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ISOLATING TUBE

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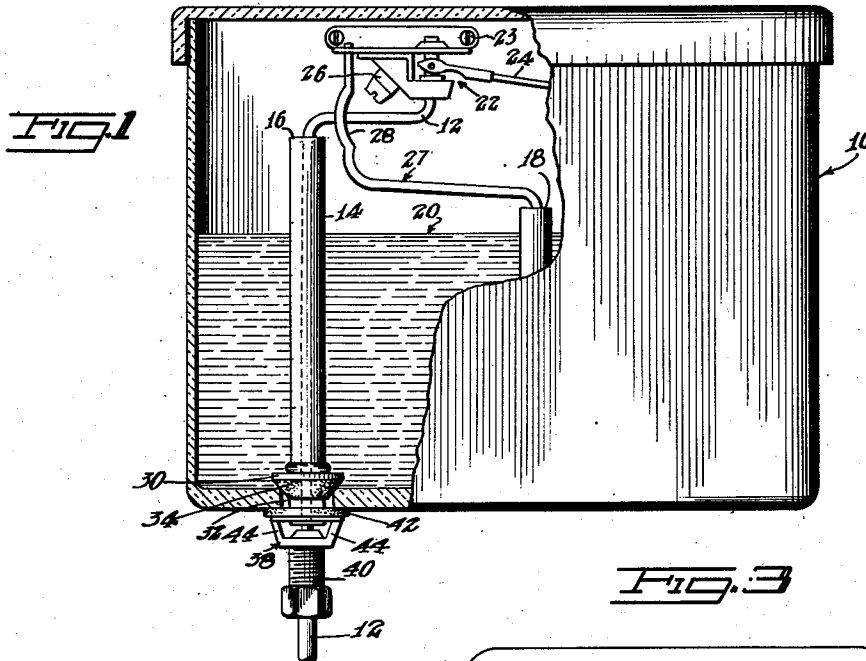


FIG. 2

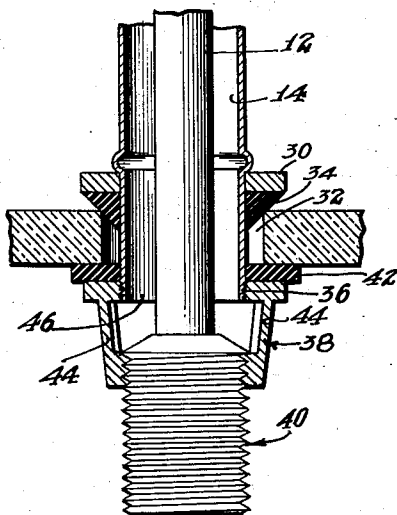
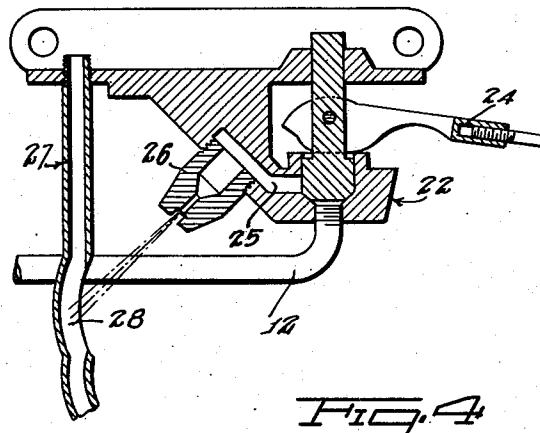
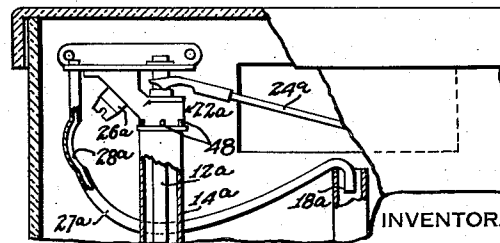


FIG. 4



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ISOLATING TUBE

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6 Claims. (Cl. 137-215)

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This invention relates to an isolating tube for isolating a potable water supply from polluted water in a tank or receptacle.

It is desirable to isolate the potable water supply from polluted water in a tank or receptacle to prevent possible contamination in the water supply in the event that the water supply should develop a leak and a vacuum should form in the supply line, thereby siphoning water from the tank to the water supply. It is frequently required by law that some precautions be taken to prevent this possible occurrence.

It is an object of this invention to isolate the potable water supply from contact with the polluted water in a tank to accomplish the aforementioned result.

It is a further object of this invention to provide an emergency overflow in the event that the primary overflow in a flush tank fails to function properly.

It is a further object of this invention to provide for immediate discovery of a leak forming in the supply tube to expedite locating and repairing of said leak.

In what is now considered the preferred embodiment of this invention, a supply tube to a tank such as the flush tank of an ordinary toilet is isolated from water in the tank by an isolating member which in turn is suitably attached to the tank. Means are provided to advise of a leak in the supply tube or of overflow into the isolating means in the event that the principal overflow in the tank fails to function properly. It is to be understood, however, that various changes in the size, shape and location of the various elements of this invention may be resorted to without departing from the scope of the invention or the appended claims.

In the drawings:

Fig. 1 represents a fragmentary side elevation of a flush tank for use with a conventional toilet and embodying this invention.

Fig. 2 is an enlarged view in section of the coupling of the isolating tube to the flush tank.

Fig. 3 is an enlarged view of the ball cock assembly.

Fig. 4 is a side elevation of a modification of this invention.

Referring now to Fig. 1 wherein the preferred embodiment of this invention is illustrated assembled in flush tank 10, which is provided with the usual supply of potable water through supply tube 12.

The isolating member provided in this embodiment may comprise an isolating tube 14

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which surrounds the supply tube 12 and isolates said supply tube from the polluted water in the tank 10. The upper extremity 16 of the isolating tube is above the normal level of water 20 in the tank. This results in the supply tube being effectively isolated from the water in the tank 10 so that if a leak should form in the supply tube and a siphon develop in the water supply, water will not be drawn from the tank to the water supply.

After the potable water passes through the supply tube, its passage being controlled by a conventional ball cock 22 at the upper extremity of said supply tube, illustrated here as retained on the wall of the flush tank by screws 23, and being controlled through lever 24 by a ball (not shown) as is well known to those skilled in the art. The water then passes from the ball cock through a passage 25 and out the nozzle 26 and into the tank. A portion of the water enters the refill tube 27 through opening 28 and passes into the toilet bowl (not shown). The details of the ball cock form no part of this invention and it may be of any suitable construction.

The isolating tube, which surrounds the supply tube may be retained in the tank in any suitable manner. In this embodiment a flange 30 is provided on the isolating tube 14 which is of greater diameter than the opening 32 in the bottom of the flush tank. A sealing member 34 is provided so that when the flange 30 is drawn toward the bottom of the flush tank the sealing member, which is preferably of a resilient material, will prevent leakage from the tank.

The lower extremity 36 of isolating tube 14 is threaded to receive the upper end of the spider 38. Said spider is threaded at its lower end to secure the isolating tube to the pipe 40 which is attached to the supply of potable water (not shown) at one extremity and to the supply tube 12 at the other extremity. Thus when the spider is tightened the isolating tube is drawn towards the pipe 40 compressing the sealing member 32 and preventing leakage from the flush tank. A resilient washer 42 may be utilized to prevent injury to the flush tank, which is usually made of porcelain or similar brittle material, when the spider is tightened.

The upper extremity 16 of the isolating tube in this embodiment is open to the atmosphere and, being positioned above the level of the overflow tube 18, will act as an emergency overflow in the event that the primary overflow fails to function properly.

The isolating tube is open to the atmosphere

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at its lower extremity 46 so that any water that may enter the isolating tube either through the failure of the primary overflow or through a leak developing in the supply tube will flow from the bottom of the isolating tube between the arms 44 of the spider and onto the floor thereby warning the house owner of the necessity for repairs.

In Figure 4 a modified embodiment of this invention is illustrated wherein like parts having the same function will be given the same designation as in the principal embodiment with the addition of the exponent α .

It is apparent that the only difference between this modification and the principal embodiment lies in the fact that the ball cock in this modification is mounted upon the isolating tube instead of being retained to the wall of the flush tank as seen in Figure 1. The upper extremity of the isolating tube is threaded internally to receive a suitable threaded portion upon the lower extremity of the ball cock. Suitable ports 48 may be provided, either in the isolating member or as shown here in the lower portion of the ball cock body, to vent the upper end of the isolating tube to the atmosphere in order that the isolating tube may serve as an emergency overflow in the event that the primary overflow fails.

While I have herein shown my invention as adapted to the flush tank of a toilet, it is obvious that my invention is not limited to such use, and where in the claims I employ the wording "flush tank," I wish to be understood as not limiting my invention to this particular use, and that I intend the words "flush tank" to include any tank or container which is filled with water and susceptible of pollution in a similar manner.

I claim:

1. In a device for isolating potable water from polluted water in a flush tank, the combination of: a supply tube which projects into said tank, a ball cock mounted in said flush tank at the upper extremity of said supply tube having a discharge opening, an overflow tube in said flush tank, an isolating member surrounding said supply tube and isolating said supply tube from water in said tank with the ball cock discharge opening positioned above the upper extremity of said isolating member, the upper extremity of said isolating member being open to the atmosphere and located above the upper extremity of said overflow tube, and means for venting the lower extremity of said isolating member to the atmosphere.

2. In a device for isolating potable water from polluted water in a flush tank, the combination of: a supply tube which projects into said tank, an isolating member surrounding said supply tube and isolating said supply tube from water in said tank, a ball cock mounted on the upper extremity of said isolating member having a discharge opening positioned above the upper extremity of the isolating tube, means for venting the upper extremity of said isolating member to the atmosphere, and means for venting the lower extremity of said isolating member to the atmosphere.

3. In a device for isolating potable water from polluted water in a flush tank, the combination of: a supply tube which projects into said tank, an overflow tube in said tank, an isolating member surrounding said supply tube and isolating

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said supply tube from water in said tank, the upper extremity of said isolating member being above the upper extremity of said overflow tube, a ball cock mounted on said isolating member having a discharge opening positioned above the upper extremity of the isolating tube, means for venting the upper extremity of said isolating member to the atmosphere, and means for venting the lower extremity of said isolating member to the atmosphere.

4. In a device for isolating potable water from polluted water in a flush tank, the combination of: a supply tube which projects into said tank, a ball cock mounted in said flush tank at the upper extremity of said supply tube, an overflow tube in said flush tank, an isolating member surrounding said supply tube and isolating said supply tube from water in said tank, the upper extremity of said isolating member being open to the atmosphere and located above the upper extremity of said overflow tube, and means for venting the lower extremity of said isolating member to the atmosphere, and a refill tube having a vent therein which vent is positioned below said ball cock discharge opening and above the upper extremity of said isolating tube whereby a portion of the water discharged from said ball cock flows through said refill tube.

5. In a device for isolating potable water from polluted water in a flush tank, the combination of: a supply tube which projects into said tank, an isolating member surrounding said supply tube and isolating said supply tube from water in said tank, a ball cock mounted on the upper extremity of said isolating member, means for venting the upper extremity of said isolating member to the atmosphere, means for venting the lower extremity of said isolating member to the atmosphere and a refill tube having a vent therein which vent is positioned below said ball cock discharge opening and above the upper extremity of said isolating tube whereby a portion of the water discharged from said ball cock flows through said refill tube.

6. In a device for isolating potable water from polluted water in a flush tank, the combination of: a supply tube which projects into said tank, an overflow tube in said tank, an isolating member surrounding said supply tube and isolating said supply tube from water in said tank, the upper extremity of said isolating member being above the upper extremity of said overflow tube, a ball cock mounted on said isolating member, means for venting the upper extremity of said isolating member to the atmosphere, means for venting the lower extremity of said isolating member to the atmosphere, and a refill tube having a vent therein which vent is positioned below said ball cock discharge opening and above the upper extremity of said isolating tube whereby a portion of the water discharged from said ball cock flows through said refill tube.

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