

Design and Development of Automatic Urinal Flushing System

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Abstract: India may finally be on the verge of making progress on eradicating problem of 'Uncleaned Public Washrooms'. The ministry of housing urban affairs is presently implementing missions like 'Swachh Bharat Mission' [SBM], Atal mission for rejuvenation and urban transformation [AMRUT], Smart Cities Mission and National Heritage City Development Augmentation Yojana. Swachh Bharat Mission is a flagship mission of Government of India and is committed to achieving total sanitation in the country. Now a day's laser or infrared sensor operated flushes is also used in a places of high commercial value and importance but are expensive and required continues operation and maintenance

Keywords: Save Water, Hygeine, Urinal, Flushing, Swachh Bharat Mission

I.INTRODUCTION

The urinal flushing system is used for disposal of human urine by using water. This type of urinal toilets are fitted in everywhere like public places (Urban & Rural), schools, hotels, bus stand etc. Many peoples using this urinals manually. This manually operated flush can spread germs, bacteria and many infectious diseases due of user flush on-off knob to contact b because of that many peoples avoid to flush. It leads to dirty and unhygienic environment Government and private sectors spends lots of money for the cleanliness and maintenance of the urinals. Therefore, solve this type of problem we needs to develop

I.1.Benifits of Automatic Urinal Flushing System:

Auto-flush is a feature available for toilets, sink faucets and urinal, and is an especially useful

Feature for public bathroom's as they require less maintenance than standard units. Growing in popularity, automatic bathroom features are becoming commonplace in more developed use abbreviations in the title or heads unless they are unavoidable country.

- Improved Sanitation:

Use of the toilets at public places is more as compared to domestic. If flushing system gets faulty it causes serious diseases. If we installed auto. Flush this problems are not arriving.

- More Economic:

Auto-flush facilities are very reasonably priced and are designed to consume less water and energy than traditional flushing system.

- Water Conservation:

The main advantage of the automatic flushing system is to avoid reduction in water wastage.

- Ease of use:

This system is totally hands-free. Older system can be quite difficult to work, often leading to incomplete flushing. That problem eliminates in automatic flushing system. And allows all capabilities to use the facilities with ease.

II.OBEJECTIVE

The main objectives of this project are as follows

1. To keep environment clean and hygienic. By using mechanical linkages.
2. To use less amount of water.
3. To avoid external power supply and reduce maintenance coast.
4. To maintain washrooms odor free.

III. DESIGN AND DEVELOPMENT

III.I.Construction:

List of components of Automatic Flushing System

1. Primary Tank
2. Secondary Tank
3. Brass valve 1/2 inches
4. Spring
5. Urinal
6. Pedistrial

7. Frame

1. Primary Tank: This is 1000 ltr. Tank manufactured by Samrudhi Industries Ltd. and placed at rooftop of the building.

2. Secondary Tank: It is one liter tank made from plastic.

3. Brass Valve 1/2 inches: The two brass valves are used manufactured by

Dimensions: 145*93*39mm

4. Spring: Two helical coil springs are used at bottom side of frame to store the energy from person standing on pedestal

Dimensions-

Wire diameter: 2.5mm

Outer diameter: 15mm

Internal diameter: 10mm

Length: 100mm

Capacity: 50 mm

5. Urinal: One ceramic urinal manufactured by Jaguar Ceramic.

Dimensions-

Length: 350mm

Width : 340mm

Height : 390mm

6. Pedestal: It is the platform for standing to urinate made from MS material which operates on bush.

Dimensions-

Length : 731mm

Width : 518mm

Height : 30mm

7. Frame: It is a rigid structure which made of MS material on which all the components are mounted.

Dimensions-

Length: 762mm

Width : 609mm

Height : 1828mm

III.II. Working:

The pedestal goes down due to weight of person stands on it. Due to this movement of pedestal springs get elongated. This downward movement causes upward movement of link .Valves are operated by movement of link .The secondary tank is placed between this two valve .At initial position upper side valve is closed and lower side valve is opened. At that time no water fills in secondary tank. At working position due to movement of link upper valve is opened and lower valve is closed. That time the water from primary tank fills in the secondary tank. When the person comes back down from the pedestal after urinate, the pedestal comes back to its initial position due to spring contraction as well as link also comes at its original position. Then upper valve gets closed and lower valve gets opened. By opening of lower valve water flushes to the urinal.

IV. STRUCTURE LAYOUT:

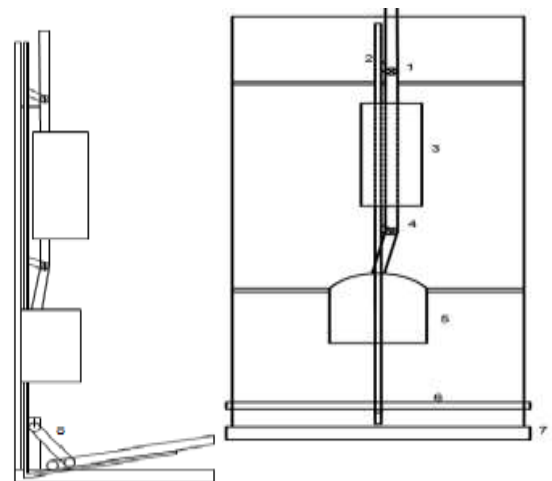


Figure a

Figure b

Part List:
1] Upper Valve
2] Mechanical Link
3] Tank
4] Lower valve
5] Urinal Pot
6] Pedestal
7] Frame
8] Helical Tension Spring

V. ADVANTAGES:

- Wastage of water in the urinal would be greatly prevented.
- This type of automatic urinal flushing system does not require external electricity source
- This system is totally hands free system.
- This system is comparatively less expensive and simple in design than the sensor or electric operated automatic urinal system.
- This system prevents bad odor and unhygienic environment in the public restroom and stand,
- 100 % efficiency in cleaning the urinal can be achieved by using this proposal.
- The excreta of one user are flushed away before the next user arrives.

VII. DISADVANTAGES:

- This system is only useful for men's toilets.
- Springs and link used in this system are required lubrication regularly.
- Requires a constant source of water.

VIII. APPLICATION:

This type of automatic urinal flushing system could be used in places such as

- Public restrooms
- Railway stations
- Parks
- Bus stands
- Government offices
- Schools

IX. CONCLUSION:

This project is developed for provide the low cost alternative solution for automatic regular and unintentional hands-free flushing of urinal toilets and societal needs as well as save the water. It is fabricated with help of mechanical elements and no electrical and electronic components can be used .This type of urinal flushing system can be placed in public places to provide a clean, hygienic and flexibility use of toilets ,which saves the amount of water flush. This is our small step towards the 'SWACHH BHARAT MISSION'.

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