

Dual Flush Toilet Actuating System

Field of the Invention

[0001] The present invention generally relates to a flush toilet system, and particularly to a wall-mounted dual flush toilet actuating system.

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Background

[0002] As the population in the earth are kept growing significantly, the usage of water – the most important compound in lives – thus accordingly increase. Due to the fear of short water supply in the future, many attempts have been made for conserving water. Considered extremely important, many attempts have been made
10 to conserve water in all aspects, including in building planning and operation.

[0003] It is a current trend that dual flush toilet systems are preferred in houses and public premises. Unlike traditional flush toilet systems, dual flush toilet systems provide a partial flush feature, i.e. an option to the toilet user to use lesser volume of water to flush away liquid waste and small amounts of waste or in any occasions that
15 full volume of water is not required. These features are not available in traditional flush toilet systems.

[0004] US 2005/0217012 provides a dual flush toilet system with a water tank, a discharge opening, a flush valve and a toilet bowl. The dual flush toilet system is provided with a dual action flush lever for actuating a full or a partial flush operation,
20 an engaging device with a V-shaped groove for selectively engaging the flush valve in both upward or downward movements and rotations about a vertical axis, a travel

limit device for limiting the maximum travel of the flush valve down to close the discharge opening and an electronic control system for electronically regulating the volumes of water used to flush the wastes. These elements controls the volumes of the water used to flush the wastes in the dual flush toilet system.

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Summary

[0005] One aspect of the present invention provides a wall-mounted dual flush toilet actuating system. The wall-mounted dual flush toilet actuating system comprises: a dual flush toilet button mounted on a metal plate attached vertically to wall of a washroom. The dual flush toilet button comprises a partial flush toilet button
10 comprising a first operating member having a first operating rod mounted perpendicularly thereto and a full flush toilet button comprising a second operating member having a second operating rod mounted perpendicularly thereto.

[0006] It is to be noted that the first operating rod and the second operating rod are enclosed by a housing member having a first through hole and second through hole.
15 In response to a pressing operation of the partial flush toilet button, the first rod being moved inwardly along the first through hole, wherein in response to a pressing operation of the full flush toilet button, the second rod being moved inwardly along the second through hole.

[0007] The wall-mounted dual flush toilet actuating device further comprises a beam
20 structure mounted on the back side of the metal plate. The beam structure has a water valve with an activation stem, wherein the water valve is connected to main water supply line such that an amount of flushing water is discharged from the main water

supply line into a toilet bowl in response to a pressing operation of the activation stem.

[0008] The wall-mounted toilet actuating device further comprises a lever having a proximal end and a distal end configured to couple the operation of the partial flush toilet button with the valve. The distal end of the lever is bent in a curvature shape and positioned on top of the through holes such that when the partial flush toilet button is subjected to a pressing operation, the rod is moved through and out of the through holes thereby pressing the distal end of the lever inwardly. The proximal end of the lever is pivoted on the beam structure and coupled with the activation stem, wherein the proximal end of the lever moves inwardly in response to the inward pressing operation of the distal end of the lever, thereby presses the activation stem of the valve and activates the valve thereof, wherein the amount of water released by the pressing operation is controlled by the pressing operation.

[0009] In a further embodiment, the water valve of the wall-mounted toilet actuating device is connected to bypass hoses for bypassing the water discharged into the toilet bowl from a water pipe tank.

Brief Description of the Drawings

[0010] This invention will be described by way of non-limiting embodiments of the present invention, with reference to the accompanying drawings, in which:

[0011] **Fig. 1** illustrates a front view of a dual flush toilet button **100** in accordance with one embodiment of the present invention;

[0012] Fig. 2 illustrates a cross-sectional view of the dual flush toilet button 100 of Fig.1;

[0013] Fig. 3 illustrates a perspective back view of the dual flush toilet button 100 of Fig.1 with dual-flush toilet actuating system in accordance with one embodiment of the present invention; and

[0014] Fig. 4 illustrates a top view of the dual flush toilet button 100 of Fig. 1.

Detailed Description

[0015] The following descriptions of a number of specific and alternative embodiments are provided to understand the inventive features of the present invention. It shall be apparent to one skilled in the art, however that this invention may be practiced without such specific details. Some of the details may not be described in length so as to not obscure the invention. For ease of reference, common reference numerals will be used throughout the figures when referring to same or similar features common to the figures.

[0016] The present invention provides a wall-mounted dual-flush toilet actuating system. The system of the present invention is applicable in a tank-less toilet. A tank-less toilet is a toilet which does not rely on a water accumulating tank to flush away any wastes in the toilet bowl. Instead, the tank-less toilet receives water directly from main water supply line of a building. Compared to normal tank toilets, the advantage of such tank-less toilet is the tank-less toilet refills very fast after being flushed, thus user does not need to wait any longer to discharge another batch of flush water.

[0017] In the embodiments of the present invention, it is preferable that the wall-mounted dual-flush toilet actuating system of the tank-less toilet is controlled by a dual flush toilet button mounted onto the wall of the washrooms.

[0018] **Fig. 1** illustrates a front view of a dual flush toilet button **100** in accordance with one embodiment of the present invention, whilst **Fig. 2** illustrates a cross-sectional view of the dual flush toilet button **100**. The dual flush toilet button **100** is embedded onto a metal plate **110**. The metal plate **110** is mounted onto wall of washroom in houses or public premises, wherein main water supply line is installed therein. Accordingly, the dual flush toilet button **100** can be connected to the main water supply line by pipe means. As the dual flush toilet button **100** is engaged by pressing it inwardly, namely when the toilet is being flushed, an amount of water from the main water supply line will be released to flush away any wastes.

[0019] Referring to **Fig. 1** and **Fig. 2**, the dual flush toilet button **100** comprises a partial flush button **101** and a full flush button **102**. The partial flush button **101** further comprises a first operating member **103** having a first rod **103B** attached perpendicularly thereto, whilst the full flush button **102** comprises a second operating member **104** having a second rod **104B** attached perpendicularly thereto.

[0020] Still referring to **Fig. 1** and **Fig. 2**, the operating members **103**, **104** are enclosed by a housing member **105**. Further, the housing member **105** comprises through holes **105A** and **105B** for receiving the rod **103B** and **104B** respectively. As the partial flush button **101** is pressed, accordingly, the rod **103B** is moved inwardly through the through holes **105A**. Similar mechanism will occur as the full

flush button **104** is pressed, i.e. the rod **104B** is accordingly moved inwardly through the through holes **105B**.

[0021] To release back the partial flush button **103** or full flush button **104** to their original position upon pressing, it is preferable that spring coils **103C**, **104C** is
5 fitted over each of the rod **103**, **104** respectively. The spring coils **103C**, **104C** reside on the floor of the housing member **105**.

[0022] Fig. 3 is a perspective back view of the dual flush toilet button **100** with dual-flush toilet actuating system in accordance with one embodiment of the present invention, whilst Fig. 4 is a top view of the dual flush toilet button **100**.

10 [0023] The feature of the dual-flush toilet actuating system of the present invention will be illustrated by its application for activating partial flush mechanism in a dual flush toilet system controlled by the dual flush toilet button **100**.

[0024] The dual-flush toilet actuating system comprises a lever **201** configured to couple operation of the partial toilet button **101** with a water valve **202** having an
15 activation stem **203**, wherein the water valve **202** is connected to the main water supply line. The water valve **202** is attached to a beam structure **210** mounted on the backside of the metal plate **110**.

[0025] The proximal end **201A** of the lever **201** is pivoted on the beam structure **210**. The proximal end **201A** of the lever **201** is coupled with the activation stem
20 **203** of the water valve **202**. The proximal end **201A** of the lever **201** is positioned and configured in such a way that in a toilet rest state, i.e. when the toilet flush is

not activated, the proximal end **201A** of the lever **201** makes a perfect tangent with the activation stem **203**.

[0026] Still referring to **Fig. 3** and **Fig. 4**, the distal end **201B** of the lever **201** is preferably bent in a curvature shape. The distal end **201B** is positioned on top of the rod **103B** resided in the through holes of the partial flush button of the dual flush toilet button **100**.

[0027] The operating mechanism of the dual flush toilet actuating system of the present invention is described as follows.

[0028] In particular, in the partial flush toilet operating mechanism, the partial flush toilet button **101** of the dual flush toilet button **100** is engaged by a pressing operation. As the partial flush toilet button **101** is pressed inwardly, the rod **103B** will be simultaneously moved inwardly through the through holes **105A** and presses against the distal end **201B** of the lever **201**. Accordingly, the lever **201** is inclined, and simultaneously, the proximal end **201A** presses against the activation stem **203** of the valve **202** provided at the beam structure **210**. The water valve **202** is simultaneously triggered into the open position and the water from the main water supply line is thus discharged into toilet bowl to flush away the waste.

[0029] In one embodiment, the water valve **202** is connected to plurality of hoses facilitating the discharging water process from the main water supply line of the building.

[0030] The lever of the toilet actuating system of the present invention provides a simple yet a reliable dual-flush toilet actuating system. The end curvature shaped

lever makes a strong and sturdy toilet actuating system. The lever is also cheap and easy to manufacture, without such complicated mechanism to open and activate water valve in a toilet system.

[0031] The above description illustrates various embodiments of the present invention along with examples of how aspects of the present invention may be implemented. While specific embodiments have been described and illustrated it is understood that many changes, modifications, variations and combinations thereof could be made to the present invention without departing from the scope of the present invention. The above examples, embodiments, instructions semantics, and drawings should not be deemed to be the only embodiments, and are presented to illustrate the flexibility and advantages of the present invention as defined by the following claims:

Claims

1. A wall-mounted dual flush toilet actuating system, comprising:

a dual flush toilet button mounted on a metal plate attached vertically to wall of
a washroom, the dual flush toilet button comprises a partial flush toilet button
5 comprising a first operating member having a first operating rod mounted
perpendicularly thereto and a full flush toilet button comprising a second
operating member having a second operating rod mounted perpendicularly
thereto, wherein:

the first operating rod and the second operating rod are enclosed by a
10 housing member having a first through hole and second through hole,
wherein in response to a pressing operation of the partial flush toilet
button, the first rod being moved inwardly along the first through hole,
wherein in response to a pressing operation of the full flush toilet button,
the second rod being moved inwardly along the second through hole;

15 a beam structure mounted on the back side of the metal plate, the beam structure
having a water valve with an activation stem, wherein the water valve is
connected to main water supply line such that an amount of flushing water is
discharged from the main water supply line into a toilet bowl in response to a
pressing operation of the activation stem;

20 a lever having a proximal end and a distal end configured to couple the
operation of the partial flush toilet button with the valve, wherein:

the distal end of the lever is bent in a curvature shape and positioned on top of the through holes such that when the partial flush toilet button is subjected to a pressing operation, the rod is moved through and out of the through holes thereby pressing the distal end of the lever inwardly;

5 the proximal end of the lever is pivoted on the beam structure and coupled with the activation stem, wherein the proximal end of the lever moves inwardly in response to the inward pressing operation of the distal end of the lever, thereby presses the activation stem of the valve and activates the valve thereof, wherein the amount of water released by
10 the pressing operation is controlled by the pressing operation.

2. The wall-mounted dual flush toilet actuating system of claim 1, wherein the valve is connected to bypass hoses for bypassing the water discharged into the toilet bowl from a water pipe tank.