

W. S. BACHMAN.
 STERILIZING ATTACHMENT FOR WATER SUPPLY PIPES.
 APPLICATION FILED APR. 1, 1918.

1,321,586.

Patented Nov. 11, 1919.

FIG. 1.

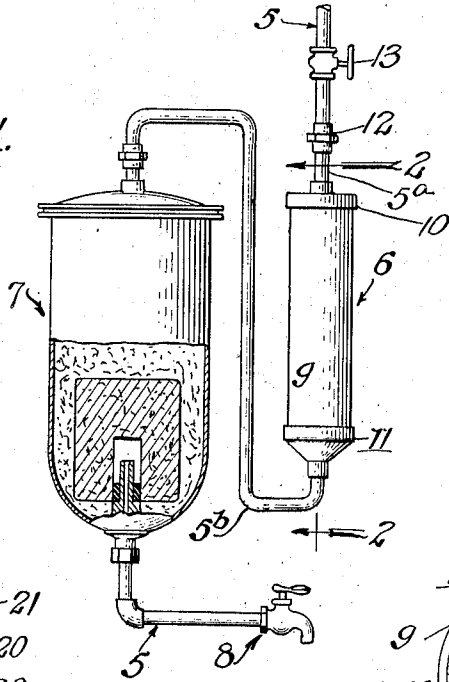


FIG. 3.

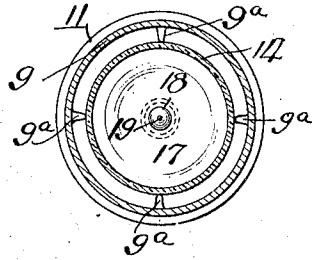


FIG. 2.

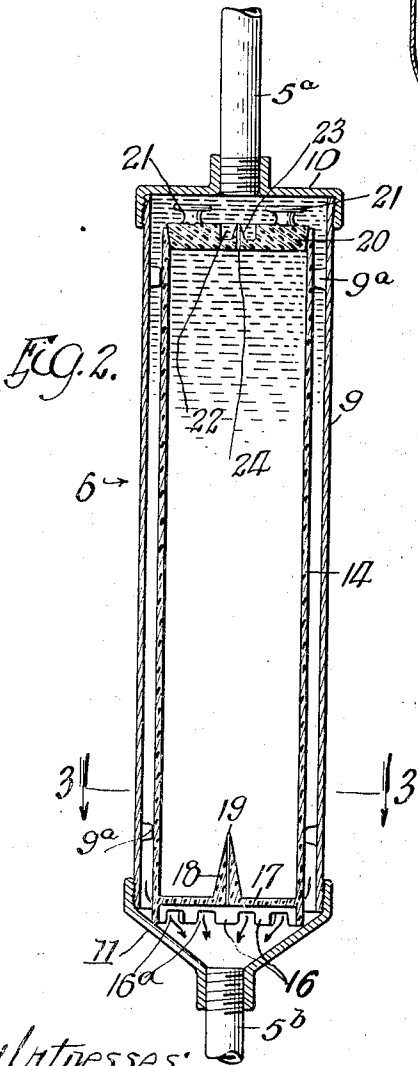
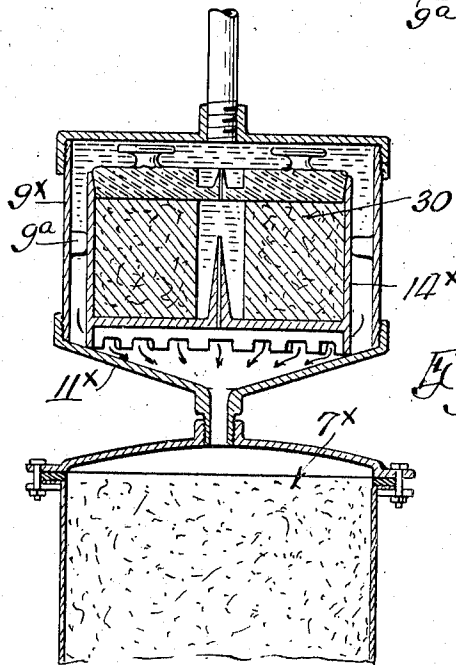


FIG. 4.



Witnesses:
 J. N. Alfreds
 D. Darrouge

Inventor
 Walter S. Bachman
 by Clarence E. Mellor Atty

UNITED STATES PATENT OFFICE.

WALTER S. BACHMAN, OF CHICAGO, ILLINOIS.

STERILIZING ATTACHMENT FOR WATER-SUPPLY PIPES.

1,321,586.

Specification of Letters Patent.

Patented Nov. 11, 1919.

Application filed April 1, 1918. Serial No. 226,091.

To all whom it may concern:

Be it known that I, WALTER S. BACHMAN, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Sterilizing Attachments for Water-Supply Pipes; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, which form a part of this specification.

This invention relates to improvements in sterilizing attachments for water supply pipes and consists of the matters hereinafter described and more particularly pointed out in the appended claims.

The object of the invention is to provide a simple and efficient water sterilizing device which may be readily and easily interposed in any water supply pipe, and which will operate automatically to discharge a small quantity of sterilizing agent into the water in said pipe, when there is a flow of water through said pipe.

Another object of the invention is to provide a sterilizing attachment of the kind which may be readily recharged, without loss of such sterilizing agent as may remain therein when the recharging takes place.

These objects as well as the several advantages of my invention will more readily appear as I proceed with my specification.

In the drawings:—

Figure 1 is a view in side elevation of a sterilizing attachment embodying my invention, interposed in a water pipe used in connection with a drinking water filter.

Fig. 2 is a view representing on an enlarged scale, a vertical section through my improved sterilizing attachment, the plane of the section being indicated by the line 2—2 of Fig. 1.

Fig. 3 is a view representing a horizontal section through the sterilizing attachment, the plane of the section being indicated by the line 3—3 of Fig. 2.

Fig. 4 is a view representing a vertical section through a modified form of my improved sterilizing attachment.

Referring now in detail to that embodiment of my invention illustrated in the drawings, and more particularly to the construction shown in Figs. 1 to 3 inclusive,—5 indicates a water supply pipe and 6 indi-

cates as a whole, my improved sterilizing attachment. As shown, in this particular instance, the pipe 5 supplies water to a filter 7 for rendering the water fit for drinking purposes, but as will be apparent, the invention is not limited to use in connection with a drinking water filter, since it may be used in other places where its peculiar characteristics make it advantageous to do so. The outlet from the pipe 5 is controlled by a faucet 8 through which the water flows after passing through the filter.

My improved sterilizing attachment 6 includes an upright, tubular, non-corrosive metal casing 9, which, as shown in this instance, is of a height greater than its diameter. Said casing is closed at its ends by top and bottom screw threaded caps 10 and 11 respectively, the bottom cap preferably being conical or funnel shape in vertical section. The cap 10 has threaded into it a part 5^a of the pipe 5, while the bottom cap has threaded into it the other part 5^b of the pipe 5, which connects the interior of the casing 9 with the interior of the filter 7. In the pipe part 5^a I provide a union fitting 12 and above the same a shut-off valve 13, the purposes of which will presently appear.

Concentrically within the casing 9 and resting upon the funnel shaped, bottom wall of the bottom cap 11, is a tubular vessel 14 which is a container for a sterilizing agent, such for example as a solution containing active chlorin. This vessel or container is preferably made of glass and is of a diameter somewhat less than that of the casing 9, so as to leave an annular space 15 between said casing and the container. Said container is held in proper spaced relation within the casing by means of radially spaced lugs 9^a arranged near the top and bottom ends of the casing 9.

The bottom end of the container 14 is provided with a plurality of annularly spaced lugs 16 which depend below its bottom wall 17 (integral with the side wall, as shown) and bear upon the conical bottom wall of the cap 11. The spaces or notches 16^a between said lugs 16 serve to connect the annular space 15 about the container 14, with the space in the cap 11 below the container and thus with the pipe part 5^b connected with said cap. 18 indicates a conical, upstanding lug located in the center of the bottom wall 17 of the container. This lug has a very small hole or passageway 19 which extends

through the bottom wall 17 and which provides an outlet for the container.

The container 14 is closed at the top by a relatively thick glass stopper 20, which is tapered to fit a tapered seat formed at the top end of the container. Said stopper has a knob or knobs 21 by means of which it may be withdrawn from and replaced in the container. In the center of the stopper 20 is located a circular depression 22 in the bottom of which is located a comparatively short, upstanding, conical lug 23 having a small hole or opening 24 through it. This hole extends through the stopper and is in line with the hole or opening 19 in the lug 18 at the bottom of the container.

The operation of my improved sterilizing device is as follows:—The container 14 is first charged with a sterilizing agent and in order to do this, it is removed from the casing 9, which may be readily done by unscrewing the top cap 10 therefrom, whereupon the container 14 may be withdrawn vertically from the casing. The stopper is then withdrawn from the container and the charge of sterilizing agent is poured or otherwise introduced therein. The charged container is then replaced within the casing 9 and the cap 10 replaced on the casing. The pipe part 5^a is then connected by means of the union fitting, to the main part 5 of the pipe line leading to the filter, the valve 13 being first closed off to prevent the flow of water during the attachment of the sterilizing device.

After the attachment is in place as hereinbefore described, the valve 13 is opened and the water will enter and fill the casing 9 and surround the container 14. The water at the top of the container will tend to enter the container and if the container is not full will do so, until the normal water pressure in the pipe 5 is attained both inside and outside of the container. This pressure will, of course, maintain through the pipe part 5^b and the filter 7 down to the faucet 8.

When the faucet 8 is opened, a differential pressure will be started at both the top and bottom of the container and in addition, the water in the main casing 9, flowing through the spaces 16^a on the way to the faucet 8, will set up an aspirating action which will tend to draw or suck the liquid in the container through the hole 19 in the bottom of said container. As a result, a minute quantity of the sterilizing agent is drawn out of the container and mixed with the flowing water on its way to the faucet, the amount taken from the container being replaced by an introduction of a like amount of water through the opening 24 at the top of the container.

This will continue until the faucet 8 is closed, whereupon the balance of pressure will be restored and the flow of the steriliz-

ing agent from the container 14 will cease with the flow of water from the casing 9 toward the faucet 8.

The opening 19 is made of such small cross section that but a small quantity of the sterilizing agent is introduced into the water,—so small that it will barely affect the taste of the water, even when the usual and preferred sterilizing agent containing free chlorine is adopted.

By making the lugs 18 and 23 through which the inlet and outlet passageways in the container are formed, as above shown and described, the tendency of the solid matter or sediment carried by the water to enter and clog said openings, is largely overcome and the frequency of the cleaning of said openings greatly reduced.

In Fig. 4, I have illustrated a modified form of my invention, wherein the casing 9^x is of a diameter greater than its length, for the purpose of using a sterilizing agent in briquet or cake form, which substantially fills the container 14^x as is illustrated at 30. In this instance, the funnel shaped bottom cap 11^x is threaded directly to the top of the filter 7^x and the briquet 30 has a central hole for the passage of water through the container. When water passes through the container, 14^x, in this case, it will act to pick up and take with it the sterilizing agent from the briquet, given up to it. Otherwise, the operation is the same as before described.

My improved sterilizer possesses many advantages. It has no moving parts to get out of order. It is simple in construction and is automatic and efficient in operation for its intended purpose. It can be easily recharged without a loss of such sterilizing agent as remains at the time it is desired to recharge the same. It can be easily cleaned and will tend not to clog up, despite the size of the inlet and outlet openings to and from the sterilizing agent container.

In describing my invention, I have referred to the same as used in connection with a filter for drinking water purposes, and I have referred to certain specific details of construction and arrangement of parts, but I do not wish to be limited thereto except as may be pointed out in the appended claims.

I claim as my invention:

1. A device of the kind described comprising a tubular casing, top and bottom caps closing the ends of said casing, said caps being each adapted to receive a pipe end, said bottom cap being conically shaped, a removable container having an apertured, integral bottom wall located within but spaced from said casing, said container resting upon said conically shaped bottom cap, the said bottom wall of said container being spaced above the bottom end of said casing and having a plurality of notches therein,

and an apertured stopper for closing the top end of said container.

2. A device of the kind described, comprising a tubular casing, top and bottom caps closing the ends of said casing, a container located in, but spaced from, said casing to provide an annular chamber, the bottom end of said container being notched and resting upon said bottom cap, said container having a bottom wall spaced above said notched end, an upright, conic, apertured lug on said bottom wall, and a stopper closing the top end of said container, said stopper having an annular recess in its top surface defining an apertured, conic lug in line with the lug on the bottom wall of the container.

3. A device of the kind described, comprising a tubular casing, top and bottom caps closing the ends of said casing, each of which is adapted to receive a pipe end and a bottom cap being a funnel cap, a con-

tainer in said casing, means in said casing for holding said container concentric with, but spaced from, said casing, the bottom end of said casing being notched and resting upon said bottom, funnel shaped cap, said container having a bottom wall which is spaced above said notched end and has a concentric, upright, apertured, conic lug, and a tapered stopper for the top end of said container, said stopper having a concentric, upright, apertured lug on its top surface, in line with the conic lug on the bottom wall of the container.

In testimony, that I claim the foregoing as my invention, I affix my signature in the presence of two witnesses, this 28th day of March, A. D. 1918.

WALTER S. BACHMAN.

Witnesses:

T. H. ALFREDS,
D. DARRENOUGUE.