGURE 1 is a fragmentary side view partly in section of an embodiment of the invention wherein the tubular structure is provided with a vented fitting to which may be fixed a tube for reception of surplus gases and material injected into the body cavity.

FIGURE 2 is a fragmentary side view partly in section of an embodiment of the invention wherein the tubular structure is provided with a pair of vents and a plurality of ridges surrounding the vents to ensure release of air and other gases injected in the body cavity while the structure is held therein by the user.

The dilator of FIGURE 1 comprises a tubular structure having a dilator element 1, an upper annular flange 2 formed integrally therewith and serving as a stop to limit insertion of the dilator into the body cavity, and an exterior portion 3 extending beyond the body cavity when the dilator is inserted therein. The flange is not essential, and can be omitted. The exterior portion 3 is provided with a projecting fitting 4 having a central passage 5 opening into the annular chamber 6 of the tubular structure. The fitting is so formed as to be adapted to receive a resilient rubber or plastic tube or hose. It can also be left open to the atmosphere, if desired.

Integral with the base 7 of the tubular structure and extending therethrough is the dispensing tube 8, which extends axially through and defines the inner wall of the annular chamber 6. The tube is considerably smaller in diameter than the tubular structure, permitting gases such

as air and surplus material to pass through the chamber 6 thus defined, and such may exit from the tubular structure at 5. The diameter of the tube 8 is adjusted to the requirements for the type of material to be dispensed. A wide diameter tube would be used for viscous materials and powders. A small diameter tube would be satisfactory for fluid liquids and aerosols. In one embodiment, the tube can be provided with a syringe applicator and plunger for dispensing viscous material such as pastes and jellies.

The end of the tube 8 extends through the base 7 for attachment to the material dispensing container. In the embodiment shown, the tube is so finished as to receive a syringe or the rubber tube or hose connected to a hot water bottle. The tube end could also be finished so as to receive an areosol container using, for example, the type of coupling shown in copending application Serial No. 708,674, FIGURES 5 and 7.

The construction ensures against entrapment of gases and surplus material in the body cavity because of the passage 5 in the fitting 4 connected to the annular chamber 6.

In the device shown in FIGURE 2 which is identical with that of FIGURE 1 in all respects save for omission of the fitting 4, entrapment of the gases in the body cavity is prevented because of the pair of vents 10 and 11. Additional vents can be provided in the exterior portion of the tubular structure. The ridges 12 and 13 alongside the vents prevent accidental closing of the vents by the hand of the user during injection.

The device is preferably constructed in one piece of plastic material. The structure is well adapted for preparation by conventional molding procedures, and the term "molding" is used generically to refer to injection molding, compression molding, die casting, extrusion molding, and heat-shaping. All parts thereof, including the tubular structure and the dispensing tube, can be molded in one piece. It is also possible to mold the tubular structure with a hole in the base 7 the diameter of the tube 8, insert the tube therein and then bond them by heat-sealing in the case of thermoplastic resins, or by heat-curing, in the case of thermosetting resins in an incomplete stage of polymerization.

Thermoplastic synthetic resins such as polyvinyl chloride, cellulose acetate, ethyl cellulose, cellulose acetate propionate, polyvinylidene chloride, polystyrene and copolymers of vinyl chloride and vinyl acetate, are particularly useful. Thermosetting resins can also be employed, such as phenolformaldehyde, urea-formaldehyde and melamine-formaldehyde resins.

Although use of a syringe or hot water bottle type applicator has been suggested in connection with the embodiment shown in the drawings, obviously other types of constructions could be employed, as shown in copending application Serial No. 708,674, filed January 13, 1958, for coupling the dispensing tube to aerosol or other types of dispensing containers.

Other modifications within the spirit of the invention and the scope of the accompanying drawings will be apparent to those skilled in the art.

What is claimed is:

1. A device for supplying material to the vagina comprising a one piece elongated cylindrical structure of substantially uniform external diameter molded of synthetic plastic including an exterior tubular dilating portion having an opening of relatively large diameter at one end, an annular disc shaped flange larger in diameter than the vagina and integral with the tubular dilating portion limiting insertion thereof into the vagina, a dispensing tube disposed within the tubular dilating portion in a manner defining an annular space between the tube and the tubular dilating portion extending axially therewithin

to a point adjacent the opened end thereof, an exterior base portion at the other end of the tubular dilating portion through which the dispensing tube extends to a point therebeyond, the dispensing tube at that portion being adapted for attachment to a material supply container and an opening in the exterior tubular portion between the flange and the attaching end of the dispensing means for exit of gas and any surplus material supplied to the vagina through the annular space between the tubular dilating portion and the dispensing tube, the surface of the tubular portion adjacent the opening being provided with ridges.

2. The device according to claim 1 wherein the opening in the tubular portion is in the form of an air vent.

3. The device according to claim 1 wherein the opening is provided with a fitting for attachment to a means for receiving vented material.

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