

Toilet Bowl with Wheel-stool Compartment

FIELD OF THE INVENTION

[0001] This invention relates to a toilet bowl, as well as to a created adjunct compartment to constrain wheel-stool(s).

BACKGROUND OF THE INVENTION

[0002] In the field of toilet bowl, there have been different approaches to provide an additional feature forming quicker defecation postures with sufficient anorectal angle similar to squatting position.

[0003] One approach is to make the toilet bowl dual mode. For example, US 20170150855 A1 describe a toilet assembly serves as a hybrid toilet to be used as a sitting toilet or as a squatting toilet. However it is a passenger lavatory unit to an on-board interior space structure and to a vehicle, not applicable to lavatories presented at home or other public toilets.

[0004] The other approach is to surround the toilet bowl with a footstool. Patent US 20170027331 A1 shows certain exemplary embodiments providing a footless footstool. It explains the use of a footstool which causes the knees to raise toward the chest. As the feet are raised, the puborectalis muscle relaxes, the colon is better aligned allowing gravity to aid evacuation. But it is a stool by itself with no fixed connection to a toilet bowl. This limits its wider presentation at places such as public toilets.

[0005] There may thus be a need to provide a toilet bowl for sitting style toilet forming quicker defecation postures.

SUMMARY

[0006] A compartment is created underneath a toilet bowl positioned at the front side relatively away from the drainage tube. The compartment has its back, top, left, and right enclosed, with its front partially open. It forms a new created one-piece apparatus together with the toilet bowl.

[0007] The exact position of the compartment's back side varies according to the shape of its connected toilet bowl, especially the bowl's outlet tube hooking with the drainage system. In some cases the outlet tube is at the rear portion near to the wall where the entire water closet is installed, in other cases the outlet tube is at a position between front and rear, but it is never found at the very front side.

[0008] The height of the compartment's top side varies according to the shape of its connected toilet bowl, especially the bowl's receptical outer edge lowest point. It may be higher or lower but is adequate to form a reasonable compartment.

[0009] The left and right side of the compartment are not too much limited by the connected toilet bowl in terms of their presumed enclosure function.

[0010] A wheel-stool is created to be fully kept inside the compartment by default. In such a situation the toilet bowl provided by this invention functions exactly the same as any other normal sitting style one: collecting human waste and providing a seat for a defecation user.

[0011] The wheel-stool can be pulled out by a defecation user. In such a situation the user can raise one's feet and rest the feet on top of the wheel-stool. The objective of this invention is thus achieved: a posture similar to squatting with better aligned colon for a quicker and easier evacuation.

[0012] There are other beneficial functions of the foot-raising toilet bowl for users without bowel movement challenges as well. It can be used for a child's toilet training. For adults, some users tend to hunch forward when they sit on a toilet bowl which compresses the nerves and hinders blood flow leading to numbness of their legs. Using the wheel-stool to raise feet and knees naturally prevents hunching forward.

[0013] Detail descriptions of the structure of the toilet bowl with wheel-stool compartment are provided in DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS section.

[0014] In summary, this invention changes the structure and shape of a normal sitting style toilet bowl but there is no change to any existing manufacturing processes and raw materials used.

[0015] To manufacture the said toilet bowl with wheel-stool compartment, an existing toilet bowl manufacturer only needs to make new molds with the required shape of this invention -- a one-piece toilet bowl with compartment, and a stool (to be assembled during on-site installation as a wheel-stool). The manufacturer can produce the said toilet bowl with compartment and stool using its existing materials, be it ceramic, stainless steel, or cultured marble.

[0016] For example a current toilet bowl pottery is required to modify its current sitting style toilet bowls' molds to let them have adjunct compartments, and create new molds for stools with matching sizes to the compartments. These are only changes it has to adopt. Exact same processes are applied to make the invented toilet bowl as well as stools -- vitreous china in a liquid form is thinned, stored in a storage tank, fired into the new molds, dried, glazed, fired, inspected and packed.

[0017] The said toilet bowl by this invention is supplied in two separate packages for on-site installation. One package contains a toilet bowl with compartment in one-piece; the other package contains stool(s) together with installation accessories -- ball transfer bearings, rubber strips, corner bumpers and a booklet of installation guide. These accessories are standard products procured from relevant third-party vendors. Corner bumpers are used to prevent hard contact of the said wheel-stool and toilet bowl; rubber strips are to seal gaps between the two to prevent foreign objects entering the invented toilet bowl.

[0018] A stool by this invention from the packages is first assembled with ball transfer bearings to become a wheel-stool. Rubber strips are applied surrounding the wheel-stool slightly behind the front face. Corner bumpers are placed at the back face upside corners of the wheel-stool. It is then situated on floor to its designated location. After that a toilet bowl with compartment by this invention is placed to its designated location. A drawing from the installation guide booklet with the exact bottom sizes / shapes of both the wheel-stool and the toilet bowl with compartment is placed on the floor to facilitate the alignment of the said wheel-stool and toilet bowl. In addition, it indicates the floor area underneath the wheel-stool is a slope declining vertically to the back side, to make the wheel-stool stay inside the compartment by default.

[0019] To use the toilet bowl by this invention, a user pull the wheel-stool out of the compartment and place one's feet onto the top of the wheel-stool. After use, the wheel-stool returns to the compartment by itself forcing by gravity.

BRIEF DESCRIPTION OF THE DRAWINGS

[0020] A wide potential practical and useful embodiments will be more readily understood through the following detailed description of two --- the first with one wheel-stool and the second with two wheel-stools -- exemplary embodiments, with reference to the accompanying drawings in which:

[0021] Fig. 1 shows an illustrative front view of a one-wheel-stool exemplary embodiment.

[0022] Fig. 2 shows an illustrative cross-sectional side view of the one-wheel-stool exemplary embodiment where the wheel-stool is halfway pulled out.

[0023] Fig. 3 shows an illustrative cross-sectional top view of the one-wheel-stool exemplary embodiment where the wheel-stool is halfway pulled out.

[0024] Fig. 4 shows an illustrative front view of a two-wheel-stool exemplary embodiment.

[0025] Fig. 5 shows an illustrative cross-sectional side view of the two-wheel-stool exemplary embodiment where the two wheel-stools are both halfway pulled out.

[0026] Fig. 6 shows an illustrative cross-sectional top view of the two-wheel-stool exemplary embodiment where the two wheel-stools are both halfway pulled out.

[0027] In all drawings rubber strips and corner bumpers are not presented since the use of them are common sense.

DETAILED DESCRIPTION OF EXEMPLARY EMBODIMENTS

[0028] Fig. 1, Fig. 2 and Fig. 3 show the first preferred embodiment toilet bowl in an illustrative front, cross-sectional side and cross-sectional top view. The toilet bowl comprises a **normal toilet bowl** and an adjunct **five-side compartment** in one-piece, and a **wheel-stool** constrained by the compartment.

[0029] The term "**normal toilet bowl**" relates to all types of sitting-only toilet bowls in the field of toilet bowl. For example a vitreous china toilet bowl of height 40 cm.

[0030] Depicting the exact details of a normal toilet bowl is not the intention of this invention therefor in all drawings only relevant portions of a normal toilet bowl are shown, with other internal details of a normal toilet bowl omitted on purpose. Adding that may distract the illustration of the invention for clearness purpose.

[0031] **Five sides** of the **compartment** refer to left 1.1, right 1.2, top 1.3, back 1.4 and front 1.5 (no bottom) as shown in Fig. 1, Fig. 2 and Fig. 3. These **five sides** of the **compartment** are described in detail below.

[0032] The term "left" and "right" relates to either sides of a toilet bowl perpendicular to a wall against which the toilet bowl is installed.

[0033] The term "back" relates to the nearer part of a toilet bowl from the wall.

[0034] The term "front" relates to the farther part of a toilet bowl away from the wall.

[0035] The left side 1.1 and right sides 1.2 are extended from a normal toilet bowl's left and right edges downwards till floor level. These are illustrated in Fig. 1 and Fig. 3.

[0036] The term "floor level" relates to the height of the floor inside a lavatory.

[0037] The top side 1.3 is lower than the interior bottom surface of a normal toilet bowl yet with adequate height to contain a wheel-stool. This is illustrated in Fig. 1 and Fig. 2.

[0038] The back side 1.4 is located in front of a normal toilet bowl's drainage tube. This is illustrated in Fig. 2 where the drainage tube is in the unsectioned portion.

[0039] The front side 1.5 is extended from a normal toilet bowl's front edge downwards until it is slightly lower than the top side 1.3. From floor level upward it is opened to a height that the front side stops the **wheel-stool** from completely detaching the compartment. This is illustrated in Fig. 2.

[0040] The **wheel-stool** has **six faces** -- left 2.1, right 2.2, top 2.3, back 2.4, front 2.5, bottom 2.6 -- and four wheels. They are described in detail below.

[0041] The left face 2.1 and right face 2.2 are both perpendicular to floor. They have the same height and depth. This is shown in Fig. 1 and Fig. 3.

[0042] The term "depth" relates to a measurement from front to back.

[0043] Comparing to the compartment left side 1.1, the left face 2.1 is slightly lesser in depth and lower in height. The same applies to right face 2.2 comparing to right side 1.2. These are illustrated in Fig. 1 and Fig. 2.

[0044] The top face 2.3 and bottom face 2.6 are both parallel to floor. They have the same width and depth. This is shown in Fig. 1 and Fig. 2.

[0045] The term "width" relates to a measurement from left to right.

[0046] Comparing to the compartment top side 1.3, both top face 2.3 and bottom face 2.6 are slightly lesser in width and depth. This is shown in Fig. 1 and Fig. 2.

[0047] The back face 2.4 is perpendicular to floor as shown in Fig. 2. The height of back face 2.4 is more than the front face 2.5 which forms a stretched out piece that interlocks with the front side 1.5. This is shown in Fig. 2.

[0048] The front face 2.5 is perpendicular to floor as shown in Fig. 2. It has the same measurement from its most left edge to its most right edge as the width of top face 2.3 and bottom face 2.6. This is shown in Fig. 1.

[0049] At the upper portion of front face 2.5 there is a slot parallel to floor; its size is suitable for a user putting fingers to pull the wheel-stool out from the compartment. This is shown in Fig. 2.

[0050] At the bottom of left face 2.1 and right face 2.2 there are two wheels each to support the wheel-stool. This is shown in Fig. 1 and Fig. 2.

[0051] Fig. 4, Fig. 5 and Fig. 6 are the second preferred embodiment toilet bowl in an illustrative front, cross-sectional side and cross-sectional top view. The toilet bowl comprises a **normal toilet bowl** and an adjunct five-side **compartment** in one-piece, and two **wheel-stools** constrained by the compartment.

[0052] **Five sides** of the **compartment** refer to left 1.1, right 1.2, top 1.3, back 1.4 and front 1.5 (no bottom) as shown in Fig. 4, Fig. 5 and Fig. 6.

[0053] Details of the five sides are the same of the first preferred embodiment.

[0054] There are two **wheel-stools** in the second preferred embodiment -- one with bigger size and the other one with smaller size whereas their heights are selected for users with different tallness. Both of them have **six faces**.

[0055] Details of the six faces are similar to the first preferred embodiment, except for below alterations.

[0056] The smaller wheel-stool is constrained by the bigger wheel-stool. Six faces of the smaller wheel-stool -- left 3.1, right 3.2, top 3.3, back 3.4, front 3.5 and bottom 3.6 are all lesser than the bigger size wheel-stool's relevant six faces -- left 2.1, right 2.2, top 2.3, back 2.4, front 2.5 and bottom 2.6. These are shown in Fig. 4, Fig. 5 and Fig. 6.

[0057] The front face 2.5 of the bigger wheel-stool is partially open to allow the smaller wheel-stool moving out and returning back. The height of the opening is more than the front side of

[0058] the smaller wheel-stool 3.5 but slightly less than the back face extended piece of the smaller wheel-stool 3.4. This stops the smaller wheel-stool from being completely detached with the bigger wheel-stool. This is shown in Fig. 5.

CLAIMS

1. A toilet bowl comprising:

a toilet bowl base, wherein the toilet bowl base includes an integrated compartment, the integrated compartment includes

a back, the back is disposed in front of a drainage tube of the toilet bowl,

first and second opposing sides, the first and second opposing sides extend forward from the back defining a width of the integrated compartment,

a top, the top is disposed underneath a receptacle of the toilet bowl, and

a front, the front is opposite of the back, wherein the front and the back define a depth of the integrated compartment, and wherein the front includes a front opening of the integrated compartment;

a stool disposed inside and constrained by the integrated compartment, wherein the stool includes a stool top surface, a front, and wheels on a stool bottom surface to facilitate moving the stool in and out of the integrated compartment from a retracted position to an extended position, the stool facilitates first and second modes of operation for the toilet bowl, wherein

in the retracted position, the toilet bowl operates for a user in a seated position, and

in the extended position, the toilet bowl operates for a user in a squatted position; and

wherein in the retracted position, a sealable gap is configured between the integrated compartment and the stool.

2. The toilet bowl of claim 1 wherein the toilet bowl includes a sitting toilet bowl.

3. The toilet bowl of claim 1 wherein the integrated compartment includes a compartment height sufficient to accommodate the stool with a stool height to serve as a foot platform for the user in the squatted position.

4. The toilet bowl of claim 3 wherein the stool is configured with an extension stopper to prevent the stool from completely extending out of the integrated compartment.

5. The toilet bowl of claim 4 wherein:

a front opening height of the front opening is less than the compartment height; and

a back of the stool includes a stool back height which is greater than the front opening height to serve as the extension stopper.

6. The toilet bowl of claim 1 wherein the sealable gap is covered by one or more strips, wherein the one or more strips include rubber strips.

7. The toilet bowl of claim 1 wherein the front of the stool includes a handle, the handle includes a slot.

8. The toilet bowl of claim 1 wherein the stool is configured with a secondary compartment to accommodate a secondary stool within the stool, the secondary stool includes

a secondary stool top surface which is lower than the stool top surface;

wheels on a secondary stool bottom surface to facilitate moving the secondary stool in and out of the secondary compartment through a secondary compartment front opening from a secondary stool retracted position to a secondary stool extended position, wherein

in the secondary stool retracted position, the secondary stool is disposed within the stool in the secondary stool retracted position,

in the secondary stool extended position, the secondary stool serves as a platform having a lower height than the stool to accommodate a taller user in the squatted position.

9. The toilet bowl of claim 8 wherein the secondary stool extends beyond the stool when the stool is in the extended position and the secondary stool is in the secondary stool extended position.

10. The toilet bowl of claim 8 wherein the secondary stool is configured with a secondary extension stopper to prevent the secondary stool from completely extending out of the stool.

11. The toilet bowl of claim 8 wherein:

the secondary compartment includes a secondary compartment height;

the secondary compartment front opening includes a secondary compartment front opening height which is lower than the secondary compartment height; and

a back of the secondary stool includes a secondary stool back height which is greater than the secondary compartment front opening height to serve as the secondary extension stopper.

12. The toilet bowl of claim 8 wherein in the retracted position, a secondary sealable gap is configured between the secondary compartment and the secondary stool.

13. The toilet bowl of claim 1 wherein a bottom of the integrated compartment is formed by a floor on which the toilet bowl is disposed.

14. The toilet bowl of claim 13 wherein the stool is configured with an extension stopper to prevent the stool from completely extending out of the integrated compartment.

15. The toilet bowl of claim 14 wherein:

a front opening height of the front opening is less than the compartment height;

a back of the stool includes a stool back height which is greater than the front opening height to serve as the extension stopper.

16. The toilet bowl of claim 13 wherein the stool is configured with a secondary compartment to accommodate a secondary stool within the stool, the secondary stool includes

a secondary stool top surface which is lower than the stool top surface,

wheels on a secondary stool bottom surface to facilitate moving the secondary stool in and out of the secondary compartment through a secondary compartment front opening from a secondary stool retracted position to a secondary stool extended position, wherein

in the secondary stool retracted position, the secondary stool is disposed within the stool in the secondary stool retracted position,

in the secondary stool extended position, the secondary stool serves as a platform having a lower height than the stool to accommodate a taller user in the squatted position.

17. The toilet bowl of claim 16 wherein the secondary stool extends beyond the stool when both the stool and secondary stool are in the secondary stool extended position.

18. The toilet bowl of claim 17 wherein:

the secondary stool is configured with a secondary extension stopper to prevent the secondary stool from completely extending out of the stool;

the secondary compartment includes a secondary compartment height;

the secondary compartment front opening includes a secondary compartment front opening height which is lower than the secondary compartment height; and

a back of the secondary stool includes a secondary stool back height which is greater than the secondary compartment front opening height to serve as the secondary extension stopper.

19. A toilet bowl comprising:

a toilet bowl base, wherein the toilet bowl base includes an integrated compartment, the integrated compartment includes,

a back, wherein the back is disposed in front of a drainage tube of the toilet bowl,

first and second opposing sides, the first and second opposing sides extend forward from the back defining a width of the integrated compartment,

a top, the top is disposed underneath a receptacle of the toilet bowl, and

a front, the front is opposite of the back, wherein the front and the back define a depth of the integrated compartment, and wherein the front includes an opening of the integrated compartment;

a stool disposed inside and constrained by the integrated compartment, wherein the stool includes a stool top surface and wheels on a stool bottom surface to facilitate moving the stool in and out of the integrated compartment from a retracted position to an extended position, the stool includes a secondary compartment, wherein

the stool facilitates first and second modes of operation for the toilet bowl, wherein

in the retracted position, the toilet bowl operates for a user in a seated position, and

in the extended position, the toilet bowl operates for a user in a squatted position; and

a secondary stool disposed within and constrained by the stool, the secondary stool includes

a secondary stool top surface which is lower than the stool top surface,

wheels on a secondary stool bottom surface to facilitate moving the secondary stool in and out of the secondary compartment through a secondary compartment front opening from a secondary stool retracted position to a secondary stool extended position, wherein

in the secondary stool retracted position, the secondary stool is disposed within the stool in the secondary stool retracted position,

in the secondary stool extended position, the secondary stool serves as a platform having a lower height than the stool to accommodate a taller user in the squatted position.

20. The toilet bowl of claim 19 wherein a bottom of the integrated compartment is formed by a floor on which the toilet bowl is disposed.

Toilet Bowl with Wheel-stool Compartment

ABSTRACT

An adjunct compartment is formed underneath any normal sitting style toilet bowl's front side. Wheel-stools are stored inside the compartment by default and pulled out for use. Feet are placed on top of a wheel-stool to facilitate defecation process with a posture similar to squatting. The toilet bowl with compartment and stools are interlocked once installed for use to become a new piece of toilet apparatus.

[Figure to be printed with the abstract: Fig. 2]