Feb. 2, 1926. 1,571,616

A. B. BACKHERMS

SPRAY NOZZLE

Filed April 6, 1925

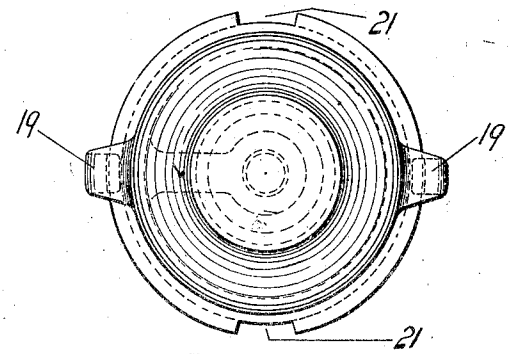


FIG-2.

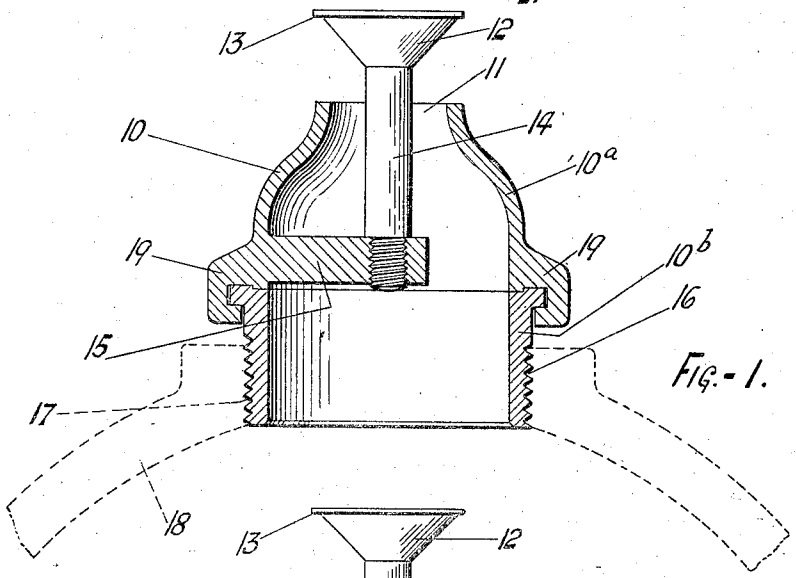


FIG.-1.

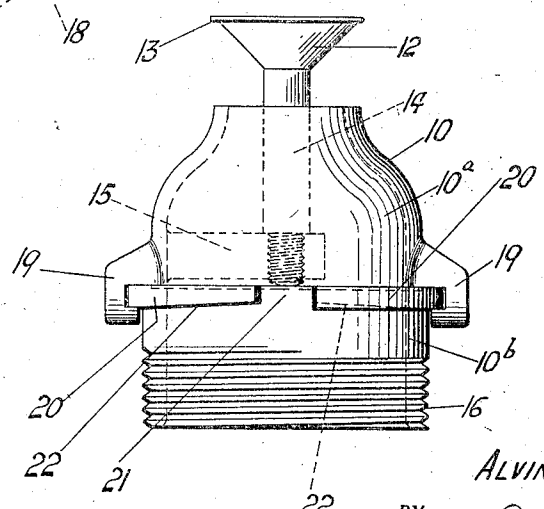


FIG.-3.

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UNITED STATES PATENT OFFICE.

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SPRAY NOZZLE.

Application filed April 6, 1925. Serial No. 20,891.

To all whom it may concern:

Be it known that I, ALVIN B. BACKHERMS, a citizen of the United States, and resident of Akron, county of Summit, and State of Ohio, have invented certain new and useful Improvements in Spray Nozzles, of which the following is a specification.

This invention relates to spray nozzles and particularly to that type of spray nozzle used in sewage filtration.

The chief object of the invention is to provide such a nozzle with a quick-removing dome whereby the nozzle may be easily and quickly removed, cleaned and replaced, removal of the dome making the entire inside of the nozzle easily accessible.

Heretofore, where the dome of the nozzle is threaded and fits directly into the supply pipe, it is of course necessary to unscrew the dome from the pipe for cleaning. This is extremely difficult—many times impossible—because the threads of the dome (which usually is bronze) and the threads of the pipe (which is iron), corrode. Their separation therefore is tedious, requires much time, and frequently the only recourse is to crush the dome to remove it, which in turn makes necessary the re-boring and re-threading of the pipe, and of course the purchase of a new nozzle.

While, to the layman, cleaning may seem to be of secondary importance, it may be said that at all filtration plants of any considerable size, a force of men is kept for this purpose alone. Foreign substances too numerous to describe—field mice, frogs, domestic articles, locks of hair—all these find their way into and through the supply pipes and into the nozzles, and until these substances are removed, the nozzles cannot operate, properly at least. Improperly operating nozzles mean an uneven distribution of the sewage, so that the efficiency of the filter bed is affected.

It should be noted also that the nozzle cleaning must be done during the interval between the discharge or spraying periods of the sewage, which occurs at approximately regular and frequent intervals, so that rapidity and ease of cleaning are all-important items.

It has been found also that the frequent unscrewing of the nozzle (for cleaning purposes) from the partly corroded threads of the cast iron supply pipes, soon wears the threads to the point where a good connection is impossible to obtain. So that this frequent removal is objectional, even where it can be efficiently done.

A particular object of the present invention is to provide a two part dome construction of non-corrodible material, such as bronze, one of which parts is adapted to be fitted into the usual cast iron supply pipe and which may remain permanently therein, and the other of which is adapted to be easily separated from the first part for cleaning the nozzle.

Another object is to provide a bayonet type of joint between said parts to facilitate ease and rapidity of removal of the dome for cleaning purposes.

The foregoing and ancillary objects are obtained by the structure illlustrated in the accompanying drawings and described below. It is to be understood that the invention is not limited to the specific construction illustrated and described.

Of the accompanying drawings;

Figure 1 is a diametral section through a nozzle construction embodying the invention;

Figure 2 is a plan thereof; and

Figure 3 is an elevation thereof.

Referring to the drawings, the nozzle includes a dome 10 of any suitable or accepted type having the usual restricted outlet or orifice 11 through which the liquid flows against the usual cone-shaped spreader 12, axially aligned with orifice 11, having its apex downwardly directed toward said orifice and formed on its upper end with a spreading shoulder or lip 13. The spreader 12 may be formed, as shown, on the upper end of a spindle 14 extending from within the dome 10 through orifice 11, and secured in the dome 10 in any suitable manner as by being threaded through a threaded aperture in an arm 15 formed or otherwise secured onto the dome 10 whereby the spindle 14 is separable from the dome. While a separable dome and spindle is shown, the dome and spindle may be formed as a single casting without sacrificing the benefits of this invention.

According to the present invention, dome 10 is formed in two parts 10^a and 10^b, the part 10^b being formed with screw threads at 16 whereby the dome 10 can be threaded into an aperture 17 in any suitable supply pipe

indicated in dotted lines at 18. The joint between parts 10^a and 10^b of the dome 10 is immediately below arm 15 or, stated in another way, arm 15 is at the lower edge of part 10^a whereby when the parts are separated, various materials clogging the nozzle, especially above arm 15, can be readily removed.

In order that the connection or disconnection of parts 10^a and 10^b can be made rapidly, they are preferably, but not necessarily, secured together by a bayonet type joint including hook members 19, 19 on one part of dome 10, such as part 10^a and a slotted flange 20 formed on the other dome member, here shown on 10^b, the slots in the flange, indicated at 21, 21, being such that hook members 19 may pass therethrough and the flange 20 being gradually thickened away from one side of each slot 21 as indicated at 22 so that by a quarter turn of the part 10^a with respect to the part 10^b the dome members will be tightly secured together.

In the operation of cleaning a nozzle, hook members 19 will be tapped slightly (no special tool is required) and member 10^a of the nozzle will be rotated until the hook members align with slots 21 whereupon part 10^a may be lifted off of part 10^b which may remain permanently in the pipe 18 since after some use it will be corroded therein. The part 10^a can now be easily, quickly and thoroughly cleaned, and replaced on part 10^b as will be understood. If the spindle 14 is separable as shown, it also may be separated from part 10^b to facilitate cleaning of the nozzle.

It will be seen from the foregoing that a simple, inexpensive, but highly effective nozzle construction has been provided whereby the nozzle may be quickly and effectively cleaned and replaced, thus eliminating the employment of a large number of operatives at sewage disposal plants to care for the cleaning of the nozzles during the periods between spraying operations.

Modifications of the invention may be resorted to without departing from the spirit thereof or the scope of the appended claims.

What is claimed is:

1. A sewage spray nozzle including a dome having an orifice therein and formed with an arm within the dome, a spindle removably mounted on the arm projecting through the orifice and formed with a spreader on its outer end, said dome being formed with upper and lower parts which join immediately beneath said arm, said lower part being adapted to be secured on a supply pipe, and means securing said parts together, said means including hook members on the upper part of the dome and a flange formed with slots on the lower part of the dome, said slots being disposed so that said hook members will pass therethrough and said flange being formed so that turning of the upper dome member will tightly secure both members together.

2. A sewage spray nozzle including a dome having an orifice therein and formed with an arm projecting within the dome, a spindle on the arm projecting through said orifice and formed with a spreader on its outer end, said dome being formed in two parts adapted to be joined immediately beneath said arm, and bayonet type joining means securing said parts together.

3. A sewage spray nozzle including a two part dome of non-corrodible material, one of said parts having a discharge orifice therein and carrying an arm having a spreader thereon and the other of said parts being adapted to be secured on a supply pipe, said parts being detachably connected together adjacent the arm, and means on said parts for securing them together.

ALVIN B. BACKHERMS.