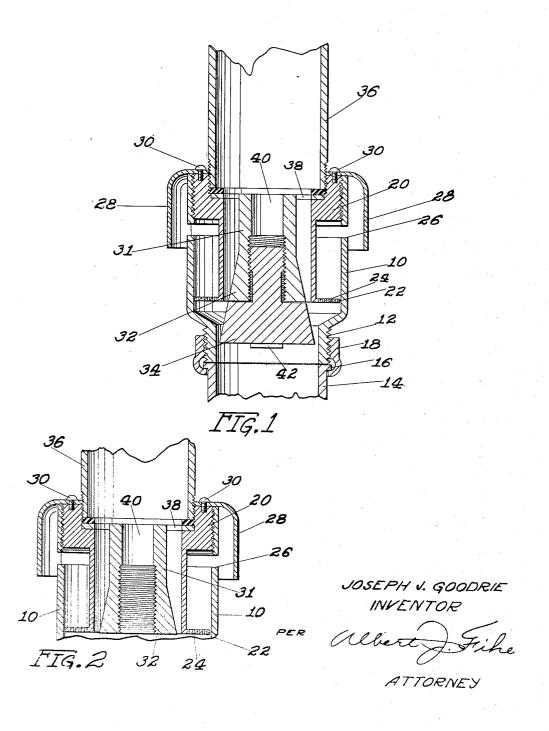
UNITARY FLUSH VALVE CONNECTION

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## UNITARY FLUSH VALVE CONNECTION

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9 Claims. (Cl. 137-111)

This invention relates to an improved unitary flush valve connection known as a vacuum breaker, and has for one of its principal objects the provision of a means for allowing the free passage of air into the interior of a pipe which connects the incoming water to the toilet bowls and other similar equipment.

Another object of the invention is to provide a device that can be used interchangeably on all types of flush valves for toilet bowls, laboratory equipment, hospital apparatus or the like.

It is known to be true especially in the larger buildings that, when the main water supply is shut off for some reason or another, a suction 15 or vacuum is created when a faucet, valve or the like is turned on, and one of the objects of this invention is to provide a means of breaking this vacuum and thus prevent any back seepage or contamination of the incoming flow of water.

20 Another object of this invention is to provide

20 Another object of this invention is to provide an apparatus that is unitary in construction. Another important object of the invention is

Another important object of the invention is to provide a device that can be used on either high or low pressure types of toilet bowls or the 25 like without any undue change in the construction of the invention.

Still another important object of the invention is to have no moving parts therein which may stick through disuse or which may have dirt 30 collect thus causing the movement to stop.

Another and still further object of the invention includes the provision of means whereby the flow of incoming water to the toilet bowl or other similar equipment will always be under control.

35 A still further important object of the invention is to provide an apparatus that shall form an integral part of the system and will be positively proof against leakage or overflow no matter what the pressure of the incoming water may 40 be.

Other and further important objects of the invention will be apparent from the disclosures in the accompanying drawing and following specification.

The invention, in a preferred form, is shown in the drawing and hereinafter more fully described.

In the drawing:-

Figure 1 is a vertical sectional view of the im50 proved unitary flush valve connection, sometimes known as a vacuum breaker for flush
valves, illustrating particularly the fact that the
same has no moving parts in the vacuum breaker
per se and further showing a free flow of incom55 ing water.

Figure 2 is a partial vertical sectional view, showing more freedom of flow of incoming water when the vacuum breaker is used on a low pressure type system.

As shown in the drawing:

The reference numeral 10 indicates generally the casing of the improved unitary flush valve connection for vacuum breaker of this invention, the same comprising a housing or the like, shaped as shown, with a screw-threaded base 12 at its 10 lower end, whereby the same may be readily fastened to an intake pipe 14 having a flange 16 and a cap 18 of a toilet bowl or other similar apparatus.

The casing 10 has an inner casing or housing 20 which is adapted to take care of the incoming water, and at the lower extremity is fastened a disk 22 having a number of small holes or perforations 24 which allows air to enter the interior of the pipe 14 through openings or ports 26 in the 20 outer casing 10, the same being guarded by an overhanging lip 28 which is cup-like in shape and fastened by means of screws or the like 30 to the casing 20.

The housing 20 has still further another inner 25 casing or the like 31 which extends downwardly and has its lower end 32 flared somewhat like the base of a cone.

Fastened integrally to the casing 31 by means of a screw thread or the like is a plug 34 shaped 30 as a frustrum and continuing downwardly from the casing 31.

The incoming flush water passes downwardly through the pipe 36 and through ports 38 of the casing 31. The openings 38 are sufficient to allow of any desired quantity of flow of incoming water so as to insure an adequate flushing operation.

In the event, however, that any back pressure is put upon the line, any possibility of suction 40 or siphoning action, which would tend to draw water upwardly through the pipe 14 and out of a toilet bowl or similar device, would be eliminated on account of the opening 26 which would allow air to flow in through this opening and 45 through the space between the casings 10 and 20 and into the interior of the housing 10. This will effectively prevent any possibility of siphonage and its consequent contamination of drinking water.

The plug 34 is placed in position in the casing 31, by means of a screw driver or the like, to prevent flow of water through the opening 40, a slot 42 being provided for thus positioning the same. The plug 34 is positioned therein at all 55

times when the unitary flush valve connection is used on high pressure water systems, as a sufficient flow of incoming water is assured through the openings 38 at all times.

When, however, the flush valve connection is to be used on a low pressure water system, to assure sufficient amounts of water, the plug 34 is removed by means of a screw driver or the like, and the device is used as shown in Figure 2. This is used only, however, when there is not sufficient pressure to assure an adequate flushing of the toilet bowl or some other similar apparatus.

The plate 22 is placed on the casing 20 to prevent any water from passing through the ports 26, the small holes or perforations 22 tending to break up any large globules of water into a fine spray and therefore preventing the water from

passing through onto the floor.

It will be seen that herein is provided a vacuum 20 breaker for flush valves which is specifically advantageous in that it has no moving parts and therefore cannot possibly get out of order, while, at the same time, it will adequately and properly perform the necessary operations required; name-25 ly, the complete prevention of any possibility of water backing up into the main supply line from a toilet bowl or similar equipment which, in many cases, contains contaminated and impure water and other liquids which, if drawn into the supply 30 line, would be a serious detriment to health. It will also be seen that the device can be interchanged on any number of different types of water systems without any radical change in the construction of the device.

35 I am aware that many changes may be made and numerous details of construction varied throughout a wide range without departing from the principles of this invention, and I, therefore, do not purpose limiting the patent granted here-40 on otherwise than as necessitated by the prior

art.

I claim as my invention:

1. A unitary flush valve connection, including an outer casing having openings therein to the atmosphere, an overhanging lip on the outside of the outer casing to cover said openings, and an inner casing forming a passage leading to the openings, said openings being large enough to allow sufficient passage of air into said outer casing, the inner casing characterized by the absence of moving parts and having openings to allow for incoming flow of water, certain of the openings being used for all types of water systems, and means for controlling the volume of incoming water passing through the inner casing.

2. A unitary flush valve connection, including an outer casing having openings therein to the atmosphere, and an inner casing characterized by the absence of moving parts in said unitary flush valve connection, said inner casing having openings to allow for incoming flow of water, certain of the openings being used for all types of water systems, and means for controlling the volume of incoming water passing through the inner casing, said means being a removable plug.

an outer casing having openings therein to the atmosphere, and an inner casing characterized by the absence of moving parts in said unitary flush valve connection, said inner casing having openings to allow for incoming flow of water,

certain of the openings being used for all types of water systems, and means for controlling the volume of incoming water passing through the inner casing, said means being a removable plug, the plug to be removed when the unitary flush valve connection is used on low pressure washdown types of water systems.

4. A unitary flush valve connection, including an outer casing having openings therein to the atmosphere, and an inner casing characterized 10 by the absence of moving parts in said unitary flush valve connection, said inner casing having openings to allow for incoming flow of water, certain of the openings being used for all types of water systems, and means for controlling the volume of incoming water passing through the inner casing, said means being a removable plug, the plug to be removed when the unitary flush valve connection is used on low pressure washdown types of water systems, and a screen placed 20 between the inner casing and the outer casing.

5. A flush valve connection, including an outer casing having openings therein to the atmosphere, and an inner casing characterized by the absence of moving parts, said inner casing having openings for incoming water, certain of the openings being used for all types of water systems, and means for controlling the volume of incoming water passing through the inner casing.

6. A unitary flush valve connection, including a casing having openings therein to the atmosphere through which air drawn in can pass out of the connection either through its top or bottom, and an internal member therein, said casing and member characterized by the absence of moving parts therein, said connection having passages therethrough to allow for the incoming flow of water, certain of the passages being used for all types of water systems, and means for controlling the volume of incoming water passing through the connection, said means being a removable plug.

7. A convertible flush connection for high or low water pressure systems, comprising a casing having air inlet ports, an inner casing, having no moving parts, provided with water inlet means and discharging below the air inlet ports, and a removable element insertable within the outer casing for high pressure and removable there-

from for low pressure.

8. A convertible flush connection for high or low water pressure systems comprising a casing with no moving parts therein, having air-inlet ports and provided with water-inlet means forming a plurality of passages therethrough and discharging below the air-inlet ports, and a removable element insertable within the casing for high pressure to reduce the total capacity of the passages and removable therefrom for low pressure to increase said capacity.

9. A convertible flush connection for high or low water pressure systems comprising a casing with no moving parts therein, having air-inlet ports and provided with water inlet means forming a plurality of passages therethrough, one of which is contracted to produce a jet action discharging below the air-inlet ports, and a removable element insertable within the casing for high pressure and removable therefrom for low pressure.

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