

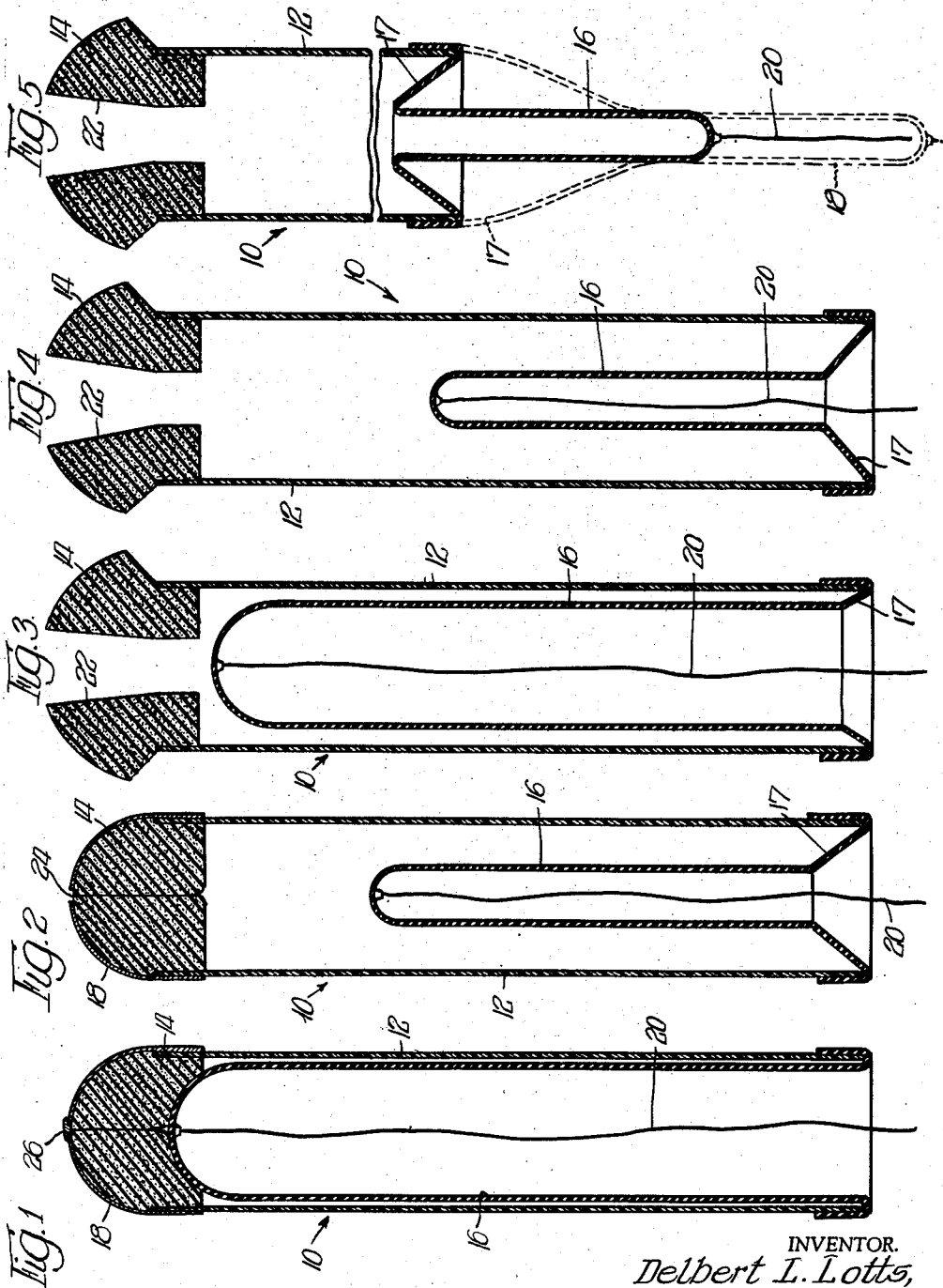
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CATAMENIAL DEVICE

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CATAMENIAL DEVICE

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This invention relates to apparatus useful for feminine hygiene. More particularly, the invention relates to devices for use by women during menstrual periods.

It is an object of the present invention to provide improved catamenial apparatus.

Another object of the invention is to provide a catamenial device utilizing vacuum means for absorbing menstrual discharge.

A further object of the invention is to provide a vacuum actuated vaginal absorption device which is completely safe.

Still another object of the invention is to provide an improved catamenial device including vacuum means controlled by moisture soluble means.

A still further object of the invention is to provide an improved catamenial device embodying flexible diaphragm means for retaining vacuum and for creating additional vacuum when the device is withdrawn.

Other objects, features and advantages will be apparent from the following detailed description taken in conjunction with the accompanying drawings, in which:

Figure 1 is an enlarged longitudinal, sectional view of a catamenial device according to the present invention with the device evacuated and ready for use;

Figure 2 is an enlarged longitudinal sectional view of a catamenial device according to Figure 1 illustrating the device before it is evacuated but with the plug retaining cap in place;

Figure 3 is an enlarged longitudinal sectional view similar to Figures 1 and 2 but showing the device in operative condition with the plug released and open and the diaphragm in its vacuum producing position;

Figure 4 is an enlarged longitudinal sectional view similar to Figure 3 but showing the device with the vacuum dissipated; and

Figure 5 is an enlarged, broken longitudinal sectional view similar to the previous figures but showing two conditions of the device as it is being withdrawn.

As shown in the figures, the catamenial device of the present invention is generally designated by the reference numeral 10 and includes a tube-like body member 12, a soft resilient end plug 14, a resilient flexible diaphragm or bulb 16, a soluble cap 18, and a withdrawal cord 20.

The tube-like body member 12 may be of any desired cross section preferably circular. The walls of the tube-like member are formed of any suitable material capable of withstanding deterioration when subjected to the body heat and moisture of the vagina. Preferably the walls are as thin as possible and limited flexibility to make the device more comfortable when in use, but the walls must be of sufficient rigidity to prevent collapse when evacuated and inserted in the vagina. The tube-like member 12 may be formed of any suitable material such as Lucite, Vinylite, hard rubber, or other plastic or rubber-like materials, or may even be formed of metal such as thin, flexible, stainless steel.

The plug 14 is disposed at the end of the tube-like member 12 to be inserted into the vagina. It is formed

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of soft resilient material, preferably porous, such as sponge material formed of rubber, nylon, or other rubber-like or plastic material. As illustrated in Figures 3, 4 and 5, the plug normally has a maximum diameter somewhat greater than the diameter of the tube-like member 12 so that it will form a soft, pliable obstruction in the upper part of the vaginal tract when in use. A portion of the plug is retained in the end of the tube-like member 12 as shown and if desired, may be cemented therein with any suitable moisture resistant cement. An axial passage 22 is formed through the plug 14 and communicates with the interior of the tube-like member 12.

The other end of the tube-like member 12 is closed by the flexible diaphragm 16. The diaphragm may be formed of any suitable resilient, flexible heat and moisture resistant material capable of substantial stretching and subsequent return to normal, such as rubber or resilient stretchable plastic. The diaphragm is shown in its unstretched condition in Figures 2, 4 and 5 and in its stressed or stretched condition in Figures 1 and 3. It is secured to the end of the tube-like member in any suitable manner such as by moisture and heat resistant cement. Adjacent its connection to the tube-like member the diaphragm is reinforced or thickened to provide a stiffened portion 17.

In order to normally confine the plug 22 in a generally hemispherical form such as seen in Figures 1 and 2 and to compress the plug for closing the passage 22 and for sealing the end of the tube 12, the generally hemispherical cap 18 is disposed over the end of the tube-like member with the plug 14 held in compressed relationship within the cap. The cap is secured to the tube-like member 12 by any suitable cement, and it is formed of thin material which is ordinarily fairly stiff and capable of retaining a vacuum within the tube-like member but which is soluble when subjected to vaginal moisture and warmth. Medical capsule gelatine has been found to be suitable for the purpose.

In order to permit the tube-like member 12 to be evacuated with the cap 18 in place, a small aperture or opening 24 is formed adjacent the outer end of the closed passage 22. The interior of the tube-like member 12 can be readily evacuated through the opening 24, through the interstices of the plug 14 (when formed of porous material), through the closed passage 22 (which will open sufficiently for drawing out the air within the tube-like member) or through both. In Figure 2 the device is shown with the diaphragm 16 relaxed before evacuation. In Figure 1 the device is evacuated and the diaphragm 16 is drawn close to the inner walls of the tube-like member 12 and into contact with the inner end portion of the plug 14. The vacuum is retained by closing the opening 24 in any suitable manner, such as by cementing over the opening a small piece of cap material 26. When the device 10 is capped and evacuated as shown in Figure 1, it will retain the vacuum indefinitely as long as the cap is not subjected to heat and moisture.

In operation, the device is inserted, plug end first, into the vaginal tract at the start of the menstrual period. The heat and moisture in the vaginal tract will dissolve or melt the cap 18 and the plug 26 to release the sponge plug 14 so that it assumes its expanded form as shown in Figure 3. The sponge plug now forms a soft, pliable obstruction in the upper portion of the vaginal tract to block passage of menstrual discharge. At the same time the passage 22 is opened so that the vacuum created by the stretched diaphragm 16 is transmitted to the vaginal tract above the plug 14 to draw menstrual discharge into the tube 12. The diaphragm 16 will contract as the tube 12 fills until the diaphragm is substantially completely contracted, as shown in Figure 4, and the tube filled to capacity. When this happens the weight

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of the tube and its contents and the reduction of the vacuum will cause the entire device to descend to a position where it will be felt by the user to warn her that it should be withdrawn.

To facilitate withdrawal of the device and to clean the vaginal tract during withdrawal, a removal cord or string 20 is provided. The cord 20 is secured to the inner end of the diaphragm as illustrated and extends out of the device a sufficient amount so that it can be grasped to effect removal of the device from the vagina of the user. When the removal cord 20 is pulled, the central portion of the diaphragm 16 is pulled inside out as illustrated by the solid lines in Figure 5, and this creates additional vacuum within the tube 12 and above the plug 14 in the vaginal tract. Additional pulling on the removal cord 20 pulls the stiffened portion 17 of the diaphragm inside out as shown in dotted lines in Figure 5, and at the same time the central portion of the diaphragm is extended as indicated in dotted lines so that additional vacuum is provided. Thus, during withdrawal additional vacuum provided through manipulation of the removal cord 20 cleans the vaginal tract.

It will be understood that the catamenial device may be made in several sizes to accommodate various ages and menstrual conditions. It is contemplated that a single one of the devices should cover the requirements for one complete menstrual period, but of course two or more devices may be utilized if necessary. The device is clean, convenient and sanitary and in no way interferes with the activities of the wearer.

While the device is described and illustrated for use in vaginal absorption during menstrual periods it will be readily understood that it can be utilized for other medical purposes in other body cavities or surgical incisions for absorption of blood, mucus or any other body fluids.

Variations and modifications may be effected without departing from the scope of the novel concepts of the present invention.

I claim:

1. In a catamenial device, a tube-like member, and means operatively associated with said tube-like member for retaining a vacuum therein, said vacuum retaining means including cap means normally sealing one end of

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said member when dry but deteriorative when exposed to moisture of a human body at body temperature, said vacuum retaining means also including a plug of resilient soft sponge material.

2. In a catamenial device, a tube-like member, means operatively associated with said tube-like member for retaining a vacuum therein and including a plug of resilient soft material having a normally open passage therethrough, and a moisture deteriorative cap encasing at least a portion of said plug and closing said passage, whereby said cap will deteriorate when exposed to human body moisture at body temperature to release said plug and to open said passage.

3. In a catamenial device, a tube-like member, means operatively associated with said tube-like member for retaining a vacuum therein, said vacuum retaining means including a plug of resilient soft material having a normally opened passage therethrough at one end of said tube-like member and a resilient rubber-like diaphragm closing the other end of said tube-like member whereby said diaphragm is drawn into said member when the member is evacuated, and a flexible cord secured to said diaphragm for drawing said diaphragm from said tube-like member to create additional vacuum in said member and for retracting said device.

4. In a catamenial device, a generally rigid tube-like member, a resilient porous plug closing one end of said member, a resilient flexible diaphragm closing the other end of said member whereby said member may be evacuated between said plug and said diaphragm, and a moisture deteriorative cap covering said plug to retain the vacuum in said tube-like member.

5. A catamenial device according to claim 4 wherein said cap is provided with an opening communicating with said porous plug through which air may be drawn to create the vacuum in said tube-like member, and moisture deteriorative means closing said opening to retain the vacuum in said member.

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