

Urinal Apparatus

Summary of the Invention

5 The present invention relates to an apparatus for a waterless or low water usage urinal.

Background to the Invention

10 In recent years there has been a growing recognition of the cost of supplying water to, and dealing with waste water from, buildings. In some territories and/or organisations there has been a drive to reduce water consumption. A significant source of water consumption for a building, such as an office block or a shopping centre, is waste water from flushable urinals.

15 Water consumption can be significantly reduced in such a building if flushable urinals are replaced with "waterless" or low water usage urinals. A waterless urinal is a urinal which requires no flushing and may include a specially designed trap which utilises urine to form a liquid seal to prevent back odours from the soil stack being emitted through the urinal. Other waterless urinals may feature oil filled traps or non-return valves which do not rely on a liquid based seal.

20 Conventional waterless urinals include a disposable cartridge which contains a consumable de-odouriser. The de-odouriser gives off an odour which masks the smell of the urine contained within the trap. The physical size of the de-odouriser reduces through contact with air and urine, and the cartridges are replaced periodically as part of a maintenance schedule. There are
25 problems associated with such a regime however; for example, where there is more than one urinal, the time period between cartridge changes is determined by the requirements of the urinal which is used most heavily as the consumable de-odouriser in this urinal will be consumed most quickly. In such a situation, the cartridges of other urinals in the same toilet may be
30 replaced unnecessarily if they are changed as part of the periodic maintenance. Furthermore, when the cartridge is changed there is a significant amount of material which has to be disposed of.

Summary of the Invention

According to a first aspect of the present invention there is provided an apparatus for a waterless urinal, the apparatus comprising:

5 a housing defining a chamber for receiving a consumable de-odoriser, the housing including an access device to permit access to the chamber for allowing replacement of the consumable de-odoriser.

10 Providing an apparatus which permits replacement of the consumable de-odoriser permits the apparatus to be reused once the de-odoriser has depleted. Such an arrangement may also permit a new consumable de-odoriser to be inserted on top of or besides an existing but not fully depleted consumable de-odoriser. This arrangement has the advantage that it is not necessary to wait until the consumable de-odoriser has been fully used before inserting a new de-odoriser.

15 The term "de-odoriser" is used to indicate any material which can be used to mask a smell from the urinal. It can also be used to refer to cleaning materials, or colouring materials.

20 In one embodiment, the access device comprises a first housing portion and a second housing portion, the first and second portions being connected such that moving the first portion with respect to the second portion permits access to the chamber.

Preferably, the access device permits repeated access to the chamber. Repeated access permits the apparatus to be used repeatedly.

25 Preferably, the first portion is movable with respect to the second portion between a closed configuration in which the chamber is closed, and an open configuration in which the chamber is accessible. By closed it is meant the apparatus is ready for use. Being able to close the chamber and, in some cases, seal the chamber, allows the consumable de-odoriser to be hidden from view.

30 Preferably, in the closed configuration, the first portion is adapted to be fixed relative to the second portion.

Most preferably, in the closed configuration, the first portion is adapted to be locked relative to the second portion.

The first portion may be connected to the second portion by means of a threaded connection.

In one alternative, the first portion is connected to the second portion by a bayonet type fitting.

In a further alternative, the first and second portions have an interference connection.

5 In a still further alternative, the first portion is connected to the second portion by a pivot connection.

Preferably, the pivot connection is a hinge, though any form of connection is suitable which permits the first and second portions to be separated sufficiently to permit access to the consumable de-odouriser chamber.

10

In another embodiment, the access device comprises a port permitting access to the chamber.

Preferably, the port is normally closed.

Most preferably, the port is normally closed and sealed.

15 Preferably, the port is opened by the application of a force.

Preferably, the port comprises a port cover.

Preferably, the port is opened by the application of a force to the port cover.

Preferably, the port cover is movable between a closed position in which the port is covered to an open position in which the port is uncovered.

20

Preferably, in the open position, the chamber can be accessed.

Preferably, the port cover is biased to the closed position.

Preferably, the port is adapted to be moved to the open configuration by a de-odouriser feed device.

25 Preferably, the feed device is an injection nozzle. Having the apparatus adapted to be fed through an injection nozzle permits the de-odouriser to be injected through, for example, a gun type arrangement which eliminates the need for the user to touch the urinal.

In one embodiment, the port cover comprises first and second doors.

30 The doors may be pivotally mounted to the housing.

In another embodiment, the port cover comprises a series of overlapping leaves.

In a further embodiment, the port cover defines a self-sealing access aperture.

In this further embodiment, the port cover may be polymeric.

Preferably, the apparatus further comprises a consumable level indicator.

5 Preferably, the consumable level indicator comprises a chamber viewing device.

Preferably, the chamber viewing device is a window defined by the housing.

In one embodiment, the port also serves as the chamber viewing device.

10 In one this embodiment, the port cover may be transparent.

The consumable level indicator may comprise a change of at least one of the physical dimensions of the apparatus as the consumable level decreases. For example, the apparatus height may reduce as the consumable is consumed.

15 Preferably, the apparatus is biased to change one or more of the dimensions of the apparatus as the consumable level decreases.

Alternatively, the apparatus is biased to move one of the first or second portions with respect to the other of the first or second portions as the consumable level decreases.

20 In one embodiment, the first portion rotates with respect to the second portion as the consumable decreases.

According to a second aspect of the present invention there is provided a consumable de-odouriser for a waterless urinal, the de-odouriser comprising a gel, flowable material or fluid

25 According to a third aspect of the present invention there is provided a consumable de-odouriser for a waterless urinal, the de-odouriser comprising a pellet.

According to a fourth aspect of the present invention there is provided a consumable de-odouriser for a waterless urinal, the consumable de-odouriser comprising an indicator device for indicating consumption of the de-odouriser.

30 Preferably, the indicator device comprises a portion of material of different colour to the rest of the de-odouriser. Such an arrangement permits, when used with embodiments of the apparatus for a waterless urinal of the

first aspect, a user to see when the consumable needs changing because of the change of colour of the consumable de-odoriser.

Alternatively the indicator device comprises a portion of material which changes to different colour to the rest of the de-odoriser on contact with urine.

5 This arrangement also permits, when used with embodiments of the apparatus for a waterless urinal of the first aspect, a user to see when the consumable needs changing because of the change of colour of the consumable de-odoriser.

Alternatively, the indicator comprises at plurality of portions of material, at least one of the portions adapted to colour a liquid. In certain embodiments of the invention, the consumable de-odoriser can be arranged so that, in use, as the de-odoriser depletes a change in colour of a liquid contacting the consumable can be seen.

10

Preferably, both portions of the material are adapted to colour a liquid. In such an arrangement the selected colours can provide a significant contrast as the consumable depletes.

15

It will be understood that preferred or other features of the one aspect may also be applicable to one or more of the other aspects and have not been repeated for brevity.

20

Brief Description of the Drawings

Embodiments of aspects of the invention will now be described with reference to the accompanying drawings in which:

Figure 1 is an exploded view of a urinal apparatus according to a first embodiment of the present invention;

25

Figure 2 is a longitudinal section through the apparatus of Figure 1;

Figure 3 is an exploded view of a urinal apparatus according to a second embodiment of the present invention;

Figure 4 is a longitudinal section through the urinal apparatus of Figure 3 shown complete with a consumable de-odoriser; and

30

Figure 5 is a perspective view of a first housing portion of a urinal apparatus according to a third embodiment of the present invention.

Detailed Description of the Drawings

Reference is made to Figure 1, an exploded view of a urinal apparatus, generally indicated by reference numeral 10, according to a first embodiment of the present invention, and Figure 2, a longitudinal section through the apparatus of Figure 1. The urinal apparatus 10 comprises a housing 12 defining a chamber 14 (Figure 2) adapted to receive a consumable de-odoriser 16 in the form of a torus.

The housing 12 further includes an access device 18 in the form of a threaded connection between a first housing portion 20 and a second housing portion 22. The access device 18 permits access to the chamber 14 allowing the consumable de-odoriser 16 to be replaced, or topped up, as and when required. As can be seen most clearly from Figure 2, the consumable de-odoriser 16 is supported by the second housing portion which is in the form of a grid.

The second housing portion 22 is connectable to a urinal outlet cover 24 which includes a hook shaped apparatus retainer 26, a hook portion 28 of which is adapted to releasably engage a trap (not shown) in a urinal. The retainer 26 is secured to the outlet plate 24 by a bolt 30.

In use, urine flows down the urinal walls 32 (shown in broken outline) and enters the apparatus 10 through access apertures 34 defined by the first housing portion 20. The urine exits the apparatus 10 and enters the urinal outlet 36 through holes 38 defined by the outlet plate 24. As can be seen particularly on Figure 1, there are fewer outlet plate holes 38 than there are housing access apertures 34 resulting, if there is sufficient flow of urine, in a build up of urine on the outlet plate 24. The urine builds up beneath the consumable de-odoriser 16 and comes into contact with the consumable de-odoriser 16 through apertures 40 defined by the second housing portion 22. Contact with urine increases the release of masking odours from the de-odoriser 16 to keep the urinal and the surrounding area smelling fresh.

Reference is now made to Figure 3, an exploded view of a urinal apparatus according to a second embodiment of the present invention, and Figure 4, a longitudinal section through the urinal apparatus of Figure 3 shown complete with a consumable de-odoriser. Many of the features of the first

embodiment are common to the second embodiment. These common features are referenced on the second embodiment incremented by 100.

5 The access device 118 in this apparatus 110 is provided by a bayonet type fitting. A pin 150 (Figure 4) extending inwardly from an internal surface of the first housing portion 120 engages a slot 152 (Figure 3) defined by the second housing portion 122. To assemble the apparatus 110, the first housing portion 120 is aligned with the second housing portion 122 such that the pin 150 enters the slot 152. The apparatus 110 is then assembled by a push and twist action.

10 In this embodiment, the consumable de-odoriser 116 is supported by a grid 154 which is separate from the second housing portion 122. The second housing portion 122 defines a number of detentes 156 adapted to receive the de-odoriser support grid 154.

15 Figure 5 is a perspective view of a first housing portion 212 of a urinal apparatus 210 according to a third embodiment of the present invention. Common features of the third embodiment to those of the first embodiment are incremented by 200. The first portion 212 is suitable for use in place of the first housing portion 112 of Figures 3 and 4.

20 The first housing portion 212 includes an access device 218 in the form of a port 260 for providing access to the internal chamber (not shown). A port 260 of this type permits a consumable de-odoriser to be injected into the chamber. The consumable de-odoriser (not shown) in this case would be in the form of a thick gel or pellets. The consumable de-odoriser is dispensed through the port 260 by dispenser having a feed nozzle (not shown)

25 The port 260 is sealed by a clear polymeric cover 262 which defines an access hole 264. The chamber is filled by applying a pressure to the cover 262 by the end of the dispensing nozzle. If sufficient pressure is applied the hole 264 in the polymeric cover 262 is forced open permitting the de-odoriser to be dispensed.

30 The transparent port cover 262 also serves as a window into the chamber, permitting the level of de-odoriser within the chamber to be assessed without having to be dismantled.

Various modifications and improvements can be made to the above described embodiments without departing from the scope of the present

invention. For example, although the port 260 is described as being part of a first housing portion, the port 260 could be provided in a conventional single piece apparatus which is not intended for being separated.

CLAIMS

1. An apparatus for a waterless urinal, the apparatus comprising:
a housing defining a chamber for receiving a consumable de-odoriser,
5 the housing including an access device to permit access to the chamber for
allowing replacement of the consumable de-odoriser.
2. An apparatus according to claim 1, configured to permit a new
consumable de-odoriser to be inserted on top of or besides an existing but not
10 fully depleted consumable de-odoriser.
3. An apparatus according to claim 1 or 2, wherein the de-odoriser is at
least one of: a material which can be used to mask a smell from a urinal; a
cleaning material; and colouring materials.
15
4. An apparatus according to any preceding claim, wherein the access
device is configured to permit repeated access to the chamber.
5. An apparatus according to any preceding claim, wherein the access
20 device comprises a first housing portion and a second housing portion, the
first and second portions being connected such that moving the first portion
with respect to the second portion permits access to the chamber.
6. An apparatus according to claim 5 wherein the first portion is movable
25 with respect to the second portion between a closed configuration in which the

chamber is closed, and an open configuration in which the chamber is accessible.

5 7. An apparatus according to claim 6 wherein in a closed configuration the chamber sealed.

8. An apparatus according to claim 6 or 7, wherein in a closed configuration the chamber is configured such that a consumable de-odoriser is hidden from view.

10

9. An apparatus according to any of the claims 5 to 8, wherein in the closed configuration, the first portion is adapted to be fixed relative to the second portion.

15

10. An apparatus according to claim 9 wherein, in the closed configuration, the first portion is adapted to be locked relative to the second portion.

20

11. An apparatus according to any of the claims 5 to 10 wherein the first portion is connected to the second portion by means of a threaded connection.

12. An apparatus according to any of the claims 5 to 10 wherein the first portion is connected to the second portion by a bayonet type fitting.

13. An apparatus according to any of the claims 5 to 10 wherein the first and second portions have an interference connection.
14. An apparatus according to any of the claims 5 to 10 wherein the first
5 portion is connected to the second portion by a pivot connection.
15. An apparatus according to claim 14 wherein the pivot connection is a hinge.
- 10 16. An apparatus according to any of the claims 1 to 4, wherein the access device comprises a port permitting access to the chamber.
17. An apparatus according to claim 16 wherein the port is normally closed.
- 15 18. An apparatus according to claim 17 wherein the port is normally closed and sealed.
19. An apparatus according to any of the claims 16 to 18 wherein the port
20 is opened by the application of a force.
20. An apparatus according to any of the claims 16 to 19 wherein the port comprises a port cover.

21. An apparatus according to claim 20 wherein the port is opened by the application of a force to the port cover.

5 22. An apparatus according to claim 20 or 21 wherein the port cover is movable between a closed position in which the port is covered to an open position in which the port is uncovered.

23. An apparatus according to claim 22 wherein in the open position, the chamber can be accessed.

10

24. An apparatus according to claim 22 or 23 wherein the port cover is biased to the closed position.

15 25. An apparatus according to any of the claims 22 to 24 wherein the port is adapted to be moved to the open configuration by a de-odouriser feed device.

26. An apparatus according to claim 25 wherein the feed device is an injection nozzle.

20

27. An apparatus according to any of the claims 20 to 26 in which the port cover comprises first and second doors.

25 28. An apparatus according to claim 27 in which the doors are pivotally mounted to the housing.

29. An apparatus according to any of the claims 20 to 26 in which the port cover comprises a series of overlapping leaves.

5 30. An apparatus according to any of the claims 20 to 26 in which the port cover defines a self-sealing access aperture.

31. An apparatus according to claim 30 in which the port cover is polymeric.

10

32. An apparatus according to any preceding claim wherein the apparatus further comprises a consumable level indicator.

15

33. An apparatus according to claim 32 wherein the consumable level indicator comprises a chamber viewing device.

34. An apparatus according to claim 33 wherein the chamber viewing device is a window defined by the housing.

20

35. An apparatus according to claim 33 or 34, when depending upon claim 16, wherein the port also serves as the chamber viewing device.

36. An apparatus according to claim 35, when depending on claim 20, in which, the port cover is transparent.

25

37. An apparatus according to claim 32, wherein the consumable level indicator is configured to provide a change of at least one of the physical dimensions of the apparatus as the consumable level decreases.
- 5 38. An apparatus according to claim 37 wherein the apparatus height reduces as the consumable is consumed.
- 10 39. An apparatus according to any preceding claim, when depending on claim 5, wherein the apparatus is biased to move one of the first or second portions with respect to the other of the first or second portions as the consumable level decreases.
- 15 40. An apparatus according to claim 39 wherein the first portion rotates with respect to the second portion as the consumable decreases.
41. A consumable de-odoriser for a waterless urinal, the de-odoriser comprising a gel, flowable material or fluid.
- 20 42. A consumable de-odoriser for a waterless urinal, the de-odoriser comprising a pellet.
- 25 43. A consumable de-odoriser for a waterless urinal, the consumable de-odoriser comprising an indicator device for indicating consumption of the de-odoriser.

44. A consumable de-odoriser according to claim 43, wherein the indicator device comprises a portion of material of different colour to the rest of the de-odoriser.

5

45. A consumable de-odoriser according to claim 43 wherein the indicator device comprises a portion of material which changes to different colour to the rest of the de-odoriser on contact with urine.

10

46. A consumable de-odoriser according to claim 43 wherein the indicator comprises a plurality of portions of material, at least one of the portions adapted to colour a liquid.

15

47. A consumable de-odoriser according to any of the claims 43 to 46, wherein the consumable de-odoriser/indicator device is arranged so that, in use, as the de-odoriser depletes a change in colour of a liquid contacting the consumable can be seen.

20

48. A consumable de-odoriser according to claim 47 adapted to colour a liquid such that selected colours provide a significant contrast as the consumable depletes.