D. E. GULICK.

FLUSHING DEVICE.

APPLICATION FILED JAN. 21, 1919.

1,437,650.

Patented Dec. 5, 1922.

2 SHEETS—SHEET 1.

Fig. 1.

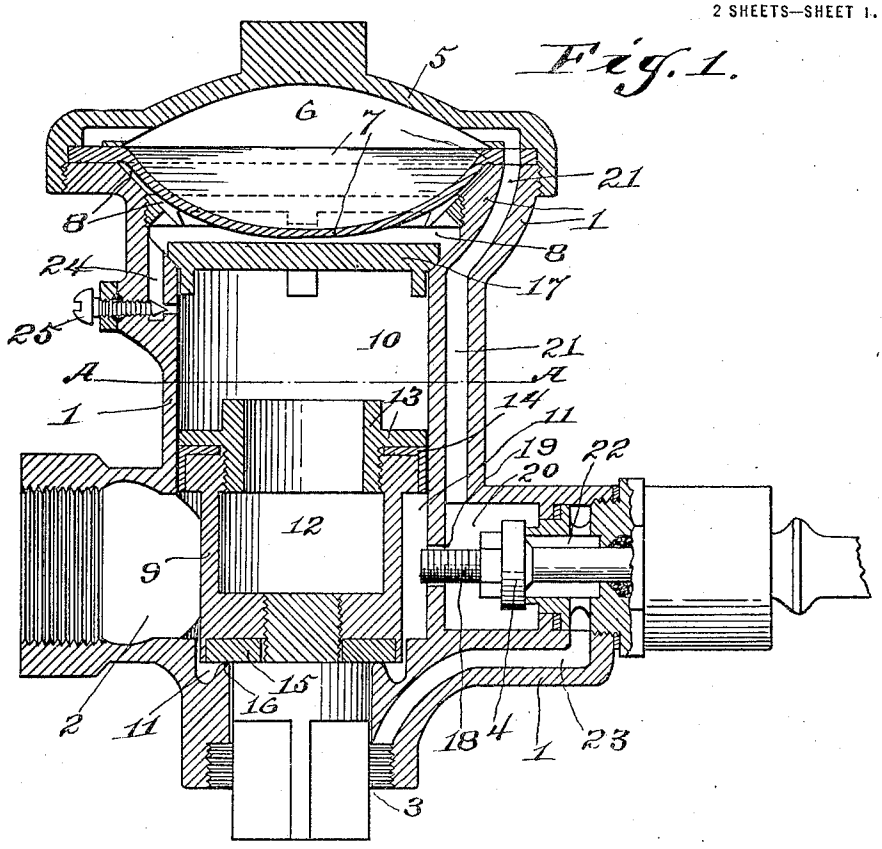
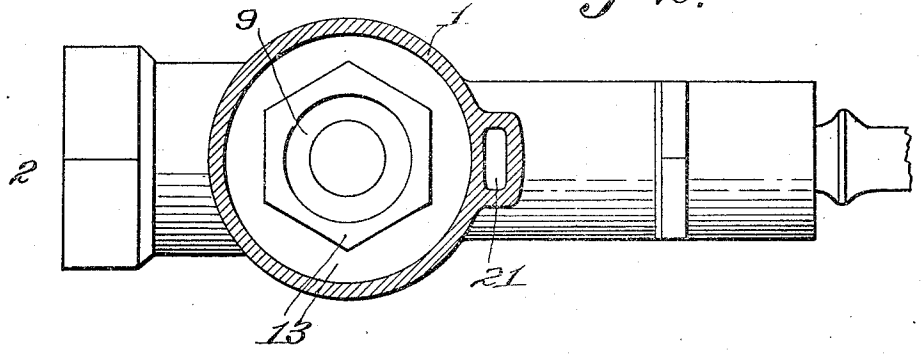


Fig. 2.



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2 SHEETS—SHEET 2.

Fig. 3.

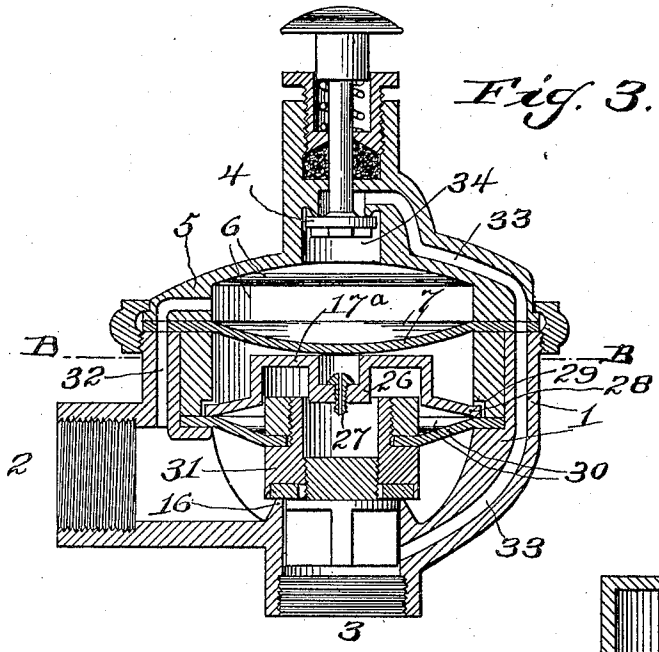


Fig. 5.

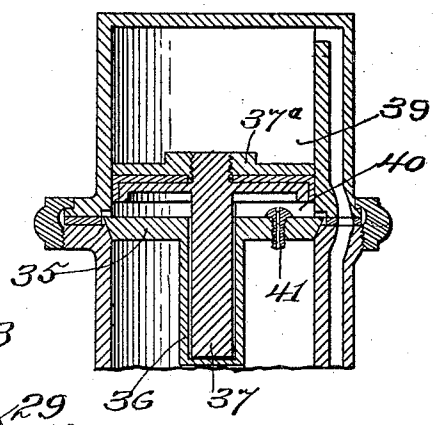


Fig. 4.

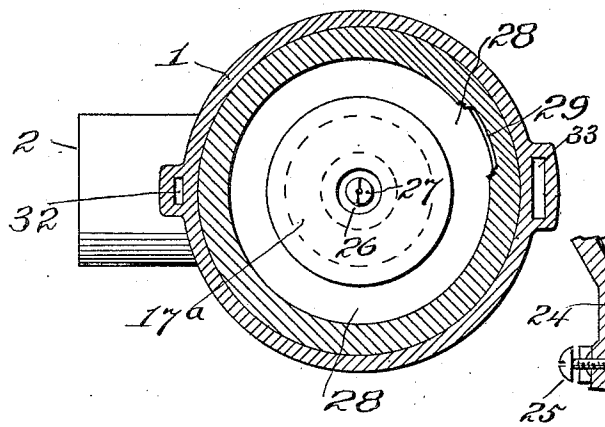
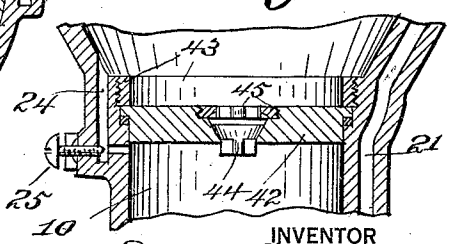


Fig. 6.



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Patented Dec. 5, 1922. 1,437,650

UNITED STATES PATENT OFFICE.

DAVID E. GULICK, OF SAN FRANCISCO, CALIFORNIA.

FLUSHING DEVICE.

Application filed January 21, 1919. Serial No. 272,294.

To all whom it may concern:

Be it known that I, DAVID E. GULICK, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented certain new and useful Improvements in Flushing Devices, of which the following is a specification.

This invention relates to water flushing devices, and pertains especially to certain features and modifications shown and described, but not claimed, in my Patent No. 1,297,836, dated March 18, 1919. This application also embodies certain new features and improvements over the device covered by said patent.

Two of the essential features of this device consist of a loosely poised partition or movable division dividing a main casing into two chambers and forming a check valve, and means for controlling the movement of the partition in a flushing operation.

Other important features producing advantages and improved results in manufacture and operation of this character of flushing devices, will be revealed in the specification to follow.

In the accompanying drawings forming part of this application:

Fig. 1 is a vertical sectional view.

Fig. 2 is a cross-section taken on the dotted line A—A, Fig. 1.

Fig. 3 is a vertical sectional view of a modification.

Fig. 4 is a cross-section taken on the dotted line B—B, Fig. 3.

Fig. 5 is a detail sectional view showing a further modification. Fig. 6 is a similar view of a further modification.

The same reference characters denote the same parts throughout the several views of the drawings.

The main body or casing 1 of this flushing device has an inlet 2, an outlet 3, and an initiating valve 4. A removable cover or cap 5 is secured to the casing 1 for closing this end of the casing, and said cap is of such shape or construction as to form, in part, a water chamber 6 as clearly shown in Figs. 1 and 3 of the drawings. In attaching the cap or cover 5, a flexible diaphragm 7 is secured between the casing and its cover, and forms an anchored partition having a movable central body, and separating the chamber 6 from an adjacent chamber 8.

Referring particularly to Fig. 1 of the drawings, the casing comprising parts 1 and 5 is divided into two main chambers by a non-flexible movable partition 17 loosely mounted in the casing to allow the passage of fluid around its periphery from one chamber to the other and to prevent return of the fluid in the same way. The upper main chamber is divided into two sub-chambers 6 and 8 by a flexible movable diaphragm 7. The lower main chamber is divided into two sub-chambers 10 and 11 by the movable partition 9. The piston is preferably hollow or chambered as at 12, and has a hollow flanged nut 13 screwing into the piston head for securing a piston gasket 14. The piston has a main valve 15 overhanging and closing on a seat 16 at the inner end of the outlet 3, and within the chamber 11. The initiating valve has an inwardly projecting stem 18 working through a water passage 19 for keeping the latter open and free from obstructions. Said passage 19 connects the chamber 11 with the initiating valve chamber 20, and this chamber is connected with the top chamber 6 by a water passage 21. The valve chamber 20 is connected with the outlet 3 through the seat opening 22, of said valve by means of the passage 23, and the chamber 10 has a bypass connection 24 with the chamber 8, and said bypass is controlled by a valve such as 25.

As shown in Fig. 3 the check partition 17^a is of special shape, having a dropped central member 26, provided with a screw duct 27, and a flange 28 loosely fitting an annular groove 29, adjacent to a flexible partition 30 upon which the piston valve 31 is mounted, so that the piston may work into the check partition, and the partition member 26 may work into the piston. A water passage 32 connects the inlet with the top chamber, and a water passage 33 connects the initiating valve opening 34 with the outlet.

Referring to the modification shown in Fig. 5, the check partition 35 has a depending socket 36 in which the stem 37, of the piston 37^a, works. This piston forms a movable partition above the check partition and divides the top casing 38 into two chambers 39 and 40. The partition 35 has a screw duct 41.

Obviously the operation of the check partitions shown herein is substantially the same, and the operation of the respective devices is substantially the same in flushing operations.

I do not wish to be understood as limiting myself as to the shape or construction and location of the check valve partition, or to any particular means or device for controlling or limiting the checking movements thereof. Nor do I wish to confine myself as to size, material and application of the invention, nor to the particular location of the initiating valve, but reserve the right to make such changes and variations in the manufacture and practical application of the invention as may be warranted under the appended claims.

In Fig. 6 is shown a partition 42 held in place by a screwthreaded ring 43. This partition is provided with a central check valve such as 44 which is limited in upward movement by a ring 45 screwing into the partition, so as to permit flow of liquid from one chamber to the other as separated by the partition without permitting return of the liquid through said valve.

Having thus described my invention what I claim as new and desire to secure by Letters Patent is:

1. In a flushing device, a casing having an inlet and an outlet, an initiating valve having an opening, a passage connecting said opening with the outlet, a non-flexible partition supported at its rim, dividing the casing into a pair of chambers, a passage connecting one of the chambers of said pair of chambers with the inlet, and a passage connecting said pair of chambers.

2. In a flushing device, a casing having an inlet and an outlet, an initiating valve, a fluid-operated main valve, a movable division supported at its rim dividing the casing into two chambers, a fluid-passage connecting said chambers, and a fluid-passage connecting an opening of the initiating valve with the outlet, said main valve and said division having cooperative movements in the flushing operation.

3. In a flushing device, a casing having an inlet and an outlet, a movable non-flexible partition dividing the casing into two chambers one of which is connected with the inlet by a passage, an initiating valve having an opening connected with the outlet, and a main valve cooperating with said non-flexible partition in a flushing operation.

4. In a flushing device, a casing having an inlet and an outlet, a main valve for opening and closing the outlet, a non-flexible movable partition supported at its rim and dividing the casing into two chambers and acting to check the closing movement of the main valve in a flushing operation.

5. A flushing device including a casing having an inlet and an outlet, a valve to control the outlet, a non-flexible movable partition supported at its rim and dividing the casing into two main chambers, and a relatively small passage way connecting the two chambers.

6. In a flushing device, a casing having an inlet and an outlet, a main valve for opening and closing the outlet, a non-flexible movable partition loosely supported at its rim and having limited movement and acting to check the closing movement of said valve, an initiating valve having an opening, and means controlled by the initiating valve for passing fluid around said partition.

7. A flushing device comprising a casing, a movable partition loosely supported at its rim and dividing said casing into two chambers and arranged to operate as a check valve to permit the flow of fluid from one of the said chambers to the other and to prevent its return, a bypass connecting the two chambers, a fluid passage connecting one of the said chambers with the outlet of the casing, and an initiating valve controlling such passage.

8. A flushing device including a casing having an inlet and an outlet, a valve to control the outlet, a non-flexible movable partition loosely supported at its rim and dividing the casing into two main chambers, a movable division dividing the lower chamber into two sub-chambers, said division being connected so as to move with the said valve, and means to regulate the movement of said movable division and the said valve.

9. A flushing device comprising a casing having an inlet and an outlet, a non-flexible movable partition supported loosely at its rim by a beveled annular ledge of the casing and dividing the casing into an upper chamber and a lower chamber, a main valve, a threaded ring having lugs on the under side thereof and placed above the movable partition to retain and limit the movement of said partition, a flexible diaphragm dividing the upper chamber into two sub-chambers, a movable division dividing the lower chamber into two sub-chambers and co-operating with the main valve to control the outlet, a passage connecting the chambers on the opposite sides of the non-flexible partition, and means to regulate the size of said passage.

In witness whereof I hereunto set my hand in the presence of two witnesses.

DAVID E. GULICK.

Witnesses:

FREMONT S. DUNN,

RALPH E. NICHOLAS.