May 13, 1969 ATSUMI ISHIHAMA ET AL 3,443,563

VAGINAL SUPPOSITORY

Filed Aug. 29, 1966

FIG. 1

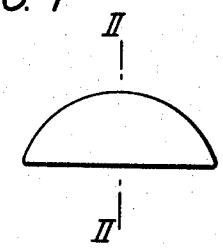


FIG. 2

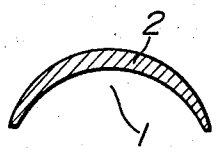


FIG. 3

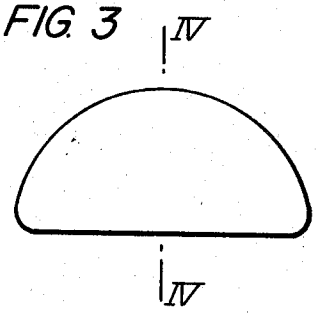


FIG. 5

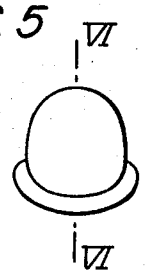


FIG. 4

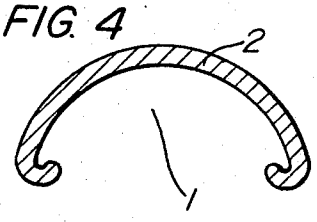


FIG. 6

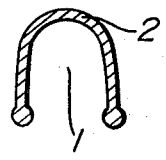
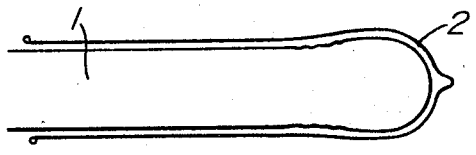


FIG. 7



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VAGINAL SUPPOSITORY

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U.S. Cl. 128—271 13 Claims

ABSTRACT OF THE DISCLOSURE

A novel thin walled polyvinyl alcohol vaginal suppository mounts on the penis and is dissolved by fluids secreted by the vagina upon insertion and releasing a drug contained therein upon contact with said fluids.

The present invention relates to vaginal suppositories, and more particularly to the shape and constitution of vaginal suppositories which are mounted on the penis for subsequent insertion into the vagina and which are normally solid but quickly melt upon being contacted by the wet vaginal membrane. Still more particularly, the present invention relates to the shape and constitution of the vaginal suppositories of the type as described which can be easily inserted into the vagina as they are in the state of being mounted on the penis and which can be deposited positively in the right region of the vagina where the chemical compounds contained in the suppositories are most required to display their primary functions.

Conventional vaginal suppositories prepared and sold for the purpose of preventing contraceptions, and suppositories intended for the treatment of vaginal diseases, and those intended for use as vaginal germicides, have all been provided in the form of tampon, globe, cream-like jelly, tablets of various shapes or the like. When these conventional vaginal suppositories, whether they are for contraceptive purposes, pasteurizing or treating purposes, were used, there were encountered various difficulties and inconveniences. For example, a suppository made of a wax-like material was placed on a finger or held between two fingers for being inserted into the vagina. However, the jelly-like suppository, upon contact with the warm fingers, immediately began to collapse on the finger or fingers, and became too soft, causing a great inconvenience on the part of its user in inserting it into the vagina or in depositing it in the right region of the vagina. In many cases, the user failed to attain the desired object.

A tablet-form suppository, on the other hand, caused, because of its rigidness, an unpleasant or irritating sentiment to the woman to whom it is applied, unless it is manipulated by a professional physician or trained person.

Moreover, these conventional vaginal suppositories were prepared so as to be inserted with the help of the fingers of the user. Therefore, in case they were used and manipulated by persons of non-medical training, it often happened that the user's fingers were contaminated, and what was worse, the suppository itself was often contaminated with the germs adhering to the user's fingers. In case the suppository did not contain any germicide, such contamination of the suppository caused problems in terms of vaginal diseases.

Still more undesirably, the use of conventional vaginal suppositories by persons of non-medical background was accompanied by an injury of the vaginal membrane either by the rigid edges of the tablet or by the nail of the user's finger.

A conventional suppository made of a cream-like jelly had the disadvantage that a particularly arranged applicator was required to inject the suppository into the vagina and to deposit it at the right place to attain the purpose. In addition, such operation had to be prepared beforehand, and caused a great inconvenience to the user.

It is, therefore, the primary object of the present invention to eliminate or reduce all or part of the foregoing disadvantages and inconveniences of the suppositories of the prior art.

Another object of the present invention is to provide vaginal suppositories which normally maintain their pliable solid form and which quickly melt once being contacted by the wet membrane and also which are of a cap, beret, derby-hat or sheath shape so as to be positively mounted on either the tip or the substantial portion of a penis, to thereby facilitate their insertion into a vagina.

Another object of the present invention is to provide vaginal suppositories of the type described in the preceding paragraph which requires no applicator.

Still another object of the present invention is to provide vaginal suppositories of the aforestated type which contain a spermatozoicide for contraceptive purposes.

Yet another object of the present invention is to provide vaginal suppositories of the aforedescribed type which contain chemical compounds for treatment of vaginal diseases.

Still further object of the present invention is to provide vaginal suppositories of the foregoing type which contain both spermatozoicide with germicide and/or chemical compounds for the treatment of vaginal diseases.

The vaginal suppositories of the present invention are prepared with a base material having a nature that can hold its original pliable solid form when not used but quickly melts after being inserted into the vagina and upon being contacted by the wet vaginal membrane, and the suppositories contain chemical compounds such as spermatozoicide, germicide or a chemical compound for the treatment of vaginal diseases such as vaginal trichomonas or Candida, either independently or in combination. The suppositories are formed in a cap, beret, derby-hat, condom or sheath-like shape, so that they may be mounted on the foremost end portion of the penis or they may be mounted so as to envelop the glans penis or they may envelop the entire or substantial periphery of the penis.

The principal constituent of the base material constituting the vaginal suppositories of the present invention includes high molecular weight materials, such as, polyvinyl-alcohol, polyvinyl-pyrrolidone, gelatin. Specially processed paper may also be used as the base material. Preferably, polyvinyl-pyrrolidone is used as the base material from the viewpoint that it is harmless to the living body and that it requires no post-use treatment or disposition.

The inventors have found, as a result of repeated experiments, that the vaginal suppositories of the present invention which are prepared in any of the aforestated shapes rest stably on the penis and can be easily inserted deep into the vagina and deposited in the right place where the chemical compounds contained in the suppository are most required to attain the desired purposes, without slipping off the glans or body of the penis onto which the suppository is mounted, and that, as a consequence, the desired object is successfully attained.

The germicide which may be contained in the base material of the suppositories may be Bengalkonium Chloride, for example. The drugs or chemical compounds intended for treatment of vaginal diseases which are contained in the suppositories include, for example, Trychomycin for the treatment of vaginal trichomonas, and

Nystatin as an anticandida agent, and antibiotics or sulfa drugs.

The present invention will be more clearly understood by reading the following detailed descriptions with reference to the accompanying drawings which are given simply by way of examples, wherein:

FIG. 1 is a side elevational view of one embodiment of the present invention;

FIG. 2 is a longitudinal cross sectional view taken along the line II—II in FIG. 1;

FIG. 3 is a side elevational view, showing another embodiment of the present invention;

FIG. 4 is a longitudinal cross sectional view taken along the line IV—IV in FIG. 3;

FIG. 5 is a perspective view of still another embodiment of the present invention;

FIG. 6 is a longitudinal cross sectional view taken along the line VI—VI in FIG. 5; and

FIG. 7 is a longitudinal cross sectional view of yet another embodiment of the present invention which is of a condom or sheath-like shape.

Description will now be made on each of the given embodiments of the present invention.

In FIGS. 1 and 2, the suppository is shown as having a cap-shape with a concave inner configuration formed on the inner surface of the suppository which will be placed in contact with the tip of the penis. This suppository is prepared with a jelly-like base material **2** as described which is moulded into a cap or semi-bowl shape. The entire configuration, the thickness, the diameter of the open edge and the overall radius of the suppository may vary as desired. Because of the cap or semi-bowl shape of the suppository, the concave portion **1** of the suppository will, when mounted onto the tip of a penis, conform to the configuration of the tip of the penis so as to embrace and receive said portion of the penis thereinside. This insures that the suppository is inserted deep into the vagina without the fear of it slipping off the penis and the user can attain the desired effect since it melts in that region of the vagina, ahead of the tip of the penis inserted thereinto, and thus the spermicidal action of the suppository is thoroughly displayed. It is needless to say that the suppository can contain any of the aforesaid germicide or treatment drugs or both of them.

The suppository illustrated in FIGS. 3 and 4 has a beret-like shape. This suppository is formed with a jelly-like base material **2** containing any of the foregoing chemical compounds as desired, and is formed so as to have a concave inner surface **1** and an inwardly curved rim **3** at the free lower end. It is to be understood that the configuration, the thickness, the dimensions of the rim, the diameter and the radius of the suppository may vary as in the case of the embodiment of FIG. 1.

When the suppository of FIG. 3 is applied to the penis, the inwardly curved rim is adapted to engage the shouldered rim-like edge of the corona glandis of the penis and serves to prevent the suppository from slipping off the penis as it is inserted into the vagina. Thus, the rim formation of the suppository facilitates a sure and smooth insertion.

FIGS. 5 and 6 represent another embodiment of the present invention, wherein the suppository is shown as having a bowler or derby-hat shape. It is to be noted that in this instance the rim of the suppository bulges slightly inwardly and more distinctly outwardly to form a derby-hat shape. This configuration of the suppository not only permits the inner portion of the rim to engage the corona glandis of the penis, when mounted thereon, but also conveniences the user in holding it between the user's fingers at the rim portion.

As with the foregoing examples of FIGS. 1 and 3, the shape and other dimensions of this embodiment may also be varied as desired, and needless to mention, the suppository of FIG. 5 may be formed with the same base material as that used in the foregoing examples, and can contain the same chemical compounds.

FIG. 7 shows still another embodiment of the present invention, wherein the suppository is made with similar material and is formed in a conventional condom or sheath shape. This suppository may be provided either in a stretched form or in a curled or rolled up form. The spermatozoicide or other chemical compounds may be located in the wall of the foremost end portion of the suppository which corresponds to the glans penis over which the suppository is mounted, or located throughout the entire wall of the suppository. The wall of the closed end portion of the suppository may have a thickness which is greater than the other portions so as to contain a substantial amount of chemical compounds to insure positive effects. The free end of the sheath may be prepared in the form of a bulging rim, if so desired. In this instance of FIG. 7, the shape and the dimensions of the suppository may, of course, be modified as desired. The advantages and the conveniences which are provided by this type of suppository should be obvious and therefore, their detailed description is omitted.

It is also to be understood that a harmless water-soluble liquid may be applied to the external and/or internal surfaces, as required, of the suppositories of the present invention before their use, so as to facilitate their insertion into the vagina.

It should further be understood that the suppositories of the present invention are packed in sterilized state when they are placed on the market and that they may be provided with water-soluble liquid covering the external and/or internal surfaces, as required, of the suppositories and in this state they may be enveloped so as to be prevented from being contaminated before their use, and in that case, such envelope should be provided so as to be removed or peeled off easily, by using a known technique of enveloping articles.

It should be understood that the aforementioned examples are given merely to illustrate the principles of the present invention and various modifications and improvements may be made by those skilled in the art without departing from the spirit of the present invention.

What is claimed is:

1. A vaginal suppositiory adapted to be mounted on the penis for subsequent insertion into the vagina, said suppository comprising a pliable mass of the polyvinyl alcohol conforming to the shape of the glans penis when mounted thereon and having a thin side wall and an open edge, means on said side wall to engage at least a part of the peripheral surface of the penis for retaining said suppository during insertion into the vagina and a drug contained in said polyvinyl alcohol, whereby said suppository maintains its solid state when it is not in use and quickly dissolves when inserted into the vagina and bought into contact with secreted fluid therein.

2. A vaginal suppository as claimed in claim **1** in which said drug is for treatment of a kind of vaginal disease.

3. A vaginal suppository as claimed in claim **1** in which said drug is a spermatozoicide.

4. A vaginal suppository as claimed in claim **2** characterized in that said suppository has a beret-like shape and said means is an inwardly turned annular rim extending along the free edge of said suppository, said annular rim being adapted to engage the corona glandis of the penis for holding said suppository thereon during insertion into the vagina.

5. A vaginal suppository as claimed in claim **2** characterized in that said suppository has a derby-like shape and said means is an inwardly and outwardly bulging circular rim extending along the free edge of said suppository, said circular rim being adapted to engage the corona glandis of the penis for holding said suppository thereon during insertion into the vagina.

6. A vaginal suppository as claimed in claim **2** characterized in that said suppository has a condom shape with an elongated cylindrical wall and said means in the inner surface of said cylindrical wall which is adapted

to engage substantially the entire peripheral surface of the penis for retaining the suppository during insertion into the vagina.

7. A viginal suppository as claimed in claim 3 characterized in that said suppository has a beret-like shape and said means is an inwardly turned annular rim extending along the free edge of said suppository, said annular rim being adapted to engage the shouldered rim-like edge of the corona glandis of the penis for retaining said suppository thereon during the insertion into the vagina.

8. A vaginal suppository as claimed in claim 3 characterized in that said suppository has a derby-hat like shape and said means is an inwardly and outwardly bulging circular rim extending along the free edge of said suppository, said circular rim being adapted to engage the corona glandis of the penis for retaining said suppository thereon during insertion into the vagina.

9. A vaginal suppository as claimed in claim 3 characterized in that said suppository has a condom shape with an elongated cylindrical wall and said means is the inner surface of said cylindrical wall which is adapted to engage substantially the entire peripheral surface of the pensis for frictionally retaining the suppository thereon during insertion into the vagina.

10. A vaginal suppository as claimed in claim 2 in which said drug includes at least one drug for the treatment of a vaginal disease and at least one spermatozoicide.

11. A vaginal suppository as claimed in claim 10 characterized in that said suppository has a beret-like shape and said means is an inwardly turned annular rim extending along the free edge of said suppository, said annular rim being adapted to engage the corona glandis of the penis for holding said suppository thereon during insertion into the vagina.

12. A vaginal suppository as claimed in claim 10 characterized in that said suppository has a derby-like shape and said means is an inwardly and outwardly bulging circular rim extending along the free edge of said suppository, said circular rim being adapted to engage the corona glandis of the penis for holding said suppository thereon during insertion into the vagina.

13. A vaginal suppository as claimed in claim 10 characterized in that said suppository has a condom shape with an elongated cylindrical wall and said means in the inner surface of said cylindrical wall which is adapted to engage substantially the entire peripheral surface of the penis for retaining the suppository during insertion into the vagina.

References Cited

UNITED STATES PATENTS

2,696,456	12/1954	Hetterick	167—64
3,170,464	2/1965	Forti et al.	128—271
3,342,181	9/1967	Jacquignon	128—260
3,373,746	3/1968	White et al.	128—271

ADELE M. EAGER, *Primary Examiner.*

U.S. Cl. X.R.

128—130, 260; 167—64, 84