FORM 2

THE PATENT ACT 1970

(39 OF 1970)

AND

The patent rules, 2003

COMPLETE SPECIFICATION

(See section 10: rule 13)

1. TITLE OF INVENTION

Green Cistern Toilet Flushing Apparatus

2 APPLICANTS

Name	Nationality	Address
Ingole Vijay Tulshiram	Indian	104 Ganediwal layout, camp, Amravati-444602
Ingole Indira Vijay	Indian	104 Ganediwal layout, camp, Amravati-444602
IngoleAshutosh Vijay	Indian	104 Ganediwal layout, camp, Amravati-444602
IngoleParitosh Vijay		104 Ganediwal layout, camp, Amravati-444602

3. PREAMBLE TO THE DESCRIPTION

COMPLETE

Following specification particularly describes the invention and the manner in which it is to be performed.

4. DESCRIPTION.

Technical field of invention:

Present invention in general relates to toilet flushing apparatus means cistern and particularly to western, Indian and similar commodes means toilet bowls by fully utilizing the natural head energy means pressure of the public water supply utilities as well as standalone overhead water tanks to save water.

Prior art:

The term cistern means an apparatus used to clean defecate/urinate having means of flushing.

Existing toilet cistern comprises a float valve which controls the flow to maintain a desired level of water in the cistern which is located above the toilet bowl at a height of meter or less so that when water is flushed by means of flush, valve, the water cleans the toilet bowl under action of gravity.In the conventional cistern plenty of water to the tune of 10 to 15 litres is required for each toilet flushing. If such high quantum of water is averted it could be availed by needy masses at large.

A conventional cistern is either connected to public water source or overhead water tank located at certain height and water is stored and controlled up to certain level by a float valve in cistern container. In certain cistern apparatus the volume of water can be minimized by adjustment up to certain extent but not to that extent. Fundamentally a float valve reduces the water head of several metres to fraction of metre. The Head loss is due turbulences created by its restricted outlet. This

involves a considerable waste the potential energy. Thus disadvantage with conventional cistern is waste of energy thus resulting in lot of water requirement to flush clean the toilet bowl and sewer. Further the cistern takes considerable time to get filled up due to restricted outlet of the float valve in addition to the associated noise. Furthermore there are other problems with the flush valve embodiment as it is controlled by the cistern using hard water. The cistern valves are prone to scale formation when used in hard water and subsequent leakages are very common requiring periodical replacements/maintenance.

In many installations a direct water supply is used for flushing toilet using an inlet cock. Normally for minimizing water head loss a larger diameter supply pipe is used requiring higher installation cost. Further where the water supply line is long it may not work that effectively due to water column inertia and water hammering.

US 7322053 B2 disclosed a pressurised toilet cistern comprising a container for toilet flushing water that is partially enclosed by an elastic membrane or diaphragm has an unrestricted connection to a source of water under pressure directly utilised for flush cleaning the toilet and sewer with less water quantity. But it may suffer from maintenance of the diaphragm and its associated problems in long term.

Hence there was a long felt need in the art to have such an apparatus means device, when installed would replace conventional low head cistern, noise, higher diameter supply pipe line, maintenance etc.

Object:

1. Primary object of the present invention is to save water for cleaning the toilet bowl and sever pipe by a novel cistern design requiring less volume of water.
2. Another object of the present invention is to provide a cistern which functions at the supply line head thereby conserving the potential energy of water.
3. Another object of the present invention is to dispense with float valve.
4. Yet another object of the present invention is to minimize water supply pipe line installation cost by using normal pipe.
5. Yet another object of the present invention is to make the flushing operation quicker and without water hammering.
6. Yet another object of the present invention is to minimize time between two successive flushing.
7. Yet another object of the present invention is to make the filling of cistern noise free.
8. Yet another object of the present invention is to provide flexibility in cistern installation, not being gravity related, for installation at available space nearby the cistern.
9. Yet another object of the present invention is to make it cost effective, safe to make use of and easy to install.

Other objects, features and advantages will become apparent from detail description and appended claims to those skilled in art.

STATEMENT:

Accordingly following invention providesa novel cistern as compared to various toilet flushing means cleaning apparatus either through direct supply line or through a conventional low head cistern comprising float valve not being energy efficient and using larger quantity of water and the present toilet flushing apparatus invention comprises a closed container enclosed by a rigid wall that has an unrestricted connection to a source of water under pressure either from public outlet or overhead tank that is sufficient to compress the air trapped above the container cavity and store the water in the lower cavity of container and when the control means flush valve is operated the pressurized water empties in the toilet bowl or urinal with high energy means velocity thereby cleaning the same and the inlet supply connection to the said container inside cavity and a pipe is preferably connected to the inlet pipe which opens in the said air cavity to prevent any accidental mixing of cistern water with the inlet supply line however at the cost of filling noise, means if noiseless operation is desired the said tube to be dispensed with and further the inlet pipe connected to a non-return valve to prevent cistern water to flow back to the supply system and preferably connected to inline cock which is always to be kept open during normal operation and an outlet pipe, preferably having larger diameter, from the cistern is immersed in container water and outside part is connected to the inlet of the toilet bowl or urinal through a control means flush valve and the container is further having a drain plug to occasionally clean the salt scale, muck or foreign particles/bodies accumulated inside the container and further connected to a pressure release valve to prevent any accidental buildup of high pressure inside the container due to unforeseen situation and the said cistern is preferably located above the

toilet bowl as per the regular practice however it offers no restriction to mount normally or in inverted manner around the toilet bowl as the flow is not gravity realted.

BRIEF DESCRIPTION OF DRAWING:

This invention is described by way of example with reference to the following drawing where,

Figure 1 and 2 of sheet 3/1 showsthe front and side elevation of container of the said cistern in ready for operation condition with mounting plates, supply inlet pipe connection, flush outlet pipe and drain/pressure release valve. Where,

100 denotesthe cistern embodiment.

101, 102, 103, 104, 105, and 106 denote cistern container wall, opening for fixing inlet supply line embodiment, opening for fixing flush outlet embodiment, opening for fixing drain and pressure release valve embodiment, mounting plates on either side, holes for grouting the cistern respectively.

201, 202, 203, 204, 205, 206, and 207 denote water supply inlet, inlet cock, non-return valve, union coupling, inlet threaded pipe to cistern, and optional pipe extension respectively.

301, 302, 303, 304, 305, and 306 denote cistern flush outlet pipe, control means flush cock in closed condition, union coupling, end of threaded outlet pipe to cistern and optional flush pipe extension for flushing water for quantity control respectively.

401, 402, 403, and 404 denote pressure release valve, drain cum coupling, and end of threaded drain pipe to cistern.

501, 502, 503, 504, and 505 denote inlet water flow direction, flush outlet water flow direction, water level inside container, water chamber cavity inside container.

601 denotes the compressed air cavity inside container.

Figure 3 of sheet 3/1 shows the front views of container with other embodiment after flushing operation.

Where,

602 denotes the air cavity preferably at atmospheric pressure

506 denotes the remaining water level

306 denotes the optional flush pipe extension

Figure 4 of sheet 3/1 shows the front views of container without optional flush pipe extension but with other embodiment after flushing operation.

Where,

507 denotes the remaining water level

Figure 5and 6 of sheet 3/2 shows the front and side elevation of the present invention of the said cistern grouted in conventional manner in a ready to use condition with embodiments attached to conventional toilet bowl.

Where,

601, 602, 603, 604 and 605 denote toilet bowl, flush inlet pipe fitted to bowl,opening for fitting of flush pipe,water seal and sewer outlet.

Figure 7 of sheet 3/3shows the front views of container of the present invention of the said cistern grouted in up-side down means an inverted position in ready to use condition with embodiments attached to conventional toilet bowl.

Where;

601, 602, 603, 604 and 605 denote toilet bowl, flush inlet pipe fitted to bowl,opening for fitting of flush pipe,water seal and sewer outlet.

507 denotes the direction of flush water flow

306 denotes the flush pipe connection between the cistern and toilet bowl.

In order that the manner in which the above-cited and other advantages and objects of the invention are obtained, a more particular description of the invention briefly described above will be referred, which are illustrated in the appended drawing. Understanding that these drawing depict only typical embodiment of the invention and therefore not to be considered limiting on its scope, the invention will be described with additional specificity and details through the use of the accompanying drawing.

Detailed description:

The present invention provides a novel cistern mean an apparatus for flushing means cleaning toilet bowl and sewer line using less quantity of water and to do the said operation effectively and efficiently.

The present toilet flushing apparatus invention comprises a closed container (100) enclosed by a rigid wall (101) that has an unrestricted connection to a source of water (501) under pressure either from public outlet or overhead tank that is sufficient to compress the air (601) trapped above the container cavity and store the water(505) in the lower cavity of container at a level (504) decided by pressure equilibrium means supply water pressure vis-à-vis compressed air (601) thence water from inlet (201) stops flowing and when the control means flush valve (302) is operated the pressurized water empties in to the toilet bowl (601) or urinal with high velocity thereby cleaning the same and sever outlet (605) and the inlet supply connection (201) to the said container inside water cavity (505) and the water (505) drained till it reaches the upper level of the pipe (306) and the flushing process stops

means by adjusting the level of the said pipe (306) the quantity of water can be adjusted or manipulated or controlled (Figure-5, 6). During this process the inlet supply (201) is simultaneous filling the container (100) against the pressure of air (601) and the air cavity (601) cushions the impact of the mass inertia of the inlet water thereby damping the phenomenon of water hammering. A pipe extension (207) is preferably connected to the inlet pipe (102) which opens in the said air cavity(601) to prevent any accidental mixing of cistern water (505) with the inlet supply line (201) and further the inlet pipe connected to a non-return valve (203) to prevent cistern water to flow back to the supply system (201) and preferably connected to inline cock (202) which is to always be kept open during normal operation and an outlet pipe (306), preferably having larger diameter, from the cistern is immersed in container water (505) and its extension is connected to the inlet (603) of the toilet bowl (601) or urinal through a control means flush valve (302) and the container is further having a drain plug (402) to occasionally clean the salt scale, muck or foreign particles/bodies accumulated inside the container (100) and further connected to a pressure release valve (401) to prevent any accidental buildup of high pressure inside the container (100) due to unforeseen situation and the said cistern is preferably located above the toilet bowl(Figure-5, 6) as per the regular practice however it offers no restriction to mount normally or in inverted manner (Figure-7) near the toilet bowl.

Additional advantages and modification will readily occur to those skilled in art. Therefore, the invention in its broader aspect is not limited to specific details and representative embodiments shown and described herein. Accordingly various modifications may be made without

departing from the spirit or scope of the general invention concept as defined by the appended claims and their equivalents.

CLAIMS

We claim:-

1. A toilet flushing apparatus comprising preferably a closed container for toilet flushing water and the container having unrestricted connection to water supply line having head means pressure that is sufficient to compress the air trapped in the upper portion of the said container and when the trapped water released through outlet by a control means flush valve, drains in toilet bowl or urinal and sewer line and the container comprising a rigid wall and having openings to the fitment of other embodiments means supply inlet valve, non-return valve with associated pipes, control means flush valve with pipes, drain and pressure release valve with pipe.

2. The apparatus as claimed in claim 1 comprises a closed container having been filled preferably with air at normal atmospheric pressure and the said container connected through an aperture in the said container to a continuous supply of pressurized water from public or overhead water storage tank water supply such that the said air entrapped in the said closed container compressed to the extent of pressure of the said water supply and said water occupies space below the said air and flushing valve when operated releases said pressurized water to flush a toilet or urinal or any application requiring instant pressurized water means showers etc, and a drain plug to clean the said container as and when required and a pressure release valve to prevent excessive pressure build up inside the said container, connected through an aperture to the said container and drained in the said toilet bowl or urinal.

3. The apparatus as claimed in claim 1 comprises an embodiment in a form of a attachable tube having certain length means height extended inside the said container and further attached to the said flush valve through the aperture in the said container so that when the flush water operates the said water under pressure from the its level inside the said container drains in the toilet or urinals to the top level of the said embodiment and by varying the height of the said embodiment the quantity of flushing water varies; and further comprises another preferable embodiment in a form of a attachable tube having certain length means height extended inside the said container such that it opens in the pressurized air cavity inside the said container and further attached to the said inlet valve through the aperture in the said container so that inlet water, such that the said embodiment opening always remain in the said air so to remain isolated from said flush water to avoid their inadvertent mixing however; to avoid noisy filling operation of the said container, the said embodiment to be dispensed with.

4. The apparatus as claimed in claim 1 comprises mounting means grouting arrangement for fixing at an appropriate position preferably above the said toilet or urinal however; the said embodiment having flexibility to be mounted on the floor or any available space nearby the toilet bowl or part of the cistern having a suitable provision.

5. The apparatus as claimed in claim 1, 2, 3, and 4 wherein the embodiments fixed on any side of the said a sealed container functions means having flexibility of mounting including on the floor.

6. The apparatus as claimed in claim 1 and claim 5 comprises an embodiment in a form of a attachable tube having certain length extended inside the said container and further attached to the said flush valve through the aperture in the said container so that when the flush water operates the said water under pressure from the its level inside the said container drains in the toilet or urinals till it touches the bottom level of the said embodiment means by varying

the height of the said embodiment the quantity of flushing water varies.

7. The apparatus as claimed in claim 1 and claim 5 comprises another preferable embodiment in a form of a attachable tube having certain length means height extended inside the said container such that it opens in the pressurized water inside the said container and further attached to the said inlet supply through the aperture in the said container so that inlet water and the said embodiment opening always remain in the said waterto avoid noisy filling operation of the said container however; to keep pressurized water isolated from said inlet water to avoid their inadvertent mixing the said embodiment to be dispensed with.

8. The apparatus as claimed in claim 1 and claim 5 comprises a non-return valve, pressure release valve.

Ingole Vijay Tulshiram
Ingole Indira Vijay
IngoleAshutosh Vijay
IngoleParitosh Vijay sheet 3/1

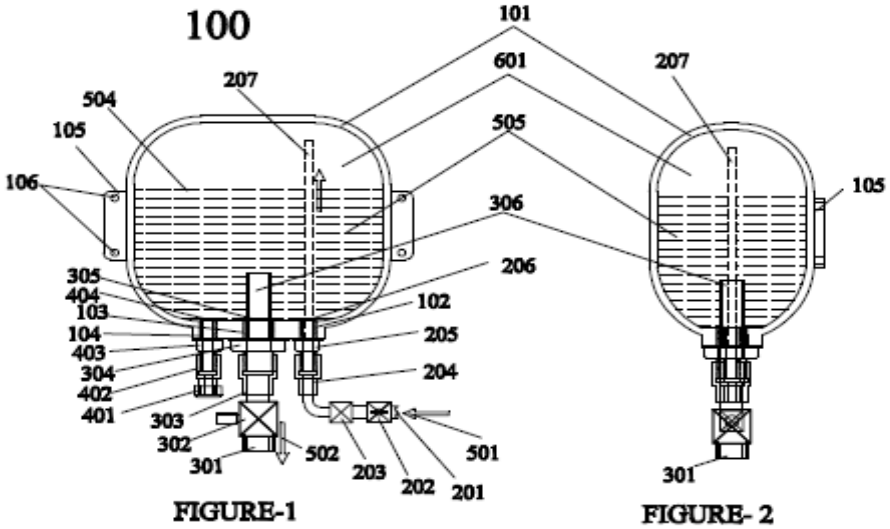

FIGURE-1 FIGURE- 2

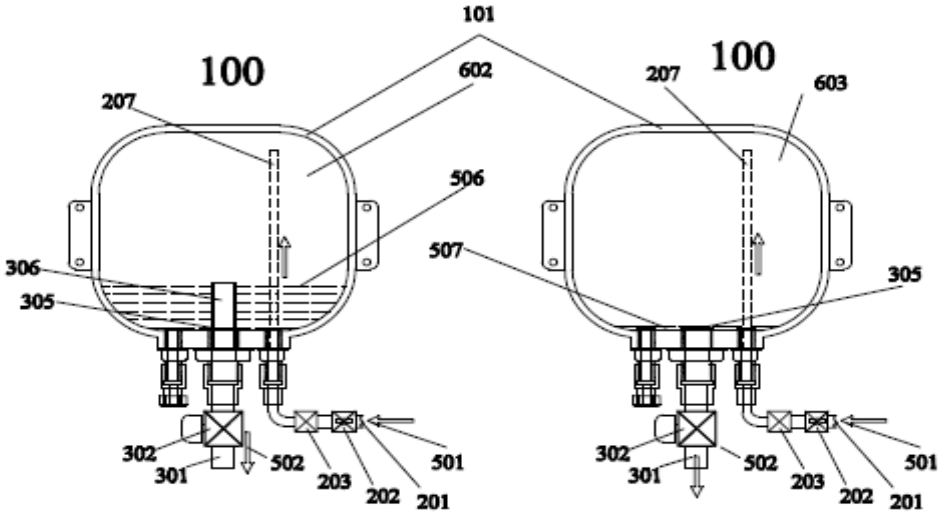

FIGURE- 3 FIGURE- 4

Ingole Vijay Tulshiram
Ingole Indira Vijay
IngoleAshutosh Vijay
IngoleParitosh Vijay sheet 3/2

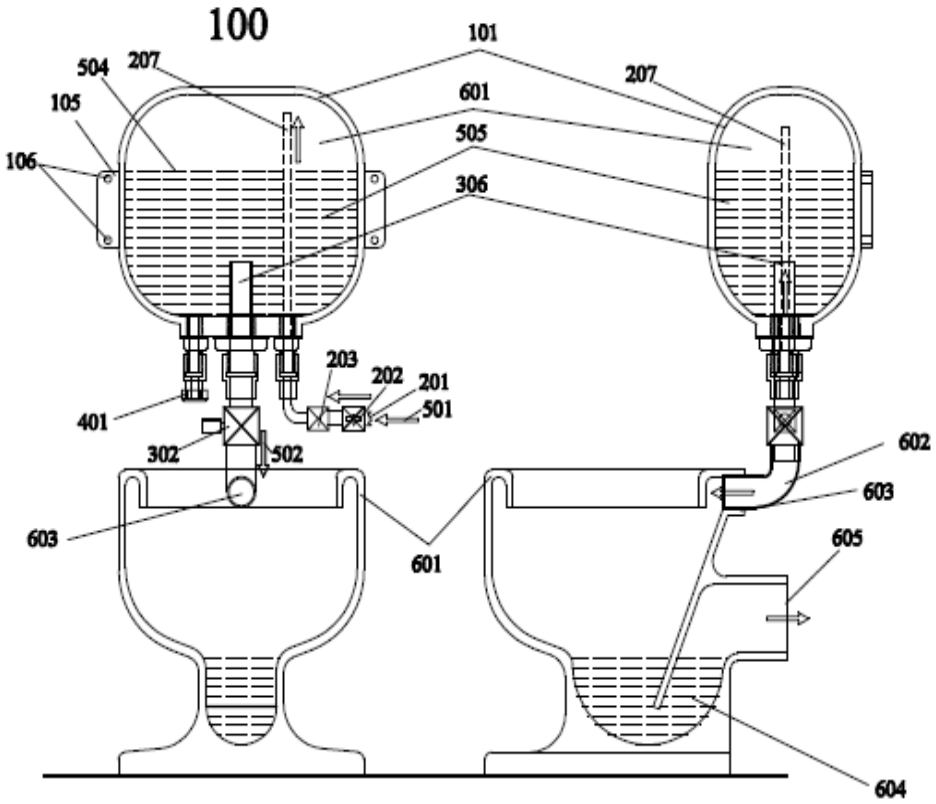

FIGURE- 5 FIGURE- 6

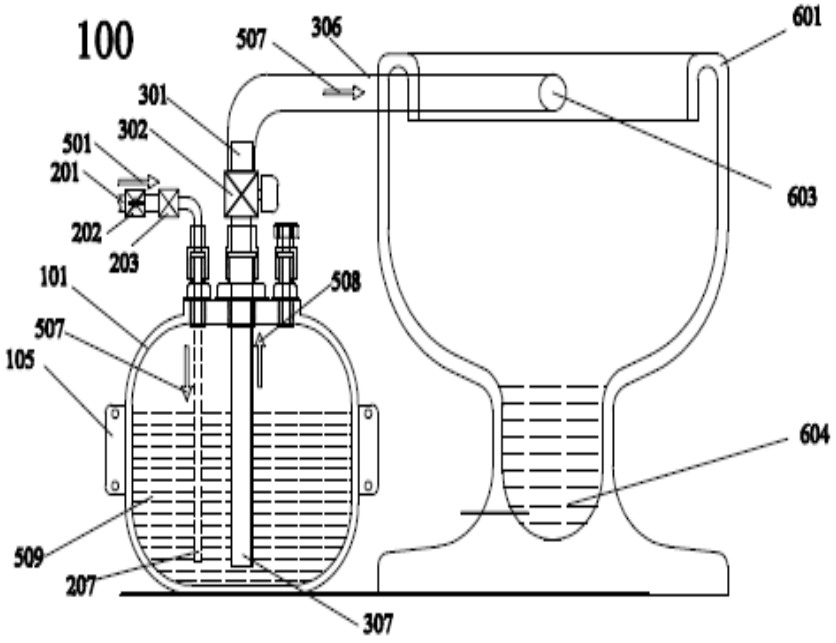
100
507
306
601
301
302
501
201
603
202
203
101
508
507
105
604
509
207
307

FIGURE- 7

ABSTRACT

The primary object of present invention is to replace conventional cistern comprising float valve having low head and using substantial quantity of water for flushing and being energy deficient by a novel cistern which is energy efficient, saves water means uses low water quantity, faster filling means low waiting period, noiseless, low in maintenance and cost effective as it utilizes the entire pressure of the water available in the public supply or overhead water tank and when the flush valve is operated the pressurized water empties instantly in the toilet bowl or urinal with high velocity thereby cleaning the same. Following invention is described in detail with the help of Sheet 1 in Figure-1,2,3,4, Sheet 2 in Figure-5, 6 and sheet 3 in Figure-7 showing various views of the apparatus.