

A URINAL DEODORISER CARTRIDGE

Technical Field

The present invention relates generally to deodorisation and treatment of urine in urinals and, in particular, to a cartridge for such purpose.

Background

5 Both flushing urinals and waterless urinals are commonly known and used. Flushing urinals are considered costly due to water wastage and water treatment costs. Waterless urinals are increasingly popular due to decreased water consumption and wastage. Flushing urinals can be converted to waterless urinals, but at relatively high cost.

Waterless urinals generally utilize a one-way valve which opens in the presence of
10 urine to allow the urine to flow to a sewage trap. The valve then closes to prevent urine odours developing in the bathroom area. However, urine odours still commonly permeate bathrooms where waterless urinals are used. Cartridges containing disinfectant and/or scent are commonly used to mask this odour, but rarely mask the odour completely. Such cartridges are normally placed in a urinal to lie above the urinal wastehole. Urinal
15 wasteholes are not normally plugged in the manner of kitchen or bathroom sink plugholes.

Similar cartridges of disinfectant and/or scent are often used in flushing urinals for deodorising purposes. Urinal cartridges containing biological substances which break down odour-causing ammoniacal compounds in urine are also available. Such cartridges require water to flow over the biological substance in order for the biological substance to
20 dissolve and treat urine. Cartridges of this type are normally placed in a urinal to lie above or over the wastehole of the urinal. Cartridges containing any of disinfectant, scent or biological substances require frequent replacement for a flushing urinal as excess flush water dissolves the disinfectant, scent or biological substance.

The plumbing systems of both flushing and waterless urinals clog over time due
25 to a build-up of urea from the flow of urine and scale from the flow of water through the piping of the plumbing system. This can lead to costly repairs and maintenance.

A need therefore exists for cost-effective methods of deodorising and preventing clogging of plumbing systems for both flushing and waterless urinals. A further need exists for cost-effective conversion of flushing urinals to waterless urinals.

Summary

According to an aspect of the present disclosure, there is provided a urinal deodoriser cartridge assembly comprising:

an outer body sized for placement in a urinal; and

5 an insert configured for insertion into and removable retention within, the outer body, and to retain a deodorising block;

the assembly being adapted to permit contact between urinal liquids and the deodorising block by a base of the insert being positionable to contact a surface of the urinal, the base being positionable through movement of the insert within the outer body
10 whilst remaining removably retained therewithin.

There is also provided a device configured for placement in a urinal, and for retaining a urinal deodoriser cartridge assembly according to the first aspect, said device comprising:

a first section configured to retain the urinal deodoriser cartridge assembly; and

15 means of changing dimensions of the device and a position of the base of the insert of the assembly relative to the surface of the urinal; wherein

the position of the base of the insert of the assembly relative to the surface of the urinal provides contact between urinal liquids and a deodorising block of the retained assembly when the urinal is used.

20 There is also provided a device configured for placement on a surface, and for retaining an object, said device comprising:

a first section configured to retain the object; and

a second section connected to the first section comprising means of changing dimensions of the device and thereby a position of the retained object relative to the surface; wherein
25

the means of changing dimensions comprises:

at least one frangible strip provided in a wall of the second section, each frangible strip being configured such that removal thereof from the device changes the position of the retained object relative to the surface;

30 an adjustable join connecting the first and second sections, the adjustable join being configured to deform according to a force applied thereto, to (i) thereby change a position of the first section relative to the second section within the device, and (ii) break

under application of sufficient force such that the second section is separable from the first section, and the first section can be placed on the surface to change the position the retained object relative to the surface.

Other aspects are also disclosed.

5 Brief Description of the Drawings

At least one embodiment of the present invention will now be described with reference to the drawings, in which:

Fig. 1A shows a side view of a urinal deodoriser cartridge assembly;

Fig. 1B shows a bottom perspective view of the assembly of Fig. 1A;

Fig. 2A is a side view of the shell 200 of Fig. 1A;

Fig. 2B is a top view of the shell 200 of Fig. 1A;

Fig. 2C is a bottom perspective view of the shell 200 of Fig. 1A;

Fig. 2D is a bottom view of the shell 200 of Fig 1A;

Fig. 2E is a transverse cross-sectional view of the shell 200 of Fig 1A;

15 Fig. 3A is a side view of the insert 300 of Fig. 1A;

Fig. 3B is a bottom view of the insert 300 of Fig 1A;

Fig. 3C is a top view of the insert 300 of Fig. 1A;

Fig. 3D is a top perspective view of the insert 300 of Fig. 1A;

Fig. 4A is a transverse cross-sectional view of an implementation of a urinal
20 deodoriser cartridge assembly 100a placed in a urinal;

Fig. 4B is a transverse cross-sectional view of an implementation of a urinal deodoriser cartridge assembly 100b placed in a urinal;

Fig. 4C is a transverse cross-sectional view of the urinal deodoriser cartridge 100c placed in a urinal; and

25 Fig 5 is a top perspective view of an insert 300 of the urinal deodoriser cartridge assembly of Fig. 4A;

Fig. 6A is a top perspective view of an adapter device 600 for use with the assembly 100;

Fig. 6B is a bottom perspective view of the device 600:

30 Fig. 6C is a top perspective view of the core section 620 of the device 600; and

Fig. 6D is a bottom perspective view of the core section 620;

Fig. 6E is a perspective view of the device 600 with frangible strips partially removed;

Fig. 6F shows user adjusting the device 600;

Fig. 7 is the adapter device 600 retaining the assembly 100 and placed in a urinal
5 700; and

Fig. 8 shows a partial cross-sectional view of a further embodiment 600a of an adapter device in comparison with a partial cross-sectional view of the device 600.

Detailed Description including Best Mode

Where reference is made in any one or more of the accompanying drawings to
10 steps and/or features, which have the same reference numerals, those steps and/or features have for the purposes of this description the same function(s) or operation(s), unless the contrary intention appears.

Figs. 1A and 1B show urinal deodoriser cartridge assembly 100 formed of two parts – an outer body (in this implementation a shell) 200, and an insert 300. The insert 300
15 is configured to retain a deodorising block 110.

Shell 200 is a substantially hollow dome-like structure preferably manufactured of a non-corrosive plastics material such polyurethane, polyethylene, nylon or the like suitable for injection moulding. In a particular implementation, this plastics material is biodegradable such as polyester, polyanhydride or the like suitable for injection moulding.
20 The shell 200 may be formed by any of a number of manufacturing techniques including injection moulding and laser cutting, or combinations of the same.

As seen in Fig. 2A, the shell 200 has a generally spherical top portion 201 from which a plurality of members 208 extend to form a wall 203 which has a generally spherical frustum shape. The wall 203 extends to form and define an outer edge 206 of the shell 200. The members 208 are formed to extend obliquely from a base 205 of the top
25 portion 201 to the wall 203 of the shell 200. As seen in Fig. 2B, the members 208 are provided uniformly around the circumference of the top portion 201.

As seen in Fig. 2A, a number supports 204 are formed on the edge 206 of the shell 200. The supports 204 extend normal to the edge 206 such that the edge 206 stands slightly
30 above a flat surface, if the shell 200 is placed upright on the surface. The diameter of the

edge 206 is preferably sized such that the edge 206 of the shell can surround a urinal wastehole, if the shell 200 is placed upright over the urinal wastehole.

As seen in Figs. 2C and 2E, a generally cylindrical wall 210 extends downwardly from an inner surface 211 of spherical top portion 201, adjacent to the base 205 of the spherical cap 201. The cylindrical wall 210 extends to form an edge 212, preferably level
5 with the edge 206 of the shell 200 and such that edge 212 can also preferably surround a urinal wastehole, if the shell 200 is placed upright over the urinal wastehole. The spherical wall 210 has height 220 and an outer surface 213.

A plurality of ledges 214 protrude generally horizontally inwardly from the wall
10 210 as seen in Fig. 2C. The members 208 extend to join to the outer surface 213 of the cylindrical wall 210 at one end thereof. The members 208 thereby form lattice-like structure 216 connecting the wall 210 to the wall 203 and the top portion 201.

The ledges 214 are preferably distributed uniformly around the cylindrical wall 210 of the shell 200, as seen in Fig. 2D. The supports 204 are distributed uniformly around
15 the circumference of the edge 206 of the shell 200. The lattice-like structure 216, formed by the members 208, defines a number of ventilation shafts 218 between the edge 206 and the edge 212 of the shell 200. The ledges 204 are provided to allow the insert 300 to be removably retained within the shell by a loose slidable engagement with the shell, as discussed below. In further implementations, the shell 200 may have notches, slots and the
20 like provided in the wall 210 to allow the insert 300 to be similarly removably retained within said shell. In another alternative implementation, a plurality of screw-threads may be provided in the wall 210 of the shell 200 such that the insert 300 can be screwed into and past the screw threads and loosely and adjustably engaged with said shell.

Returning to Figs. 1A and 1B, the insert 300 of the assembly 100 is generally U-
25 shaped in section and preferably made of a plastics material such as polyethylene, polyurethane or the like suitable for injection moulding. The insert 300 may be formed by any of a number of manufacturing techniques including injection moulding and laser cutting, or combinations of the same. As seen in Figs. 3A and 3B, the insert 300 has a circular flat base 302 and an annular lip 304. The diameter of the base 302 is less than the
30 diameter of the lip 304, and the diameter of the base 302 is formed such that the base 302

of the insert 300 can substantially cover a urinal wastehole, as discussed later. A plurality of protrusions 306 extend outwardly from the lip 304 of the insert 300.

A wall 307 is formed between the lip 304 and the base 302 and has a section 308 that extends generally vertically from the lip 304 to an inclined section 310 that joins the base 302 and which allows for the different diameters mentioned above. The inclined section 310 may allow the insert 300 to at least partially protrude into a urinal wastehole, as discussed later. In further implementations, as seen in Figs. 4A, 4B and 5, the diameter of the base 302 and the lip 304 may be generally equal, and the wall 307 comprises a single section extending generally vertically from the lip 304 to the base 302. Such a wall may be suitable for use with large deodorising blocks.

A plurality of generally L-shaped slots 312 are formed in the insert 300. The slots 312 extend from the section 308 and into a perimeter of the base 302, as seen in Figs. 3B-3D. In various exemplary implementations, the number of the slots 312 provided may range from 2 to 12 slots.

The diameter of the lip 304 and the extent of the protrusions 306 are sized to permit limited engagement between the insert 300 and the shell 200, sufficient to hold the insert 300 loosely slidably adjustably within the shell 200. The insert 300 can be positioned by way of resilient flexibility of the plastics material from which the insert 300 is manufactured such that on insertion of the insert 300 into the shell 200, the protrusions 306 ride up and over the ledges 214. The height 305 of the insert 120 is preferably similar to, but slightly greater than, the height 220 of the wall 210 of the shell 200. The plurality of protrusions 306 provide for the resilient flexibility of the lip 304 due to the plastics material from which the insert 300 is manufactured. In other implementations, a single annular protrusion may be provided on the lip 304.

Insert 300 is normally supplied with deodorant block 110 placed inside the insert 300. In a preferred implementation, the deodorant block 110 is a bio-enzymatic substance which deodorises and biologically treats urine, and is soluble in the presence of urinal liquids including one or both of urine and water. The bio-enzymatic substance operates to reduce or eliminate urinal odours and decrease scale build-up in urinal plumbing by breaking down the composition of urea in urine.

As seen in Figs. 3C and 3D, a plurality of braces 314 protrude inwardly from the wall 307. The braces 314 are provided uniformly around the circumference of the wall 307 to provide rigidity to the wall 307, and to hold a deodorising block in place, should such a block be placed in the insert 300. The braces 314 extend to within a given distance of the base 302 such that said deodorising block will fall to lie on the base 300. Implementations of insert 300 may be provided for use with a variety of sizes of deodorising blocks by variation of the diameters of the lip 304 and the base 302, or by variation of the protrusion of the braces 314. In other implementations, the braces 314 may not be provided.

The insert 300 containing the deodorising block 110 can be positioned within the shell 200 of the assembly 100 by pushing the insert 300 into the shell 200 so that the protruding edges 306 of the insert 300 are pushed past the protruding ledges 214 of the cylindrical wall 210 of the shell 200.

Fig. 1A illustrates the insert 300 inserted into the shell 200 and hanging under gravity by the protrusions 306 resting on the ledges 214. To disengage the insert 300 from the shell 200, a user picks up and holds the shell 200 with one hand. As the insert 300 can slide down to protrude from the shell 200, the user can hold the insert 300 in the other hand, squeeze the wall 307 of the insert 300, and pull the insert 300 away from the shell 200.

The two-part structure of the assembly 100 provides for ease of assembly and disassembly, permitting ready placement of deodorising block 110, or the insert 300, or the shell 200, as may be required. Further, once fitted within the shell wall as seen in Fig. 1A, the insert is free to move slidably up and down within the shell 200 subject to a surface upon which the assembly 100 is placed. The loose and slidably adjustable engagement of the insert 300 to the shell 200 is sympathetic to poor placement and/or use of the assembly 100 on uneven surfaces such as urinals which may be of the trough variety or porcelain/vitreous style. The loose engagement also simplifies engagement and/or disengagement of the insert 300 with the shell 200.

Fig. 4A shows a flat surface 402a of a trough urinal 400a. Trough urinal 400a is configured of a flat basin 401a generally manufactured of stainless steel or the like which extends along a bathroom wall and floor. The basin 401a connects to at least one sewerage pipe (not shown). Urinal liquids including urine and perhaps water, flow into the at least

one sewerage pipe through at least one wastehole provided in the basin. In a case where a single wastehole is provided, processing and deodorising of urinal liquids may be desired at areas of the trough urinal basin other than at the single wastehole. In such use, urinal cartridge deodoriser assembly 100a may be placed upright on a surface 402a of the basin 401a. As the insert 300a has height 305 greater than height 220 of the inner wall 210 of the shell 200a, the base 302 of the insert 300a lies on the surface 402a. The supports 204 of the shell 200a permit urinal liquids to flow under the edges 206 and 212 of the shell 200a and through the slots 312 of the insert 300a, wherein contact with the urinal liquids and the deodorising block 110a dissolves the deodorising block 110a. Although assembly 100a is not positioned over a wastehole of the urinal 400a, urinal liquids are treated by dissolution of the block 110a where urinal liquids pass the section of the trough urinal 400a where assembly 100a is placed.

Deodorising and treatment of urinal liquids will commonly be desired at the wastehole of a urinal. Fig. 4B shows a wastehole fixture 405b in a urinal 400b. The urinal 400b may be a trough urinal of stainless steel manufacture similar to 400a, or a porcelain, vitreous china or plastics bowl-like shape. The fixture 405b has an annular ring 404b defining a wastehole pipe section 406b for coupling to a sewerage waste pipe (not shown) in a traditional fashion. The fixture 405b includes a transverse mounted grate 408b.

In use the cartridge assembly 100b is positioned in the urinal 400b on the fixture 405b, such that the supports 204 of the shell 200b rest on or outside the annular ring 404b. In ideal placement, the base 302 of the insert 300b containing the deodorising block 110b sits on the ring 404b or substantially covers the wastehole fixture 405b. Urinal liquids such as water or urine can therefore flow under the edges 206 and 212 of the shell 200b and through the slots 312 of the insert 300b, dissolving the deodorising block 110b before flowing into the wastehole fixture 405b. If assembly 100b is moved during use to partially cover the ring 404b, a portion of the urinal liquids will likely still flow under the edges 206 and 212 of the shell 200b and through the slots 312 of the insert 300b, dissolving the deodorising block 110b.

Urinal wastehole fixtures will vary in size and shape according to different designs and manufacturers. A urinal 400c is seen in Fig. 4C with wastehole fixture 405c. Wastehole fixture 405c has a smaller diameter than 405b but is otherwise similar to 400b.

The assembly 100c is placed on the urinal 400c such that the supports 204 of the shell 200c rest on or outside the annular ring 404c. In this case insert 300 has an inclined section 310 of wall 307. The base 302 of the insert 300c protrudes into wastehole fixture 405c and rests on the grate 408c. Urinal liquids such as water or urine can flow under the edges 206 and 212 of the shell 200c due to supports 204. As the section 310 is in contact with the annular ring 404c, the urinal liquids can further flow through the slots 312 of the insert 300c and dissolve the block 110c. The slidable adjustable engagement of insert 300c with shell 200c allows the base 302 of the insert 300c to rest on the grate 408c.

If any of assemblies 100a, 100b and 100c were placed on an uneven surface or on a urinal with steep side walls, the slidable adjustable engagement of the shell with the corresponding insert would allow the base of the insert to lie close to or on a desired area of the urinal. However, such assemblies should be used in an area of a urinal through which liquids can flow freely – placement in a clogged urinal such that the insert of the assembly soaks in urinal liquids will cause rapid dissolution of the deodorising block 110.

In the preferred implementation, as the biological substance of the deodorising block 110 is soluble in both water and urine, the urinal cartridge deodoriser cartridge assembly 100 of the present disclosure can be used to convert a flushing urinal to a waterless urinal.

Urinal deodoriser cartridges may be provided in a variety of sizes, depths and widths and with a variety of aesthetic adornments or designs. Modifications and/or changes can be made thereto without departing from the scope and spirit of the invention, the embodiments being illustrative and not restrictive.

Some urinals may be operated such that a pool of water is provided in a basin of the urinal when the urinal is not in use. In such cases, the insert 300 may lie in the pool of water. The tablet 110 will thus be at least partially submerged in the pool at all times, and thus would typically dissolve rapidly. Owners or maintainers of a bathroom may also wish improve appearance of a urinal, whether waterless or flushing, by removing the urinal wastehole from sight. In such cases, an adapter device 600, as shown in Figs. 6A and 6B, configured to retain the assembly 100 may be required.

The adapter device 600 is preferably formed of a similar plastics material to the shell 200 or the insert 300.

As shown in Figs. 6A and 6B, the adapter device 600 has a substantially cylindrical shape, and comprises a core section 620 connected to a second section 640. A top surface 602 of the core section 620 has an annular shape.

The second section 640 comprises a ring-shaped ledge 604 protruding substantially vertically outwardly from an outer edge of the surface 602, and connected to the surface 602 by a thin plastic join 606. The second section further comprises a substantially cylindrical side-wall 610 extending generally downwardly from a periphery of the ledge 604 to form a ring-like periphery 611 that operates as a base of the device 600 to rest upon a surface such as a surface of the urinal. A plurality of vertical struts 646 are formed on an inner surface of the wall 610.

As illustrated in Figs. 6C and 6D, the core section 620 of the adapter 600 has an inverted frustoconical shape. A ring-shaped edge 608, depressed relative to the surface 602, forms a circular slot 613 in a centre of the surface 602. A cylindrical wall 612 extends vertically downwardly from the edge 608. The edge 608 is of size such that the supports 204 of the assembly 100 can be placed thereon. The wall 612 and the slot 613 are sized such that, if the supports 204 are placed on the edge 608, the insert 300 of the assembly 100 protrudes into the slot 213 by gravity and engagement of the ledges 214 of the shell 200 with the protrusions 306 of the insert 300. In some embodiments, the edge 608 may be sized such that the protrusions 306 can be positioned thereon, and the wall 307 of the insert 300 protrude into the slot 213.

The core section further comprises an annular outer wall 614 extending downwardly from a periphery of the surface 602, almost parallel to the wall 612. The wall 614 has a peripheral edge in which preferably a plurality of notches 616 are formed, creating a castellated appearance. The wall 614 preferably has a height equal to or greater than the sidewall 307. Relatively, the wall 612 may be shorter than illustrated in comparison to the wall 614. Thus, if the section 620 retaining the assembly 100 were placed on a surface (such as a urinal surface), the insert 300 would not touch the surface.

As seen in Fig. 7, the adapter device 600 can be positioned in the urinal 700, shown in phantom lines, so as to cover a wastehole or a pool of water (not shown). The assembly 100 can be retained in the adapter 600 as described above. The side-wall 610 has a height such that the insert 300 of an assembly 100 retained by the adapter 600 is

positioned at a height just above the urinal fluid surface in the urinal 700. The height of the side-wall 610 is configured such that base 302 of the insert 300, and thus the tablet 110, should likely be positioned above a pool of water, thus preventing unnecessary dissolution of the tablet 110. Contact between urinal fluids and the tablet 110 should thus only occur
5 during use or flushing of the urinal. During such operation of the urinal, urinal fluids can pass under the shell 200 due to the supports 204, and into the slot 210 to dissolve the deodorising block 110 and enter the urinal wastehole.

Referring back to Figs. 6A and 6B, a plurality of frangible strips 642 are provided in the sidewall 610 adjacent to the base 611. The frangible strips 642 may be manually
10 removed to change the base of the device 600, adjusting the height of the wall 610. The adapter 600 is thus suitable for use in a variety of urinal designs of varying size and dimensions. A thin layer of plastic joins each strip to the wall 610, or adjacent strips as appropriate. To remove one of the strips 642, and any lower strips, a user applies pressure to that one of the strips 642 relative to the side wall 610. That one of the strips 642 bends
15 towards the wall 610 by flexibility of the material from which the device 600 is manufactured. Application of sufficient force by the user can break the thin plastic connection such that the strips 642 can be torn off. Fig. 6E shows the strips 642 partially removed from the wall 610. The user can remove the strips 642 by hand or with a pliers or similar mechanism. In some embodiments, a single frangible strip or several frangible
20 strips may be provided.

The side-wall 610 further comprises a frustoconical portion 605 connected to the ledge 604. The portion 605 is configured to bend inwardly by flexibility of the plastics material from which the device 600 is formed when pressure is applied thereto.

As shown in Fig. 6F, if a user applies force on the core section 620 relative to the
25 second section 640, due to the flexibility of the plastics material from which the device 600 is formed, the portion 605 and thin plastic connection 606 allow the core 620 to be depressed downwardly relative to the second section 640 from a first configuration, as shown in Fig. 6A, to a second configuration, as shown in Fig. 6F. In some embodiments, the surface 602 is configured to slope downwardly toward the wall 612 when a user applies
30 such force on the core 620 relative to the second section 640. Such downward sloping of the surface 602 assists in preventing splashing of urinal fluids from the urinal. The

connection 606 can further be torn or cut to separate the core section 620 from the second section 640 if desired by a user. In further embodiments, the join 606 may be scored for improved ease of separation of the sections 620 and 640. A user of the device 600 can retain the assembly 100 in the core 620, and discard the section 640. If the core 620 is used without the second section 640, the notches 616 further allow urinal fluids to flow under section 620 to the wastehole. In some embodiments, the second section may not be removable.

The device 600 thus provides a number of means of adjusting the position of the base 302 of the insert 300 relative to the surface of the urinal and is thus suitable for use in a wide variety of urinals, and with various depth pools of urinal fluids. The device 600 is further easily adapted by a user for placement in urinals of various depths and widths.

If any of the frangible strips 642 are removed, the peripheral edge remaining rests on a surface of the urinal 700 and allow fluids to pass under the second section 640. The thin plastic join 606 provides means of adjusting the position of the insert 300 relative to the surface of the urinal. Thus, variations in depths of urinal pools and/or variations in size of urinal can be accounted for. The adapter also provides means of covering the urinal wastehole to improve appearance.

In some embodiments, dimensions of the device 600 may be altered according for appearance or purpose, or to fit alternate sizes of urinal deodoriser cartridges. Fig. 8 shows a comparative lateral cross-section of example embodiments of the device 600. The right-hand section of Fig. 8 shows the device 600 as described above. The left-hand section shows a second embodiment 600a of an adapter device, in this case in a second, depressed configuration consequential to the operation illustrated in Fig. 6F. Similarly to the device 600, the embodiment 600a comprises a core section 620a connected to a second section 640a. The device 600a also comprises a wall 610a, a top surface 602a, a ring-shaped ledge 604a, a join 606a, an edge 608a, and frangible strips 642a, similarly to the device 600. A slot 613a is formed in the device 600a, similar to the slot 613 of the device 600. The line 800 indicates division between the embodiments 600 and 600a, and is provided at the centre of each of the slots 613 and 613a. For purposes of comparison, the walls 612 and 614 of the device 600, and corresponding elements of the device 600a, are not shown in Fig. 8.

The device 600a has a slot 613a of radius shorter than that of the slot 613 of the device 600 as indicated in measurements 802 and 802a. In some embodiments, the edge 608 of the device 600 may be lengthened, such as the edge 608a of the embodiment 600a. The radius of the surface 602 may be correspondingly varied, such as the shorter radius of the surface 602a in the embodiment 600a. The embodiment 600a is shown after a user has applied pressure to depress the insert 602a within the device 600a. The surface 602a is further configured to slope downwardly as a user applies pressure to the insert 620a of the device 600a (similarly to Fig. 6F). A resultant downward slope of the surface 602a is shown in Fig. 8.

10 In some embodiments, the device 600 may be used for retaining an object other than the assembly 100.

In the context of this specification, the word "comprising" means "including principally but not necessarily solely" or "having" or "including", and not "consisting only of". Variations of the word "comprising", such as "comprise" and "comprises" have
15 correspondingly varied meanings.

CLAIMS:

1. A urinal deodoriser cartridge assembly comprising:
an outer body sized for placement in a urinal; and
5 an insert configured for insertion into and removable retention within, the outer body, and to retain a deodorising block;
the assembly being adapted to permit contact between urinal liquids and the deodorising block by a base of the insert being positionable to contact a surface of the urinal, the base being positionable through movement of the insert within the outer body
10 whilst remaining removably retained therewithin.
2. A urinal deodoriser cartridge assembly according to claim 1, wherein a plurality of braces protrude inwardly from a wall of the insert such that a deodorising block can be retained between said braces.
- 15 3. A urinal deodoriser cartridge assembly according to any of claims 1 and 2, wherein a deodorising block is provided in the insert.
4. A urinal deodoriser cartridge assembly according to claim 3, wherein the insert
20 and the deodorising block are provided as a replaceable refill.
5. A urinal deodoriser cartridge assembly according to claim 2 or claim 3, wherein the deodorising block comprises a bio-enzymatic material which is soluble in urinal liquids.
- 25 6. A urinal deodoriser cartridge assembly according to any of claims 1 to 5, further comprising a plurality of ventilation shafts formed in the outer body.
7. A urinal deodoriser cartridge assembly according to any of claims 1 to 6, wherein

the outer body comprises a shell having a wall sized for placement in the urinal, and a plurality of supports extending from the wall and configured to allow urinal liquid to flow beneath the wall;

the insert is generally U-shaped and includes a plurality of slots permitting, when
5 positioned in the urinal, contact between urinal liquids and the deodorising block.

8. A urinal deodoriser cartridge assembly according to claim 7, wherein the assembly is adapted such that the insert is removably retainable within the outer body by an engagement mechanism comprising:

10 a first component configured on an interior of the wall, and
a second component configured on the insert for limited engagement with the first component to slidably retain the insert within the shell.

9. A urinal deodoriser cartridge assembly according to claim 7 or claim 8, wherein
15 the shell wall is sized to surround a urinal wastehole.

10. A urinal deodoriser cartridge assembly according to any of claim 7 to 9, wherein the insert is sized to substantially cover a urinal wastehole.

20 11. A urinal deodoriser cartridge assembly according to claim 8 to 10, wherein the first component comprises a plurality of inwardly protruding ledges, and the second component comprises at least one protrusion provided on a wall of the insert such that the insert can engage with the shell by pushing the at least one protrusion of the insert past the protruding ledges of the shell such that the at least one protrusion slides over said ledges.

25 12. A urinal deodoriser cartridge assembly according to claim 8, wherein an inner wall protrudes downwardly from an inner surface of the shell wall, and
the first component is provided on an inner surface of said inner wall.

30 13. A urinal deodoriser cartridge assembly according to claim 12, wherein the inner wall is sized to surround a urinal wastehole.

14. A urinal deodoriser cartridge assembly according to claim 12 or claim 13 when dependent on claim 3, wherein the wall of the insert has height greater than a height of the inner wall.
- 5 15. A urinal deodoriser cartridge assembly according to any of claims 1 to 14, wherein the assembly is formed of biodegradable plastics material.