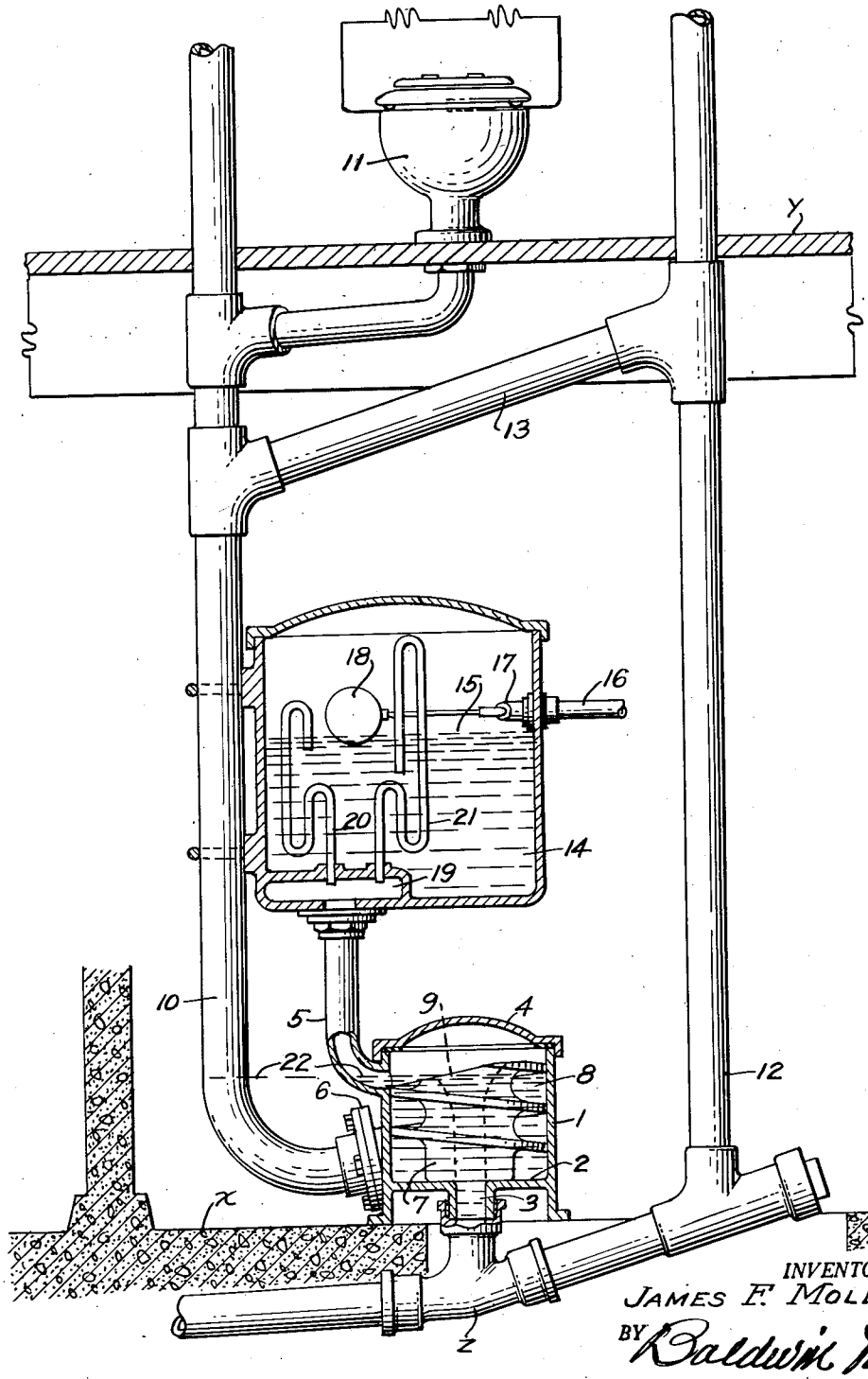
Sept. 20, 1949. J. F. MOLLOY 2,482,359

SANITARY PLUMBING

Filed Aug. 21, 1946



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Patented Sept. 20, 1949 2,482,359

UNITED STATES PATENT OFFICE

2,482,359

SANITARY PLUMBING

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Application August 21, 1946, Serial No. 691,911

2 Claims. (Cl. 182—12)

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This invention relates to sanitary plumbing and more particularly to gas traps and ventilation for building installations.

Among the objects of the invention is to lower the cost and improve the efficiency of plumbing installations, by simplification of the plumbing and the building structures.

Another object is to afford visual evidence of the functioning of the apparatus.

Another object is to avoid the necessity of weakening the structure of the building by cutting away frame work for the installation of superfluous vents.

A further object is to eliminate the effects of excessive or minus pressures in the discharge system.

Other objects and advantages will appear as the description progresses. In the specification and the accompanying drawings, the invention is disclosed in its preferred form. But it is to be understood that it is not limited to this form, because it may be embodied in modifications within the spirit of the invention as defined in the claims following the description.

In the one sheet of drawings the figure is a side elevation partially in vertical section showing the invention installed in the basement of a building.

In detail the structure shown in the drawing, comprises the usual basement floor X and first floor level Y. The basement usually has a pit in the floor through which the T fitting Z projects and is connected with the street sewer.

The cylindrical trap chamber 1, has the bottom 2, with the outlet 3 discharging into the outlet fitting Z. The top is closed by the sealed cover 4, and has the side inlet 5 beneath the cover. The trap chamber rests upon the floor X and has the tangental flanged inlet 6 leading into the trap chamber at a slight incline, above the bottom 2.

The helix block 7 fits snugly within the chamber 1 and seals against its inner wall. The helix is preferably composed of a rubber-like compound or a suitable plastic, and has the helical groove 8 in its perimeter. This groove is open at the bottom to the inlet at 6, and discharges above into the top of the chamber 1 beneath the cover 4. It has a vertical opening flared at the top 9, and discharging through the outlet at 3, in the bottom of the trap chamber.

The conventional soil stack 10 extends vertically through the walls of the building and terminates in the attic or is carried through the roof, and is open to the atmosphere. This stack receives the sewage waste from water closets such

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as 11, sinks, wash basins, and the like. Its lower end is connected at 6 to the trap chamber 1.

The air vent pipe 12 rises from the T fitting Z and passes upward through the building walls and through the roof and is open to the atmosphere for venting any sewer gases rising from the street sewer system, before they can enter the building. This vent system has the cross connection 13 with the soil stack 9 for carrying off any gases accumulated therein above the trap chamber 1, before such gases rise into the upper regions of the building.

Any water waste discharged from the toilet 11, or other such fixture, descends the soil stack 10 at considerable velocity because of the hydrostatic head, and rushes around the helical groove 8, and descends into the discharge opening 9 and through the fitting Z and into the street sewer. As the hydrostatic head diminishes in the stack 10, the residual water flushed through the toilet 11 remains within the trap chamber 1 and acts as a water seal preventing the rise of gases from the sewer into the stack 10. Should simultaneous flushings occur throughout the building, the volume of water passing down through the stack 10, may generate a velocity through the trap 1, sufficient to cause a siphoning effect through the discharge opening 9, which would siphon out the water that should remain in the trap chamber 1, to act as a gas seal as described.

To assure a water seal within the trap chamber 1 against such siphoning effects, the reservoir 14 is provided. A predetermined water level 15, is maintained in this reservoir by the water service pipe 16, through the valve 17, controlled by the float 18 actuated by the water level in the reservoir.

The reservoir has the cored pocket 19, in its lower portion and open to the water inlet 5 leading to the trap chamber 1. The goose neck siphon tubes 20, 21 open to the pocket 19, extend upward through the water in the reservoir and return into the body of water and terminate at different levels below the normal water line 15.

Should siphoning through the outlet 9 lower the normal water level 22 in the trap 1, it would also create a minus pressure within the pocket 19 and the siphon tubes 20, 21, and withdraw water from the reservoir 14, lowering the float 18, and opening the valve 17. The incoming service water would continue to flow until the water level 22 was restored in the trap 1, through the inlet neck 5.

The goose neck siphons 20, 21 being of reduced capacity because of their diameter relative to the capacity of the neck 5, the siphon 21 will continue

to function, even after the intake end of the pilot siphon 20 is exposed above the water level in the reservoir, until the suction ceases at 9, and the residual water in the stack or the reservoir 10 fills the trap to the level 22.

The trap chamber 1 and the cover 4 are preferably composed of transparent plastic, so that the condition and functioning of the internal assembly may be observed.

It is customary to provide each fixture in the building with a water sealed P trap beneath and also with a separate vent, often leading back to the stack 10. Since the vent capacity of the stack may be reduced by accumulations on its inner wall, this system has many disadvantages. Simultaneous discharge of a large volume of water into the stack with its accompanying velocity may create a suction in the stack sufficient to empty the water seal in the adjacent P traps. This unsanitary result is eliminated by the cross vent 13 between the stack and the vent pipe 12, which breaks the minus pressure that may be created in the stack 10. The vent 12 leading from the T Z relieves any plus or minus pressure that may be generated in the drain line to the street sewer, not shown, acting through the T fixture Z.

The reservoir 14, responding to any siphonic action in the trap chamber 1, assures a constant water seal up to 22, therein. The elimination of individual fixtures vents simplifies the whole plumbing system and the architectural structure of the building and avoids the necessity of weakening the building structure by cutting through studding, bridge braces and other wall and floor supports.

Having fully described this invention and its mode of operation, what I claim and desire to secure by Letters Patent is:

1. A trap seal for plumbing systems, comprising a sealed cylindrical chamber having a peripheral stack inlet at its bottom portion and a sewer outlet through its bottom; and an annular block within said chamber with a central opening therethrough discharging downwardly through said sewer outlet and having a helical flange contacting the inner wall of said casing and forming an external spiral channel confined within the wall of the casing through which the sewage is forced upwardly and escapes downwardly through the central opening through the top of said block to said sewer outlet.

2. A trap seal for plumbing systems, comprising a sealed cylindrical chamber having a removable cover and a stack inlet at its bottom portion and a central sewer outlet through its bottom; and a removable block within said casing with a central opening discharging downwardly through said sewer outlet and having a resilient flange contacting the inner wall of said casing and forming an external spiral channel confined within the wall of the casing through which the sewage is forced upwardly and escapes downwardly through the top of the central opening through said block to said sewer outlet.

JAMES F. MOLLOY.

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