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M. YAVITCH

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DEVICE FOR SILENCING THE FLOW OF WATER IN CONDUITS

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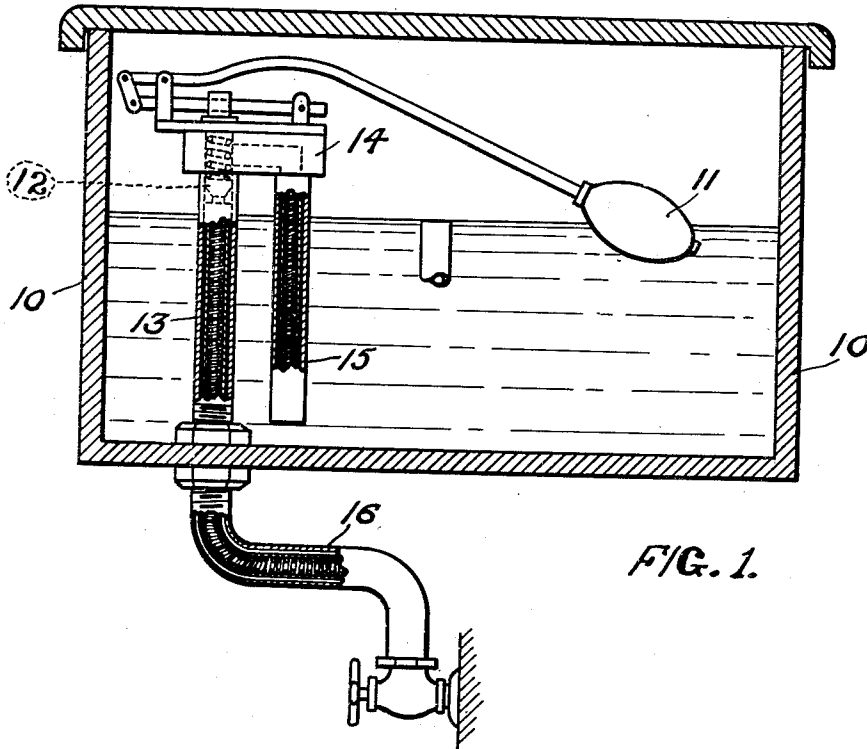


FIG. 1.

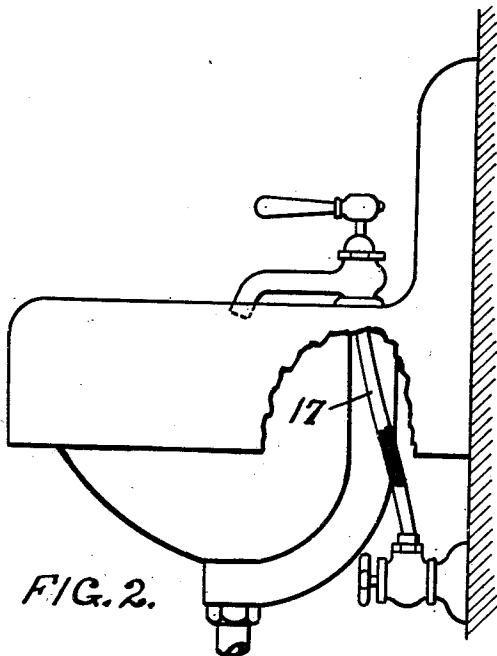


FIG. 2.

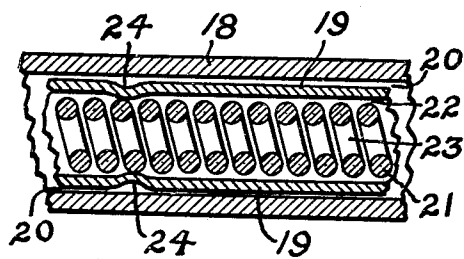


FIG. 3.

INVENTOR.

MORRIS YAVITCH

BY

Ramuel S. Fuchs

ATTORNEY.

UNITED STATES PATENT OFFICE

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DEVICE FOR SILENCING THE FLOW OF
WATER IN CONDUITS

Morris Yavitch, Los Angeles, Calif.

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6 Claims. (Cl. 137—111)

This invention is intended to silence the flow of liquids in conduits. It is adaptable for use in various relations but, since it is believed that its principle use will be in toilet rooms and lavatories to silence the flow of water into the flushing tank or into the wash bowl, it is so shown in the drawing and is so described herein.

In the drawing, Fig. 1 shows a flushing tank for a toilet bowl with the invention embodied therein as well as in the water supply pipe leading to the tank; Fig. 2 shows a lavatory wash basin with the invention in the supply pipe thereof, and Fig. 3 is a central longitudinal section on a larger scale of a pipe having the silencer therein.

Fig. 1 shows a conventional flush tank 10, having the usual float 11 for shutting off the inflowing water by closing the valve 12. The water, under pressure, flows in through pipe 13 to a casing 14 which has an outlet port connected with a depending pipe 15 which terminates near the bottom of the tank. The invention may be used in either or both of the pipes 13 and 15, the drawing showing the same in both of these pipes. The water is supplied to pipe 13 through a valved pipe 16 which, also, is provided with my silencer.

Fig. 2 shows a conventional lavatory wash bowl having a valved inlet pipe 17 with the silencer therein.

In Fig. 3, 18 is the inflow pipe, which may be pipe 13, 15, 16, 17 or any other pipe leading to any device to which there is a flow of water. The pipe may be in the inside or outside of the device, or both inside and outside as may be most convenient and desirable.

Inside the pipe 18 of Fig. 3 is a tube 19 of lighter gage and ductile metal which fits loosely within pipe 18, leaving a narrow tubular space 20 thereabout. Within the tube 19 is a helical coil 21 of metal. This coil is made of a wire-like rod which may be round or of any other shape in cross section. The convolutions of the coil do not quite touch one another so that water may pass between them. The tube and coil may be formed of any suitable metals which are preferably non-corrodible. I have found copper to be a very satisfactory material. The coil fits loosely within the tube, leaving a narrow tubular passage 22 thereabout. There is also a passage 23 through the coil.

The water flowing through the pipe 18 is broken up into three coaxial tubular parts 20, 22 and 23 with transverse streams through the passages between the convolutions of the coil

21. This effectually silences the flow. As shown at 24, the tube is indented at intervals to hold the coil in place and to maintain the space 22.

In Fig. 1 the silencer may be, and in many cases will be, placed within the supply pipe 16 outside the tank, thus making up a structure similar to that of Fig. 2. The pipe 16 or 18 as shown in Fig. 3, is sufficiently flexible for bending into any desired shape, and the silencer will prevent the pipe from collapsing while bending. This is for the reason that the coil 21, the convolutions of which are narrowly spaced, will resist crushing while bending and, since it and the tube 19 almost fill the pipe 18, they form a core for said pipe and prevent it from kinking or bending at too abrupt an angle. Fig. 1 shows the pipe 16 bent into an S-shape without kinking or forming any abrupt angles. In fact, the core, comprising the coil and tube 19, may be tied into a loose knot without any collapse of the tube, the bends of the core being gradual and without any rupture of the tube. The core may be made up and marketed in pieces of any desired length and may be cut transversely to fit into any length of the pipe 18. The silencer may be installed at any part of the pipe and may be remote from any valve or fixture, and it will eliminate the objectionable noises from the flow of the water through the valve or into the fixture.

Having thus described my invention, I claim:

1. A silencer for the flow of water in a pipe which comprises a helical coil of a wire-like rod, the convolutions of the coil being spaced slightly from one another to leave a narrow passage for water, and a tube of ductile metal surrounding the coil and leaving a narrow tubular space between the coil and the tube, said silencer being adapted to be inserted into a pipe where-in water may flow under pressure, the outer diameter of the said tube being slightly less than the inner diameter of the pipe so that a narrow tubular space is provided between the tube and pipe, the arrangement being such that, when the silencer is positioned within the pipe and the water is turned on, the water flows in three coaxial streams and in a plurality of transverse streams between the convolutions of the coil.

2. A silencer for the flow of water as set forth in claim 1 in which the tube of ductile metal is provided with inwardly directed dents at intervals to hold the coil in the tube and for maintaining the space between the coil and tube.

3. A device of the character described which

comprises a tube of ductile material through which a liquid flows under pressure, a helical coil of a wire-like rod within said tube, said coil having an external diameter less than the internal diameter of the tube, the tube being provided with depressions in its circumferential wall to form inwardly extending projections for holding the greater portion of the coil spaced from the tube to provide a substantially unobstructed tubular passage for the water outside the coil, the coil having an unobstructed passage for water extending axially therethrough, the structure being such that the liquid passing through the tube is divided into an inner and an outer stream which streams are separated by said coil.

4. A device as set forth in claim 3 in which the convolutions of the coil are slightly spaced to provide a passage for the liquid radially of the tube between the inner and the outer streams.

5. A device as set forth in claim 3 in which the coil extends throughout the tube and is unobstructed in its interior so that a stream of liquid may pass freely through it from end to end.

6. In a device of the character described, the combination of a tube of ductile material through which water under pressure may flow, of a helical coil of a wire-like rod axially positioned within said tube and spaced from the inner wall of the tube so as to provide a cylindrical space about the coil and within the tube, said coil being held coaxial with the tube by indentations in the circumferential wall of the tube which form internal projections which contact the coil, said coil having an axial passage therethrough which extends from end to end of the tube and is unobstructed throughout its length.

MORRIS YAVITCH.