United States Patent

[11] 3,629,873

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[21] Appl. No. **29,049**
[22] Filed **Apr. 16, 1970**
[45] Patented **Dec. 28, 1971**

[54] **CONTAINER STRUCTURE**
10 Claims, 11 Drawing Figs.

[52] **U.S. Cl.** ..... **4/110,** 4/141, 220/97 F
[51] **Int. Cl.** **A47k 11/12**
[50] **Field of Search** ..... 4/110–113, 138, 139, 141, 142; 128/283, 294, 295; 220/60 A, 97 F

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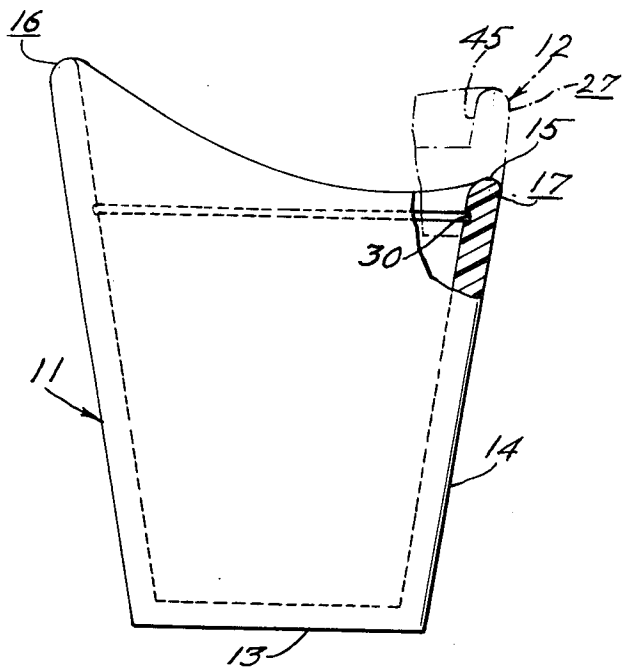
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ABSTRACT: A disposable container which is particularly suited for collecting and containing specimens of human female urine has a body provided with an upstanding sidewall shaped at its upper end to engage the female pubic region and receive within its opening the labial portion of the genitalia. A lid is provided to engage over the upper terminus of the shaped sidewall to sealingly cover the opening and contain the collected specimen. The lid has an upper flat horizontal surface to afford stacking of the covered container. In one embodiment, the lid is formed of frangible material and is centrally weakened to permit a pipette to be inserted therethrough for withdrawing a portion of the specimen. In another embodiment, a lid of frangible material is weakened in two locations and it has a pour spout adjacent its periphery to permit the specimen to be poured from the container and through the lid when the lid is punctured in both locations.



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FIG. 3.

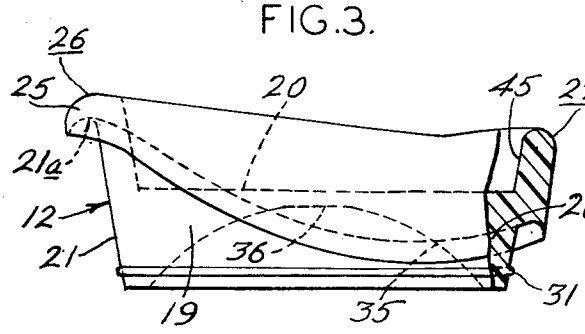


FIG. 4.

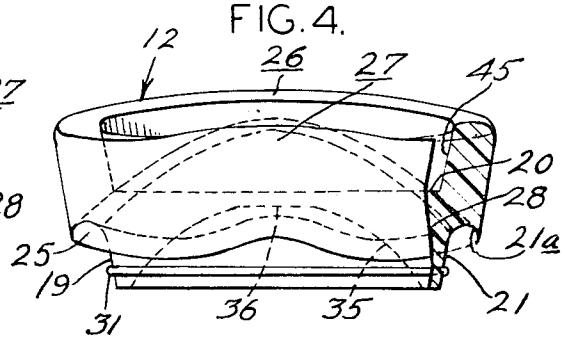


FIG. 1.

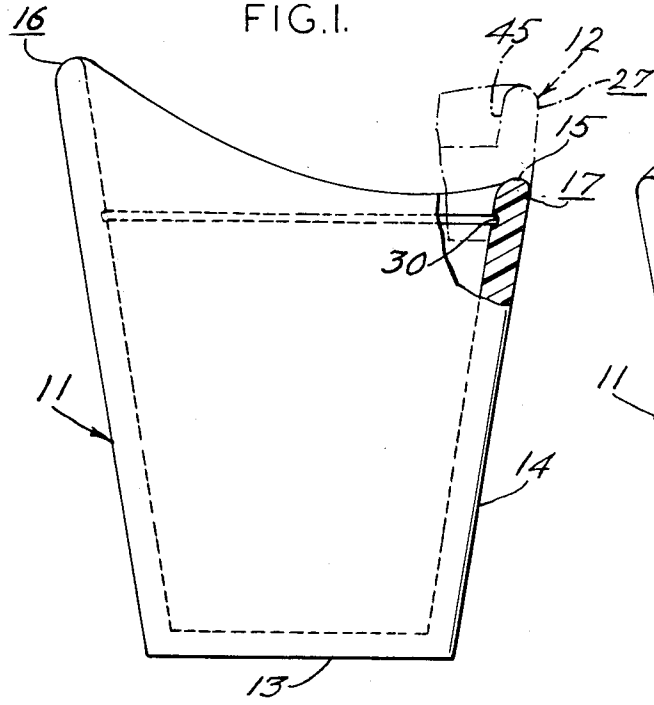


FIG. 2.

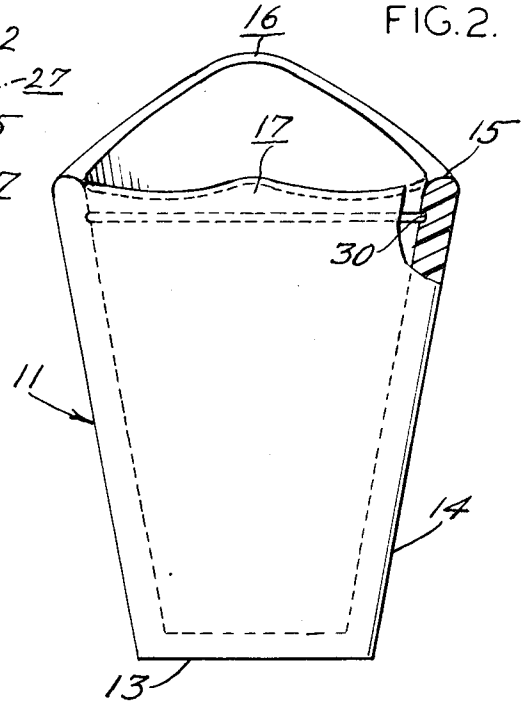


FIG. 5.

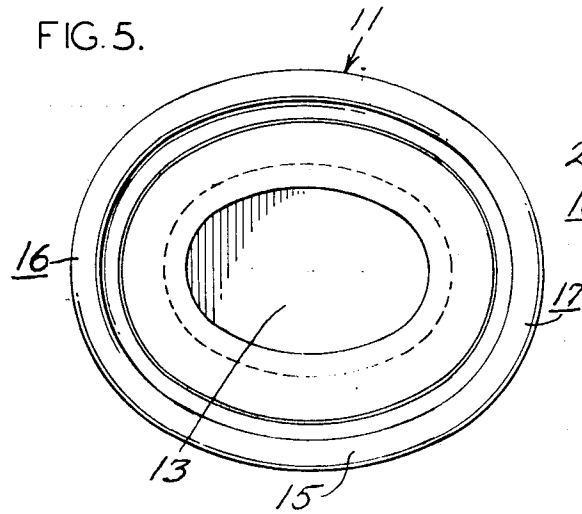
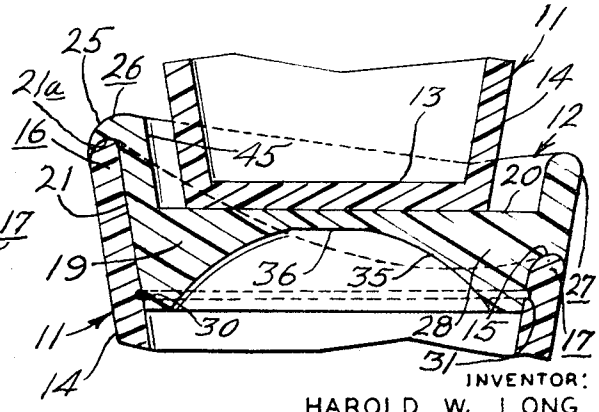


FIG. 6.



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FIG. 9.

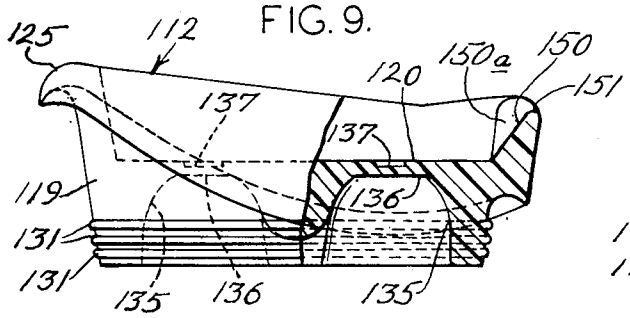


FIG. 10.

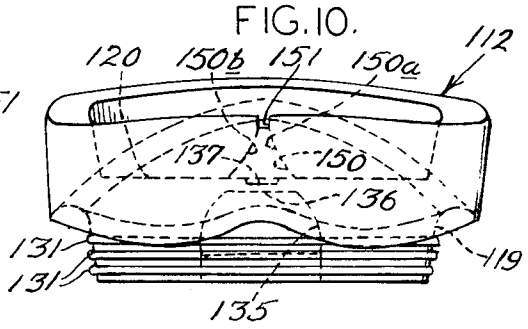


FIG. 7.

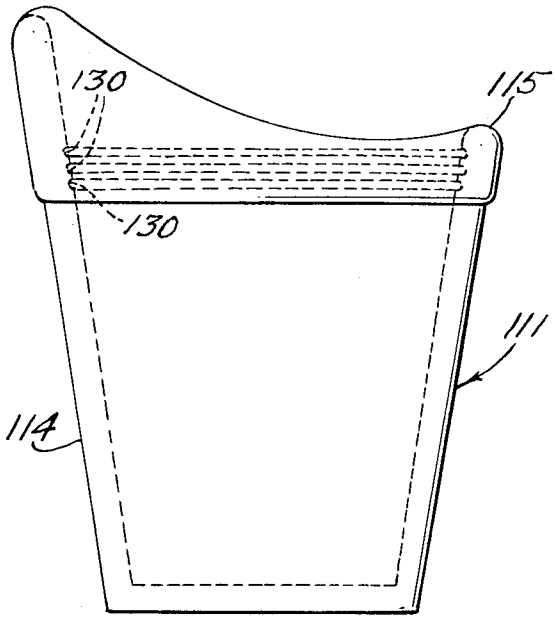
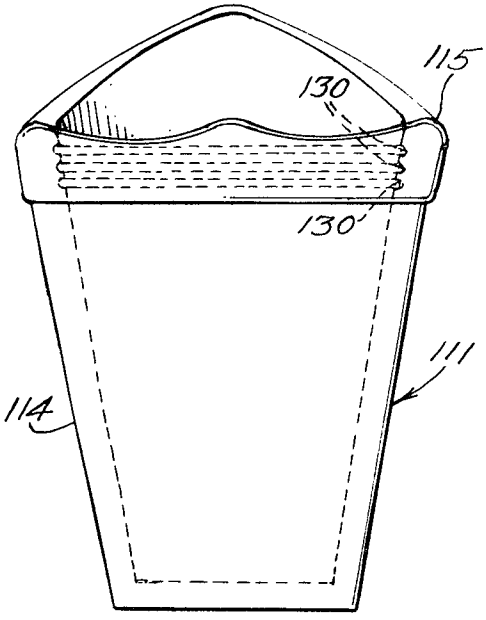


FIG. 8.



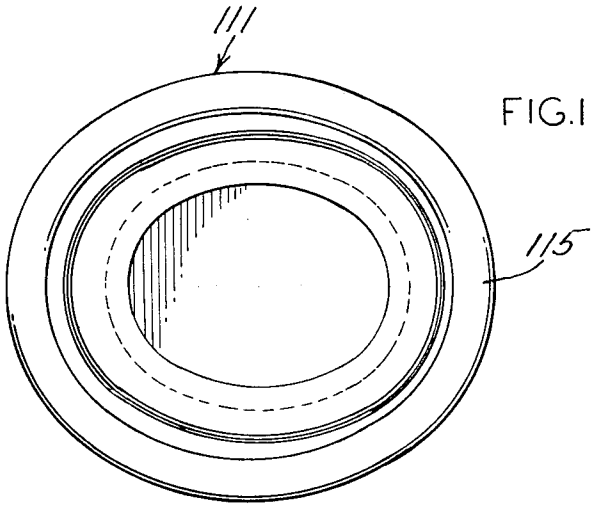


FIG. 11.

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CONTAINER STRUCTURE

The present invention relates to containers which are particularly adapted for use in collecting specimens of human waste and for containing the specimens to enable them to be transported without spillage.

At present, specimens of urine are collected for urinalysis purposes in hospitals, laboratories and doctors' offices. In serving large numbers of patients, it is not uncommon for laboratory personnel to collect a correspondingly large number of urine specimens per day. At present, open-top paper cups, beakers, or other containers, are customarily used for this purpose. Depending on the laboratory staffing, it is possible that many specimens may not receive immediate processing and, unless adequately covered, the specimens tend to emit an unpleasant odor. Also, it is to be noted that the aforementioned types of containers may readily spill their contents if accidentally bumped or if jostled during their transportation in and about hospital and laboratory facilities.

Specimen collectors have been proposed having openings which are shaped to engage against the female anatomy for use by females in collecting specimens. Examples of collectors of this type are disclosed in U.S. Pat. Nos. 3,329,973; 3,473,172; and 2,734,198. None of these patents, however, discloses a collector having a removable lid. Thus, even if these collectors were employed to contain specimens for urinalysis purposes, their lack of suitable cover means may cause unpleasant, if not unsanitary, laboratory conditions.

A covered receptacle for collecting and containing a urine specimen is disclosed in U.S. Pat. No. 3,172,130; however, this type of collector does not provide all the advantages of the shaped opening and the closure is not sealed. The cover is hinged to the collector, and, in order for the specimen to be withdrawn from the receptacle, the lid must be raised by laboratory personnel. Not only does the removal of the cover increase the possibility of spilling the contents, but it also increases the possibility of contamination of the specimen or of the personnel by disease germs around the receptacle opening.

With the foregoing in mind, it is a primary object of the present invention to provide an improved container for collecting a specimen of urine from a human female and containing the specimen in a manner which prevents the escape of odors therefrom and which enables the specimen to be transported without spillage.

It is a further object of the present invention to provide a feminine urine specimen collector having a contoured opening with a unique lid which provides both a sanitary closure for the collector, and the possibility for stacking the covered containers one upon the other.

As a still further object, the present invention provides a novel removable lid for a specimen collector which provides a sealed closure for the collector but which may be punctured to permit a portion of the specimen to be withdrawn by a pipette without the necessity of removing the lid.

It is a further object of the present invention to provide a new fluid container having a frangible lid with a shaped pour spout which permits contents of the container to be poured therefrom without prior removal of the lid.

More specifically, the present invention provides a container having a body having an upstanding sidewall with a shaped terminus which is adapted to engage the female pubic region and receive the labial portion of the genitalia within its opening. A removable lid is provided for closing the opening, the lid being telescopically received in the container opening and having a peripheral flange which is shaped to engage over the sidewall terminus. Sealing means is provided on the inner periphery of the lid to prevent the escape of odors from the container when the lid is in position. In one embodiment, the lid is formed of frangible material and has a downwardly concave recess forming a thin wall section which is readily punctured by means of a pipette to permit withdrawal of a specimen contained therein. In another embodiment, the frangible lid is provided with a pair of downwardly concave recesses forming pierceable thin wall sections, and a pour spout is provided adjacent one of the thin wall sections to enable the specimen to be poured from the container without prior removal of the lid. The lid also has in its top side a central upwardly opening recess with a flat bottom to permit a series of the containers to be stacked vertically.

These and other objects, features and advantages of the present invention should become apparent from the following description when taken in conjunction with the accompanying drawings in which:

FIG. 1 is a side elevational view of the body of a container embodying the present invention with a portion broken away, and showing in broken lines a fragment of a lid engaged thereon;

FIG. 2 is a rear elevational view of the container body of FIG. 1 having another portion broken away;

FIG. 3 is a side elevational view of the removable lid adapted to be mounted on the container body of FIG. 1 and having a portion broken away;

FIG. 4 is a rear elevational view of the lid of FIG. 3 and having another portion broken away;

FIG. 5 is a plan view of the container of FIG. 1;

FIG. 6 is a fragmentary, longitudinal sectional view illustrating the container of the present invention with its lid in position and illustrating the bottom of a like container stacked on the lid;

FIGS. 7 and 8 are elevational views, similar to FIGS. 1 and 2, of a modified container body embodying the present invention;

FIGS. 9 and 10 are elevational views, similar to FIGS. 3 and 4, of a modified lid for use with the container bodies illustrated in FIGS. 7 and 8; and

FIG. 11 is a plan view of the modified container body of FIGS. 7–10.

Referring now to the drawings, there is illustrated in FIGS. 1–6 a container body 11 for collecting a urine specimen and a lid 12 for covering the open end of the container body. As may be seen in FIGS. 1 and 5, the container body 11 has a flat elliptical bottom 13 surrounded by an upstanding sidewall 14 which is integral therewith. In the present instance the sidewall is continuously arcuate, and the upper end of the sidewall 14 terminates in an upwardly concave curvilinear edge or terminus 15 which is rounded and shaped to engage female pubic region intermediate its anterior end 16 and its posterior end 17. The container body 11, and hence its edge 15, is sized to receive the labial portion of female genitalia when the edge 15 is engaged against the female anatomy laterally of the labial folds. However, in order to enable the width of the opening to be varied, depending upon the users's anatomy, the oval outline of the sidewall 14 is resiliently flexible inwardly and outwardly adjacent the opening. Thus, the user may vary the dimensions of the container opening by applying inward pressure on opposite sides of the sidewall 14.

In accordance with the present invention, the lid is mounted on the open end of the container body 11, as illustrated in FIG. 6, for effecting a sanitary closure thereacross. As may be seen in FIGS. 3 and 4, the lid 12 is of one-piece molded construction, having a plug portion 19 comprising a bottom wall 20 surrounded by an upstanding sidewall portion 21 which tapers upwardly and outwardly and which matingly engages the like-shaped tapered sidewall 14 of the container 11. The plug portion 19 is telescopically received in the open end of the container body, and in order to provide a sanitary closure, the lid 12 has a peripheral flange 25 which engages over the edge 15. In the present instance, the flange 25 extends outwardly from the tapered wall portion 21 and has a downwardly concave, rounded peripheral recess 21*a* shaped to mate with the edge 15. Thus, when the lid is positioned on the receptacle as illustrated in FIG. 6, the edge 15 of the container 11 is completely covered. As a result, it is impossible for the edge 15 to be contacted, for example, by the hands of a laboratory technician. Also, it is to be noted that the posterior end 27 of the lid 12 which engages the corresponding end 17 of the container 11 forms a smooth upward continuation of the outer

surface of the container sidewall **14**, extending upwardly to an elevation substantially equal to its anterior end **26**. With this structure, a technician may disengage the lid **12** from the container **11** by displacing the posterior end **27** of the lid **12** in an upward direction.

As noted heretofore, there is a tendency for urine specimens in uncovered containers to emit unpleasant odors. This undesirable and possibly unsanitary condition is eliminated by the present invention which provides sealing means between the container **11** and lid **12** to thereby prevent odors from being emitted. To this end, a groove **30** (FIG. 1) is provided on the inside of the sidewall **14** of the container **11** adjacent its opening, and a bead **31** (FIG. 3) is provided on the outside of the wall **21** of the lid **12** for mating in the groove **30**. In the present instance, the container **11** and the lid **12** are formed of resilient materials. Thus, the bead **31** being somewhat resilient permits the lid **12** to be displaced downwardly into the open end of the container **11** until the bead **31** engages in the groove **30** and thereby effects an interlock between the container **11** and its lid **12**. With this structure, a secure and odortight connection is provided between the container and its lid, and the connection is sufficiently secure to prevent inadvertent disengagement of the lid from the container and spillage of its contents, for example, should the container be knocked over or jostled while being transported.

In accordance with another object of the present invention, the lid **12** is constructed to permit withdrawal of the specimen from the container body without its prior removal. For this purpose, the wall portion **20** of the lid **12** has downwardly concave recess **35** forming a thin wall section **36** centrally of the lid **12**. In addition, the lid **12**, and the container body **11**, is preferably formed of polymeric frangible material, for example polyurethane or polystyrene. Thus, a laboratory technician may withdraw a portion of the specimen in the container by displacing a pipette downwardly to pierce through the wall section **36** and thereafter manipulate the pipette in the customary manner.

In order to enable the receptacles to be stacked vertically, the wall portion **20** of the lid **12** is spaced downwardly from the flange **25** around the rim of the lid to form an upwardly open depression or recess **45** for receiving the bottom portion of an identical container. As may be seen in FIG. **6**, the recess **45** is larger than the container bottom **13**, and the flat top surface of the wall **20** extends substantially parallel to the bottom **13** of the container **11**, so that it is horizontal when the container is resting on a horizontal surface. Although the central section of the lid **12** is weakened by the recess **45**, a thickened section **28** adjacent the inside of the container sidewall **14** provides additional material which is resistant to downward shear stresses applied on the lid **12** when a series of filled containers are stacked thereon.

In a modified embodiment of the present invention, a container (FIGS. 7 to 11) is provided which permits a small sample of the specimen to be withdrawn by means of a pipette, and which permits a larger sample of the specimen to be poured therefrom when such sample is desired. To this end, the container body **111** is like the container body **11**, except for the thickened upper portion of the sidewall around the opening which protrudes outwardly from the plane of the sidewall to reinforce the container in the zone of the opening and to provide a handgrip in addition to a larger body-engaging edge **115**. Like the aforementioned embodiment, the container **111** is provided with a lid **112** having a plug portion **119** with a plurality, in the present instance two, downwardly concave recesses **135, 135** on its underside, forming a like number of frangible thin wall sections **136, 136** spaced apart in the transverse wall portion **120**. On the upper side, the locations of the sections **136, 136** are identified by suitable indicia, in the present case indentations **137, 137** in the flat wall **120**. The posterior end of the lid **112** is provided with a channel **150** formed by converging walls **150*a*** and **150*b*** extending upwardly from the top surface of the wall portion **120** and terminating in a notch **151**. With this structure, a large volumetric portion of the specimen may be poured from the container **111** without prior removal of the lid **112** after both wall sections **136, 136** have been punctured and the container is tipped rearwardly. If desired, however, a smaller volumetric portion of the specimen may be withdrawn from the container **111** when a pipette is displaced downwardly through one or the other of the weakened wall sections and is manipulated in the usual manner. As in the first-mentioned embodiment, the modified container **111** has sealing means which, in the present instance, comprises a series of three resilient peripheral beads **131, 131** engaging in a like number of grooves **130, 130** in the inside of the container sidewall **114** adjacent its opening. In addition, the underside of the peripheral flange **125** on the lid **112** is recessed to engage around the upper edge **115** of the sidewall of the container. Thus, a secure and odorproof container closure is provided.

It is to be noted that the enlarged shoulder forming the handgrip and illustrated in the modified embodiment may, if desired, be provided on the embodiments of the container body illustrated in FIGS. **1–2**; or, the series of sealing beads and grooves on the modified embodiment may be provided on the FIGS. **1–2** container body embodiments. Conversely, the modified embodiment may be provided with the thinner shoulder or the single sealing bead and groove of the FIGS. **1–2** container body embodiment. Thus, one or more of the aforementioned structural features may be interchanged without departing from the present invention.

In view of the foregoing, it should be apparent that a novel container has now been provided for collecting and containing specimens of female urine in a manner which limits the possibility of contamination, which is sanitary and which prevents the emission of unpleasant odors and possibility of spillage during transportation.

While many materials may be used to form the container body and lid, it is preferred to use a foamed urethane or polystyrene composition which can be molded to desired form, is resistant to the chemical action of the specimen, and yet is lightweight and sufficiently resilient and flexible to provide a tight seal and to conform to the pubic region of the anatomy. Although the container disclosed herein is particularly suited for collecting and containing specimens of human female urine, it may also be used to collect other types of human excretions including feces and sputum and contain such specimens in a sanitary manner.

While preferred embodiments of the present invention have been described in detail, various modifications, alterations or changes may be made without departing from the spirit and scope of the present invention as defined in the appended claims.

What is claimed is:

1. A container comprising a body having a bottom and upstanding sidewall means surrounding said bottom, said sidewall means terminating in an edge forming an opening at one end of said container body, said edge having an anterior portion and a posterior portion and sloping downwardly from said anterior portion to dispose said posterior portion at a lower elevation, said edge being shaped to engage against the female pubic region and receive the labial portion of the genitalia inwardly of said opening, and a lid removably mounted on the open end of said container body for closing said opening, said lid having a peripheral flange shaped to conform to and engage around said edge, said lid having a plug portion telescopically received in the open end of said container, and sealing means on said plug portion and the inside of said sidewall for securely mounting said lid to said container.

2. A container according to claim **1** wherein the bottom of said container body is substantially elliptical and said sidewall means is resiliently deformable inwardly in the zone of said opening.

3. A container according to claim **1** wherein the sidewall means of said container body has a thickened portion sur-

rounding said opening and protruding from the sidewall portion therebelow to reinforce said container body in the zone of its opening and to provide a handgrip therearound.

4. A container according to claim 1 wherein the plug portion of said lid has a transverse wall extending substantially parallel to the bottom of said container and a sidewall surrounding said transverse wall, said transverse wall operable to support the bottom of a like container body for stacking.

5. A container according to claim 4 wherein said transverse wall is disposed below the level of said flange, whereby said lid sidewall cooperates with said transverse wall to form a depression.

6. A container according to claim 1 wherein said sealing means includes at least one protruding rib and a mating groove for receiving said rib disposed on the confronting surfaces of said lid and said container body, thereby securing said lid to said container body and sealing said opening.

7. A container according to claim 1 wherein at least said container body is of molded polymeric construction.

8. A container comprising a body having a bottom and upstanding sidewall means surrounding said bottom, said sidewall means terminating in an edge forming an opening at one end of said container body, said edge being shaped to engage against the female pubic region and receive the labial portion of the genitalia inwardly of said opening, and a lid removably mounted on the open end of said container body for closing said opening, said lid having a peripheral flange shaped to conform to and engage around said edge, a plug portion telescopically received in the open end of said container, and sealing means for securely mounting said lid to said container, the plug portion of said lid having a transverse wall extending substantially parallel to the bottom of said container and a sidewall surrounding said transverse wall, said transverse wall operable to support the bottom of a like container body for stacking and said transverse wall having recess means forming at least one frangible thin wall section in the plug portion of said lid.

9. A container according to claim 8 wherein the transverse wall is substantially flat on its upper surface and said recess means includes a downwardly concave recess in the lower surface of said transverse wall.

10. A container comprising a body having a bottom and upstanding sidewall means surrounding said bottom, said sidewall means terminating in an edge forming an opening at one end of said container body, said edge being shaped to engage against the female pubic region and receive the labial portion of the genitalia inwardly of said opening, and a lid removably mounted on the open end of said container body for closing said opening, said lid having a peripheral flange shaped to conform to and engage around said edge, a plug portion telescopically received in the open end of said container, and sealing means for securely mounting said lid to said container, the body-engaging edge of said container body sloping downwardly from its anterior end to its posterior end to dispose its posterior end at a lower elevation, and the posterior end of said lid projecting upwardly from the edge of said container body to substantially the same elevation as its anterior end to enable the lid to be disengaged from the container body upon the application upward and inward pressure on its posterior end.

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