

Oct. 17, 1967

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3,347,234

HYGIENIC DEVICES

Filed Aug. 5, 1964

2 Sheets-Sheet 1

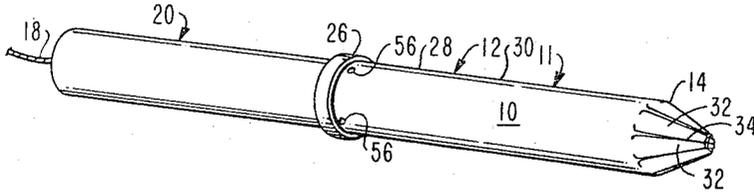


FIG. -1

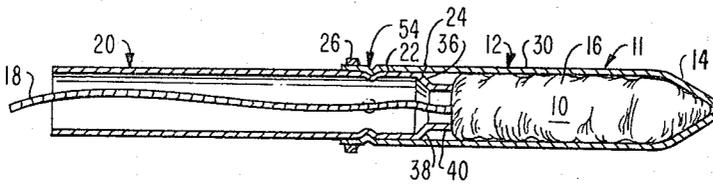


FIG. -2

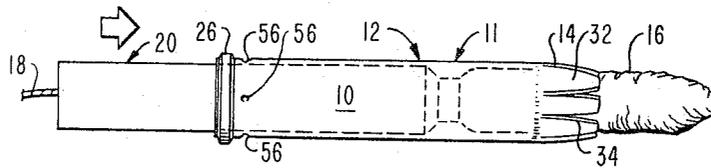


FIG. -3

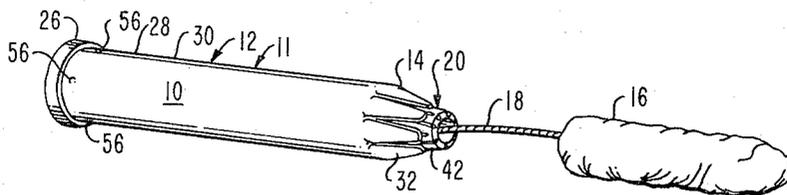


FIG. -4

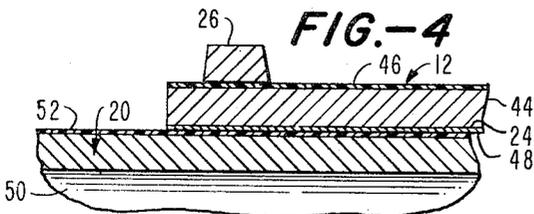


FIG. -5

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2 Sheets-Sheet 2

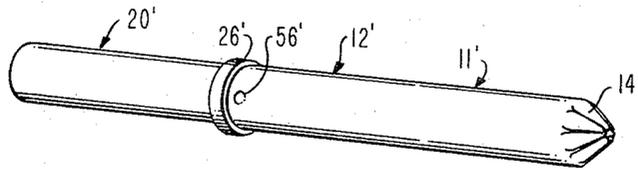


FIG. - 6

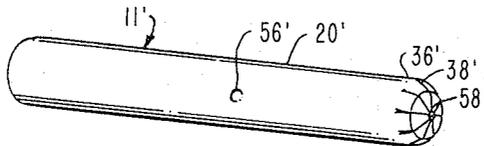


FIG. - 7

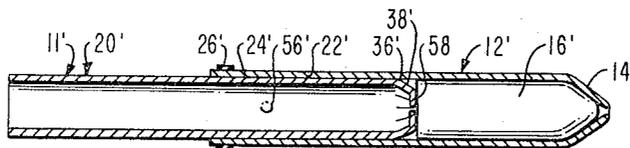


FIG. - 8

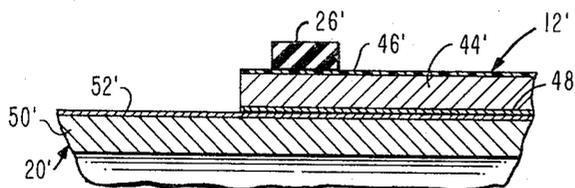


FIG. - 9

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HYGIENIC DEVICES

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15 Claims. (Cl. 128—260)

The present invention generally relates to hygienic devices and more particularly to improved hygienic applicators for catamenial tampons or suppositories.

Various devices for catamenial and suppository purposes have been proposed for the sanitary injection of absorbent or medicinal media into body cavities. Such devices usually comprise the hygienic media and applicators for delivery of the hygienic media. Such applicators are generally cylindrical in cross section so as to conform generally to the cross-sectional configuration of the body cavities into which they are to be inserted.

Certain improved hygienic devices described in co-pending United States patent application Ser. No. 266,914 filed Mar. 21, 1963 for Hygienic Devices, issued Sept. 7, 1965, as U.S. Patent No. 3,204,635 in the names of Joseph A. Voss and Carl W. Johnson, include applicators having a tapered forward end which facilitates initial entry and continued penetration of body cavities. During use of the improved hygienic devices set forth in the co-pending United States application, Ser. No. 266,914, now Patent 3,204,635 hygienic media can be ejected from the applicator with a relatively small amount of force, with the tapered forward end of the applicator being opened during ejection. However, it would be desirable to reduce further the amount of force required for ejection, since this would have important and favorable influence on customer approval and usage of the devices.

During use of an hygienic device it is important to be able to grip the applicator portion of the device securely and to guide it easily into the body cavity within which the particular hygienic medium is to be deposited. This is particularly true when hygienic media are to be delivered to the vagina and the anus, since in such instances a portion or all of the applicator is out of a direct line of vision. Applicators which are clumsy or complicated to handle or are slippery interfere with proper and rapid delivery of hygienic media to desired body cavities and tend to discourage their continued use. It is of primary importance to the user to be able to manipulate the hygienic device readily but securely and to be able to judge the relative positions of the respective portions of the applicator, whenever visual orientation is inconvenient or inadequate. Moreover, it will be noted that whenever an hygienic applicator is difficult to grip securely, due to its bulky nature, slipperiness or other defect, the tendency of the user is to apply an increased gripping force on the body of the applicator. In some instances, the gripping force is sufficient to deform partially the walls of the applicator and in devices which employ applicators having telescoping inner and outer tubes, the effort required to eject the hygienic medium may be increased considerably so that the utility of the device is depreciated substantially. Accordingly, it would be desirable to provide an hygienic applicator which can be gripped and manipulated easily, and with which the user can gauge readily the relative positions of the components of the applicator.

Also, it is desirable to provide hygienic applicators with effective means of sealing the same so as to avoid the possibility of contamination of hygienic media which are adapted to be contained therein. As particularly described in the co-pending United States patent application, Ser. No. 266,914 now Patent 3,204,635 identified above, this problem is overcome by providing an im-

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proved hygienic applicator for an hygienic device. A generally cylindrical portion of the applicator has a closed, generally conical forward end which opens to deliver an hygienic medium from the hygienic device to the desired body cavity. Thus, the described forward end acts as a seal against contamination of an hygienic medium contained within the tube before use of the device and also improves the ease, smoothness and rapidity with which the tube can be inserted into the desired body cavity for delivery of the hygienic medium. In order to improve further the smoothness and efficiency of such a device, it is desirable to have the conically shaped forward end of the outer tube open under as little force as possible. If relatively thin paper, paperboard, plastic or the like is used as the fabrication material for the tube, the generally conical closed forward end of the outer tube can be opened under a minimum amount of force. However, the outer tube wall is weak and is deformable inwardly under finger gripping pressure very readily during use of the hygienic device. Accordingly, binding is more likely to occur between the outer tube and an inner tube portion of the applicator, which inner tube telescopes within the outer tube during ejection of the hygienic medium from the device. Any such binding increases the amount of force required to eject the hygienic medium and defeats the purpose of the thinner walled outer tube.

It should be noted that the foregoing problem is encountered whenever telescoping inner and outer tubes are utilized in applicators of hygienic devices, whether the forward ends thereof are closed or open, so long as light weight materials are employed in the fabrication of the outer tube. Accordingly, it would be desirable to provide a simple and relatively inexpensive way of overcoming such problem, so as to permit the use of inexpensive, relatively thin outer tubes in applicators of hygienic devices without the usual attendant difficulties.

Accordingly, it is a principal object of the present invention to provide an improved hygienic device and improved applicator portions thereof.

It is also an object of the present invention to provide improvements in hygienic applicators so that hygienic media can be ejected therefrom with less force than heretofore.

It is a further object of the present invention to provide an improved hygienic applicator which includes means for strengthening inherently weak outer tube components thereof so as to prevent collapsing thereof during use.

It is a further object of the present invention to provide improved means for strengthening components of hygienic applicators and for improving the ease with which the applicators can be gripped and used, even when visual observation is obscured.

The foregoing objects and other objects are achieved by the present invention which comprises an improved hygienic device employing an improved applicator for ejecting the hygienic medium contained therein. The applicator includes a ring secured to the outer surface of a substantially cylindrical outer tube member. The ring not only acts as a tactile indexing and improved gripping means for the applicator, but has the advantage of inhibiting inward deformation of the outer tube under finger gripping pressure during use of the device, even though the outer tube may be weak and thin walled. When the ring is used, the outer tube can be made sufficiently thin so as to increase substantially the ease with which a generally conically shaped forward end thereof, such as is disclosed in United States patent application, Ser. No. 266,914, now Patent 3,204,635, can be opened during ejection of an hygienic medium from the hygienic device. Thus, the smoothness, ease and efficiency of use of such a device are improved.

In a preferred specific embodiment, an improved catamenial applicator includes an applicator portion having a generally cylindrical, thin-walled and relatively weak outer tube, constructed of a central lamination of thin kraft paper, a thin outer lamination of polyethylene film, and a thin inner lamination of aluminum foil. The outer tube has a conically shaped forward end formed of a plurality of tightly abutting dove-tailed folds separated by fold lines. A cellulosic catamenial tampon is disposed within the outer tube, the forward end of which tampon conforms to that of the outer tube.

Behind the tampon in the outer tube is disposed an inner tube portion of the applicator, which inner tube telescopes and is in sliding engagement with the outer tube. The inner tube is fabricated of an inner lamination of thin kraft paper of the same type as used for the outer tube and an outer lamination of thin polyethylene film, also of the same type as used for the outer tube.

In order to strength the outer tube and prevent binding thereof with the inner tube, as by finger gripping pressure during ejection of the hygienic medium, the outer tube is provided with a strengthening ring. The ring is fabricated of paperboard, rubber, emeryboard, paper, plastic or the like and preferably is thicker than the wall of the outer tube. Preferably the ring is formed in a continuous piece, although such ring also may be formed from a strip. It is secured to the outer surface of the outer tube, as by adhesive or the like, adjacent the rear end thereof and serves as a substantial strengthening means for the tube and also as a tactile indexing means and non-slip finger-gripping means. Thus, the hygienic device includes an improved applicator which imparts to the device an improved efficiency of performance, including the improved ease with which a tampon or other hygienic medium can be ejected from the device into the desired body cavity.

Further features and advantages of the present invention will be apparent from a study of the following detailed description and the accompanying drawings, of which:

FIG. 1 is a perspective view of one embodiment of a catamenial tampon device incorporating features of the present invention;

FIG. 2 is a longitudinal section of the device of FIG. 1;

FIG. 3 is a side elevation of the catamenial device of FIG. 1, illustrating the opening of the forward conical end of the outer tube thereof during passage of a tampon therethrough;

FIG. 4 is a perspective view illustrating the catamenial device of FIG. 1 with a tampon fully ejected therefrom;

FIG. 5 is an enlarged fragmentary schematic cross section of the inner and outer tubes of the applicator of the device of FIG. 1, illustrating the laminated construction thereof;

FIG. 6 is a perspective view of a preferred embodiment of a suppository device incorporating features of the present invention;

FIG. 7 is a perspective view of the inner tube of the device of FIG. 6, illustrating particularly the end thereof;

FIG. 8 is a longitudinal section of the device of FIG. 6; and

FIG. 9 is an enlarged fragmentary schematic cross section of the inner and outer tubes of the applicator of the device of FIG. 6, illustrating the laminated construction thereof.

Now referring more particularly to FIGS. 1-5 of the accompanying drawings, a preferred embodiment of a catamenial tampon device 10 incorporating features of the present invention is illustrated. The device 10 includes an hygienic applicator 11, a portion of which is a hollow, generally cylindrical outer tube 12 which is relatively thin walled and inherently weak and which includes a generally conical forward end 14. The forward end 14 can be inserted very easily and rapidly into the vagina without discomfort or irritation to the user.

The device 10 also includes a cellulosic cotton tampon 16 or the like with a drawstring connected to the rear end thereof and extending rearwardly therefrom. As shown in FIGS. 2-4, inclusive, the forward end of the tampon 16 conforms to that of the outer tube 12 and the tampon is disposed in the forward end 14 of the outer tube 12 before use. The applicator 11 also includes a tampon-ejecting inner tube 20 disposed within the outer tube 12 rearward of the tampon. The inner tube 20 is hollow and generally cylindrical, and has a slightly smaller external diameter than the internal diameter of the outer tube 12, so that the tube 20 can telescope readily within the tube 12, with the outer surface 22 of the inner tube 20 in sliding engagement with the inner surface 24 of the outer tube 12, during ejection of the tampon 16 from the forward end 14 of the outer tube 12, as indicated in FIGS. 2-4, inclusive, of the drawings.

The applicator 11 of the improved device 10 is characterized by a strengthening ring 26 connected to the outer surface of the outer tube 12 adjacent the rear end 28 thereof, as shown in FIGS. 1-4. The ring 26 is made separate and apart from the outer tube 12 and is connected thereto, by adhesive or the like (not shown). The ring 26 can be fabricated from any suitable material, such as paper, paperboard, rubber, emeryboard, plastic, metal, ceramic or the like. It can be connected adjacent the rear end 28 of the outer tube 12, as by adhesive material, or by other means such as fusion thereof to the outer surface of the outer tube (in the case where the outer tube and/or ring are fabricated of smooth, flexible thermoplastic material, such as polyethylene or the like).

Preferably, the ring 26, as shown in FIGS. 1-4, inclusive, is made in one continuous piece. However, the ring also is effective if it is made as a thin strip which then is joined end to end before or during application to the outer tube 12 in order to form the ring 26. Preferably but not necessarily the ring is of a greater thickness and strength than the wall 30 of the tube 12. The ring 26 is relatively inexpensive and simple, and it permits the successful use of relatively thin inexpensive material in the fabrication of the outer tube 12. Accordingly, the ring 26 reduces costs of manufacture of the device 10 while improving the openability of the forward end 14 of the outer tube 12 under a minimum amount of force during ejection of the tampon 16. It will be understood that the ring 26 can be applied to the outer tube at any time after fabrication and before use thereof, or before fabrication of the outer tube into its finished form, i.e. before formation of the generally conical forward end 14.

The tapered, generally conical forward end 14 of the outer tube may be partially frusto-conical, as illustrated in FIGS. 1-4, and preferably is formed from a generally uniform cylinder which is worked so as to have a plurality of tightly abutting, symmetrically disposed folds 32 arranged in a dove-tailed configuration, as clearly illustrated in FIGS. 1-4. Such dove-tailed configuration provides the forward end 14 of the outer tube 12 with a smooth and substantially continuous outer surface which minimizes frictional resistance of the forward end 14 with tissues lining the vagina during insertion of the outer tube 12, and thus prevents irritation of the vagina and eliminates the possibility of discomfort and infection as a result thereof. Moreover, the smooth, generally conical forward end 14 of the outer tube 12 is attractive as such, which encourages use of the device 10, and is deceptively slim in appearance, which encourages selection of forms of the device 10 containing tampons which are of adequate diameter and volume to provide long-continued menstrual flow-absorbing action, in contrast with certain other catamenial devices.

The generally conically shaped forward end 14 of the outer tube 12 can be fabricated as more particularly set forth in the co-pending United States patent application, Ser. No. 266,914, now Patent 3,204,635 identified above. Thus, for example, the tube material lying on fold lines 34

between adjacent folds 32 at the forward end 14 can be sufficiently weakened by repeated folding and unfolding thereof so that in the finished product little forward thrust or force need be applied to the inner tube 20 in order to eject the tampon 16 from the forward end 14. However, in most instances, a sufficiently thin walled outer tube 12 can be used, due to the strengthening effect of the ring 26, so that the folding and unfolding operation need not be employed to weaken further the inherently weak wall 30 of the outer tube 12 in order to minimize the forward thrust or force necessary to eject the tampon 16 from the tube 12.

The forward end 14 of the outer tube 12 can be said to be unilaterally or unidirectionally openable in that it will not deform inwardly from its closed position before use, particularly because of the position of the shaped tampon 16 therein, but such forward end 14 open outwardly very readily under the urging of the tampon 16. The forward end 14 of the outer tube 12 during ejection of the tampon 16 is unfolded to the initial prefolded form without substantial distortion, compression or other damage to the tampon 16 during such ejection, particularly because of the relatively thin and weak nature of the material from which the forward end 14 of the outer tube 12 is fabricated. Accordingly, fraying of the outer tube 12 and tampon 16 are avoided. The tube wall 30 does not deform inwardly before ejection of the tampon 16, as previously described, and also resists inward deformation during ejection of the tampon 16 due to the strengthening effect of the ring 26. The outer tube 12 retains its slim attractive shape and the tightly abutting folds thereof present a desirable finished appearance and a uniformly smooth surface to the touch. Accordingly, the device is compact, highly functional and attractive.

Material from which the outer tube is to be fabricated is selected such that it will improve, by reason of its weakness, the openability of the forward end of the outer tube. Such material is usually so inherently weak as to be deformable readily under finger pressure during use of the device. However, the ring 26, when applied thereto adjacent the rear end thereof, increases the strength of the wall 30 sufficiently so that the wall 30 retains its form and shape during normal use and even when substantial finger pressure is applied thereto.

The inner tube 20 is sufficiently long, with respect to the outer tube 12, so that it can be used as a plunger or tampon-ejecting means and can be telescoped forwardly through the outer tube 12 to extend from the forward conical end 14 thereof, as shown in FIG. 4. The inner tube 20 preferably is provided with a relieved forward end 36 which minimizes binding of fibers of the tampon 16 between the adjoining walls of that inner tube 20 and the outer tube 12 during such telescoping. Thus, the forward end 36 of the inner tube 20 for a preselected length has a smaller diameter than the remainder of the inner tube 20. In the case of a catamenial device, the relieved portion 36 preferably is formed with a tapered shoulder 38 and an open ended small diameter terminus 40. Such shoulder 38 and terminus 40 may be formed of a plurality of tightly abutting dove-tailed folds 42, as more particularly described in co-pending patent application Ser. No. 266,914 now Patent 3,204,635.

Both the inner tube 20 and the outer tube 12 can be fabricated of any suitable foldable material, for example, a cellulosic fibrous material such as paper, paperboard, cardboard, or plastic, rubber or the like, or a combination or lamination of such materials such as plastic coated paper, foil coated paper, foil and plastic coated paper or the like. The inner and outer tubes can be fabricated of the same or different types of material but the material utilized for both must be capable of being folded readily and, in the case of the outer tube, must be sufficiently weak so that the forward end 14 of the outer tube 12 unfolds readily under a minimum amount of force during passage of the tampon 16 forwardly therethrough.

As an example, as shown in FIG. 5, the outer tube 12 can be fabricated of an intermediate layer 44 of relatively thin kraft paper with an even thinner outer layer 46 of smooth polyethylene plastic film bonded thereto for improved appearance and ease of insertion of the tube 12 into the vaginal cavity. If desired, the inner surface 24 of the outer tube 12 may be provided with a thin layer 48 of aluminum foil or the like bounded to the intermediate layer 44. The layer 48 improves the slidability and ease of telescoping of the inner tube 20 within the outer tube 12.

Also as an example, the inner tube 20 can be fabricated with an inner layer 50 of thin kraft paper and an outer layer 52 of plastic or the like to improve the slideability of the inner tube 20 within the outer tube 12. Such components of typical laminates utilized in the inner and outer tubes have a tendency to be strippable very easily from one another after the device 10 is discarded, so as to facilitate permanent disposal thereof.

The device 10 also may be provided with means 54 to stabilize the position of the inner tube 20 within the outer tube 12. For example, means 54 may be in the form of relatively small detents 56 or flaps extending downwardly and forwardly from the outer tube 12 to the inner tube 20. These detents inhibit rearward withdrawal of the inner tube 20 from the outer tube 12, but do not inhibit forward movement of the inner tube 20 relative to the outer tube 12.

The outer tube 12, the inner tube 20, the tampon 14 and detents 56 can be provided essentially as set forth in detail in co-pending United States patent application Ser. No. 266,914, now Patent 3,204,635 or in any other manner which accomplishes the purposes of the present invention, and which provides the inner and outer tubes and tampon with the desired configuration and ease of use.

As more particularly described in co-pending United States patent application Ser. No. 266,914, the outer tube first may be crimped or partially folded adjacent one end thereof to a generally conical or steeple shape, with a plurality of dove-tailed folds symmetrically disposed so as to have a substantially smooth, essentially continuous, generally conically shaped surface comprising a plurality of tightly abutting dove-tailed folds. This can be accomplished through the use of suitably dimensioned and shaped sets of male and female dies, either hand operated or machine operated. If desired, partial folding may be replaced by full folding on such apparatus.

In like manner, the inner tube 20 can be folded into the desired shape, so as to provide a smaller diameter forward end to avoid binding between the tampon 16, the inner tube 20 and the outer tube 12 at that end. In this regard, the contoured forward end 36 of the tube 20 can be formed from a plurality of tightly abutting dove-tailed folds by means of a set of inner and outer dies and/or female or male dies either hand operated or machine operated, and as described particularly in co-pending United States application Ser. No. 266,914 now Patent 3,204,635.

In the finished form for use in a preferred embodiment of the device incorporating features of the present invention, the forward end of the outer tube 12 has the desired generally conically shaped configuration formed of a plurality of symmetrically disposed dove-tailed folds tightly abutting one another and separated from one another by fold lines. The inner tube 20 has a reduced diameter forward end 36 in the form of a tapered shoulder 38 with a reduced diameter terminus 40 provided by a closely abutting plurality of dove-tailed folds shaped to the desired configuration.

The tampon 16 can be of any suitable size and shape and can be formed on any suitable conventional fabricating apparatus so that, preferably, its forward end is gen-

erally conically shaped to conform to that end of the outer tube 12.

Before, during or after formation of the forward end of the outer tube, as described, the ring 26 which affords improved strength, tactile indexing and finger-gripping action for the device 10 can be disposed adjacent the rear end of the outer surface of the outer tube 12 of the applicator 11. The ring 26 can be stamped, molded or otherwise formed, either as a continuous smooth ring or as a flat strip which is then bonded, as by casein glue, animal glue or other adhesive material or the like, to the outer surface of the outer tube to form the desired ring at the desired location, as indicated in FIGS. 1-4. The tampon 16 then is disposed within the forward portion of the outer tube 12 in the position shown in FIG. 2, whereupon the inner tube 20 is inserted within the outer tube 12 with the drawstring 18 extending rearwardly through the cavity in the inner tube 20, drawn as by suction or the like to that position. Thereafter, any detents 56 which it may be desired to dispose in the device 10 in order to position the inner tube 20 positively within the outer tube 12 can be formed by suitable cutters, punches or the like so that the detents 56 are directed forwardly and inwardly, as indicated in FIGS. 1-4 of the accompanying drawings. Now the device 10 is assembled fully and ready for use as a catamenial device. Outer packaging also may be applied, if desired, around the device, although this is not necessary in view of the total closure and protection afforded the tampon 16 by the outer tube 12.

When the finished device 10 illustrated in FIGS. 1-4 is utilized, the user grips the rear end portion of the outer tube between the thumb and middle finger of one hand, with the index finger positioned at the rear end of the inner tube. The thumb and second (middle) finger are positioned on opposite sides of the ring which acts as a non-slip finger grip and tactile indexing means to establish the relative position of the inner and outer tubes. The forward end 14 of the device 10 is then directed against the vaginal orifice and is inserted therein, whereupon the device 10 is slid up within the vagina to the desired location. The index finger is then approximated to the thumb and second finger so as to push the tampon 16 forward and out of the forward end 14 of the outer tube 12 and into the desired location in the vagina. The forward end 14 of the tube 12 opens smoothly and very easily for this purpose. The applicator then is withdrawn from the vagina, leaving the tampon 16 in place, with the drawstring 18 extending from the vagina for subsequent withdrawal of the tampon 16.

During the indicated procedure, the ring 26 permits the user to ascertain accurately the exact relative positions of the rear end of the outer tube 12 and the rear end of the inner tube 20, and thus to estimate how nearly complete the ejection is. The ring 26 also affords the user a non-slip grip although the remainder of the outer tube may be very slippery. Of primary importance, the ring 26 strengthens the weak, readily deformable outer tube 12, except in the region of the forward end 14. Accordingly, inward deformation of the tube 12 and binding against the inner tube 20 during ejection of the tampon are avoided. Accordingly, improved ease of insertion of the device 10 and delivery of the tampon 16 are afforded. The forward end 14 of the device 10 opens under a smaller amount of pressure than heretofore obtainable, the walls of the outer tube 12 being thin and weak at that forward end 14. There is no necessity of providing slots or slits in the forward end of the outer tube 12 to facilitate opening of the forward end, so that there is no necessity of providing separate closure means to keep closed the forward end of the outer tube before use of the device. Accordingly, substantial advantages are obtained through the use of the catamenial device incorporating features of the present invention.

A second embodiment of an improved device in accordance with the present invention is illustrated in FIGS. 6-9, inclusive, of the accompanying drawings. In those figures, a suppository device is illustrated which is of the same general configuration as the device 10 of FIGS. 1-5, but is somewhat smaller and employs a vaginal or anal suppository instead of a tampon. Those components of the suppository device which are similar to those of the device 10 are designated by the same numerals, but followed by the prime (') sign. In this regard, the device 10' includes an improved applicator 11'. The applicator 11' includes an outer tube 12' generally similar to that of the device 10, including the dove-tailed folded conical forward end 14', and an inner tube 20', detents 56' and ring 26'. Moreover, the general shape of the hygienic medium 16', in this case a suppository, is similar to that of the tampon 16 of the device 10.

As shown in FIGS. 7 and 8, whether the suppository device 10' is vaginal or anal, the dove-tailed folded narrow diameter forward end 36' preferably is closed, as by an end wall 58, rather than being open as in the device 10. Moreover, end 36' preferably has only a tapered shoulder 38'. With such an arrangement, an annular space is provided between the edge of the forward end 36' of the inner tube 20' and the adjacent portion of the outer tube 12'. Accordingly, material from the rear end of the suppository 16' does not bind between adjoining surfaces of the inner and outer tubes, so that passage of the suppository 16' through the outer tube 12' is facilitated. Moreover, the closed forward end 36' of the inner tube prevents penetration of the suppository 16' into the cavity within the inner tube 20'.

The inner tube 20', the outer tube 12' and ring 26' are fabricated in a manner essentially similar to that previously described for the inner tube 20, outer tube 12 and ring 26. Moreover, materials can be employed which are similar to those of the device 10. As an example, the outer surface 22' of the inner tube 20' is provided with a relatively thin, smooth, readily slidable layer 52' of aluminum foil, in place of the previously described film of polyethylene. The layer 52' is bonded to an inner layer 50' of kraft paper. The outer tube 12' is fabricated of a thin middle layer 44' of kraft paper, with a thin outer layer 46' and inner layer 48' of aluminum foil bonded thereto. In addition, the ring 26' is fabricated of relatively thin firm rubber in place of the paper or paperboard ring of the device 10. The ring 26' stabilizes and strengthens the outer tube 12' so that the outer tube 12' can be relatively thin walled. This, in turn, allows the conically shaped forward end 14' of the outer tube 12' to be openable more readily than would be the case with a thicker, stiffer walled outer tube 12'. Moreover, binding is inhibited between the outer tube 12' and inner tube 20' so that the force required to eject the suppository is kept at a minimal level. Moreover, the ring 26' indexes the outer tube with respect to the inner tube, and provides a non-slip finger grip therefor.

Also, it will be noted that the inner tube 20' is joined to the outer tube 12' by matched detents 56' which extend downwardly and forwardly through the outer tube 12' and also the inner tube 20' (not shown) so as to inhibit rearward withdrawal of the inner tube 20' from the outer tube 12' without interfering with the forward movement of the suppository 16' in the outer tube 12' and out the conically shaped forward end 14' thereof.

Accordingly, a suppository device 10' which includes various improvements, particularly in the applicator 11' thereof, is provided. The improvements maximize ease of insertion of the device and the suppository thereof and minimize the force necessary to deliver the suppository.

It will be understood that the improved hygienic devices comprise devices having applicators in the form of substantially cylindrical outer tubes and substantially cylindrical inner tubes slidably, telescopically and releasably engaged therewith and of slightly smaller outer

diameter than the inner diameter of the outer tubes. Hygienic media are disposed between the forward end of the inner tube and forward end of the outer tube in such devices and improved strengthening means in the form of retaining rings are disposed on the outer surfaces of the outer tubes adjacent the rear ends thereof. Such rings have the advantage of tactily indexing the devices and of providing finger grips, in addition to strengthening the outer tubes so that the outer tube can be formed of thinner, less expensive materials and still can be used without binding between the inner and outer tubes during telescoping thereof. Additionally, when an outer tube is employed which has a conically shaped forward end, as is preferred, the ring allows the forward end of the outer tube to be openable more readily, inasmuch as weaker thinner material can be used in the fabrication of the outer tube and its forward end.

Accordingly, the improved hygienic devices include catamenial devices and suppository devices of the described types, each of which features improvements in the smoothness and ease with which the devices can be operated due to improved applicators for the devices.

Although particular catamenial devices and suppository devices have been described herein in order to illustrate various manners in which the devices can be utilized and constructed, it will be appreciated that the present invention is not limited to any such illustrations and descriptions. Accordingly, any and all modifications, alternatives and equivalent arrangements for such devices which fall within the scope of the appended claims shall be considered a part of the present invention.

What is claimed is:

1. An improved hygienic applicator for an hygienic device, said applicator comprising, in combination, a substantially cylindrical, hollow, thin-walled first tubular member adapted to contain an hygienic medium, a second substantially cylindrical tubular member coaxially and releasably disposed within said first tubular member adjacent the rear end thereof and telescoping therein to eject an hygienic medium from the forward end of said first tubular member, the outer surface of said second tubular member being in sliding engagement with the inner surface of said first tubular member, said wall of said first tubular member being sufficiently thin so that normally it is deformable readily inwardly by finger pressure during said ejection, and a strengthening ring secured to and disposed about the outer surface of said first tubular member adjacent the rear end thereof, said ring being sufficiently thick and strong so as to increase substantially the resistance of said first tubular member to said inward deformation, whereby the ease of ejection of said hygienic medium from said first tubular member is increased.

2. An improved hygienic applicator for an hygienic device, said applicator comprising, in combination, a first, substantially cylindrical, hollow, thin-walled tubular member adapted to contain an hygienic medium, a second substantially cylindrical tubular member coaxially and releasably disposed within said first tubular member adjacent the rear end thereof and telescoping therein to eject an hygienic medium from the forward end of said first tubular member, the wall of said first tubular member being sufficiently thin so that normally it is readily deformable inwardly by finger pressure during said ejection, whereby binding between said first and second tubular members increases the degree of force necessary to effect said ejection, and a substantially continuous ring disposed around and connected to the outer surface of said first tubular member adjacent the rear end thereof, said ring being sufficiently thick and strong so as to increase substantially the resistance of said first tubular member to said deformation and so as to reduce substantially said binding, whereby the ease with which said ejection is effected is increased substantially, said first tubular member having a substantially closed, generally conically shaped, smooth surfaced forward end formed of a plurality of tightly abut-

ting dovetailed folds adapted to unfold readily, due to said thin wall, into a substantially tubular configuration as an hygienic medium is being ejected therefrom while maintaining said medium in substantially unaltered form.

3. The improved hygienic applicator of claim 2 wherein the inner surface of the first tubular member and the outer surface of said second tubular member are covered with readily slidable material, whereby the force necessary to effect said ejection is decreased.

4. The improved hygienic applicator of claim 3 wherein the forward end of said second tubular member has a reduced diameter with respect to the remainder of said second tubular member, whereby ejection of an hygienic medium from said first tubular member can be effected without binding of the hygienic medium between said first and second tubular members.

5. The improved hygienic applicator of claim 3 wherein said ring is continuous, fabricated of paper, and is secured to the outer surface of said first tubular member at the rear end thereof by adhesive means.

6. The improved hygienic applicator of claim 3 wherein said ring is continuous, fabricated of paperboard, and is secured to the outer surface of said first tubular member at the rear end thereof by adhesive means.

7. The improved hygienic applicator of claim 3 wherein said ring is continuous, fabricated of rubber, and is secured to the outer surface of said first tubular member at the rear end thereof by adhesive means.

8. An improved catamenial applicator for use in a catamenial device, said applicator comprising, in combination, a hollow, cylindrical tubular member adapted to contain a tampon, a second substantially cylindrical tubular member coaxially and releasably disposed within said first tubular member adjacent the rear end thereof and adapted to telescope therein to eject a tampon from the forward end of said first tubular member, the outer surface of said second tubular member being in sliding engagement with the inner surface of said first tubular member, said first tubular member having a substantially closed, generally conically shaped, smooth surfaced forward end formed of a plurality of tightly abutting dovetailed folds adapted to unfold readily into a substantially tubular configuration as a tampon is ejected therefrom while maintaining the tampon in substantially unaltered form, said second tubular member having a forward end portion of reduced diameter and comprising a tapered shoulder and small diameter terminus adapted to engage the rear end of the tampon for ejection thereof from said first tubular member without binding of the tampon between said first and second tubular members, the inner surface of said first tubular member and the outer surface of said second tubular member having a readily slidable material, the wall of said first tubular member being sufficiently thin so that normally it is readily deformable by finger pressure during said ejection, and said conically shaped forward end being readily openable due to the thinness of said wall of said first tubular member, and a substantially continuous ring disposed around said first tubular member adjacent the rear end thereof and connected to the outer surface thereof, said ring being of sufficient thickness and strength so as to increase substantially the resistance of said first tubular member to said inward deformation while maintaining substantially unaltered the easy openability of said forward end of said first tubular member, whereby the ease of ejection of said tampon from said first tubular member is increased substantially.

9. An improved suppository applicator for use in a suppository device, said applicator device comprising, in combination, a first generally cylindrical, thin-walled tubular member adapted to contain a suppository, a second substantially cylindrical tubular member coaxially and releasably disposed within said first tubular member and adapted to telescope within said first tubular member to eject a suppository from the forward end of said first

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tubular member, the inner surface of said first tubular member and the outer surface of said second tubular member being in sliding engagement and readily slidable, whereby the force necessary to eject said suppository is reduced, said first tubular member having a substantially closed, generally conically shaped smooth surfaced forward end formed of a plurality of tightly abutting dovetailed folds adapted to unfold readily into a substantially tubular configuration as a suppository is ejected therefrom while maintaining the suppository in substantially unaltered form, the wall of said first tubular member being sufficiently thin so that normally it is deformable readily inwardly under finger pressure during said ejection whereby binding between said first and said second tubular members increases the degree of force necessary for said ejection, and said wall being sufficiently thin so as to allow said dovetailed folds to unfold readily during said ejection, and a substantially continuous ring disposed around said first tubular member adjacent the rear end thereof, said ring being of sufficient thickness and strength so as to increase substantially the resistance of said first tubular member to said inward deformation during said ejection, said second tubular member having a forward end portion of reduced diameter having an end wall therein formed from a plurality of dovetailed folds, said forward end being adapted to engage the rear end of a suppository for ejection thereof from said first tubular member without binding of the suppository between said first and second tubular members.

10. The improved catamenial applicator in accordance with claim 8 wherein said first tubular member comprises a central lamination of thin paper, a thin polyethylene film outer lamination secured to one side of said paper and a thin aluminum foil inner lamination secured to the opposite side of said paper, wherein said second tubular member comprises an inner lamination of thin paper, and an outer lamination of thin polyethylene film secured to said paper, and wherein said ring comprises paper.

11. The improved catamenial applicator in accordance with claim 8 wherein said first tubular member comprises a central lamination of thin paper, a thin polyethylene film outer lamination secured to one side of said paper and a thin aluminum foil inner lamination secured to the opposite side of said paper, wherein said second tubular member comprises an inner lamination of thin paper, and an outer lamination of thin polyethylene film secured to

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said paper and wherein said ring comprises paperboard.

12. The improved catamenial applicator in accordance with claim 8 wherein said first tubular member comprises a central lamination of thin paper, a thin polyethylene film outer lamination secured to one side of said paper and a thin aluminum foil inner lamination secured to the opposite side of said paper, wherein said second tubular member comprises an inner lamination of thin paper, and an outer lamination of thin polyethylene film to said paper and wherein said ring comprises rubber.

13. The improved suppository applicator in accordance with claim 9 wherein said first tubular member comprises a thin layer of paper, a thin film of polyethylene plastic bonded to the outer surface of the paper, and a thin layer of aluminum foil bonded to the inner surface of the paper, wherein said second tubular member comprises a thin layer of paper and a thin layer of aluminum foil bonded to the outer surface of the paper, and wherein said ring comprises paper.

14. The improved suppository applicator in accordance with claim 9 wherein said first tubular member comprises a thin layer of paper, a thin film of polyethylene plastic bonded to the outer surface of the paper, and a thin layer of aluminum foil bonded to the inner surface of the paper, wherein said second tubular member comprises a thin layer of paper and a thin layer of aluminum foil bonded to the outer surface of said paper, and wherein said ring comprises rubber.

15. The improved suppository applicator in accordance with claim 9 wherein said first tubular member comprises a thin layer of paper, a thin film of polyethylene plastic bonded to the outer surface of the paper, and a thin layer of aluminum foil bonded to the inner surface of the paper, wherein said second tubular member comprises a thin layer of paper and a thin layer of aluminum foil bonded to the outer surface of said paper, and wherein said ring comprises paperboard.

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Disclaimer

3,347,234.—*Joseph A. Voss*, Denver, Colo. HYGIENIC DEVICES. Patent dated Oct. 17, 1967. Disclaimer filed July 17, 1974, by the assignee, *Kimberly-Clark Corporation*.

Hereby enters this disclaimer to claim 1 of said patent.

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