

FLUSH DEVICE FOR A TOILET BOWL ✓

The present invention relates to a flush device for a toilet bowl, and more particularly to a flush device to effectively save water.

Flush toilets are commonly used around the world and though their functions seem clearly advantageous, a problem of unnecessary use of water still exists. Conventional flush toilets generally release all the water within a water tank thereof every time a user flushes the toilet, regardless of whether the toilet bowl contains stools and urine or urine only. As urine does not require the same amount of water as required to flush stools, this causes a waste of water. To overcome the above mentioned problem, some users dispose an object such as a brick within the water tank in order to reduce the capacity thereof. Other users shorten the length of a pipe extending between a pressure bar and a valve of the water tank in order to shorten the opening time of the valve. Although the above methods solve the problem of water waste to some extent, a disadvantage still exists, which is, said methods release a fixed amount of water. While a reduced and fixed amount of water sometimes can not completely flush away stools, therefore, flushing a single amount of water can not achieve the combined objectives of reducing water consumption and efficiently flushing away all waste matter.

Later, some manufacturers developed a toilet bowl with a basin disposed at a top of the water tank and communicated therewith. In operation, when flushing the toilet bowl is completed, water to be stored in the water tank is firstly conveyed to the basin through a U-shaped pipe. A user can wash his hands in the basin and then allow the waste water to discharge to the water tank for the next flushing. When the water reaches a certain level in the water tank, water supply is stopped. Thereby, waste water can be re-utilized. This kind of toilet still has a disadvantage that the basin is not convenient for a user to wash his face due to a limited space resulted from it being

disposed on a top of the water tank for the toilet bowl. A U.S. Pat. No. 524,246 issued to Garland on August 7, 1894 discloses a toilet having an annular seat defined therein a plurality of apertures. A German patent DE 3705044A1 teaches a toilet in communication with a washbasin via a water pipe, such that waste water from the washbasin is directed to the toilet to flush the waste. Other related information is disclosed in patents such as U.S Pat. No. 5,323,810; U.S Pat. No. 5,218,726; and U.S Pat. No. 2,595,009.

The present invention provides an improved flush device for a toilet bowl to mitigate and/or obviate the aforementioned problems.

One object of the present invention is to provide a flush device for a toilet bowl which can save water effectively.

Another object of the present invention is to provide a flush device through which part of waste water can be uniformly discharged to flush the urine.

In accordance with one aspect of the present invention, the flush device for a toilet bowl includes a tap connected in a drainage pipe of a washbowl in a washroom. A conduit pipe is obliquely connected between the tap and an inlet of the water tank in order to flush the toilet bowl with the waste water from the washbowl. A pair of arcuate pipes is disposed oppositely within a hollow rim of the toilet bowl. Each of the pair of arcuate pipes defines a plurality of orifices.

In accordance with another aspect of the present invention, the conduit pipe has a first end connected to the tap and a second end fixedly connected with an L-shaped flush pipe of the toilet. The second end of the conduit pipe has a diameter smaller than that of the L-shaped flush pipe and extends in the L-shaped flush pipe to the toilet.

In accordance with a further aspect of the present invention, the orifices of the pair of pipes are arranged in a non-linear fashion such that there are more orifices at a front section of each pipe than a rear section.

In accordance with still a further aspect of the present invention, the pair of arcuate pipes are jointed with each other by a T-shaped connector.

In accordance with still a further aspect of the present invention, the tap has a change-over switch mounted thereon.

Other objects, advantages and novel features of the invention will become more apparent from the following detailed description when taken in conjunction with the accompanying drawings.

In the drawings:

FIG. 1 is a perspective view showing a flush device for a toilet bowl in accordance with the present invention;

FIG. 2 is a partial cross sectional view showing the flush device for a toilet bowl in accordance with the present invention;

FIG. 3 is a side view showing the flush device for a toilet bowl in accordance with the present invention; and

FIG. 4 is a top and cross sectional view showing the configuration of a pair of arcuate pipes disposed within the toilet in accordance with the present invention.

Referring to FIG. 1, the present invention provides a flush device for a toilet bowl 20. The flush device permits not only water in a tank 10 behind the toilet bowl 20, but also the waste water from a washbowl 40 to flush the toilet bowl 20. The flush device includes a tap 35 connected in a predetermined position with a drainage pipe 41 of the washbowl 40. A conduit pipe 30 is obliquely connected between the tap 35 and an inlet (not numbered) of the toilet bowl 20 so as to transfer the waste water from the washbowl 40 into the toilet bowl 20. The tap 35 has a change-over switch 351 mounted thereon to control the waste water flowing from the washbowl 40 to flow into the conduit pipe 30 or to be directly discharged from the drainage pipe 41.

Referring to FIG. 2 and FIG. 3, the conduit pipe 30 has a first end (not

numbered) thereof connected to the tap 35 and a second end 31 thereof connected with an L-shaped flush pipe 11 of the toilet bowl 20. The L-shaped flush pipe 11 is provided for sending the water in the water tank 10 into the toilet bowl 20. The second end 31 of the conduit pipe 30 is configured to have a diameter smaller than that of the L-shaped flush pipe 11, as shown in FIG. 3, and extends in a horizontal section of the L-shaped flush pipe 11 from an entrance 311 where it enters into the L-shaped pipe 11 to the toilet bowl 20.

Referring to FIG. 4, a pair of arcuate pipes 33, 34 are disposed oppositely within a hollow rim 21 integrally extending around a top of the toilet bowl 20. The arcuate pipes 33, 34 each have a first end and a second end. A connector 32 which is T-shaped and hollow has two distal tips and a central tip perpendicular to and in communication with the two distal tips. The first ends of the arcuate pipes are securely received in a respective one of the two distal tips of the connector 32. The central tip of the connector 32 securely receives the second end 31 of the conduit pipe 30. The second ends of the arcuate pipes 33, 34 are disposed adjacent to each other. Each of the pipes 33, 34 defines a plurality of orifices 331 through which water may pass. The orifices 331 are arranged in a nonlinear manner such that a distance between two adjacent orifices 331 near the first ends of the arcuate pipes 33, 34 is greater than a distance between two adjacent orifices 331 near the second end of the arcuate pipes 33, 34. The nonlinear arrangement of the orifices 331 provides an even distribution of water along the length of the arcuate pipes 33, 34.

In operation, when a user needs a little amount of water to flush away urine, the switch 351 can be turned to a horizontal position, i.e., to close the drainage pipe 41 of the washbowl 40, whereby waste water in the washbowl 40 will be guided into the conduit pipe 30 and flush the toilet bowl 20 via the orifices 331, 341 of the arcuate pipes 33 and 34. Therefore, the waste water in the washbowl 40 is utilized. When the

waste water is too dirty to flush the toilet bowl 20, or when the user needs a large amount of water to flush away stools, the switch 351 can be turned to a longitudinal position, i.e., to open the drainage pipe 41 of the washbowl 40. The waste water in the washbowl 40 will be directly discharged from the drainage pipe 40, while the stools can be flushed by the water from the water tank 10 in a usual way.

Accordingly, with the flush device of present invention, the water for flushing can be effectively saved.

It is to be understood, however, that even though numerous characteristics and advantages of the present invention have been set forth in the foregoing description, together with details of the structure and function of the invention, the disclosure is illustrative only, and changes may be made in detail, especially in matters of shape, size, and arrangement of parts within the principles of the invention to the full extent indicated by the broad general meaning of the terms in which the appended claims are expressed.



Claims

1. A flush device connected between a toilet bowl and a washbowl comprising:

a tap connected in a drainage pipe of the washbowl;

a conduit pipe connected in fluid communication between the tap and an inlet of the toilet bowl so as to flush the toilet bowl with waste water from the washbowl; and

a pair of arcuate pipes disposed oppositely in a hollow rim of the toilet bowl, each of said pair of arcuate pipes defining a plurality of orifices therein;

wherein said conduit pipe has a first end connected to the tap and a second end connected into an L-shaped flush pipe of the toilet bowl, the second end having a diameter smaller than that of the L-shaped flush pipe and extending in the L-shaped flush pipe to the toilet bowl;

wherein a first end of each of said pair of arcuate pipes is respectively connected with the second end of the conduit pipe by a T-shaped connector.

2. The flush device as defined in claim 1, wherein said tap has a change over switch mounted thereon.

3. The flush device as defined in claim 1, wherein adjacent orifices have a decreasingly smaller distance therebetween when progressing from the first end of the arcuate pipes to the second end of the arcuate pipes.