

24 SEP 1997

TOILET SYSTEM**Field of the Invention**

5 This invention relates to a toilet system.

This Sheet Has Been Replaced

**Background Art**

Water is an extremely scarce and precious resource in cities all over the world. Authorities
10 are grappling with the problem of providing clean, affordable water to the public, especially
to the overcrowded cities. As water is so essential to basic life, the authorities are usually
obliged to make this commodity easily available at subsidised prices. However, because it
is therefore readily available and cheap, people have taken its availability as a right.
Consequently, water is wasted without thought that this precious life giving resource has
15 become more and more difficult to obtain and the situation is likely to get worse in the future.

Approximately 50% of total water usage is consumed in homes, mainly for bathing, washing
and cleaning, and also flushing of toilets. Approximately 20% of this domestic consumption
is used for flushing toilets.

20

The average person visits the toilet about six times a day; probably once for solid discharge
and the other five times for liquid discharge. While a substantial flush (approx. 10-15 litres
per flush) is necessary for the flushing of solid wastes, use of such a flush for urinal discharge
only is an unnecessary wastage of good clean water.

25

Disclosure of the Invention

According to the present invention there is provided a toilet system comprising a toilet bowl
having first and second separate and upwardly open compartments for respectively receiving
30 solids waste and urine, and flushing means with separately actuatable first and second

actuating means for flushing the respective first and second compartments.

The compartments are preferably integrally formed. The compartments may be defined in a single toilet bowl which has a transverse upstanding wall such that the compartments are
5 defined at portions of the bowl on respective opposite sides of the wall. The upper edge of the wall may be at a lower location than the upper edge of the periphery of the bowl.

The flushing means may comprise a cistern with a water storage vessel and first and second valve means, coupled for actuation by the respective first and second actuating means for
10 delivering water from the water storage vessel to the respective first and second compartments. Preferably, a first delivery duct communicates between a lower region of the interior of said vessel and a first flushing outlet, at said first compartment, for delivery of flushing water from the vessel via the first flushing duct and first flushing outlet to the first
15 compartment, when the first valve means is actuated, and a second flushing duct communicates between a second region of the interior of the vessel which is located at a higher level than that at which the first flushing duct communicates with the interior of the vessel, and a second flushing duct, at the second compartment, for delivery of flushing water from the vessel via the second flushing duct and second flushing outlet to the second
20 compartment, when the second valve means is actuated. The first valve means may form part of a level control means responsive to reduced water level in the vessel to open further valve means for, in use, admitting water into the vessel, and responsive to the water level in the vessel rising to a predetermined level to close the further valve means. The second region may be intermediate between said lower region, and the predetermined level.

25 The first and second flushing outlets may open to locations adjacent upper rims of the respective first and second compartments. The first flushing outlet may comprise one of a plurality of first flushing outlets arrayed about the rim of said first compartment and the second flushing outlet may comprise one of a plurality of second flushing outlets arranged about the rim of said second compartment.



The first and second compartments may have respective first and second outlets for outlet of, respectively, flushing water and solids waste from the first compartment, and flushing water and urine from the second compartment, said first and second outlets communicating via respective first and second outlet ducts to common outlet of the toilet system.

5

The first outlet may be positioned above the lower most part of the first compartment, for retention of flushing water in the first compartment, in use of the toilet system, and the second outlet arranged substantially at the lowermost part of the second compartment, so that substantially no flushing water is retained in the second compartment, in use of the toilet
10 system.

The second outlet duct may extend downwardly from the second compartment to a lower part thereof, thence upwardly, and thence downwardly to the common outlet, whereby in use a quantity of flushing water is retained at the lower part of the second outlet duct

15

The second compartment may be at a forward location relative to the first compartment.

The toilet system may have a toilet seat having a first portion positionable to cover at least a substantial portion of the rim of the first compartment, and a second, relatively forward
20 portion arranged to then cover at least a substantial portion of the rim of the second compartment, said seat being contoured to facilitate a person sitting thereon in a rearward position, for use of the first compartment and alternatively at a forward position for use of the second compartment.

25 The invention is further described by way of example only with reference to the accompanying drawings.

Brief Description of the Drawings

This Sheet Has Been Replaced



30 Figure 1 is a plan view of toilet system constructed in accordance with the invention;

Figure 2 is cross section on the line 2-2 in Figure 1;

Figure 3 is a cross section on the line 3-3 in Figure 1;

5 Figure 4 is a plan view of seat cover forming part of the toilet system in Figure 1; and

Figure 5 is a side view of the seat of Figure 4, taken on the line 5-5 in Figure 4.

Best Mode for Carrying out the Invention

10

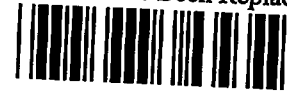
The toilet system 10 shown comprises a toilet bowl 12 and a cistern 14. Toilet bowl 12 may be of somewhat convention configuration, except that it provides first and second compartments 16, 18 respectively, formed by transversely dividing the interior of the toilet bowl by an upstanding wall 20 which may, over most of its side to side dimension be slightly
15 lower than the upper edge toilet bowl 12.

Compartment 18 is situated forwardly of compartment 16 and is arranged at a relatively upper location. Compartment 18 is smaller than compartment 16 and is designed to receive urine, whereas compartment 16 is designed to receive solids waste.

20

Cystern 14 may be of somewhat conventional construction but arranged, as next described, to separately flush the two compartments 16, 18. As best shown in Figure 3, the cystern 14 comprises a vessel 22 for receiving flushing water 24. A conventional vacuum pump 26 is provided in the interior of the vessel. A level control device 28, also of conventional form
25 is likewise positioned within the vessel 22 and arranged for actuation of a conventional inlet valve 30 for inlet of water from an external supply into the system. First actuating means, in the form of a conventional external push/pull lever mounted on the outside of the vessel 22 is provided. When this is actuated, water within the vessel is passed via a first duct 32 in the toilet bowl 12 from a lower region of the vessel 22 to outlets 34 arranged around the
30 periphery of the rim of the compartment 16. As the water level drops, the water level





control 22 is actuated to replenish tank water in the vessel 22. That is to say, valve 30 is opened as bowl valve 28 moves from its upper position shown in Figure 3 to a lower position with the falling water level, and remains open so that water can enter via the valve into the system vessel until the valve is closed by the resumption of the level control to the position
5 shown in Figure 3.

During the aforementioned flushing action, solids waste and water within the compartment 16 is flushed via a first outlet 36 at the rear of the compartment 16 to a common outlet 38 of the toilet system. As shown, the outlet is configured so that the body of water is retained in
10 normal use at the lower part of the compartment.

In addition to the duct 32, there is a further duct 40 which is formed within the bowl 12, and which communicates via a pipe 40a with the interior of the vessel 22, at a location, below the high water level therein. This has a second actuating means in the form of a push button tap
15 42 associated therewith, so that on operation of this, water is taken from the system via the pipe 40a and duct 40 to outlets 34 arrayed around the rim of the compartment 18. Valve 42 may be of the kind which has an actuating member which is depressible against resilient bias so that when opening pressure is released, the valve is reverted to its closed position automatically. Delivery of flushing water to the compartment 18, that water and urine within
20 the compartment 18 is delivered via a second outlet duct 48 from a lower outlet 46 of the compartment 18 to the common outlet 38. In the arrangement shown, the duct 48 extends downwardly at an angle of about 45° from the lower part of the compartment 18, thence underneath the compartment 18 thence to rise somewhat before thence passing downwardly to the common outlet 38. By this means, there is retained flushing liquid in the lower part
25 of the duct 48.

By the above arrangement, for flushing urine only, it is only necessary to actuate the tap 42 and only a small amount of water needs to be delivered then to the compartment 18. The amount of water delivered at any one time is limited by the spring-loaded push button tap.
30 A quick depression and release of the push-button will deliver a certain pre-set amount of

water, then the spring will act to close the tap. More water will be delivered as long as the hand pressure is kept on the push button, until the water level drops below the level of pipe 40a inlet. That is to say, if the water level drops below the level at which the pipe 40a communicates with the vessel 22, no more water will be delivered, until the water level again rises pursuant to actuation of the valve 30.

The seat 50 shown in Figures 4 and 5 can be attached to the toilet device so as to be pivotal to positions at which it covers and uncovers the upper periphery of the toilet bowl. As shown this is of somewhat conventional annular form, but has somewhat forwardly elongated open portion 52 formed by forwardly extending portion 54 of the seat. The seat is configured with the portion 54 being at a slightly lower level than the remaining portion 56 seat so as to facilitate the person sitting on the seat either on the portion 56 or at a more forward location 54. The latter position being employed for use of compartment 18 and the former for use of compartment 16.

15

The above arrangement thus facilitates the saving of water, since, for flushing of urine, it is only necessary to employ a small quantity of water.

The foregoing detailed description has been presented by way of example only, and is not intended to be considered limiting to the present invention which is defined in the claims appended hereto. Those skilled in the art will recognise that many variations and/or modifications are possible to the described constructions without departing from the spirit and scope of the invention.

25 The amount of water delivered at any one time is limited by the spring-loaded push button tap. A quick depression and release of the push-button will deliver a certain pre-set amount of water, then the spring will act to close the tap. More water will be delivered as long as the hand-pressure is kept on the push button, until water level drops below the level of pipe 40a inlet.





CLAIMS:

1. A toilet system comprising a toilet bowl having first and second separate and upwardly open compartments for respectively receiving solids waste and urine, and flushing means with
5 separately actuatable first and second actuating means for flushing the respective first and second compartments.
2. A toilet system as claimed in claim 1, wherein the compartments are integrally formed.
- 10 3. A toilet system as claimed in claim 1 or claim 2, wherein the compartments are defined in a single toilet bowl which has a transverse upstanding wall such that the compartments are defined at portions of the bowl to respective opposite sides of the wall.
4. A toilet as claimed in claim 3, wherein the upper edge of the wall is at a lower location
15 than the upper edge of the periphery of the bowl.
5. A toilet system as claimed in any preceding claim, wherein the flushing means comprises a cistern with a water storage vessel and first and second valve means, coupled for actuation by the respective first and second actuating means for delivering water from the water storage
20 vessel to the respective first and second compartments.
6. A toilet system as claimed in claim 5, having a first delivery duct communicating between a lower region of the interior of said vessel and a first flushing outlet, at said first compartment, for delivery of flushing water from the vessel via the first flushing duct and
25 first flushing outlet to the first compartment, when the first valve means is actuated, and a second flushing duct communicating between a second region of the interior of the vessel which is located at a higher level than that at which the first flushing duct communicates with the interior of the vessel, and a second flushing duct, at the second compartment, for delivery of flushing water from the vessel via the second flushing duct and second flushing outlet to
30 the second compartment, when the second valve means is actuated.





7. A toilet system as claimed in claim 6 wherein the first valve means forms part of a level control means responsive to reduced water level in the vessel to open further valve means for, in use, admitting water into the vessel, and responsive to the water level in the vessel rising to a predetermined level to close the further valve means.

5

8. A toilet system as claimed in claim 7 wherein the second region is intermediate between said lower region, and the predetermined level.

9. A toilet system as claimed in any one of claims 5 to 8, wherein the first and second
10 flushing outlets open to locations adjacent upper rims of the respective first and second compartments.

10. A toilet system as claimed in claim 9 wherein the first flushing outlet comprises one of a plurality of first flushing outlets arranged about the rim of said first compartment and the
15 second flushing outlet comprises one of a plurality of second flushing outlets arranged about the rim of said second compartment.

11. A toilet system as claimed in any preceding claim wherein the first and second compartments have respective first and second outlets for outlet of, respectively, flushing
20 water and solids waste from the first compartment, and flushing water and urine from the second compartment, said first and second outlets communicating via respective first and second outlet ducts to common outlet of the toilet system.

12. A toilet system as claimed in claim 11, wherein the first outlet is positioned above the
25 lower most part of the first compartment, for retention of flushing water in the first compartment, in use of the toilet system, and the second outlet is arranged substantially at the lowermost part of the second compartment, so that substantially no flushing water is retained in the second compartment, in use of the toilet system.

30 13. A toilet system as claimed in claim 12 wherein the second outlet duct extends downwardly





- 9 -

from the second compartment to a lower part thereof, thence upwardly, and thence downwardly to the common outlet, whereby in use a quantity of flushing water is retained at the lower part of the second outlet duct

5 14. A toilet system as claimed in any preceding claim wherein the second compartment is at a forward location relative to the first compartment.

15. A toilet system as claimed in claim 14, having a toilet seat having a first portion positionable to cover at least a substantial portion of the rim of the first compartment, and a
10 second, relatively forward portion arranged to then cover at least a substantial portion of the rim of the second compartment, said seat being contoured to facilitate a person sitting thereon in a rearward position, for use of the first compartment and alternatively at a forward position for use of the second compartment.

This Sheet Has Been Replaced

