April 27, 1926. 1,582,225

W. R. PULKINGHORN

DEVICE FOR IMPREGNATING FLOWING WATER

Filed July 13, 1925

Fig. 1

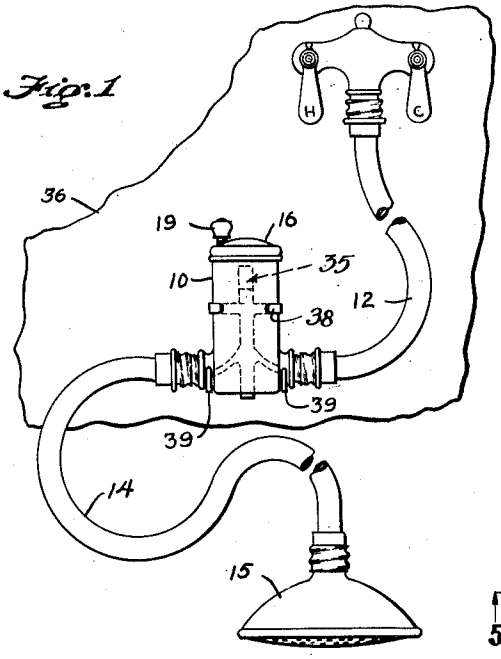


Fig. 2

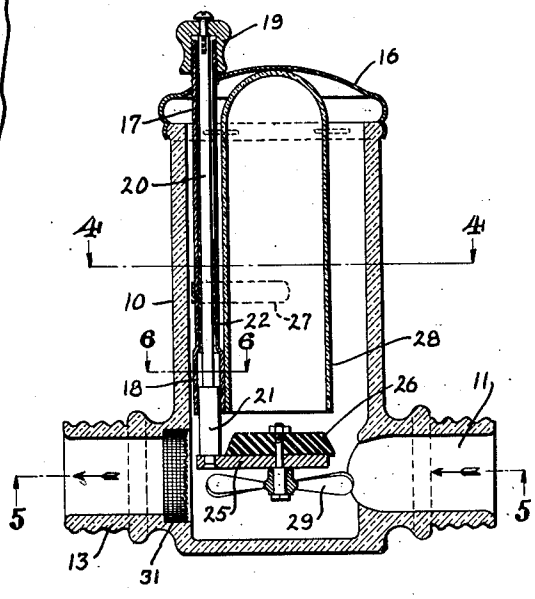


Fig. 3

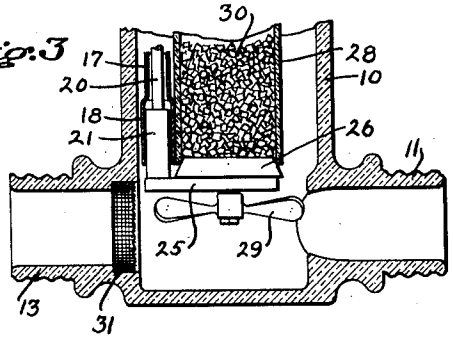


Fig. 6

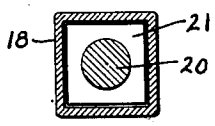


Fig. 5

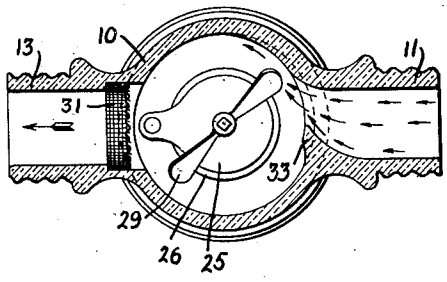
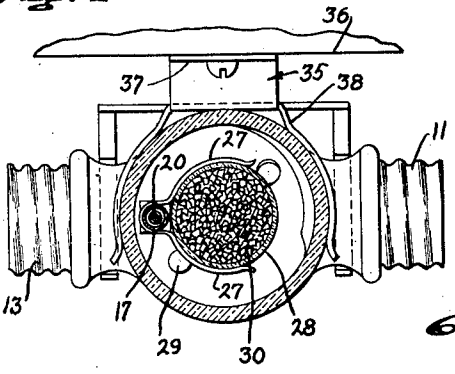


Fig. 4



INVENTOR.
WILLIAM R. PULKINGHORN

BY

ATTORNEY.

Patented Apr. 27, 1926. 1,582,225

UNITED STATES PATENT OFFICE.

WILLIAM ROSS PULKINGHORN, OF LOS ANGELES, CALIFORNIA.

DEVICE FOR IMPREGNATING FLOWING WATER.

Application filed July 13, 1925. Serial No. 43,414.

To all whom it may concern:

Be it known that I, WILLIAM ROSS PULKINGHORN, a citizen of the United States, residing at Los Angeles, in the county of Los Angeles and State of California, have invented a new and useful Device for Impregnating Flowing Water, of which the following is a specification.

This invention relates more specifically to a device designed to be used in connection with shower, spray and bath fixtures to impregnate the water flowing therethrough with various granular soluble or liquid chemicals.

A main object of the invention is to provide a simple device formed of a sanitary material, such as glass or porcelain that may be conveniently mounted in a shower, spray, or bath room fixture for delivering when desired to the water flowing therethrough soluble chemical salts or liquids in order to soften, perfume, or otherwise chemicalize the flowing water.

Another object is to provide a device in which the soluble salts may be introduced to the flowing water when required, and to provide a convenient removable means for holding the chemical salts within the device.

A further object is to provide suitable means connected to the device for efficiently mixing the chemical salts with the water as it flows therethrough.

Briefly the invention consists of a small cylindrical casing formed of glass, porcelain or other sanitary material, having a water inlet leading thereto and an oppositely disposed water outlet leading therefrom at the base thereof. The open top of the casing is provided with a detachable metal closure, carrying a downwardly extending metal sleeve in which is mounted a vertically reciprocable shaft, means being provided on the upper end of the sleeve for manually reciprocating the shaft when desired; the shaft is also provided therearound with a suitable packing to form a water tight joint. Secured to the lower end of the shaft is a circular arm extending at right angles thereto carrying on its upper face a circular valve, an impeller wheel for mixing the chemicals being rotatably secured to the under face of the circular arm. The sleeve secured to the closure cap is provided with a pair of spring arms for supporting in position a glass container carrying the chemical salts or liquids in the form of a test tube, its upper closed end bearing against the under surface of the metal closure cap and the longitudinal axis of the container being in alinement with the vertical axis of the circular arm, whereby when the shaft is reciprocated upwardly the valve on the circular arm will form a perfect closure for the lower open end of the container. The inlet opening may be connected by a flexible tube to a source of water supply while the water outlet is designed to carry a flexible tube having a shower or spray nozzle on the outer end thereof, or other forms of nozzles intended for various uses.

In the drawings attached hereto and forming a part of the following specification,

Fig. 1 is a side elevation of the device detachably mounted on a wall bracket and connected for use.

Fig. 2 is a central vertical section through the device showing the valve in an open position.

Fig. 3 is a partial central section of the lower end of the device showing the valve in a closed position.

Fig. 4 is a transverse section of the device taken on line 4—4 of Fig. 2 looking in the direction indicated by the arrows thereon.

Fig. 5 is a transverse section of the device taken on line 5—5 of Fig. 2 and looking in the direction the arrows indicate thereon.

Fig. 6 is an enlarged detailed sectional view taken on the line 6—6 of Fig. 2 looking in the direction shown by the arrows.

Referring more particularly to the drawings, 10 indicates a cylindrical casing open at the upper end and preferably formed of heavy glass, porcelain or other sanitary material. Formed in the circular wall of the casing and adjacent the bottom thereof is a water inlet opening 11 externally threaded for the reception of a rubber tubing 12, whose free end is adapted to be secured to a water supply fixture of any approved type. Disposed diametrically opposite water inlet 10 is an outlet 13 of the same general form as the inlet, being externally threaded on its outer end for the reception of a rubber hose 14 carrying a spray or other discharge type of nozzle 15 on the free end thereof as clearly shown in Fig. 1.

Detachably secured to the upper open end of the casing 10 is a metal closure cap 16 car-

rying adjacent its circular edge a downwardly extending metal sleeve 17. The lower end of sleeve 17 is of rectangular formation as at 18, and the upper end that projects above the closure cap 16 is threaded for the reception of a shaft adjusting nut 19. Mounted in sleeve 17 is a reciprocable shaft 20, the upper end thereof being swivelly secured to the operating adjusting nut 19, the lower end of the shaft 21 being of rectangular formation and fitting loosely within the rectangular portion 18 of the sleeve, whereby the shaft 20 is prevented from rotating when adjusted vertically within the sleeve. In order to form a water tight joint between the shaft 20 and the interior of the sleeve 17 a tubular packing 22 is provided, it being understood that other forms of packing may be utilized if desired.

Rigidly secured on the lower end of shaft 20 is a circular arm 25 that projects at right angles therefrom and carries on its upper face a valve 26 formed of rubber or other pliable material. Secured to sleeve 17 above its rectangular end 18 are spring fingers 27 adapted to support in position in the casing a removable glass container tube 28 closed at its upper end. This container tube is designed to carry the salts or chemicals for chemicalizing the water passing through the device as will be more clearly explained further on.

Rotatably mounted on the underface of arm 25 is an impeller wheel 29 for the purpose of mixing the chemicals that fall from the container 28 into the path of fluid flow through the device. At the inner end of the outlet opening is formed a circular seat 31 for the reception of a flanged screen, designed to prevent the passage therethrough of any undissolved chemicals on an operation of the device.

In order that the water passing through the inlet opening may rotate the impeller wheel 29, a deflecting lip 33 is formed at one side of the inner end of said opening as clearly shown in Fig. 5 of the drawing. By means of this deflector lip the water entering the device will be deflected tangentially with respect to the cylindrical casing to rapidly rotate the impeller wheel, and thus mix the chemicals falling from the container 28 when the valve is opened.

The operation of the device will be apparent from the following description. The device when used in connection with a spray nozzle (as illustrated in Fig. 1 of the drawings) is detachably mounted on a support 35, secured to the wall 36 adjacent the source of water supply. This support preferably consists of a standard 37 having a pair of spring arms 38 extending from its outer face midway its upper and lower ends, adapted to engage the cylindrical wall of the casing 10, the lower portion of the support being provided with hook seats 39 that engage the inlet and outlet nipples of the casing.

When it is desired to use the device in connection with a shower bath, the closure cap together with its attached mechanism is first removed from the casing and a filled container tube mounted in the spring arms 27, the valve 26 being rotated to a closed position. The plumbing fixture may now be operated to supply water for the bath, and when the same is completed the valve is unseated to release the contents of the container tube into the flowing water to impregnate the same for a final rinsing operation. As the salts fall from the container into the path of the flowing water the impeller wheel will thoroughly co-mingle the same therewith, such salts employed for this purpose being highly soluble. Should chemicals in the form of crystals be employed in the device that are not as readily soluble, the rapidly revolving impeller wheel will greatly assist in their rapid absorption.

In the drawings although I have illustrated my device in connection with a shower spray tube, it will be readily understood that it may be just as effectively used in connection with other apparatus such as nasal douche, fountain syringes, or similar devices with equal facility. Further the device may be combined in connection with tub, shower or kitchen sink fixtures.

The chemical container tubes 28 may be formed of a comparatively inexpensive material, such as blown glass, and the filled containers may be charged with chemicals of various kinds and vended in cartons of a dozen or half dozen lots at small cost. In the case of perfumed bath salts this method of using the same will effect economies in their use, as the tubes will not contain more than the exact quantity of salts necessary to efficiently perfume the bath.

What I claim is:

1. A device of the class described comprising a casing having an open upper end and provided in its lower portion with water inlet and outlet openings, a closure for the upper end of said casing, a container having an open lower end removably supported by said casing closure, and a valve secured to said casing closure for closing the open end of said container and operating means therefor.

2. A device of the class described comprising a cylindrical casing open at its upper end and provided with fluid inlet and outlet openings, a closure for the upper end of said casing, a sleeve secured to said closure extending downwardly therefrom its upper end projecting above said closure, a shaft mounted to reciprocate in said sleeve and means to operate the same, a fluid impregnating material container detachably secured

to said sleeve having an open lower end, and a valve secured to said shaft for controlling the opening and closing of said container.

3. A device of the class described comprising a vertically disposed cylindrical casing provided at the bottom thereof with fluid inlet and outlet openings, a container having a discharge port for confining a water impregnating material, means for supporting said container within said casing above the fluid inlet and outlet openings, a valve for controlling the port of said container, an impeller wheel mounted on said valve and adapted to be actuated by the fluid passing through said casing, and means to operate the valve to open or close the port in said container.

4. A device of the class described comprising a cylindrical casing open at its upper end and provided with fluid inlet and outlet openings, a closure for the upper end of said casing, a sleeve secured to said closure extending downwardly therefrom its upper end projecting above said closure, a shaft mounted to reciprocate in said sleeve and means to operate the same, a fluid impregnating material container detachably secured to said sleeve having an open lower end, a valve secured to said shaft for controlling the opening and closing of said container, and an impeller wheel rotatably secured to the under face of the valve and operated by the fluid passing through said container, whereby to mix the fluid impregnating material with the fluid on its passage through the casing.

5. A device of the class described comprising a vertically disposed cylindrical casing provided at the bottom thereof with fluid inlet and outlet openings, a container having a discharge port for confining a water impregnating material, means for supporting said container within said casing above the fluid inlet and outlet openings, a valve for controlling the port of said container, an impeller wheel mounted on said valve and adapted to be actuated by the fluid passing through said casing, the inner end of the fluid inlet opening being provided with a fluid deflecting means, whereby to actuate the impeller wheel, and means to operate the valve to open or close the port in said container.

In witness that I claim the foregoing I have hereunto subscribed my name this 30th day of June 1925.

WILLIAM ROSS PULKINGHORN.