Oct. 1, 1957 D. B. PERKINS 2,808,211

CONDENSATION ELIMINATOR FOR FLUSH TANKS

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Fig. 1.

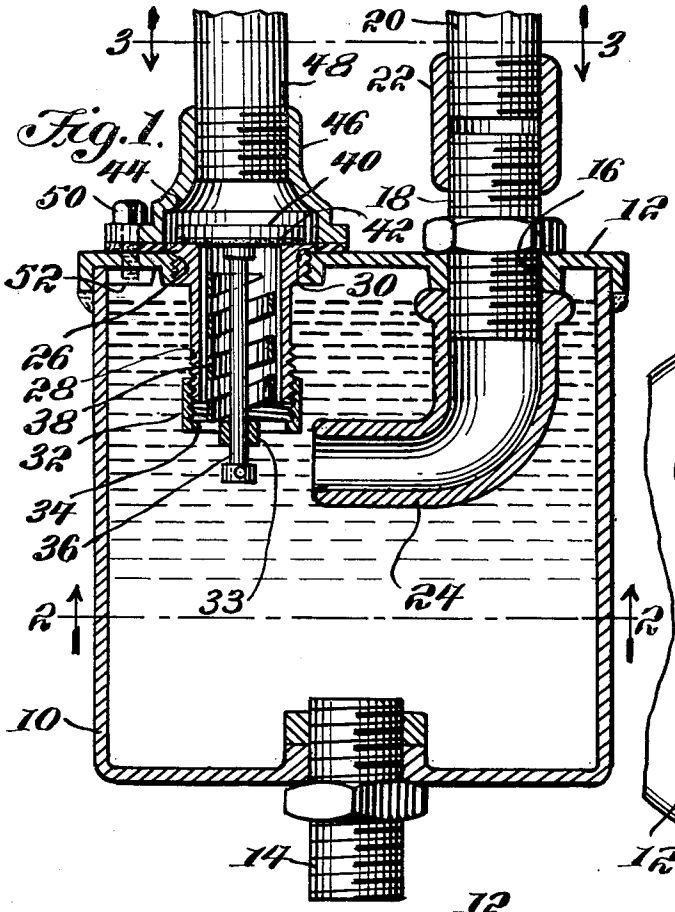


Fig. 3.

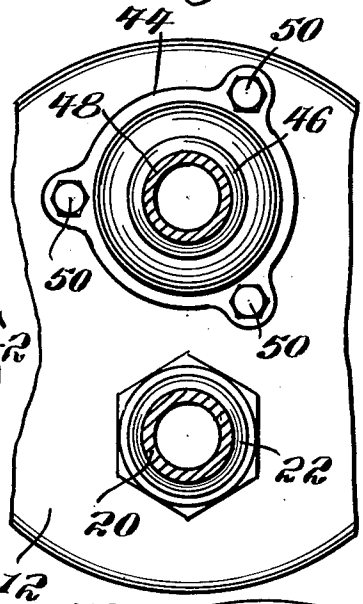


Fig. 2.

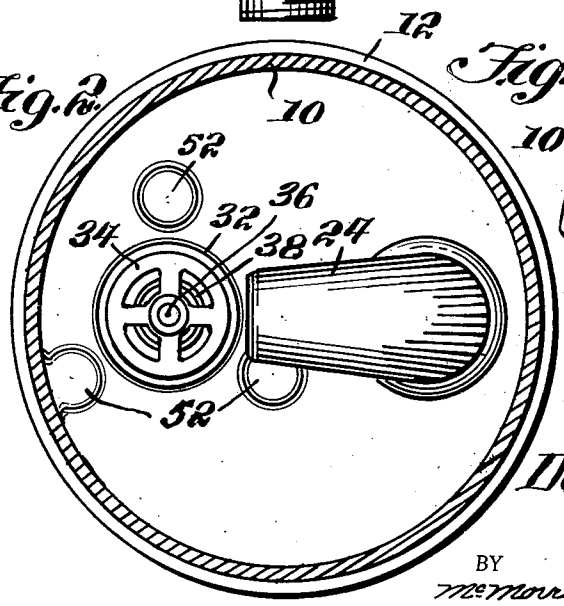
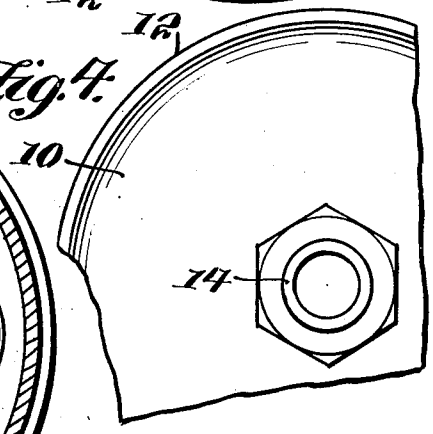


Fig. 4.



INVENTOR

Dowd B. Perkins,

BY

McMorrow, Berman & Davidson

ATTORNEYS

United States Patent Office

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CONDENSATION ELIMINATOR FOR FLUSH TANKS

Dowd B. Perkins, Mason City, Iowa

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2 Claims. (Cl. 236—12)

This invention relates to a device for eliminating condensation on the outer surface of a flush tank wall. More particularly, the invention has reference to a blending container having an outlet to a flush tank and having hot and cold water inlets, the cold water inlet being valved with the valve of the cold water inlet being opened thermostatically, responsive to elevation of the temperature within the blending container above an optimum level.

It is well appreciated in the art to which the invention relates that the formation of condensation on the outer surface of a flush tank wall is a serious problem. In many instances, said condensation is so severe as to cause an almost continuous dripping of water onto the floor below the flush tank. The main object of the present invention, accordingly, is to provide a device for eliminating condensation under conditions of the type stated, and it is a more particular object of the present invention to provide a condensation eliminating device which will be so designed as to be readily associated with conventional flush tanks already in use.

Another object of importance is to provide a device of the type stated which will include a thermostatic means disposed within a blending container, said thermostatic means being so designed as to insure that the water flowing out of the container into the flush tank will be maintained at a temperature sufficiently above the normal or ambient air temperature to insure that condensation will not occur.

Another object is to provide a device of the character referred to which will be so designed as to make use, for the most part, of individual parts which are conventional per se, thereby to permit the device to be manufactured at relatively low cost.

Still another object is to provide a condensation eliminating device in which the thermostatic means can be preset in such a manner as to insure that the valve associated with said thermostatic means will open at a selected temperature elevation, the temperature at which the valve is to open being any one of various temperatures falling within a prescribed range. By reason of this arrangement, it is proposed to adapt the device for use under various conditions, and it is apparent that the device is thus rendered usable in various situations in which room temperatures vary considerably.

A further object of importance is to provide a device which will be characterized by its ease of installation, and by its ruggedness and adaptability for use over a substantial period of time without requiring repair or maintenance.

Other objects will appear from the following description, the appended claims thereto, and from the annexed drawing, in which like reference characters designate like parts throughout the several views, and wherein:

Figure 1 is a longitudinal sectional view through a condensation eliminator formed in accordance with the present invention;

Figure 2 is a sectional view on line 2—2 of Figure 1;

Figure 3 is a sectional view on line 3—3 of Figure 1; and

Figure 4 is a fragmentary bottom plan view.

The reference numeral 10 has been applied in the drawing to a cylindrical container permanently closed at one end and formed open at its other end. The open end of the container is provided with a lid 12, said lid being peripherally flanged with the flange portion of the lid being welded or otherwise fixedly attached to the adjacent surface of the container wall.

In the end of the container remote from the lid 12, there is formed a center opening, said opening providing an outlet for blended water, in which outlet a connecting fitting 14 can be mounted. The fitting 14 is so designed as to permit a pipe, not shown, to be readily attached thereto at one end of the pipe, the pipe leading to a flush tank, also not shown. As a result, the water supplied to the flush tank will be directed through the blending container 10, rather than directly from a source of cold water as is customary under normal conditions.

Formed in the lid 12 is a hot water inlet opening 16, in which is mounted a hot water inlet fitting 18. Connected to fitting 18 is the outlet end of a hot water supply pipe 20, the pipe 20 being connected to the fitting 18 exteriorly of the container 10 by means of a nipple 22.

Within the container, there is threadedly connected to the fitting 18 an L 24, the L 24 being so arranged as to have the outlet end thereof disposed centrally within the container, in position to cause hot water to be discharged along lines extending transversely of the container.

Adjacent the inlet 16, there is formed a cold water inlet 26, having threads engaging complementary threads provided upon one end of a cylindrical thermostat housing 28. Housing 28, at one end, projects exteriorly of the container, said end of the housing being outwardly flanged as at 30, thus to provide an abutment that will engage the outer surface of the container lid 12, to limit movement of the housing 28 inwardly of the container.

Provided upon the other end of the housing 28 are external threads engaging internal threads of a collar or sleeve 32. Threadedly engaged in the sleeve 32 is a spider 34 (Figure 2) having a central hub 33 extending in a direction away from the housing 28. A center opening is provided in the hub 33 in which is slidably mounted one end portion of a shaft 36, so that the boss or hub 33 constitutes a guide centering the shaft in the housing 28 and affords a support for the shaft 36.

The shaft 36 extends longitudinally and centrally of the housing 28, and circumposed about the shaft within the housing is a spirally coiled bimetallic strip 38. Strip 38, at one end adjacent the lid 12, is anchored to the shaft 36, as by passing through a slot provided therein, the strip being seated at its other end upon the spider 34. The bimetallic strip 38 is so designed as to expand in the direction of the length of the shaft 36 responsive to a rise in the water temperature within the blending container.

Since the spider 34 upon which the coiled strip 38 is seated is movable longitudinally of the housing 28 in response to the threading of the sleeve 32, upon threaded end of housing 28, the strip 38 can be selectively adjusted to predeterminedly control the temperature at which the strip will expand. This adjustment is accomplished by threading the sleeve 32 farther onto the threaded end of the housing 28 thereby causing the coils of the strip 38 to contract hence imparting a greater stress to the coil causing the coil 38 to operate responsive to a lesser temperature rise while by backing off sleeve 32, the distance between the coils of strip 38 will increase and a greater temperature rise will be required to have the strip 38 expand.

Fixedly connected to the other end of the shaft 36 is a disc valve 40 having a gasket 42 secured to its under-

side, the gasket 42 being engageable against the flanged end 30 of the thermostat housing 28. The valve 40 is normally closed, and is disposed within the bell shaped end 44 of a cold water inlet fitting 46 in which is secured the outlet end of a cold water supply pipe 48. At its belled end, the fitting 46 is outwardly flanged at circumferentially spaced locations (Figure 3), the spaced flanges or ears of the housing being apertured for extension of connecting bolts 50 therethrough. The bolts 50 are threaded in recesses provided in bosses 52 formed upon the lid 12.

The valve 40 is normally maintained in a closed position, under pressure of water moving in the direction of the container 10 through the cold water supply pipe 48. The hot water inlet, however, is continuously open, and as a result, when water begins to flow out of the container 10 through the outlet 14 toward a flush tank, responsive to emptying of the flush tank, the hot water flowing out of the L 24 will be directed substantially against the bimetallic strip 38. As a result, the strip 38 will, when the water has reached a prescribed temperature, expand to an extent sufficient to move the shaft 36 toward the lid 12 in the direction of the length of the shaft to shift the valve 40 to an open position, causing cold water to be admitted to the blending container. This will, as will be appreciated, maintain the temperature of water within the container 10 at a predetermined level found to be the optimum elevation for preventing condensation from forming on the flush tank wall. For example, under normal conditions it would be proposed to cause water to flow out of the outlet 14 into the flush tank at a constantly maintained temperature of about 105 degrees. This temperature is above that of normal or ambient air temperature surrounding the flush tank, and as a result, condensation will be precluded.

The thermostat setting can, of course, be varied as desired, depending upon the temperature which the water within the flush tank should have in relation to the surrounding air. If the surrounding air is at a low temperature, the temperature of the water flowing through the tank can be correspondingly reduced.

It is believed apparent that the invention is not necessarily confined to the specific use or uses thereof described, since it may be utilized for any purpose to which it may be suited. Nor is the invention to be necessarily limited to the specific construction illustrated and described, since such construction is only intended to be illustrative of the principles of operation and the means presently devised to carry out said principles, it being considered that the invention comprehends any minor change in construction that may be permitted within the scope of the appended claims.

What is claimed is:

1. A condensation eliminator for flush tanks comprising: a blending container having an outlet to a flush tank and having hot and cold water inlets; a normally closed disc valve on the container positioned to control flow of water into the container through the cold water inlet, said disc valve being held in closed position by pressure of water moving in the direction of the container through the cold water inlet; and thermostatic means mounted within the container connected to the valve for opening

the same against the opposing pressure of the water tending to hold the valve in closed position, said thermostatic means operating responsive to elevation of the temperature of water within the blending container above an optimum level, whereby to maintain the temperature of water flowing through the outlet into the flush tank at said level, said thermostatic means including a shaft secured at one end to the valve, guide means for the shaft mounted in the container for adjustment toward and away from the valve, said shaft being slidably mounted within the guide means for movement in the direction of its length, said thermostatic means further including a bimetallic strip seated upon and adjustable with the guide means, said thermostatic means being secured to the shaft and adapted to expand in the direction of the length of the shaft, said bimetallic strip expanding responsive to the elevation of the temperature of water within the blending container above said optimum level.

2. A condensation eliminator for flush tanks comprising: a blending container having an outlet to a flush tank and having hot and cold water inlets; a normally closed disc valve on the container positioned to control flow of water into the container through the cold water inlet, said disc valve being held in closed position by pressure of water moving in the direction of the container through the cold water inlet; and thermostatic means mounted within the container connected to the valve for opening the same against the opposing pressure of the water tending to hold the valve in closed position, said thermostatic means operating responsive to elevation of the temperature of water within the blending container above an optimum level, whereby to maintain the temperature of water flowing through the outlet into the flush tank at said level, said thermostatic means including a shaft connected to the valve, an open-ended cylindrical housing mounted within the container in position to constitute a passage through which water will flow from the valved inlet to the container interior, the shaft extending longitudinally and centrally of the housing, a spider mounted on the housing for adjustment longitudinally thereof toward and away from said valved inlet and including a hub in which the shaft is slidably engaged, and a thermostatic element having one end seated upon the spider for disposition of said element in a predetermined, selected position of adjustment responsive to said adjustment of the spider, and having its other end fixed to the shaft, said strip being adapted to expand in the direction of the length of the shaft, the strip expanding responsive to the elevation of the temperature of water within the blending container above said optimum level, whereby to unseat the valve and admit water through the valved inlet to the housing for flow into the container.

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