

[54] CATAMENIAL DEVICE AND APPLICATOR THEREOF

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[58] Field of Search..... 128/285, 270, 263

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[57] ABSTRACT

An expendible menses collector for insertion into the vagina and comprised of a collapsible monocoque shell of ovular form having a perforated upper hemisphere and an imperforate lower hemisphere and within which there is a chamber filled with resilient and absorbent material. The shell of the device is pliant and supple and has a circumferential seal at its major diameter that effectively engages with the vagina wall. Insertion is effected by collapse of the pliant shell and aided by lubrication released from a frangible or water soluble cell, and is implemented by a cylinder and piston applicator.

39 Claims, 8 Drawing Figures

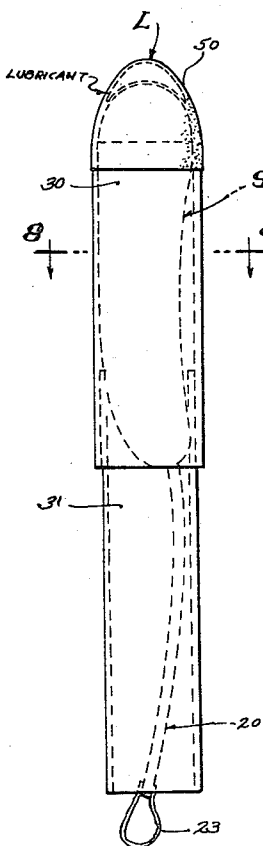


FIG. 1.

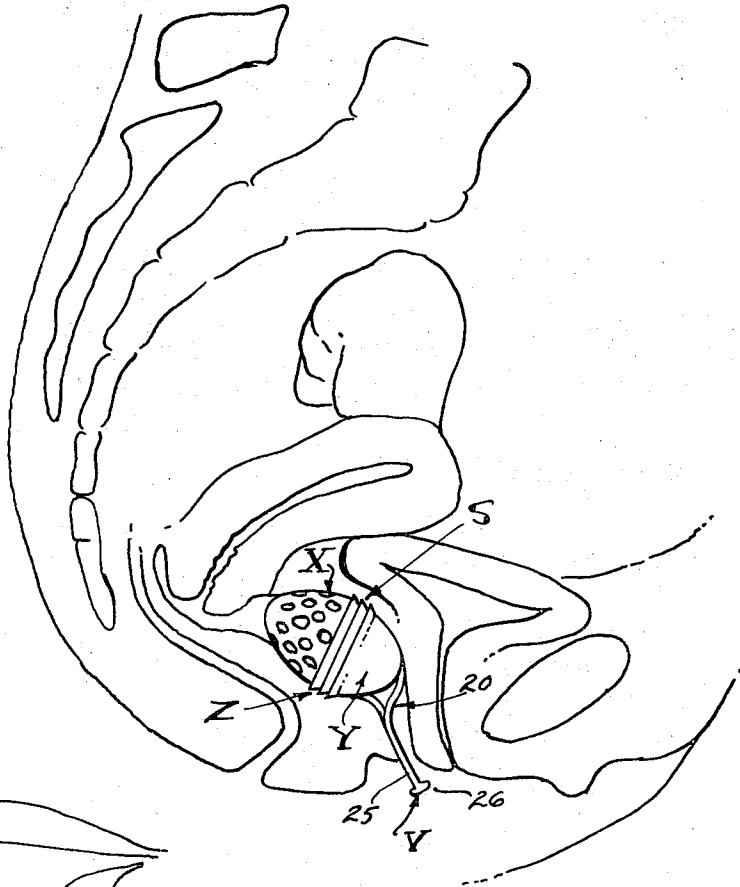


FIG. 2.

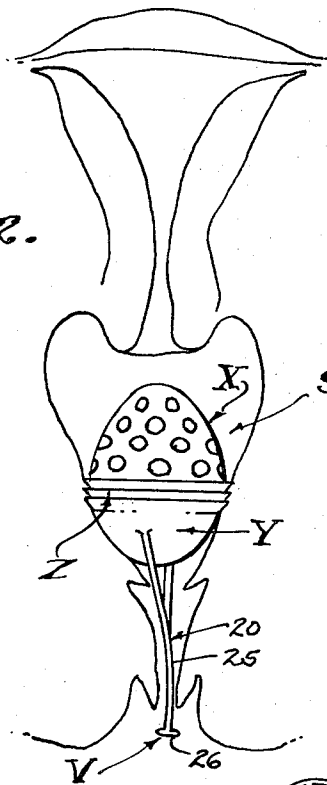
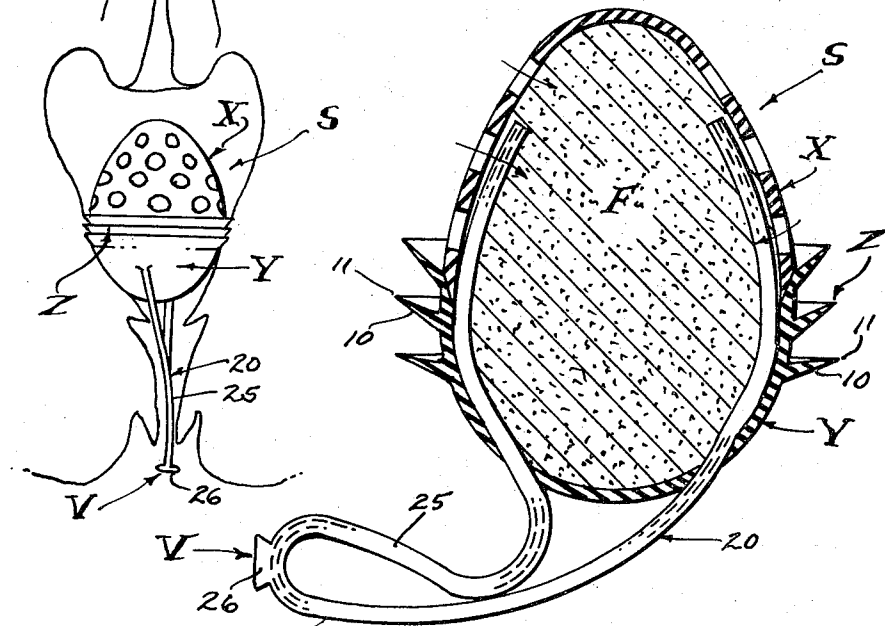
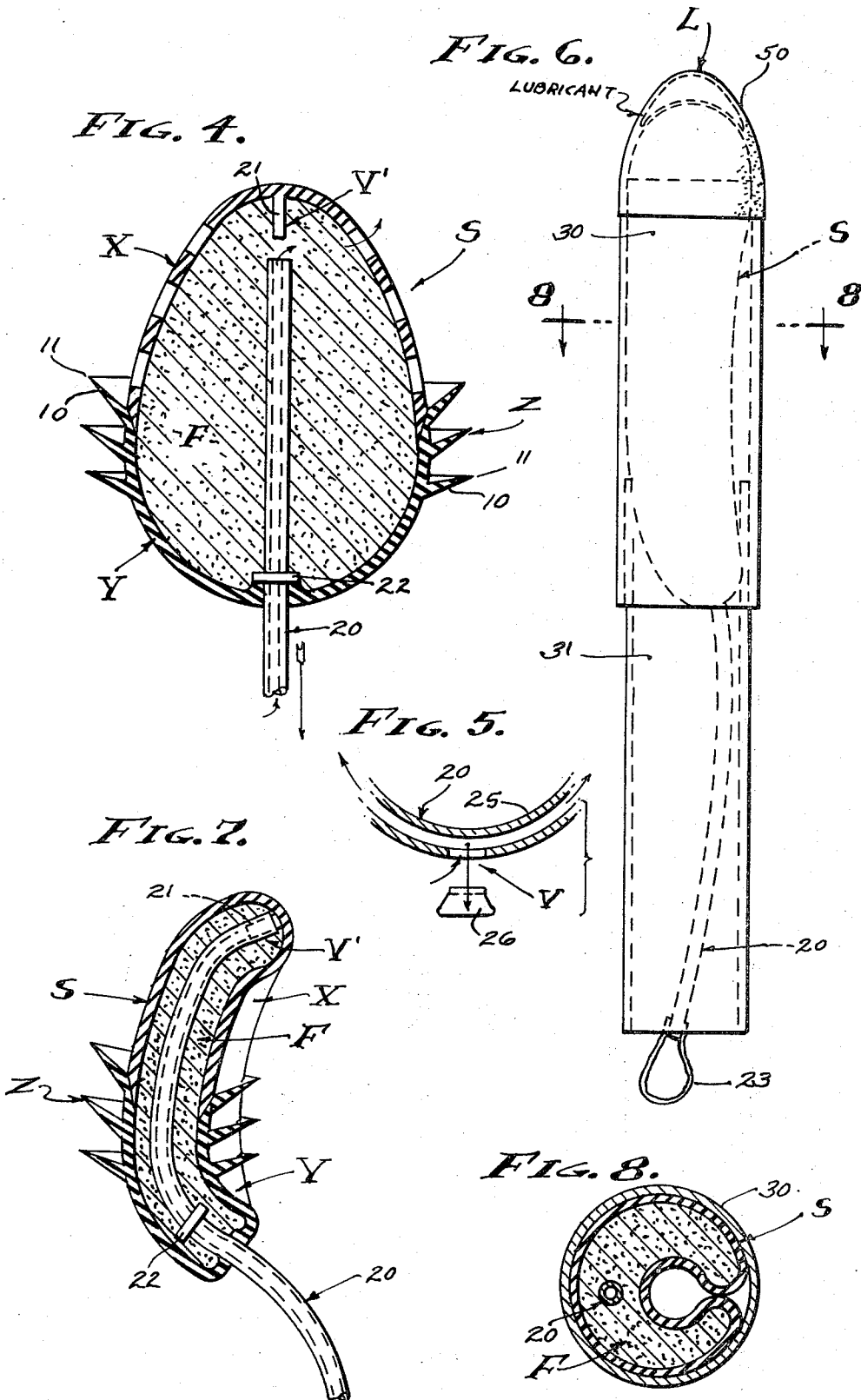


FIG. 3.





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**CATAMENIAL DEVICE AND APPLICATOR
 THEREOF**

BACKGROUND

With reference particularly to man, the female of the species performs its reproductive cycle through a usual 28 day or monthly period, during which there is a continual change in the reproductive organs. Briefly, the female ovulates whereupon the ovum emanates from the ovary and escapes into the fallopian tube and progresses to the uterus which has been preparing therefor by maturation of the endometrial lining of the uterus. Only in the event that the ovum is impregnated does it attach to the uterus wall and form into a fetus, and when not impregnated the endometrial lining of the uterus sloughs away and is discharged through the cervix into the vagina or birth canal. This discharge period or menstrual portion of the reproductive cycle produces therefore the discharge known as menses and which is composed of degenerating endometrical tissue, body fluids, and varying amounts of blood. And, although the cervix opening of the uterus into the vagina experiences changes in the premenstrual, menstrual and post-menstrual periods, the vagina retains its general configuration and can be relied upon for the retention of devices such as is disclosed herein, and namely a device for the containment and control of the menses as is normally discharged.

The vagina or birth canal is that reproductive organ which is the squamous mucus membrane canal that extends into the body from the vulva, into which the cervix of the uterus is open, and through which the menses normally flows. This organ is supported by and passes through the peroneal sling and will take a variety of positions in different individuals, but in any case is normally of tubular formation with an inner wall that has folds or the like which permit it to close together and as well to expand. The expanded diameter of the vagina is the least at the introitus near the vulva and hymen area, while it is the greatest at the upper vaginal vault or closed remote end where the cervix enters therein. Further, there is an internal border of shoulder of the pelvic peroneal sling which is superior to the introitus and which is comprised primarily of the following muscles with their fascia and supporting structures; namely the pubococcygeus, levator ani, transverse parinaei and bulbo-cavernosus muscles. It is this muscular border or shoulder which forms the support upon which the device of the present invention will rest, and it is a general object of this invention to advantageously employ the aforementioned shoulder to the purpose of retaining the catamenial device in working position as shown herein.

FIELD OF INVENTION

The vagina establishes a yieldingly contractible passage through which the menses is free to discharge, and the introitus and said shoulder portion is determinably measurable in practically all individuals. This muscular border or shoulder is located internal to the peroneal sling and is comfortably expansible to an approximate diameter of 1½ inches (3.7 cm) in the average individual; while the extreme expansibility is from about three-quarters of an inch (2 cm) to 2 inches (5 cm). Therefore, it is an object of this invention to provide a menses collecting device adapted to be positioned

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proximal to and carried by the said muscular border or shoulder within the canal of the vagina while expanding the organ comfortably inside the confines of the peroneal sling. The nominal size or diameter of this device is determined by the measured expansibility in the individual, and in practice the device is to be furnished in several nominal sizes.

The comfort and safety of the individual is of prime importance and it is to this end that the shape and construction material of this device is important. It is an object therefore, to provide a device compatible with and having substantially the same suppleness as the membrane of the in vivo organ in which it is contained. With the present invention, a thin walled device of supple and pliant plastic is provided of a material that is inert or neutral with respect to the in vivo environment in which it is useably contained.

It is another object of this invention to provide a readily insertable device of the type herein referred to, and a device that is collapsible and easily passed through the vulva and restricted introitus and smaller outlet diameter portion of the vagina. With the present invention, advantage is taken of the sizeable volume of the vaginal vault, namely the large diameter portion thereof into which the cervix of the uterus discharges. Accordingly, it is still another object of this invention to provide a device that is expansible to a maximum volume and adapted to collect a substantial quantity of menses.

The catamenial device of the present invention is a chambered structure that is collapsible and which contains a compressively expansible charge of absorbent fill. The aforementioned supple walls of plastic material are formed in upper and lower hemispheres, the former being perforated and the latter being imperforate. The fill is contained therein, and the major diameter intermediate the two hemispheres is provided with seals that assure containment of fluids within the confines of the vagina. Accordingly, it is an object to provide a device having the practical features of such description, a comfortable device devoid of sharp edges and corners, a device which will retain the menses inherently entered therein, and a device that reliably seals with the vagina walls.

It is still another object of this invention to provide means for breaking the partial vacuum created during retraction of such a device from its sealed confinement within the vagina of an individual. Having provided an effective seal with the vagina wall, the present invention includes a valve openable to atmosphere and communicating into the innermost and largest portion of the vagina. Further, this precludes abnormal suction which otherwise might be applied to the upper vaginal vault and through the cervix and into the uterus; and all of which would hamper removal of the device.

It is also an object of this invention to eliminate direct contact between the mucus membrane and the absorbent fill material that collects the menses. With the present invention the device is essentially a chambered monocoque shell with a perforated hemisphere through which the discharged menses is enterable. The absorbent fill is confined within the shell and out of contact with the mucus membrane of the vagina and cervix, while the said shell has sufficient rigidity to maintain its initially formed expanded shape with interfacial engagement with said mucus membrane walls of the vagina. Further, the expanded shape of this device is ad-

vantageously employed as a pessary in instances where support of the uterus, bladder and rectal walls is required, in which case the resiliently filled monocoque shell provides a cushioned support for these organs. The fill which is characterized by a multiplicity of resilient fibers will not dry the vaginal mucosis or adhere to the vagina walls. And, concurrent with the advantages of this structure, it is also an object of this invention to expose a lubricant as by means of removing a cap, breaking a frangible cell, or a water soluble cell.

DRAWINGS

The various objects and features of this invention will be fully understood from the following detailed description of the typical preferred forms and applications thereof, throughout which description reference is made to the accompanying drawings, in which:

FIG. 1 is a sectional view taken through the central plane of the female anatomy, showing the device of the present invention installed therein.

FIG. 2 is a transverse section of the said female anatomy.

FIG. 3 is an enlarged sectional view of the device in its preferred embodiment.

FIG. 4 is a view similar to FIG. 3 showing a second embodiment of the device.

FIG. 5 is a fragmentary enlarged section showing the valve means of FIG. 3 and its operation.

FIG. 6 is an elevation showing the applicator for the device as it is stored therein. And,

FIGS. 7 and 8 are illustrative of the mode in which the device is folded for insertion into the said applicator.

PREFERRED EMBODIMENT

The catamenial device herein disclosed overcomes the usual objections to other devices of the type under consideration. Realizing that the upper vaginal vault of the vagina is expansible to quite a large volume, whereas the introitus into the vagina tends to be constricted, the collapsible and subsequently expansible device herein disclosed is advantageously employed to occupy that enlarged portion of the vagina into which the menses is discharged. Unobviously, the support for carrying this device in working position is the muscular border or shoulder which occurs near the outlet portion of the vagina and said upper vault thereof, this shoulder being upwardly disposed and thereby adapted to establish support. Further, the walls of the vagina fold together and are yieldingly expansible and to the end that the mean diameter at said shoulder is flexible. Also, a factor is the introduction and intrusion of a sizeable device through the introitus and through the orifice of the peroneal sling, and all of which is enhanced by the instant device which is characterized by its curvilinear entry portion especially adapted to ease penetration into the body.

Referring now to the drawings, the body cross sections of FIGS. 1 and 2 show the installation of the expansible menses collector supported upon the upwardly disposed muscular border or shoulder which normally occurs between the introitus and upper vaginal vault. The expanded device is of rounded configuration and preferably of ovular form comprised generally of a chambered shell having a perforated upper hemisphere X, an imperforate lower hemisphere Y, an

intermediate seal Z, an absorbent fill F, lubricating means L, and a valve means V. The shell S is a monocoque structure of pliant but suitably stiff material that has sufficient memory to return to its initial shape. The two hemispheres X and Y which form the shell are permanently secured together with the absorbent fill F contained therein. The lubricating means L is a frangible or water soluble cell or peel-off element strategically located and which facilitates insertion of the device into working position. And, the valve means V is operable to release atmospheric pressure into the upper vaginal vault so as to facilitate removal of the device.

The chambered shell S is a thin walled member of pliant material and is of rounded ball form. In accordance with the invention, the ball form of the shell is elongated on its major axis which extends coincidental with the columnar axis of the vagina, and thus the shell S is ovular and egg-shaped. As a practical matter, the shell is fabricated in halves which are joined permanently together at the major diameter mid-cross section of the member. The wall of the shell is a self-supporting monocoque structure of pliant and supple material which is collapsible and yet sufficiently stiff and resilient in order to return to its initial formation, or to the general configuration of the individual vaginal vault in which it is contained. A suitable material is rubber or a plastic substitute therefor which is deformably pliable and adapted to return to these configurations after prolonged collapse. Further, the physical properties of such material closely resemble the soft nature of the vagina wall, but necessarily the material of the shell S is substantially harder than the said body tissues, and all to the end that the normal constrictive forces applied by the vagina through the full range of body movements will not collapse the device when in use. However, it is to be understood that there is a suitable flexibility in the device which permits it to deform in configuration and in conformity to the changes in shape which take place in the vagina during the various expected body movements, and to the individual differences in vaginal configurations.

The upper hemisphere X of the chambered shell S is a tapered curvilinear dome and is perforated as shown for the reception of the menses discharged into the vagina. The channeling of discharge from the cervix is at random and to this end the entire upper surface of the shell S and upper hemisphere X is perforated and/or of screen form, thereby permitting entry of fluids into the chambered interior of the shell.

The lower hemisphere Y of the chambered shell S is semi-spherical and imperforate for the retention of the menses discharge collected therein from the upper hemisphere X. The hemisphere Y is essentially, therefore, a vessel or basin which contains the discharged fluids that collect therein.

The intermediate seal Z that engages the vagina wall prevents discharge of the menses to the body exterior and is a wing-like structure that projects radially from the peripheral major diameter of the shell S and is preferably in the form of a plurality of encompassing ribs 10 that extend outwardly and upwardly to circumferentially continuous lips 11 respectively. These ribs 10 are of relatively thin cross section and are thereby membranous and of flexible nature, being integrally formed of the aforementioned plastic material and adapted to conform to all irregularities substantially without leak-

age. As shown, the multiple lips are spaced and together establish a labyrinth which supplements and enhances the seal.

The absorbent fill F that is contained within the chambered shell can vary widely. For example, it can be a cellular sponge or it can be a collection of spaced fibers. In either case, the fill F is a collapsible body that is resilient and adapted to expand into full occupancy within the chamber shell S when said shell expands into full form. In practice, resilient fibers are employed and into which the discharged body of fluids are readily absorbed. It is to be understood that the density of said fibers is established by the particular physical properties thereof and their ability to retain the said body fluids therebetween.

The valve means V that is operable to release atmospheric pressure into the upper vaginal vault is a normally closed valve which is releasable as and when required in order to facilitate removal of the device from working position. As is shown, the shell S of the device is expanded and rests upon the aforementioned muscular border or shoulder formed by the peroneal sling. Furthermore, the intermediate seal Z effectively isolates the innermost vaginal vault from the introitus thereof which opens to atmosphere. Thus, when extraction force or movement is applied there would be a consequent suction or partial vacuum applied within the said innermost vault and which opens through the cervix and into the uterus that communicates to the fallopian tubes and lower abdomen. Application of such a negative pressurization could be discomforting or injurious, and as well cause mechanical difficulty in removal of the device.

Accordingly, therefore, an extracting means E is provided in the form of a lanyard 20 that depends from the lower hemisphere Y of the shell and said lanyard is tubular for transmission of fluid (air) therethrough. In its preferred form, valve means V is normally closed and releasable to open at the top of the upper hemisphere X, and therefore it extends through the chamber within the shell S. As shown in FIGS. 1-3 and 5, the lanyard 20 is a depending loop 25 that fairs tangentially into the opposite inner walls of the lower hemisphere Y; and the valve element V is a plug or button 26 at its lowermost extremity and which is ripped off manually when required. As shown in FIGS. 4, 6 and 8, the valve element is a stem 21 that depends axially from the interior side of the upper hemisphere X and slideably (slip-fit) engages in the otherwise open end of the lanyard 20, forming a plug. The lanyard 20 projects axially through the lower hemisphere Y where it frictionally (press-fit) engages in an opening therethrough. A stop 22 projects laterally from the lanyard normally spaced above the interior side of the lower hemisphere Y and said stop engages said interior side when the upper terminal end of the lanyard is pulled free of the valve stem 21. In practice, a finger loop 23 is provided at the lower end of the lanyard and which is engageable (also the loop 25) to apply downward force and movement for both seating of and extraction of the device from the vagina. As is clearly indicated, the lowermost terminal end of the tubular lanyard is open to atmosphere. Like the shell of the device, the tubular lanyard 20 (and 25) is made of soft pliable material so as to be conveniently trained into a conveniently obscure position during use.

An applying means A is provided in the form of an open ended cylinder 30 through which a piston 31 is

manually operable to press the collapsed shell S therefrom. Such applicators are common and a description thereof is quite unnecessary, however the disposition and configuration of the shell S is quite unique and cooperatively combined with the cylinder 30 for its practical application and insertion into a working position. In other words, the collapse, initial projection and subsequent expansion of the shell S is practical and readily accomplished by virtue of foldability of the supple shell and its fill as will now be described: Firstly, the ovalar shell S of egg-shape is collapsed laterally (see FIG. 7) so as to fold in a substantially vertical plane with one side half thereof bilaterally depressed into the other side half thereof. Secondly, the bilaterally collapsed shell S is rolled circumferentially (see FIG. 8) so as to minimize its cross section. And thirdly, the folded and rolled shell S is slideably entered into and stored within the confines of the open ended tubular cylinder 30 as shown in FIG. 6 with its tapered curvilinear foremost end exposed for ease of penetration. The aforesaid collapse results in the compression of the fill F of resilient fibers which subsequently expand to open the shell S toward its initially formed monocoque shape. Reversely therefore, the shell walls then unfold under the expansive influence of the resilient fill from which the confining pressure has been released, and thereafter the shell S seeks its full pre-form as shown installed in FIGS. 1 and 2 herein.

The lubricating means L that facilitates insertion of the device is a peel-off element, or frangible or water soluble cell that exposes or releases a lubricant as and when so required. As shown, the orientation of shell S is on its major longitudinal axis of insertion coincidental with the columnar axis of the vagina. Therefore, the tapered and curvilinear upper hemisphere X is foremost and initiates entry into and through the vulva; and in accordance with this invention the lubricating means L is located strategically over the forward apex (when folded) or curvature of said upper hemisphere. As shown, the peel-off element or frangible and/or soluble cell is in the form of a cap 50 carried over the otherwise open end of cylinder 30 to protectively cover the tapered curvilinear end portion of the device which exposedly projects therefrom. In practice, the protective peel-off element can be removed in its entirety and said frangibility thereof can be enhanced and/or controlled by forming the cell walls of a water soluble material that is substantially weakened when placed into contact with water or body fluids. The lubricant to be exposed can vary as circumstances require and for example can be a form of petroleum jelly, water soluble jelly, or the like.

Having described only typical preferred forms and applications of our invention, we do not wish to be limited or restricted to the specific details herein set forth, but wish to reserve to ourselves any modifications or variations that may appear to those skilled in the art:

I claim:

1. An expendible catamenial device for the collection of menses discharged into the vaginal vault and adapted to positionably rest upon the internal border of the peroneal sling, and comprising: a chambered monocoque shell having a perforated upper hemisphere and an imperforate lower hemisphere and with a circumferential seal at the major diameter of the monocoque shell and engageable with the vagina wall, said shell being made of resiliently pliable material and thereby

adapted to conform to the internal configurations of the vaginal vault.

2. The catamenial device as set forth in claim 1 wherein the shell is comprised of said two hemispheres and is ovular in configuration.

3. The catamenial device as set forth in claim 1 wherein the shell comprised of said two hemispheres is egg-shaped and the said lower hemisphere is of larger ovular configuration than said upper hemisphere.

4. The catamenial device as set forth in claim 1 wherein the circumferential seal is comprised of at least one continuously encompassing rib.

5. The catamenial device as set forth in claim 1 wherein the circumferential seal is comprised of at least one radially flexible continuously encompassing membranous rib.

6. The catamenial device as set forth in claim 1 wherein the circumferential seal is comprised of at least one outwardly and upwardly radially flexible continuously encompassing membranous rib.

7. The catamenial device as set forth in claim 1 wherein the circumferential seal is comprised of axially spaced circumferentially encompassing ribs.

8. The catamenial device as set forth in claim 1 wherein the circumferential seal is comprised of axially spaced radially flexible continuously encompassing membranous ribs.

9. The catamenial device as set forth in claim 1 wherein the circumferential seal is comprised of axially spaced outwardly and upwardly disposed radially flexible continuously encompassing ribs.

10. The catamenial device as set forth in claim 1, wherein the shell comprised of said two hemispheres is egg-shaped and the said lower hemisphere is of larger ovular configuration than said upper hemisphere, and wherein the circumferential seal is comprised of axially spaced outwardly and upwardly disposed radially flexible continuously encompassing ribs.

11. An expendible catamenial device for the collection of menses discharged into the vaginal vault and adapted to positionably rest upon the internal border of the peroneal sling, and comprising; a chambered monocoque shell having a perforated upper hemisphere and an imperforate lower hemisphere and with a circumferential seal at the major diameter of the monocoque shell and engageable with the vagina wall, and resiliently collapsible fill of absorbent material occupying the chambered shell, said shell being made of resiliently pliable material and thereby adapted to collapse around said fill and to be subsequently expanded thereby into its initial aforesaid form.

12. The catamenial device as set forth in claim 11, wherein the resiliently collapsible fill is fibrous material.

13. The catamenial device as set forth in claim 11 wherein the resiliently collapsible fill is a cellular body.

14. An expendible catamenial device for the collection of menses discharged into the vaginal vault and adapted to positionably rest upon the internal border of the peroneal sling, and comprising; a chambered monocoque shell having a perforated upper hemisphere and an imperforate lower hemisphere and with a circumferential seal at the major diameter of the monocoque shell and engageable with the vagina wall, an extraction means therefor including a lanyard depending from said lower hemisphere and exposed at the exterior opening of the vagina, said shell being made of resil-

iently pliable material and thereby adapted to collapse and subsequently expand into its initial aforesaid form.

15. The catamenial device as set forth in claim 14 wherein the extraction means is a normally closed tubular valve means opening into the vaginal vault and open to atmosphere at the opening of the vagina.

16. The catamenial device as set forth in claim 14 wherein the lanyard is a tube opening into the vaginal vault and normally closed by a removeable button manually disengageable to open the tube to atmosphere at the opening of the vagina.

17. The catamenial device as set forth in claim 14 wherein the lanyard is a loop of tubing opening into the vaginal vault and normally closed by a removeable button manually disengageable to open the tube to atmosphere at the opening of the vagina.

18. The catamenial device as set forth in claim 14 wherein the lanyard of the extraction means is a tube slideably engaged with a valve member carried by the shell and moveable relative to the shell to be disengaged from said valve member and opened to atmosphere at the opening of the vagina.

19. The catamenial device as set forth in claim 14 wherein the lanyard of the extraction means is a tube slideably engaged with a valve member carried by the upper hemisphere of the shell and moveable through the lower hemisphere of the shell to be disengaged from said valve member and opened to atmosphere at the opening of the vagina.

20. The catamenial device as set forth in claim 14 wherein the lanyard of the extraction means is a tube slideably engaged with a valve member carried by the upper hemisphere of the shell and frictionally engaged with and moveable through the lower hemisphere of the shell to be disengaged from said valve member and opened to atmosphere at the opening of the vagina.

21. The catamenial device as set forth in claim 14 wherein the lanyard of the extraction means is a tube slideably engaged with a valve member carried by the upper hemisphere of the shell and frictionally engaged with and moveable through the lower hemisphere of the shell and having a stop limiting said movement and for disengagement from said valve member and opened to atmosphere at the opening of the vagina.

22. An expendible catamenial device for the collection of menses discharged into the vaginal vault and adapted to positionably rest upon the internal border of the peroneal sling, and comprising; a chambered monocoque shell having a perforated upper hemisphere and an imperforate lower hemisphere and with a circumferential seal at the major diameter of the monocoque shell and engageable with the vagina wall, resiliently collapsible fill of absorbent material occupying the chambered shell, and extraction means therefor including a lanyard in the form of a tubular valve controlled element extending through said collapsible fill and depending from said lower hemisphere and exposed at the opening of the vagina, said shell being made of resiliently pliable material and thereby adapted to collapse around said fill and to be subsequently expanded thereby into its initial aforesaid form.

23. The catamenial device as set forth in claim 22 wherein the extraction means is a normally closed tubular valve means opening into the vaginal vault and open to atmosphere at the opening of the vagina.

24. The catamenial device as set forth in claim 22 wherein the lanyard is a tube opening into the vaginal

vault and normally closed by a removeable button manually disengageable to open the tube to atmosphere at the opening of the vagina.

25. The catamenial device as set forth in claim 22 wherein the lanyard is a loop of tubing opening into the vaginal vault and normally closed by a removeable button manually disengageable to open the tube to atmosphere at the opening of the vagina.

26. The catamenial device as set forth in claim 22 wherein the lanyard of the extraction means is a tube slideably engaged with a valve member carried by the shell and moveable relative to the shell to be disengaged from said valve member and opened to atmosphere at the opening of the vagina.

27. The catamenial device as set forth in claim 22 wherein the lanyard of the extraction means is a tube slideably engaged with a valve member carried by the upper hemisphere of the shell and moveable through the lower hemisphere of the shell to be disengaged from said valve member and opened to atmosphere at the opening of the vagina.

28. The catamenial device as set forth in claim 22 wherein the lanyard of the extraction means is a tube slideably engaged with a valve member carried by the upper hemisphere of the shell and frictionally engaged with and moveable through the lower hemisphere of the shell to be disengaged from said valve member and opened to atmosphere at the opening of the vagina.

29. The catamenial device as set forth in claim 22 wherein the lanyard of the extraction means is a tube slideably engaged with a valve member carried by the upper hemisphere of the shell and frictionally engaged with and moveable through the lower hemisphere of the shell and having a stop limiting said movement and for disengagement from said valve member and opened to atmosphere at the opening of the vagina.

30. An expendible catamenial device for the collection of menses discharged into the vaginal vault and adapted to positionably rest upon the internal border of the peroneal sling, and comprising; a chambered monocoque shell having a perforated upper hemisphere and an imperforate lower hemisphere and with a circumferential seal at the major diameter of the monocoque shell and engageable with the vagina wall, said shell being made of resilient pliable material folded bilaterally in one plane and then rolled into a minimum cross sectional collapsed configuration and thereby adapted to be subsequently expanded into its

initial aforesaid form.

31. The catamenial device as set forth in claim 30 wherein the chambered shell is filled with resiliently compressible absorbent material.

32. The catamenial device as set forth in claim 30 wherein the chambered shell is attached to a tubular lanyard and normally closed valve means open to atmosphere and operable to open therethrough and into the innermost portion of the vagina.

33. The catamenial device as set forth in claim 30, wherein the chambered shell is filled with resilient compressible absorbent material, and wherein the lower hemisphere is attached to a tubular lanyard and normally closed valve means extended through said absorbent material and open to atmosphere and operable to open therethrough and into the innermost portion of the vagina.

34. A catamenial device and applicator therefor for the collection of menses discharged into the vaginal vault and adapted to be positionably rested upon the internal border of the peroneal sling, and comprising; a chambered monocoque shell having a perforated upper hemisphere and an imperforate lower hemisphere and with a circumferential seal at the major diameter of the monocoque shell and engageable with the vagina wall, said shell being made of resiliently pliable material folded bilaterally into one plane and then rolled into a minimum cross sectional collapsed configuration and confined within an open ended tube from which it is subsequently projected and expanded into its initial aforesaid form.

35. The catamenial device as set forth in claim 34 wherein the curvilinear uppermost crown of the upper hemisphere projects from said open ended tube.

36. The catamenial device as set forth in claim 34 wherein the open ended tube is closed by a cap.

37. The catamenial device as set forth in claim 34 wherein the open ended tube is closed by a tapered curvilinear cap.

38. The catamenial device as set forth in claim 34 wherein the open ended tube is closed by a tapered curvilinear and frangible cell containing lubricant.

39. The catamenial device as set forth in claim 34 wherein the curvilinear uppermost crown of the upper hemisphere projects from said open ended tube and is covered by a tapered curvilinear peel-off element exposing lubricant.

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