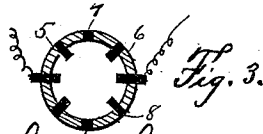
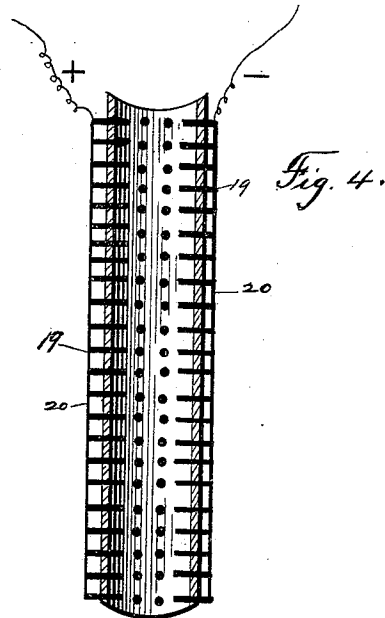
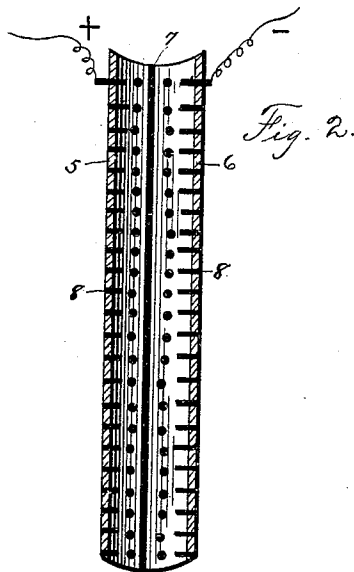
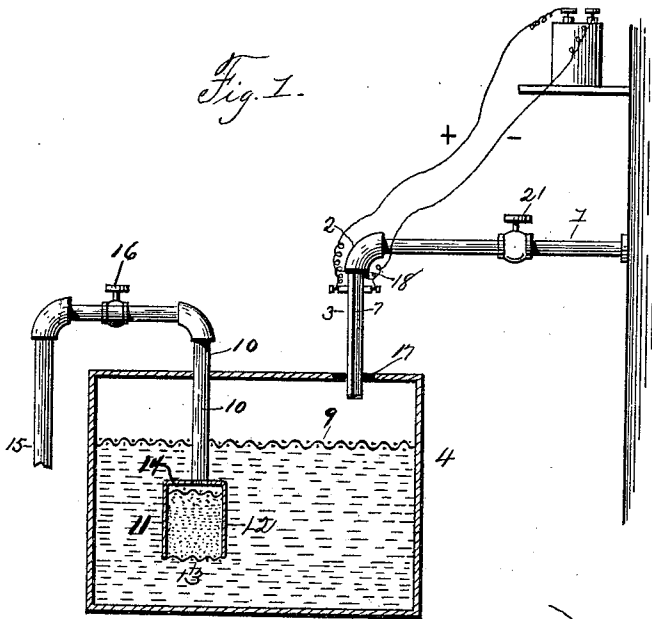


(No Model.)

G. G. SCHROEDER.
LIQUID PURIFIER.

No. 447,585.

Patented Mar. 3, 1891.



Witnesses
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UNITED STATES PATENT OFFICE.

GEORGE G. SCHROEDER, OF WASHINGTON, DISTRICT OF COLUMBIA.

LIQUID-PURIFIER.

SPECIFICATION forming part of Letters Patent No. 447,585, dated March 3, 1891.

Application filed March 6, 1890. Serial No. 342,836. (No model.)

To all whom it may concern:

Be it known that I, GEORGE G. SCHROEDER, a citizen of the United States, residing at Washington, District of Columbia, have invented certain new and useful Improvements in Liquid-Purifiers; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention relates to a device for purifying water or other liquids.

The object of this invention is to produce a device which will thoroughly and rapidly purify water or other liquids of inherent or local impurities by bringing the said liquid into contact with successive charges of electricity during certain stages of the operation and subsequently forcing it through a suitable filtering substance.

A further object of the invention is to produce a device which shall combine simplicity, durability, and economy in its construction.

My invention consists in a pipe through which the water to be purified is passed, the said pipe having conducting-points extending inwardly therefrom, the points upon the opposite sides thereof being insulated from each other and being connected with the opposite poles of the source of electricity; and it also consists in the construction, arrangement, and combination of the several parts of which it is composed, as will be hereinafter more fully described and claimed.

In the accompanying drawings, forming part of this specification, and in which like numerals of reference indicate corresponding parts, I have illustrated one form of device embodying the essential features of my invention, although the same may be carried into effect in other ways without in the least departing from the spirit thereof, and in these drawings—

Figure 1 is a side elevation of my device, partly in section, showing the relative arrangement of the different parts. Fig. 2 is a vertical sectional view of the induction-pipe, showing its peculiar construction. Fig. 3 is a top plan view of the same. Fig. 4 is also a verti-

cal sectional view showing another form of induction-pipe which may be employed in lieu of that shown in Fig. 2, and Fig. 5 is a top plan view of the pipe illustrated in Fig. 4.

Referring to the drawings, 1 designates a supply-pipe, which may be made to connect with a suitable liquid-supplying source—such as with a barrel or tank containing liquors, but preferably in this instance with a water-supply pipe. To one end of this pipe is connected in any suitable manner, but preferably by an elbow-joint 2, an induction-pipe 3, which extends down through the tank 4 as far as may be desired. This induction-pipe may be constructed of any suitable metal, and preferably, as shown in Fig. 2, of two semicircular sections 5 and 6, of metallic tubing, insulated from each other by means of strips of suitable insulating material 7, as clearly shown in Fig. 3. Through these sections extend a series of inwardly-projecting conducting-points 8, which are by preference of aluminum, but any other suitable conducting material may be employed. To one or more points on one of these sections is secured a negative wire of a battery, while to the points on the opposite section a positive wire of the same battery is attached. Thus it will be seen that when the wires are connected a flow of electricity will pass through the sections, thus charging each of the points, which charge remains static until the circuit is completed by means of the liquid which flows through the pipe, when a spark or flow of current will be interchanged from the positive to the negative points, and vice versa, thereby effectually killing the many animalculæ found in most waters. As the liquid passes through this pipe, it is thoroughly agitated and turned in upon itself by means of the conducting-points before referred to, which agitation tends to disintegrate the molecules of whatever impurities may be contained in the water and cause them in a degree to amalgamate somewhat in the manner of the butter-globules of cream when undergoing the process of churning.

The tank 4, to which reference has been made, may be constructed of any suitable material, and is provided with a reticulated or foraminous screen 9, upon which the water is discharged from the induction-pipe, and through which it passes to the lower part of

the tank or reservoir. Thus should any impurities—such as dead wood, leaves, or sand—pass through the pipe they will be caught by the screen and prevented from passing to the lower part of the tank.

Within the tank is mounted an eduction-pipe 10, the lower end of which extends below the screen 9 and carries a filter 11, consisting of a suitable cylindrical body 12, provided with a foraminous bottom 13 and a similar foraminous partition 14, secured near or at the top of said cylinder. Between these two partitions is confined a suitable filtering substance—as, for example, charcoal and sand. The upper end of the eduction-pipe carries a discharge-spout 15 and also a valve-cock 16 to shut off the flow of water or other liquid when desired. When the form of induction-pipe illustrated in Fig. 2 is employed, it is necessary to insulate it from the supply pipe and tank, otherwise the whole device would become charged, and thereby render the induction-pipe incapable of accomplishing the result for which it is designed. In order to remedy this evil a gasket or block of insulated material 17 is placed around the induction-pipe at the point where it enters the tank, and a similar block 18 at the point where it enters the supply-pipe. Thus the only portion of the device which is charged when the batteries are connected is the induction-pipe.

In Fig. 4 I have shown the induction-pipe constructed of an insulated substance—such as gutta-percha or similar material—and through this pipe extends a series of conducting-points 19, which extend beyond the exterior of the pipe a sufficient distance to admit of their being connected by wires 20. In this instance one half of the points are in connection with the positive wire of the battery and the other half are in connection with the negative wire. Thus when the battery is connected it will be found to operate in the same manner as the induction-pipe illustrated in Fig. 2, for the reason that as the pipe itself is of an insulating material the points will be insulated from each other and will only be affected by that current passing through the wire to which they are connected. In this instance I have only shown a single battery; but it is obvious that the number may be increased so as to produce the desired electro-motive force. The supply-pipe 1 is also shown provided with a valve-cock 21, by means of

which the supply of liquid to the tank may be cut off when it is desired to repair or clean the tank or filter or replace a new induction-pipe.

Having now described the different parts of my device, I will explain the method of its operation. The valve-cock 21 is turned and the liquid allowed to pass through the supply-pipe down through the induction-pipe, where it is brought into contact with successive charges of electricity through the conducting-points and is then discharged upon the screen 9, through which it passes to the bottom of the reservoir. As the flow of liquid continues, the tank becomes filled and the pressure from above forces the liquid up through the filter and out through the eduction-pipe. It will be found that should the water when discharged from the induction-pipe be muddy and foul when it passes from the eduction-pipe it will be clear and pure.

Having thus fully described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. The combination, with a pipe consisting of two longitudinal sections insulated from each other, of conducting-points projecting inwardly from the said sections, and a suitable source of electricity having its opposite poles connected with the opposite sections, as described.

2. The combination, with a pipe consisting of two longitudinal sections insulated from each other and having a single central bore, of conducting-points consisting of non-oxidizable material projecting inwardly from the said sections, and a source of electricity the opposite poles of which are connected to the opposite sections, as described.

3. The combination, with the pipe having inwardly-projecting conducting-points thereon, the points upon the one side of the pipe being insulated from those upon the other, of a source of electricity having its positive pole connected with the points on the one side of the pipe and its negative pole with those on the opposite side of the pipe, as described.

In testimony whereof I affix my signature in presence of two witnesses.

GEORGE G. SCHROEDER.

Witnesses:

G. W. BALLOCH,
W. F. RAGAN.