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DRAIN AND WASTE PIPE CLEANER.

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An object of this invention is to provide an effective and easily operated simple means for cleaning the drain pipes of sinks, toilet bowls, wash bowls and the like with minimum amount of labor and skill of operation.

Cheapness, ease of manufacture and great durability are other objects of the invention.

This invention is novel in that it comprises in combination with a tubular flexible body, a coupling adapted to fit securely on the end of a faucet and being continuous with the tube at one end thereof and a rubber plumber's pump comprising an annular wall terminating in a suction mouth, a diaphragm connected to said annular wall and a practically rigid tubular handle central to said diaphragm and integral therewith and integrally connected to the end of the tube opposite the faucet connection, whereby the operator may conveniently use the device independently of water pressure, by closing the opening in the coupling as by his thumb, and then operating the pump by means of the hollow handle; or may apply the coupling to a closed faucet, thus closing the vent from the pump and may then use the pump to loosen the obstruction by suction, and then turn the water on at the faucet and apply the water pressure to flush the pipe; or at his option may turn on the pressure at the outlet and increase the pressure intermittently by operating the pump.

In order to produce the device in cheap, simple, practical and durable form, I mold the suction pump and central tubular handle in one piece of india rubber and mold the faucet connection of india rubber and connect the same with stock tubing by a suitable well known process.

A feature of the invention lies in the construction of a tubular composite metal and rubber handle in the form of the frustum of a cone having a central axial cylindrical bore, the base of the frustum being integral with a flexible diaphragm surmounting a cylindrical wall having a thickened base, and the top of the frustum forming a continuation of the tube, thus affording, with a minimum amount of material, a portion susceptible of affording a superior handle which the hand may grasp and through which the force of the hand may be applied to operate the diaphragm to produce a water hammer when

the suction cup is in place over the drain outlet in a sink basin or other bowl, the drain of which is to be cleaned.

An object is to provide a superior plumber's pump that may be conveniently stored in kitchen drawers or recesses where storage space is limited.

Another object is to so construct the device as to insure that no joints are likely to part under high pressure applied to the pump by the water service.

Other objects are cheapness and convenience of manufacture.

Another object is to make provision whereby the device may be conveniently used for pumping toilet flush bowls.

Other objects, advantages and features of invention may appear from the accompanying drawing, the subjoined detailed description and the appended claim.

The accompanying drawing illustrates the invention.

Figure 1 is a side view of a plumber's pump constructed in accordance with this invention as embodied in a plumber's pump adapted to be attached to a bathtub faucet and to be used to pump or force out an obstruction in the flush bowl of a water closet.

Fig. 2 is an elevation partly in section of a plumber's pump adapted for use in pumping or forcing out obstructions in sink drains; parts being shown in axial section.

Fig. 3 is an end view of the faucet connection, omitting the bell end of the pump.

Fig. 4 shows the sink pump ready for action on a clogged sink trap.

The faucet connection 1 is a taper soft rubber molding having a bell mouth 2 and a central annularly beaded bore 3 formed with thickened lips 4, rounded inwardly as at 5 to accommodate easy entrance of a faucet nozzle 6 into the bore 3.

The connection is shown with two internal beads 7 and 8 with an intermediate cavity 9.

The bore 3 is of less diameter than the faucet nozzle 6 for which the connection is intended, so that when the connection 1 is forced onto the nozzle, the walls of the connection must be expanded as the end of the nozzle 6 passes the beads, so that the resilient rubber walls of the connection at the recess 9 may be compressed by forcibly gripping the same to expel air from the recess

as the end of the nozzle passes the bead 8, so that when the connection has been forced over the nozzle to cause both of the beads 7 and 8 to grip the nozzle, the expanding resiliency of the walls of the connection outside the recess 9 will tend to produce a vacuum in said recess 9 to cause external air pressure on the wall surrounding the recess, to tighten the grip upon the nozzle.

The end 10 of the connection 1 opposite the intake at 5 is provided with an annular recess 11 to receive the end 12 of the rubber tube 13 stretched over one end of a beaded internal coupling tube 14, that is provided with a taper insert 15 and bead 16, over which the end of the rubber tube 13 is stretched to bring the end of the tube 12 to the intermediate bead 17 of the coupling 14, the inner end of which is provided with a bead 18 to embed itself in the rubber, as shown in Fig. 2, when the parts are fully assembled.

The connection 1 is provided with an external annular bead 19 adapted to surround the connection between the beads 17 and 18 of the inserted coupling tube 14 whereby when the connection 1, the tube 13 and the coupling 14 are assembled, the strength of the reinforcement 19 of the connection tends to hold the connection with a tight grasp and practical suction on the tube 14 between the beads 17 and 18.

Both ends of the tube 13 are provided with coupling tubes 14, 14' practically alike in structure and function, and the combined plumber's pump and nozzle 20 is fixed to the coupling tube 14', and comprises an expanding hollow stub 21 provided at its upper end with an annular recess 22 to receive the discharge end 23 of the flexible tube 13 and tubular coupling 14' when the beaded end of said coupling has been inserted into the end of the tube 13 to bring said tube end over the bead 16.

After the bead 18 has been forced into the hollow stub 21, the union between the tube 13 and the hollow stub 21 is made very firm. Said stub is also provided with a reinforcement 19' corresponding to the reinforcement 19 of the faucet nozzle connection.

A suitable cement, as rubber cement, may be applied as at *a*, Fig. 2 to secure the ends of the tube in place.

The body of the stub 21 is stubbornly resilient and practically non-compressible endwise under such pressure as may be applied to it by the operator in pumping out a clogged pipe; the wall 21 having a thickened portion *b* between the recess 22 and the union of the stub at 24 with an annular diaphragm 25, which is integral with and connects the discharging end of the stub with the gradually thickened barrel 26 that terminates in the thickened end flanged annular foot 27, the inside wall of which is provided with an an-

nular groove 28 into which the rim of a removable sprinkling disk or brushing disk, not shown, can be inserted.

The beaded tubular couplings may be of any suitable length, as is indicated at 14, 14' and 14''; the construction of said coupling 14'' being analogous to that of the couplings 14 and 14' but being of greater length; and the tube 13' is also of considerable length and the nozzle 32 and its flange 27' are of such diameter, as to constitute an appropriate plumber's pump for forcing an obstruction through the drain of a toilet flush bowl.

In practical use with the long tube form shown in Fig. 1, the connection 1 may be attached to the faucet nozzle and the extended length of tube 13' enables the operator to apply the pump nozzle 32 to a toilet flush bowl for pumping the same while direct connection with the faucet of the bathtub is maintained.

This is usually possible with a moderately long tube on account of the usual close arrangement of bathtub and flush bowl in bathrooms.

I have found a length of six feet quite satisfactory with a coupling tube 14'' about a foot more or less long.

One wishing to use the device as a plumber's pump on a kitchen sink, will first remove from the sink outlet the strainer plate, not shown in the drawings, and may then apply the connection 1 to the appropriate faucet and force it into place thereon and then grasping the stub 21 firmly, may operate the pump to cause suction and may open the faucet and allow water to flow into the plugged pipe with a water pressure on, may work the pump 20 up and down, thus bending the diaphragm 25 as indicated in solid and broken lines in Fig. 2, and will turn on the water at the faucet and will work the stub 21 up and down, with the suction foot tightly in place on the sink bottom around the outlet to the trapped pipe 35 to force out the stoppage, thus applying the force of the water pressure onto the obstruction, alternating the same with a force of suction.

The operator may force the open end of the nozzle tightly against the bottom of the sink or wash bowl as the case may be, and force the stub downward to flex the diaphragm 25 as indicated in broken lines in Fig. 2, and holding the stub firmly down, may open the faucet to which the connection 1 is attached and may operate the device as a plumber's pump while the service pressure through the faucet is exerted inside the nozzle.

The use of the toilet flush bowl pump shown in Fig. 1 is practically the same as just described.

I claim:

As a new article of manufacture the combination of a flexible hose, a soft rubber molding at its top adapted frictionally to engage

a faucet nozzle, the upper end of said hose being in engagement with the lower end of said molding, and a plumber's pump at the lower end of said hose, comprising a lower, thickened terminal, annular wall terminating in a suction mouth, said lower thickened wall merging upwardly into a thinner flexible portion, which terminates in an upper, rigid thickened tubular handle, the lower end of said hose being secured to the upper end of said thickened tubular handle, so that said hose and handle form a substantially unbroken continuity and may be actuated as a unit.

In testimony whereof, I have hereunto set my hand at Los Angeles, California, this 7th day of March, 1928.

ADONIRAM JUDSON CHURCHILL.