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**Administration**

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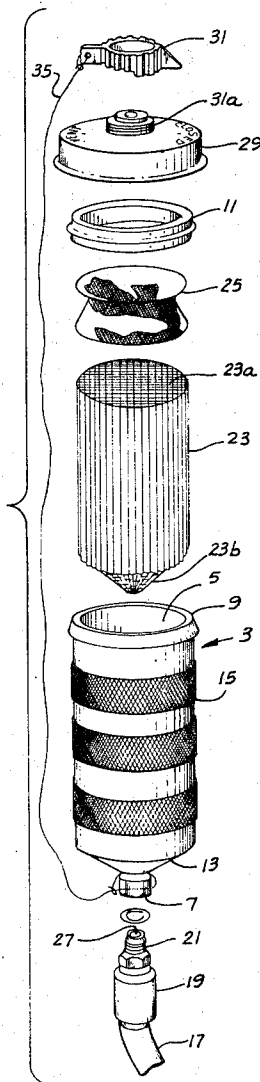
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[54] **OPEN-TYPE URINE RECEPTACLE**  
**7 Claims, 2 Drawing Figs.**

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 [51] Int. Cl. .... **E03d 13/00**  
 [50] Field of Search ..... 4/10, 99,  
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**ABSTRACT:** An open-type urine receptacle comprising a tubular housing having an inlet end and an outlet end. Disposed within the housing is a honeycomb insert for polarizing the urine stream in order to eliminate splashback. Supported on the honeycomb insert and at one end thereof is a fine mesh screen insert adapted to serve as a wicking means upon completion of micturition. A receptacle cover is also provided for covering the open end of the housing and a vacuum removal tube is connected to the other end and in fluid communication with the interior thereof.



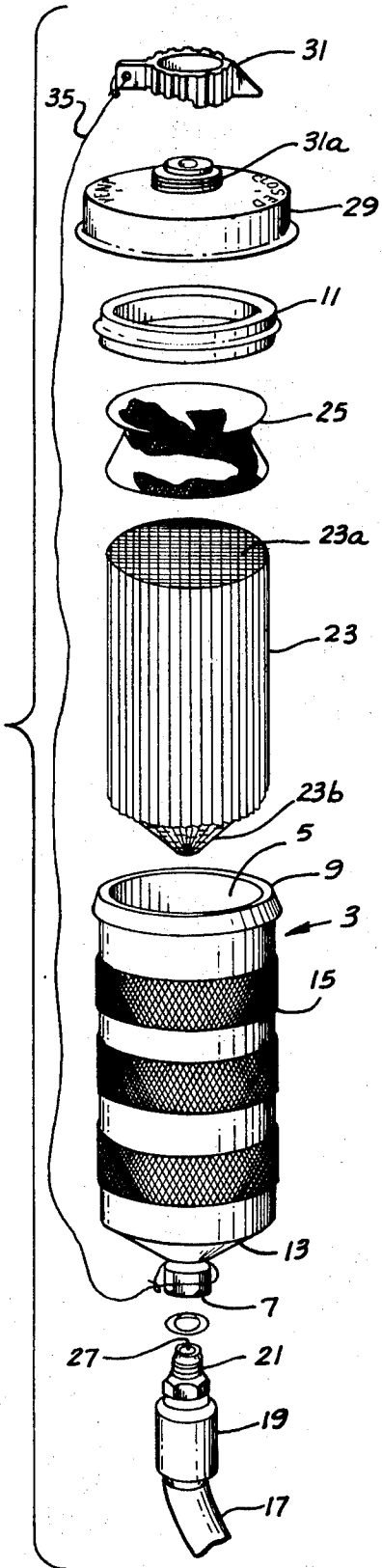


Fig. 1

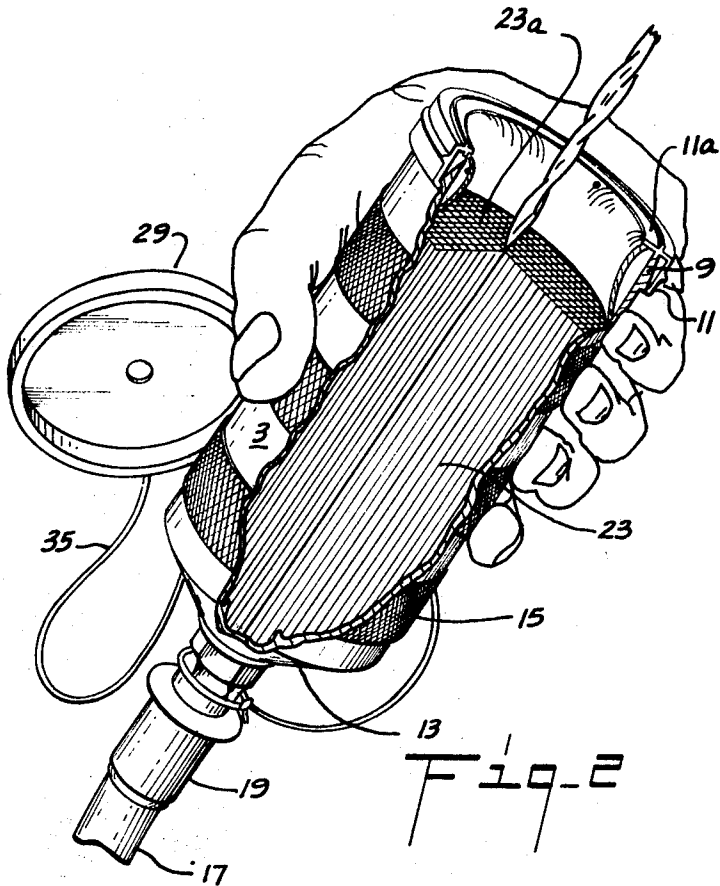


Fig. 2

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## OPEN-TYPE URINE RECEPTACLE

### ORIGIN OF THE INVENTION

The invention described herein was made by an employee of the United States Government and may be manufactured and used by or for the government for governmental purposes without the payment of any royalty thereon or therefor.

### BACKGROUND OF THE INVENTION

The present invention relates to a urine receptacle for use in micturition. More particularly the invention is directed to an improved open-type urine receptacle for micturition in a zero-gravity environment.

Existing urine receptacles either are in the form of a penis cuff which is adapted to circumferentially contact the penis in order to permit urination or are of the open type such as the conventional relief tube wherein no direct contact between the receptacle and the penis is made. Both are characterized by numerous problems. The penis cuff, for example, is objectionable because intimate contact is unsanitary and uncomfortable. Also, the cuff becomes soiled, sticky, and odorous and is therefore generally a disagreeable implement. Known open-type receptacles are similarly unsatisfactory. Unless such receptacles are accompanied by the transfer of extremely large volumes of air through the unit, they fail to reasonably accomplish their function, and also are characterized by a soiled, odorous and generally esthetically displeasing appearance.

### SUMMARY OF THE INVENTION

The instant invention is believed to obviate all of the aforementioned objections and disadvantages characterizing prior art urine receptacle devices. The invention overcomes the unsanitary and uncomfortable characteristics of the cuff-type device and at the same time eliminates the ineffectiveness and esthetically unpleasant nature of the known open-type receptacles. Briefly, the invention contemplates the utilization of an open-ended tubular housing in which there is placed a first insert of honeycomb-type construction and a second insert of fine mesh screen construction. The honeycomb insert serves to polarize the urine stream so as to eliminate splashback while the mesh screen insert is adapted to provide a wicking means upon completion of micturition. The entire structure is generally connected to a flexible withdrawal tube and therefore it may be stably supported on a wall or the like, or it may be portably moved depending upon the environment. In either case, there is provided an open-type urine receptacle having structures to effectively retain the urine stream and to obviate splashback and other unsanitary characteristics. With this structure, the discomfort of the cuff-type device, the splashback of the open-type device, and the hygienic and esthetic objections to both types of devices are substantially eliminated.

Numerous features and advantages in addition to those set forth will become apparent upon a reading of the following detailed description, claims and drawings in which:

FIG. 1 illustrates the components of the open-type urine receptacle of the invention in operational but exploded relationship to one another.

FIG. 2 illustrates in partial cutaway, the operational position of the assembled urine receptacle of the invention.

With reference now to FIG. 1, there is shown the urine receptacle housing 3 consisting of an elongate cylindrical body having an entry end 5 and an exit end 7. The entry end 5 is characterized by an integral externally protruding flange 9 which is adapted to receive the Teflon retainer and sealing ring 11 thereover. As best shown in FIG. 2, the ring 11 firmly engages the circumferential flange 9. Intermediate the exit end 7 and the housing 3 is the end wall 13, conically shaped in order to effectively direct the urine through the exit and the attached removal line noted hereafter. The external surface of

housing 3 is characterized by knurled circumferential areas 15 in order to facilitate handling and to prevent accidental slippage on the otherwise smooth surface. The housing is detachably connected to the removal line 17 by means of a connector 19 having threaded male end 21 which is adapted to be inserted into the exit end 7 of the housing. An appropriate O-ring or the like (not numbered) may be used at this connection in order to insure against leakage.

In order to polarize the urine stream so as to avoid splashback, there is provided the honeycomb insert 23 which is characterized by numerous honeycomb channels 23a extending the length of the insert. An end 23b of the insert is conically shaped in order to conform to the end wall 13 of housing 3. As shown in FIG. 2 the insert is slipped into the housing through the entry end 5 so that the honeycomb channels present their full surface area to the incoming urinal stream. The increased surface area presented to the stream not only eliminates splashback, but also improves capillary action so as to thereby act as a reservoir and to reduce residual dripping.

Also there is provided a fine mesh screen insert 25 which is adapted to be disposed internally of the housing through the entry end 5 and in abutting relationship to honeycomb insert 23. The screen insert 25, which may be made of oxidized stainless steel, is adapted to function as a wicking means by the user for remaining droplets of urine. As shown in FIG. 2, both the honeycomb insert 23 and the screen insert 25 are fixedly positioned within the housing 3 by the interior flange 11a of retainer and seal ring 11 when the latter is engaged over the housing flange 9.

Operationally it is intended that the urine receptacle shall be connected to the withdrawal line 17 which communicates with a vacuum environment. The withdrawal line is connected to the vacuum environment through an 0.055-inch diameter orifice at the urine-dump nozzle on the spacecraft (not shown). Prior to use the receptacle cover 29 is removed from its frictional engagement with the retainer and seal ring 11 in order to expose the screen insert 25 and the open end of the honeycomb channels 23a. When not in use the receptacle cover is positioned over the entry end so as to engage the flange 9. As noted above, the interior of the housing 3 is subjected to a vacuum when not in use in order to dry it and withdraw urine therefrom. Therefore, in order to facilitate removal of the receptacle cover prior to use there is provided a simple valve mechanism generally illustrated by the knob 31 which is threaded onto housing head 31a. Rotation of the knob 31 opens a minute vent in the housing head so as to relieve the housing external pressure and thus facilitate removal of cover 29. The receptacle cover 29 and its cooperating knob 31 may be tied to the housing in any appropriate manner such as by cord 35.

While there is shown here only a single embodiment of the present invention, it will be readily recognized that various modifications, and changes may be made therein within the scope of the appended claims without departing from the spirit of the invention.

That which is claimed and desired to be secured by United States Letters Patent is:

1. An open-type urine receptacle for receiving and conveying urine comprising:

a vented housing having urine entry and exit ends, stream-polarizing means operatively associated with said housing for preventing splashback of a urine stream directed thereinto, said stream-polarizing means constitutes an elongated structure characterized by a plurality of adjacent longitudinal channels having the ends thereof being exposed at said entry end of the housing.

2. The open-type urine receptacle of claim 1 wherein said housing-exit end is in fluid communication with a vacuum urine-withdrawal line for removing urine, said urine-entry end is adapted to receive in covering relation thereover a closure means, and

closure means for covering the entry end of said housing when not in use so as to enhance withdrawal of urine from and drying of the housing interior.

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3. The urine receptacle of claim 1 wherein said stream-polarizing means constitutes a honeycomb structure characterized by a plurality of adjacent honeycomb channels.

4. The urine receptacle of claim 2 wherein wicking means are disposed adjacent to said polarizing means at the entry end of the housing. 5

5. The urine receptacle of claim 4 wherein said stream-polarizing means constitutes a honeycomb structure characterized by a plurality of adjacent honeycomb channels having the ends thereof being exposed at the entry end of said housing. 10

6. The urine receptacle means of claim 2 wherein said closure means is characterized by a vent means for relieving the vacuum in the housing prior to use so as to facilitate removal of the closure.

7. The urine receptacle of claim 1 wherein said urine exit end is of conical configuration so as to enhance removal of urine by drawing it to the apex thereof where a vacuum urine-withdrawal line is connected in fluid communication therewith.

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