

FULLY AUTOMATIC TOILET WARE WITHOUT FLUSHING

Technical field

The present invention relates to a toilet equipment, in particular, to a dry and sealed toilet equipment.

Background Technology

At requirement for environmental protection and the request for returning to nature, people are, in the past around hundred years, more and more aware of the defects of flush toilet that embodies the modern civilization. Therefore there have been various inventions, such as PCT/CN96/00009, which puts forward a toilet seat stool without flushing. Though said invention has features of prevention cross-contamination, convenience and sanitation, its transmission is electrically controlled, which may lead to easy mal-operation when user is not familiar with the structure of the seat stool and make it inappropriate in the area without electricity and water, such as sea beach etc.

Summary

The objective of the present invention is to provide a dry and sealed toilet ware controlled by the weight of human body.

One solution to achieve the objective of the present invention is: a fully automatic toilet ware without flushing, including a case body; a shaped cavity; a seat ring provided on said cavity; a plastic cover over the periphery of said case body; an open-close pulling mechanism to pull plastic bag, provided in said case body for controlling the connection between said shaped cavity and an excrement-holding box fixed under said case body; said case body is fixed on one pedal, and said pedal has one end hinged with base, said the front end of said pedal is a swing end, and there is a pressing spring fixed between its end and the base, the pedal is hinged at least with one crank for controlling the operation of said open-close pulling mechanism, said crank has one end rolling against the supporting board of said base, and the other end is connected with said open-close pulling mechanism.

Another solution to achieve the objective of the present invention is: a fully automatic toilet ware without flushing, including a case body; a shaped cavity; a seat ring provided

on said cavity; a plastic cover over the periphery of said case body; an open-close pulling mechanism to pull plastic bag, provided in said case body for controlling the connection between said shaped cavity and a excrement-holding box fixed under said case body; at least one vertically movable controlling rod is provided on the periphery of said plastic cover, said seat ring has one end hinged with said shaped cavity, the controlling rod has the upper end against said ring via a spring fixed thereon, at least one gear is rotatably fixed at the lower part of said controlling rod, said gear is joggled with one fixed rack and one sliding rack, said open-close pulling mechanism is connected with said sliding rack.

The present invention fully utilizes the weight of human body to automatically control the operation of said open-close pulling mechanism, and it is reliable and has good adaptability and may be widely used in such cases as in family, tourist area, long-distance bus, train, boat and aircraft etc.

Summary of drawings

The other objectives, structure and advantages of the present invention may be better understood with the detailed description by reference to the following drawings.

Fig. 1 is a longitudinal section view of one embodiment of the present invention;

Fig. 2 is a perspective view of one embodiment of the seal structure of Fig. 1;

Fig. 3 is a perspective view of another embodiment of the seal structure of Fig. 1;

Fig. 4 is a side view of said pulling mechanism of Fig. 1;

Fig. 5 is a half-sectional view along the line of A-A of Fig. 4;

Fig. 6 is a top view with partial sectional view at the closing time of another embodiment of the open-close pulling mechanism of the present invention;

Fig 7 is a view cut along B-B line of Fig. 6;

Fig 8 is a perspective view of the pulling roller in Fig. 6 and 7;

Fig 9 is a top view of the pulling roller at the state of opening as shown in Figs. From 6-8;

Fig 10 is a view cut along C-Cline of Fig. 9;

Fig 11 is a perspective view of another embodiment of the present invention;

Fig. 12 is a top view of the seat ring in Fin. 11;

Fig. 13 is a view showing the transmission mechanism mounted in the case body of Fig. 12;

Fig. 14 is a sectional view cut along D-D line of Fig. 13;

Fig. 15 is a view showing another transmission case body of Fig. 14;

Fig. 16 is a view showing the sealing structure along E-E line of Fig. 15;

Best Mode of Embodiment of the Present Invention

Referring to Fig. 1, the toilet ware of the present invention includes a case body 3, a shaped cavity 7 formed on said case body 3, a seat ring 8 provided under said shaped cavity, a cover of plastic bag 10 provided over the periphery of said case body, wherein said cover is formed by outer protective board 25 and inner protective cover 26 and said plastic bag is provided between the two protective boards. Said plastic bag 10 is preferably dissoluble plastics. Said case body 3 is mounted on a pedal 2 which has the rear end hinged with a base 1 and may swing around a supporting point O. Between said base and the front a end of said pedal 2 is provided with a press spring 11. And said pedal 2 is hinged with two cranks 21,23 which control the operation of said open-close pulling mechanism provided in said case body 3. Each of said cranks has one end rolled on a supporting board 13 of said base 1, and the other end connects respectively to said open-close pulling mechanism via pulling ropes 22 and 24.

The moving directions of said cranks 21 and 23 are opposite and a reset spring 12 is provided between said swing end of said crank 21 and said base.

The lower end of said case body 3 connects a excrement holding case (not shown) via a flexible tube 9.

Referring to Figs. 2-5. The open-close pulling mechanism of the present invention includes a sealing means and a pulling means. Said sealing means has a pair of upper sealing doors 41 mounted on an upper partition board 31 and a pair of lower sealing doors 51 mounted on an lower partition board 32. Said sealing doors have respectively spring 42 and 52 which may force them to close. Said upper and lower doors are to be alternatively closed and said two upper sealing doors 41 connect to two pulling ropes 24 via pulleys 25,26 and 27 while said two lower sealing doors 51 connect to the upper sealing doors 41 via a pair of pulling ropes 44 and pulleys 43 and 53. Said rope 24 connects with said crank 23 and the force of said spring 42 is bigger than that of said spring 52. Said pulling means is provided between said upper and lower doors 41 and 51, and has a pulling wheel 63 mounted on a transmission shaft 60. Said pulling wheel 63 should be preferable two. In addition, there is also provided a tension wheel 64 cooperated with said pulling wheels 63. Said tension wheel 64 adjusts the press between itself and pulling wheel 63 via adjusting screw 66 and support 65. On said transmission shaft there is provided a chain wheel 62

which is turned by a chain connected on said rope 22 and the other end of said chain connects to chain said case body 3 via an extension spring 67. The force of said reset spring 12 is stronger than that of said extension spring 67.

Said crank 21 connects to said pulling rope 22 which controls said sealing means, and said crank 23 connects to said pulling rope 24 which controls said pulling means.

Between said chain wheel 62 and pulling wheel 63, there is provided a surpassing clutch which provided within said pulling wheel 63 or on said chain wheel 62. The simplest chain wheel 62 is an ordinary flywheel widely used on bike.

Fig.3 shows another embodiment of said seal structure. It differs from that of Fig.2 in that said press springs 42 and 52 are replaced by extension springs 242 and 252, and that Fig. 2 shows the upper door is open and the lower door is closed while Fig.3 shows the upper door is closed and the lower door is open.

Figs. 6-10 show another embodiment of pulling open-close structure.

Open-close pulling mechanism mounted in said case body 3 includes two symmetrically-arranged rollers 70, of which each has two pulling wheels 71 which connect to one another via a plywood board 72 positioned along the axis of said rollers. The maximum width of said plywood board 72 is equal to the diameter of the rollers 70 and the thickness of said board 72 is less than half of radius of said rollers. Said two rollers 70 turn towards the opposite direction driven by said chain wheel 62 via transmission means 68 and 69. Two rollers 70 has a pressing means on one of them, such as said screw 66 and support 65.

When open-close pulling mechanism as shown by Figs. 6-10 is adopted, only one crank 21 may be provided, of which its swing end drives said chain wheel 62 to rotate via said rope 22 and chains connected with said rope. The other end of the chain connects to said case body via said extension 67. The force of said reset spring 12 connected between said swing end of said crank 21 and base 1 is stronger than that of spring 67. Said chain wheel 62 may be above flywheel.

Figs. 6-7 show that said roller 70 is in a state of close and said plastic bag 10 is clipped and sealed by two plywood boards 72, and Figs. 9-10 show that said roller 71 is in a open state and said plastic bag 10 may go through a room shaped between said boards 72. Said

pulling wheels 71 are used to pull said plastic bag 10.

Figs. 11-16 show another embodiment of the present invention, which adopts an open-close pulling mechanism which, is the same as that of Figs. 1-10. The only difference is that the operation is initiated by seating pressing.

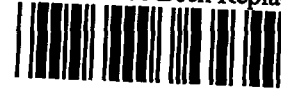
Referring to Figs. 11-14. The toilet ware includes a case body 3, a shaped cavity 7 mounted on said case body, a seat ring 8 provided on said shaped cavity, a plastic bag cover (not shown) provided on the periphery of said case body, and an open-close pulling mechanism mounted in said case body 3. At least an open-close pulling performing mechanism provided around the periphery of said plastic bag, which has a control rod 100 that may vertically glide. The seat ring 8 has its rear end hinged with said shaped cavity 7, said control rod 100 has its upper end against said ring 8, which is effected by a spring 110 mounted on said rod 100. The lower part of said rod 100 is connected to a transmission mechanism 101, which includes at least one gear wheel 102 movably fixed on said rod 100, a fixed rack joggled with said gear wheel 102 and a gliding gear wheel 104. Provided on said rack 104 there is a pulling rope 122 connected to the open-close pulling mechanism, and said pulling rope 122 is connected to said open-close pulling mechanism by a pulley range expanding mechanism. Said pulley range expanding mechanism includes a first and second movable pulley 105 and 106 mounted on said gliding rack 104, a first and second fixed pulley 107 and 108 and a rope 122 which has one end fixed in said case body 3 and goes on in turn around the first movable pulley 105, the first fixed pulley 107, the second movable pulley 106 and second fixed pulley 108, and is then connected to said open-close pulling mechanism. In Figs. 11-16, the parts identical to those in Figs. 1-10 are indicated by the same marks.

Figs. 15-16 shows another sealing structure including also a pair of upper sealing doors 41 and a pair of lower sealing doors 51, as well as springs 42 and 52 which may force said sealing doors to close. The difference is that on both sides of said case body there is symmetrically provided with a pair of open-close mechanism for sealing doors formed by fixed rack 103, movable rack 104, gear wheel 102 and control rod 100, wherein said upper and lower sealing doors are connected to the upper and lower ends of movable rack 104 by ropes 111 and 112, so as to pull said sealing door to open and close.

The next is description of the process of operation by reference to Figs. 1-5.

When a man steps on said pedal 2, no matter whether he seats on said seat ring 8 or not, pedal 2 will rotate around point O. Crank 21 then overcomes the force of reset spring 12 and rotate in a counter clockwise way. Rope 22 in turn, under the function of spring 67, moves to the right side of Fig. 2 so as to consequently make chain 62 to rotate. Since there is a surpassing clutch provided between chain wheel 62 and pulling wheel 63, pulling wheel does not move when chain wheel 62 freely rotates. At the same time, crank 23 rotates clockwise bringing rope 24 to move leftward, pulling open upper sealing door 41. Lower sealing door 51 closes at function of spring 52. At this time there is a clean room for excrement. When one left pedal 2, reset spring 12 overcomes the force of spring 67 (the force of spring 12 is stronger than of spring 67) and pulls the plastic bag 10 containing excrement downward via pulling wheel 63 rotated by chain wheel 62, making shaped cavity 7 to be a clean room while upper sealing door 41, activated by spring 42, overcomes the force of spring 52 and opens lower sealing door 51, making excrement fall into said excrement holding case, finishing one use of toilet. The using method is similar to that of other embodiments.

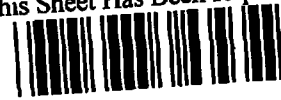
The embodiment of the present invention as described above may evidently be varied within concept of the present invention, and all the variations are within capability of ordinary technicians. For example chain wheel 62 may be replaced by a belt wheel, said pulling roller may be a drum wheel as shown in PCT/CN96/00009 and an expending ring as described in PCT/CN96/00009 may also be fixed within said shaped cavity 7. Under said pulling wheel there may be provided with a lower sealing door which opens or closes according to its action. Said lower sealing door may be a turning gate rotating around axis.



What I claim is:

1. A fully automatic toilet ware without flushing including a case body, a shaped cavity mounted on said case body, a seat ring provided on said shaped cavity, a cover for a plastic bag provided over periphery of said case body and an open-close pulling mechanism mounted in said case body for controlling connection between said shaped cavity and an excrement holding case fixed under said case body, characterized in that said case body is fixed on a pedal which has its rear end hinged with a base and its front end structured as a swing end, and between the end said base there is provided with a press spring, and said pedal is at least hinged with a crank for controlling the operation of said open-close pulling mechanism, and said crank has one end rolled in a supporting board of said base and the other end connected with said open-close pulling mechanism.
2. A toilet ware in accordance with claim 1. Characterized in that said open-close mechanism includes a sealing means and a pulling means, said sealing means has a pair of upper sealing doors mounted on an upper partition board and a pair of lower sealing doors mounted on a lower partition board and said sealing doors have respectively springs which may force them to close and said upper and lower sealing doors are alternatively opened or closed, and two upper doors are connected with two pulling ropes through pulleys and two lower doors are connected with said two upper doors through a pair of pulling ropes and pulleys, and a spring of said upper sealing doors are stronger than that of lower doors; said pulling means is provided between said upper and lower sealing doors and has a pulling wheel mounted on a transmission shaft, a tension wheel, and a chain wheel mounted on said transmission shaft, and between said chain wheel and pulling wheel there is a surpassing clutch;
3. A toilet ware in accordance with claim 1 characterized in that said open-close pulling mechanism includes a sealing means and a pulling means, said sealing means has a pair of upper sealing doors mounted on an upper partition board, and said upper sealing doors have springs which may force them closed and are connected with two pulling ropes through pulleys, said ropes are connected with said first crank; said pulling means are provided under said sealing doors and have a pulling wheel mounted on an mounted on said transmission shaft;
there are two cranks, one first crank for controlling said upper sealing doors and one





there are two cranks for controlling said pulling means.

4. A toilet ware in accordance with claims 2 or 3 characterized in that said first crank and second crank have opposite direction of movement, and said first crank has its swing end drive a chain wheel rotate through a pulling rope and a chain connected with said rope; said chain has the other end connected with said case body through an extension spring, and between said swing end of said first crank and said base there is connected with a reset spring, said reset spring has a stronger force than that of the extension spring, said second crank is connected with a pair of ropes bringing said upper sealing doors; there is a surpassing clutch provided between said chain wheels and pulling wheels.
5. A toilet ware in accordance with claim 1 characterized in that said open-close pulling mechanism includes two symmetrically provided rollers, of which each has two pulling wheel parts which are connected to one another by a plywood board positioned along the axis of said rollers, said plywood board has its maximum width equal to the diameter of said rollers and its thickness less than the radius of said rollers, said two rollers rotate in opposite directions driven by said transmission means.
6. A toilet ware in accordance with claims 1 or 5 characterized in that said cranks have their swing ends drive a chain wheel through a rope and a chain connected with said rope, said rope has the other end connected with said case body through a extension spring, between said swing end of said crank and said base there is connected with a reset spring, said reset spring has stronger force than that of said extension spring.
7. A fully automatic toilet ware without flushing including a case body, a shaped cavity mounted on said case body, a seat ring provided on said shaped cavity, a cover for plastic bag provide over periphery of said case body and an open-close pulling mechanism mounted in said case body for controlling connection between said shaped cavity and an excrement holding case under said case body, characterized in that at least one vertically movable control rod is provided over said cover of plastic bag, said rear end of said seat ring is hinged on said shaped cavity, said control rod has its upper end against said seat ring and the lower part of said control rod has at least one gear wheel movably fixed, said gear wheel is joggled with one fixed rack and a



movable rack, said open-close pulling mechanism is connected with said movable rack.

8. A toilet ware in accordance with claim 7 characterized in that said open-closed pulling mechanism is connected with said movable rack through a pulling rope.
9. A toilet ware in accordance with claim 8 characterized in that on said movable rack there is mounted a first and a second movable pulleys, and on said case body there is mounted a with a first and second fixed pulleys, said pulling rope have one end fixed on said case body go on around said first movable pulley, first fixed pulley, second movable pulley and second fixed pulley, and then is connected with said open-closed pulling mechanism.
10. A toilet ware in accordance with claims 1 or 5 characterized in that under said pulling wheel there is provide with a lower sealing door which may be opened and closed along its action.
11. A toilet ware in accordance with claim 10 characterized in that said lower sealing door is a turning door which may rotate around said axis.
12. A toilet ware in accordance with claims 1,2,3,5,7,8,9 or 11 characterized in that there is an expanding ring fixed within said shaped cavity.

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