A personal sanitary device for use in incontinent females comprises a vaginal portion for insertion in the vagina and provided with an opening for receiving secretion from the uterus and a vestibular portion provided with an opening for receiving fluid from the urethra, the openings communicating with passage means provided with a one way valve which is adapted such that the passage of fluid from the openings there through will maintain a subatmospheric pressure in the device which pressure causes the device to be sealingly engaged with the wearer.
PERSONAL SANITARY APPLIANCE

The present invention relates to improvements in personal sanitary devices for the incontinent female. According to the present invention, there is provided a personal sanitary device for use in incontinent females comprising a first portion for insertion into the vagina having a surface portion defining a first opening for receiving secretion from the uterus and adapted for contact with the tissue surrounding the uterine orifice, a second portion having a surface portion defining a second opening for receiving fluid discharged from the urethra and adapted for contact with the tissue surrounding the urethral orifice, outlet passage means communicating with said openings and fluid flow control means in said passage means for controlling the flow of fluid therealong and adapted such that a passage of fluid from said openings thenceforth will maintain a subatmospheric pressure at said openings, said subatmospheric pressure causing said surface portions to sealingly engage said respective tissue.

Preferably the control means is a one way valve comprising two flexible sheets extending in the direction of fluid flow from said openings, the upstream margins of the sheets being relatively fixed with the sheets in face to face relation, the said faces of the sheets being in sealing engagement when the valve is closed.

A device according to the invention will keep the wearer dry because of its sealing engagement with the wearer. By virtue of the fact that the subatmospheric pressure is maintained by the flow of fluid from the wearer, the device can be simple in construction and has no need of external suction mechanisms.

The present invention will be more readily understood from the following description of an embodiment thereof, given by way of example only, reference being made to the accompanying drawings in which:

FIG. 1 is a perspective view of the first and second portions of the device;

FIG. 2 shows in perspective a part of the device including the one way valve;

FIG. 3 illustrates schematically the device in section in situ on a wearer;

FIG. 3A is a scrap view of a part of the device, and

FIG. 4 illustrates the principle on which the device works.

Referring to FIG. 1, the device 10 comprises a vaginal portion 11 and a vestibular portion 12. The portion 11 is preferably composed of an inert plastics material which does not excite tissue reaction and is adapted to be inserted into the vagina and be in sealing engagement with the wearer. To this end, the portion 11 has wing portions 13, a tuberosity 14 and shoulders 15. An opening 16, communicating with a passage 17, is defined in the portion 11 for receiving secretion from the uterus.

The portion 12 has an oval opening 18, bounded by a rim 19 and communicating with a passage 20, for receiving fluid from the urethra. Adjacent and below the rim 19 is a fine anti-oedema screen or netting 21 which may be of nylon and which will overlie the urethral orifice when the device is in position on the wearer. A similar screen or netting may be provided over opening 16. The passages 17 and 20 communicate with an outflow passage 22 which will receive secretion from the portion 11 and urine from the portion 12.

The portions 11, 12 may be made of average size, namely approximately 4 cms in width and approximately 7 cms in length or may be made smaller or larger as required.

The passage 22 is formed by a suitable length of tubing, for example silicone tubing, and is connected with a chamber 23. The chamber 23 may be substantially cylindrical and approximately 8 cms long and may be made of a suitable plastics material. Fluid flows out of the chamber through an aperture 24 and flow through the aperture 24 is controlled by control means in the form of a valve 25. Urine and secretion from the urethra and uterus pass through the valve 25 and are collected in a suitable receptacle 29 which may be a plastics bag or a bottle and may be attached by suitable means to the chamber 23. The upper part of the receptacle envelopes the valve 25 without touching it or impeding its action.

The valve 25, as seen in FIG. 3, comprises opposing flexible sheets 26 having their upper or upstream edges fast with marginal portions of the wall of the aperture 24 and their lower or downstream edges free. When the valve 25 is closed, the adjacent inner faces of the sheets engage each other as seen in FIG. 3; these faces are so treated that they lie perfectly flat on each other in sealing relationship. The sheets may be approximately 3 cms long and may be made of a suitable plastics material.

In FIG. 3 which shows diagrammatically the appliance in position on a wearer, the rectum is shown at 27, the uterus at 28, the vagina at 30, the bladder at 31, the urethra at 32 and the symphysis pubis at 33. The portion 11 of the device is located in the vagina with the opening 16 positioned to drain secretions from the uterus. The portion 12 of the device is located so that the opening with its protective screen or netting 21 overlies the urethra 32. Tubing 22 leads to the chamber 23 from which fluid passes to the collecting receptacle 29 by way of valve 25; the receptacle 29 as shown contains some liquid 34 which has drained through the appliance.

Reference will now be made to FIG. 4 for an explanation of the principle on which the appliance works. In FIG. 4, the portion 11 of the device has been omitted for clarity, the portion 11 working on the same principle as the portion 12 which is shown. The collecting bag or receptacle below the valve 25 is also not shown for clarity.

The device is put in position on the wearer and the tubing 22 connected to the outflow passage 21; clamps (not shown) close the tubing 22 to prevent liquid escaping therefrom. The evacuation chamber 23 is at this time disconnected from the tubing 22 and is charged with a suitable antiseptic liquid 35 to the mark 36 (see FIG. 2). The chamber 23 is then connected to the tubing 22 and is allowed to hang vertically. The tubing clamps are then released. An evacuated state within the appliance is now produced by the liquid 35 falling freely through the chamber aperture 24 and through the valve 25, the sheets 26 of which will be forced open by the liquid against atmospheric pressure. When the pressure in the device has been reduced by reason of the flow of liquid to a preset level, a pressure balance is set up, i.e. the reduced atmospheric pressure, for example 758 m.m. Hg., within the device plus the downward
pressure of, for example, 2 m.m. Hg of the liquid remaining in the chamber 23 balances atmospheric pressure of 760 m.m. Hg. acting on the valve. At this instance the valve 25 closes preventing further loss of liquid from the chamber 23. The suction created within the device produces a leak-proof seal between the surfaces of the device 10 around the openings 16, 18 and the tissues of the wearer. The screen or netting covering the openings 16, 18 prevents this suction from injuring the tissues yet allows the passage of fluid.

The valve will remain shut preventing egress of liquid from the chamber 23 (which would upset the balance in favor of a greater external pressure) until fluid comes over through the device into the chamber 23. When this occurs the pressure balance is upset because of the increase in the pressure due to the liquid in the chamber 23. This balance is promptly restored by passage of an equal volume of liquid through the valve 25 as comes over from the wearer, whereupon the valve recloses. The suction is thus maintained at a substantially constant level; the seal at the interface between the device 10 and the tissues is undisturbed and any volume of urine and/or secretion from the urethra or vagina is drained in a leak-proof fashion indefinitely.

The chamber 23 and receptacle 29 may be made to hook on to the side of a bed or wheel chair, or may rest on the ground. In ambulant patients the collecting system may be made attachable to the lower limb in the region of the knee.

What I claim is:

1. A personal sanitary device for use in incontinent females comprising a first portion for insertion into the vagina having a surface portion defining a first opening for receiving secretion from the uterus and adapted for contact with the tissue surrounding the uterine orifice, a second portion having a surface portion defining a second opening for receiving fluid discharged from the urethra and adapted for contact with the tissue surrounding the urethral orifice, outlet passage means communicating with said openings and fluid flow control means in said passage means for controlling the flow of fluid therealong and adapted such that the passage of fluid from said openings therethrough will maintain a subatmospheric pressure at said openings, said subatmospheric pressure causing said surface portions to sealingly engage said respective tissue.

2. A device as claimed in claim 1, wherein said control means is a one way valve.

3. A device as claimed in claim 2, wherein said valve comprises two flexible sheets extending in the direction of fluid flow from said openings, the upstream margins of the sheets being relatively fixed with the sheets in face to face relation, the said faces of the sheets being in sealing engagement when the valve is closed.

4. A device as claimed in claim 1, wherein at least the second opening is covered with a screen permeable to fluid.

5. A device as claimed in claim 1, wherein at least said first and second portions are made of inert plastics material.