

International Conference on Solid Waste Management, 5IconSWM 2015

A Mechanical Automatic Urinal-Toilet Flusher for Swach Bharat Mission

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Abstract

A flush urinal-toilet disposes human waste by using water through a drainpipe to another location. A series of urinal-toilets are fitted in offices, malls, multiplexes, educational institutions, bus railway stations, airports, commercial complexes, stadia and other public places. Most have manual flushing systems like push button, trigger, pull chain, etc. however, use of such manually operated flush can spread germs and bacteria when contacted and thus users avoids to flush or lead to wastage of water if used. Now a day's laser or infrared sensor operated flushes is also used in the places of high commercial value and importance but are expensive and required continuous O&M. Therefore, the sanitary facility may remain un-flushed leading to unhygienic conditions and foul smell. Thus need for a low cost automatic flushing apparatus which can flush the right-controlled amount of water and avoid direct contact thus conserving water as well as maintaining personal hygiene and sanitation. The present invention relates to a specially designed mechanical automatic urinal-toilet flusher and a mechanism thereof, which utilizes the weight load/pressure of the person using the urinal-toilet for automatic flushing the urinal-toilet with the specified or measured quantity of water to prevent odors, soil drain and scale buildup. It ensures the compulsory, regular and un-intentional flushing of the urinal-toilet without any direct hand contact of the user to the flush and also conserve water at the same time is simple and cheap, which can be fitted-retrofitted to new as well as existing water pipe line of the urinal-toilets.

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Peer-review under responsibility of the organizing committee of 5IconSWM 2015

Keywords: Bathroom, Hygiene, Fittings, Flushing Systems, Sanitation, Sanitory.

1. Introduction

A flush urinal-toilet disposes human waste by using water through a drain pipe to another location. A series of

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urinal-toilets are fitted in offices, malls, multiplexes, educational institutions, bus stands, railway stations, airports, commercial complexes, stadia and other public places. Most have manually operated flushing systems such as push button, trigger, pull chain, etc. however, use of such manually operated flush can spread germs and bacteria when contacted and thus users avoid to flush-on or flush-off, which may lead to dirty toilets or wastage of water if used. Now a day's laser or infrared sensor operated flushes are also used in the places of high commercial value and importance but are expensive and required continuous O&M, which may not be affordable to all. Therefore, the toiletries-sanitary facilities may remain un-flushed leading to dirty, unhygienic environment and foul smell, due to which people refrain from using it, and may leads to open defecation even in places with toilets, which may leads to various diseases.

Public awareness of personal hygiene and water conservation issues over the last several years has caused manufacturers of sanitary facility and hygiene devices to develop automatic actuators for sanitary facilities such as toilets and urinals. One purpose of such devices is to automatically control the amount of flush water used to eliminate waste and in the process eliminate human contact with the surfaces that may contain disease spreading bacteria.

Most of the present day toilets and urinal flush devices for sanitary facilities are operated by a water control valve which includes a manually operable flush handle adapted to be gripped and moved by a user. However, those manually operated valve actuation devices have many problems for e.g. use of such manually operated flush can lead to diseases thus users avoid to touch / use the flush button. Therefore, the sanitary facility may remain un-flushed which increases the unsanitary conditions, and fouling the atmosphere in the facility. Also, a large volume of water is wasted every time a user flushes a standard toilet.

Thus there is a great need for a low cost automatic flushing apparatus which can flush the essential-controlled amount of water and avoid direct hand contact, thus conserving water as well as maintaining personal hygiene and sanitation. The present invention discloses an automatic flusher with dual-valve pipe mechanism actuated by a mechanical platform

1.1 Reasons of Unflushed- Dirty Urinals-Toilets: Technical challenges to be overcome

In general, public places do stink, and un-clean urinals-toilets are the common observations which make the user of these urinals-toilets to avoid its uses, or to use it reluctantly in case of urgency. The reasons of not flushing the urinals-toilets and its limitations may be many which includes both *Technical* as well as *Non-Technical (Behavioural and Psychological)*, such as:

A. Limitation of Resources

- Un-availability of water.
- Higher water usage: Conventional water flush urinals use approximately 4 liters (approx. 1 gallon) of water for flushing, which goes up to 10-15 liters (approx. 3-4 gallons) when a toilet pan with flush is used for urinating. (Source: <http://web.iitd.ac.in/~chariarv/WLUResourceBookFinal.pdf>)
- Un-availability of flushing system itself
- Non-operational flush/ flushing system

B. Technical and Economic Reasons

- *Extra Time and efforts needed:* Tap fitted and manually operated urinal-toilets are sometimes too high or awkwardly mounted and are often dirty. It may lead to dirty urinals-toilets, if not flushed; or wastage of water, if flushed. As person using doesn't bother to take of extra time and efforts to open or close the tap/ knob fitted on the wall.
- *Absence of regular maintenance:* Faulty taps used for flushing may leads to continuous wastage of water and is commonly observe all over. Also there is a chance of spillage of urinal water on the person during its usage.

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