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CLEANER FOR DRAIN PIPES

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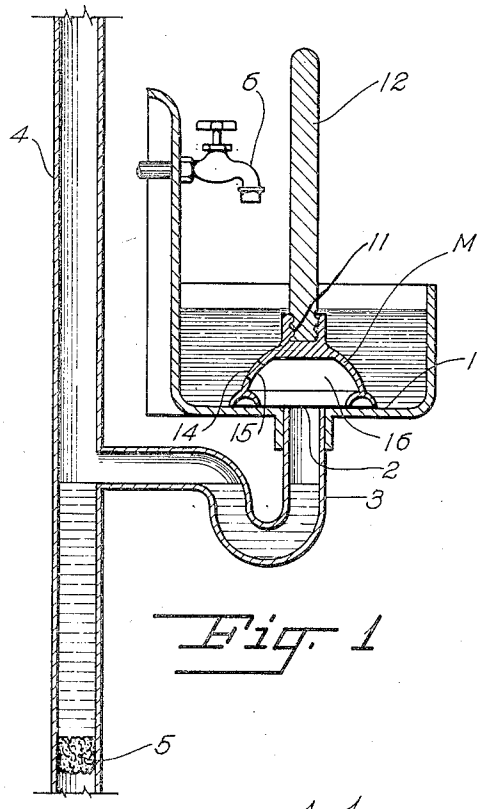


Fig. 1

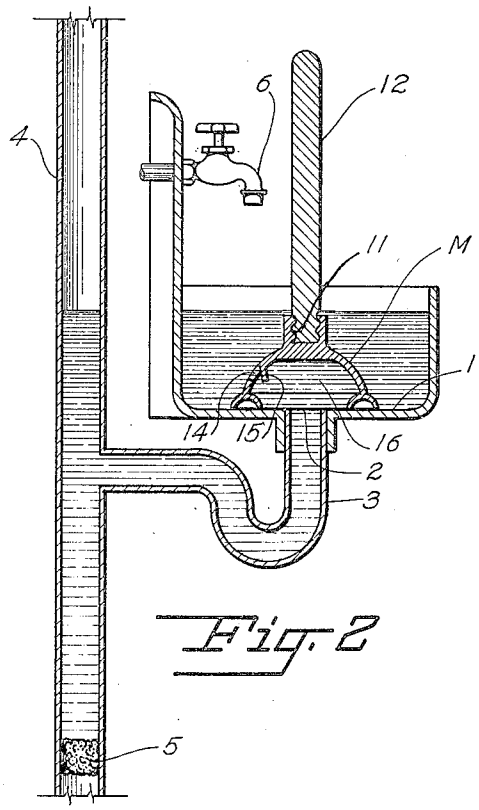


Fig. 2

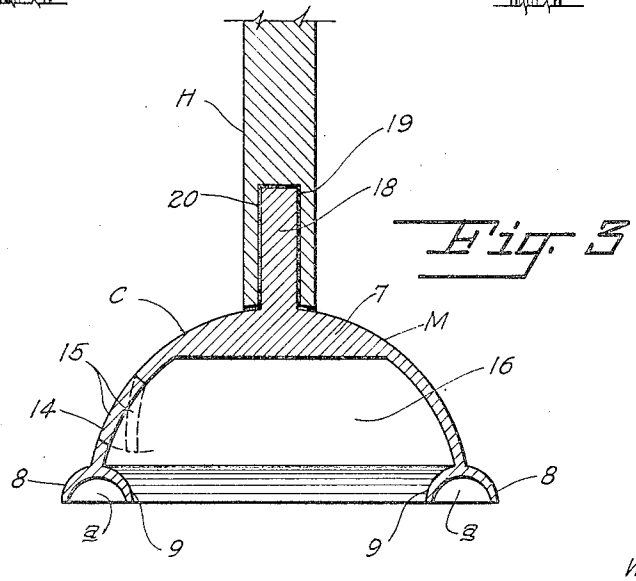


Fig. 3

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CLEANER FOR DRAIN PIPES

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2 Claims. (Cl. 4—255)

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This invention relates to a cleaner for drain pipes and has relation more particularly to a device of this kind of a plunger type, and it is primarily an object of the invention to provide a cleaner for effectively applying the force of momentum and suction to an unbroken column of water to aid in loosening and removing an obstruction in a drain pipe.

It is also an object of the invention to provide a device of this kind which comprises a chambered member of rubber or kindred material for placement over a drain outlet and which is provided in its central part with means for receiving a handle member for manually imparting piston action to the chambered member and wherein such chambered member is provided with an inwardly opening valve adapted to deliver water from the basin into said member and to the drain and vent.

An additional object of the invention is to provide a device of this kind including a chambered member having means whereby said member may be engaged with a basin surface under the action of a vacuum and in a manner to allow piston action of said member to be imposed upon an unbroken water column to aid in loosening and removing an obstruction.

A still further object of the invention is to provide a device of this kind comprising a chambered member for disposition over a drain outlet and which is so constructed to permit an unbroken column of water from an obstruction within the drain or vent to the upper inner surface of the plunger to provide means to assure the full force and effect of the suction and pressure created by the piston action of the member to the unbroken column of water to aid in loosening and removing an obstruction in the drain pipe, irrespective of the location of the stoppage.

The invention consists in the details of construction and in the combination and arrangement of the several parts of my improved cleaner for drain pipes whereby certain important advantages are attained, as will be hereinafter more fully set forth.

In order that my invention may be better understood, I will now proceed to describe the same with reference to the accompanying drawings, wherein:

Figure 1 is a fragmentary view partly in section and partly in elevation illustrating a cleaning device constructed in accordance with an embodiment of my invention and in working position but before equal water levels are attained in

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the chamber of the device and in the vent and/or drain pipe;

Figure 2 is a view similar to Figure 1 but illustrating the equal water levels; and

Figure 3 is a view partly in section and partly in elevation illustrating a connection between the operating handle and chambered member in accordance with a further embodiment of the invention.

As disclosed in the accompanying drawing, 1 denotes the bottom wall of a basin or kindred receptacle having a discharge opening 2 from which leads a drain pipe 3 delivering to a vent pipe 4 in which is illustrated an obstruction 5. Associated with the basin or receptacle is a tap or surface cock 6.

The improved cleaning device, as herein embodied, comprises a concavo-convex member M preferably of rubber and circular in form. This member M has the central portion 7 of its wall of a material thickness, with said increased thickness disposed inwardly of the chamber of the member.

Surrounding this thickened portion 7 is a skirt 8 of a thickness materially less than the thickness of the central portion 7 and, as illustrated in the accompanying drawings, the outer marginal edge of this skirt 8 has direct and close contact with the upper surface of the bottom wall 1 of the basin or kindred receptacle when the member M is in applied or working position.

It is also to be noted that the member M at its open bottom face is of a diameter considerably in excess of the discharge opening 2 so that the inwardly and downwardly disposed internal skirt 9 carried by the marginal portion of the member M outwardly of the central portion 7 may also have direct and close contact with the upper surface of the bottom wall 1. The skirt 9 coacts with the skirt 8 to provide therebetween a vacuum chamber *a*. It is to be further pointed out that the thickened portion 7 terminates inwardly of or spaced from the internal skirt 9, resulting in a continuous supplemental chamber 16.

The member M at its axial center is herein disclosed as having integrally formed therewith an outstanding and internally threaded socket 11 into which threads an end portion of a handle member 12 of wood or such other material as may be preferred.

The member M at a desired point thereon is provided with an opening 14 with which coacts an inwardly opening flap valve 15. This opening 14 discharges directly within the chamber 16 of the member M and results in water being deliv-

ered from the basin into the drain pipe 3 and the vent pipe 4 to bring the water level within the vent pipe to and maintain it above the point of communication of the drain pipe 3 and the vent pipe 4.

In applying the device, the member M is first disposed over the discharge opening 2 or other entrance to the drain pipe 3 and pressed down upon the bottom wall 1 of the basin or other receptacle to expel air from the chamber 16 between the skirts 8 and 9 resulting in the marginal portion of the member being tightly engaged with the upper surface of the bottom 1 and in a manner whereby the vacuum is not broken by the force of the water being delivered into the chamber 16 of the member M and into the drain pipe 3 or by the force of the piston action of the member M.

The water, before the obstruction 5 is removed, will back up into the vent pipe 4 and into the inner chamber 16 of the member M so that the pressure upon such water, upon the down stroke of the member M as the result of pressure imposed through the handle member 12, will bear against the internal skirt 9 resulting in additional force being exerted to maintain the marginal portion of the member M in desired close contact with the wall 1 of the receptacle or basin.

After the member M has been properly placed, the tap or cock 6 is opened and the basin or receptacle filled with water to a level above the member M and, in practice, to a depth of approximately six inches, whereupon the tap or cock 6 is closed. The handle member 12 is then manually operated to impose piston action upon the central portion of the applied member M. The weight of the water in the basin or receptacle plus atmospheric pressure is greater than the pressure within the chamber 16 of the member M before equal water levels are had in the vent pipe and basin or receptacle, with the result that, upon the up-stroke of the central portion of the applied member M, the flap valve 15 is opened to permit admission of the water from the basin or receptacle into the chamber 16 and, of course, to the vent pipe 4.

When the water levels within the vent pipe 4 and the basin or other receptacle are equal above the applied member M, the water will back up to the top of the chamber 16, assuring an unbroken column of water extending from the obstruction 5 in the pipes 3 or 4, regardless of the location of such obstruction to the inner upper surface of the chamber 16 of the member M so that, upon the down stroke of the central portion of the member M, increased pressure is brought to bear against the flap valve 15 from within, whereby such valve is maintained in full closed position. The full force and effect of suction and pressure imparted to the said unbroken column of water by the piston action of the member M is brought against the obstruction 5 to aid in loosening and removing the same. During this period of operation, there is also prevented circulation of air from the chamber 16 of the member M into the vent pipe 4 above the point of communication of the drain pipe 3 therewith.

The efficiency of the device as herein embodied is materially increased on account of the structure of the member M being such as to result in the elimination of any mechanical means for holding the member in any proper working position and wherein the structure of such member M is such to confine all of the suction and pressure created by the piston action of the member M within the chamber 16, the drain pipe 3 and the vent pipe 4. It is to be further noted that the construction of the member M is such to result in creating a solid water column through which suction and pressure are transmitted through the member M to the obstruction 5. This action is further facilitated by having the major diameter of the member M relatively large.

In the embodiment of the invention as illustrated in Figure 3, the member C in its axial center is provided with an outstanding integral post 18 of desired dimensions which is substantially snugly received within a socket 19 provided in an end portion of a handle member H and said post 18 is securely held within a socket 19 through the medium of a suitable bonding agent 20 or otherwise as may be preferred.

From the foregoing description it is thought to be obvious that a cleaner for drain pipes constructed in accordance with my invention is particularly well adapted for use by reason of the convenience and facility with which it may be assembled and operated.

I claim:

1. A device for moving an obstruction in a drain pipe, comprising a substantially semi-spherical hollow flexible body having a channelled edge for engagement with a surface around the entrance to the drain pipe opening, said body having a wall opening, an inwardly opening flap valve adapted to position in said opening, the flap valve forming an integral portion of the body wall and closing into the opening flush with the wall, and a rigid handle member secured to the central portion of the body and providing means for manually imparting piston action to the body.

2. A device of the character stated in claim 1, wherein the central top portion of the body is of materially increased thickness, the wall portion of the body between said channelled edge and the part of increased thickness having said valve therein.

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