

ABSTRACT

Now days, most of the peoples are too lazy and they avoid to push flush after urinating. In public places toilet flushers are very unhygienic which affects to the health of the people and there are some people who doesn't closed the knob of the flusher, which result in the wastage of water. As we know that, water is an important things which used for many purposed. To overcome this problem it is proposed to design and fabricate the mechanically operated urinal flusher which works automatically. So it does not required any external source to push the knob of the flusher and it minimizes the wastage of water as well. It helps to provide clean and hygienic environment.

Keywords: Urinal toilet flusher system, Hygiene.

I. INTRODUCTION

Flushers are generally available in two types, manual (knob or button) and solenoid. The purpose of these flushers is to flush the urinal waste away into the sewer system. At most of the places, where manual flushing system used are of the type of push button, trigger, pull chain etc. However, such types of manual operated flusher can spread germs and bacteria when user comes in contact and thus users avoid pushing the knob of the flusher at the time of the urinating. A urine toilet is a toilet that throw out human urine waste by using water to flush it through a pipe to another location or throwing away, thus maintain a distance between humans and their excreta.

More importantly in view of the recently launched "SWACHH BHARAT MISSION", by Honorable Prime Minister of India with a special focus of hygiene and sanitation in urban as well as rural areas, especially for the economical backward population of India, this innovation has a great social importance and potential for replication within India.

II. LITERATURE REVIEW

Mohamed Aamir.M, Kamalanathan. P [1], they have studied that water is the resource which is very important for now a days and in future. People want clean and hygienic restrooms, toilets and comfortability with saving of water.

E.V.Munch (Germany) and P.Dahm (South Africa) [2] they have studied that odour control methods in waterless urinals and the aspects to be considered regarding maintenance requirements and costs.

Abhimanyu Kumar and AnshuTaunk [3] have studied that it is desirable to present the definition of the sanitation in schools, colleges, and rural areas in Uttarakhand. It is anticipated that the state will archive full sanitation coverage in near future.

Ling Xu and Chunxiang Cao [4] have studied that status analysis of public toilets and the problem existing in public toilets. They also studied the measures uses to perfect construction of toilets.

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III. DESIGN AND PARTS:

The mechanically operated urinal flusher is consisting of following components:-

A. Main tank, B. Secondary tank C. $\frac{3}{4}$ " inlet valve. 1" outlet valve. Urinal F. Platform. Base
 H. Lever and linkages, I. Spring

A. Main Tank: - The main tank is water storage tank or the reservoir. It is the supply of water for flushing the urinal waste.

B. Secondary Tank: - The secondary tank is the tank in which the water accumulated from the main tank for flushing.

C. $\frac{3}{4}$ " inlet Valve: - The $\frac{3}{4}$ " inlet valve is the flow control valve which is used to allow the water from main tank to secondary tank when it is in opened condition.

D. 1" outlet Valve: - The 1" outlet valve is another flow control valve which is used to drain out the water from secondary tank to the urinal while it is in opened condition.

E. Urinal: - The urinal is the basin in which the person does urinating. The one end of urinal is connected to secondary tank and another is connected to drainage.

F. Platform: - The platform is the place where the person is stands for the urinate. The platform is connected to linkage for movement of the valves. The spring is attached below the platform.

G. Base: - The base is the solid frame which sustains urinal flushing system. The platform place on the base.

H. Linkage:-The linkage is connected to the platform and the valves. It is used to opening and closing of the valves.

I. Spring:-The spring is used to movement of the platform. When the person stands on the platform spring gets compressed and vice versa

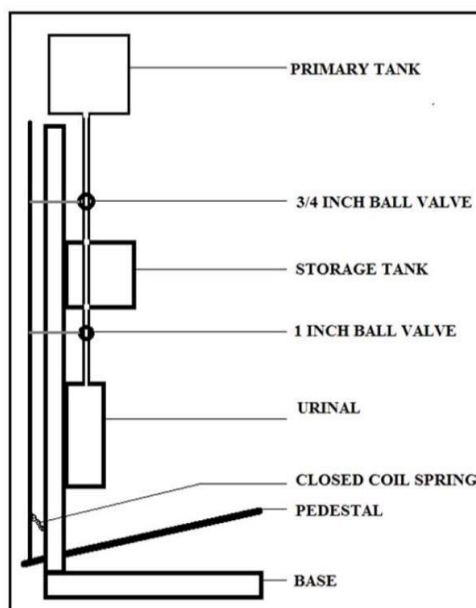


Fig: Actual Setup



Fig.2 Schematic diagram of actual setup

IV. WORKING:

The working process of the mechanically operated urinal toilet flusher system can be Second stage c. Final stage

- a) **Initial stage:** Highlights: 3/4 inch inlet valve – closed condition, 1 inch outlet valve – opens condition

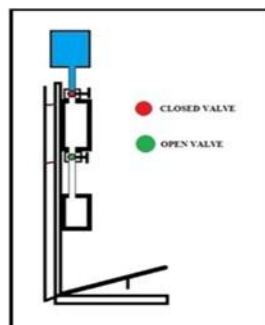


Fig. Initial stage

In initial stage of the system operation, the platform would be at its original position or ideal condition. The inlet valve is closed condition and the outlet valve is opened condition. Hence water from main tank cannot be entered in the secondary storage tank. The platform spring is in its normal condition i.e. decompressed.

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b) **Second stage:** Highlights: $\frac{3}{4}$ inch inlet valve -open condition, 1 inch outlet valve – closed condition

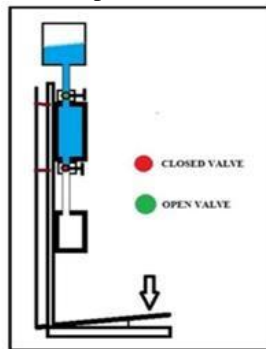


Fig. Secondary stage

In second stage, the person who stands on the platform because of its weight the platform spring gets compressed. Hence the linkage moves upward and the inlet valve gets opened and the outlet valve gets in closed condition. With the help of inlet valve the water from main tank enters in the secondary storage tank. Because of the closed condition of outlet valve the water doesn't get flush.

c) **Final stage:** Highlights: $\frac{3}{4}$ inch inlet valve – closed condition, 1 inch outlet valve – opens condition

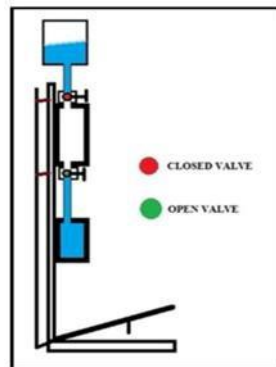


Fig.Final stage

In final stage, when the person leaves the platform after urinating, the platform moves upwards and the spring comes to its original position i.e. in decompressed position. Hence the linkage moves downward and the inlet valve is closed and the outlet valve gets opened condition. Due to the open condition of outlet valve the water gets flushed.

Thus, the water gets flushed without any manual effort, it works automatically. The water doesn't flushed until the person who stand on the platform. Hence we save the wastage of water.

V. ADVANTAGES

The main advantages of the mechanically operated urinal flusher are:

1. No wastage of water.
2. It provides hygienic environment and restricts the bad odour.
3. This system is totally automatic. It doesn't require any external source.
4. This system is cheaper than the sensor based urinal flushing system.

VI. DISADVANTAGES

The disadvantages of the mechanically operated urinal flusher are:

1. The system requires lubrication because of mechanical linkage and springs are used.
2. These system is convenient only for men.

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VII. APPLICATIONS

The mechanically operated urinal toilet flusher would be used in following places

1. Public places such as malls, theater etc.
2. School and Colleges.
3. Railway stations and Bus stands.
4. Gardens or parks.
5. Government offices, etc.

VIII. CONCLUSION

Water is the universal resource and every living being has the authority to have clean and hygienic water. It is our responsibility to pass this natural resource to the future generations. Measures have to be taken by everyone to save water by all possible means. The mechanically operated urinal flusher would be incorporated in public places to provide clean, hygienic and comfortable use of restrooms, in addition to saving of water resource

IX. REFERENCES

- [1] Mohamed Aamir M., Kamalnathan P., "AUTOMATIC URINAL FLUSHING SYSTEM", International Journal of Science, Engineering and Technology Research (IJSETR), Volume4, Issue 4, April2015.
- [2] E.V.Munch, P. Dahm, "Waterless Urinals: a Proposal to save water and recover urine nutrients in Africa", 34th WEDS International Conference, Addis Ababa, Ethiopia, 2009.
- [3] Abhimanyu Kumar, Anshu taunk, "A study of sanitation of toilets in elementary and senior secondary schools located in rural areas of Uttarakhand state in India". International Journal of Sociology and Anthropology, ISSN 2006- 988x©2010 Academic Journal, Volume 2(8), pp. 178-184, October 2010.
- [4] Ling Xu, Chunxiang Cao," Investigation and research on public toilets in classical gardens of Suzhou", International Conference on Education Technology and Social Science (ICETSS 2014).