

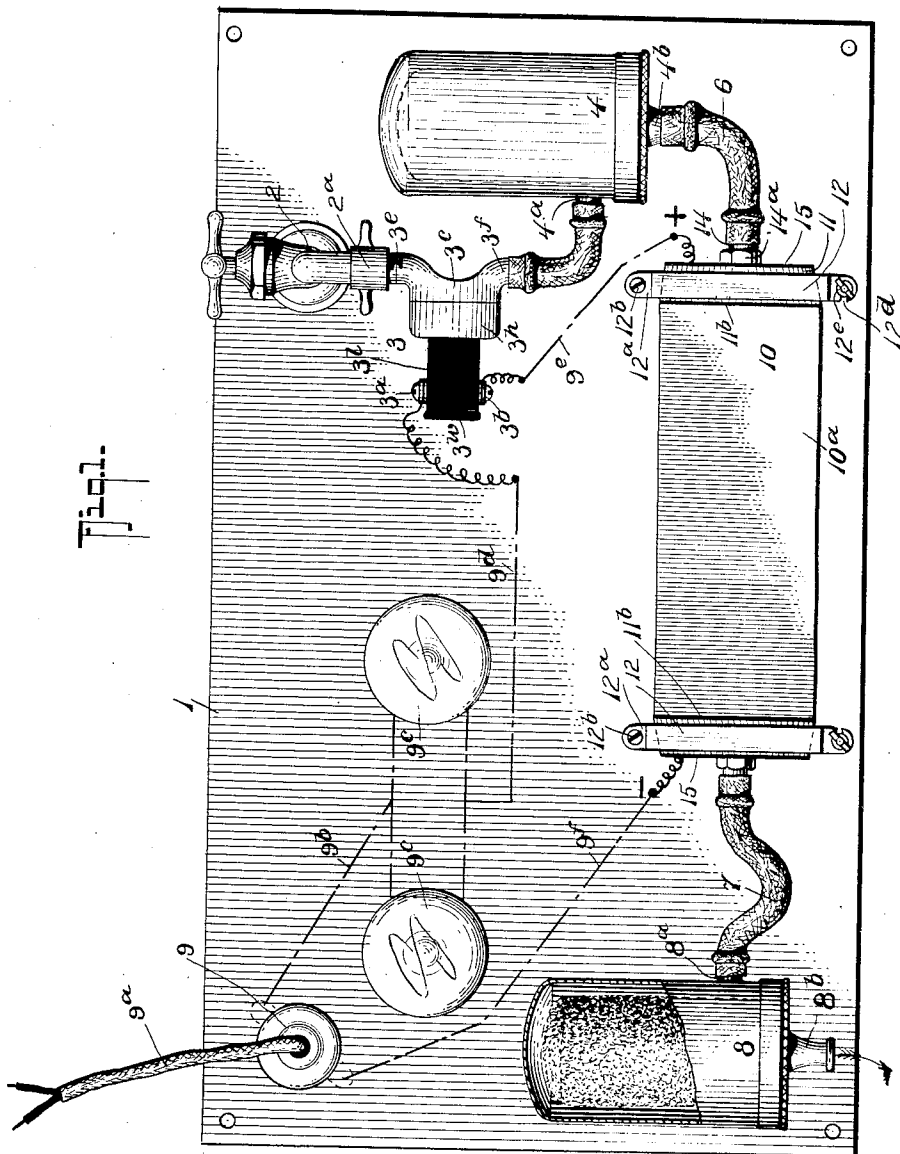
No. 844,262.

PATENTED FEB. 12, 1907.

A. E. DIETERICH.
WATER PURIFYING APPARATUS.

APPLICATION FILED OCT. 3, 1906.

2 SHEETS—SHEET 1.



WITNESSES:

John T. Schrott
Chas. C. Gibson

INVENTOR

Albert E. Dieterich

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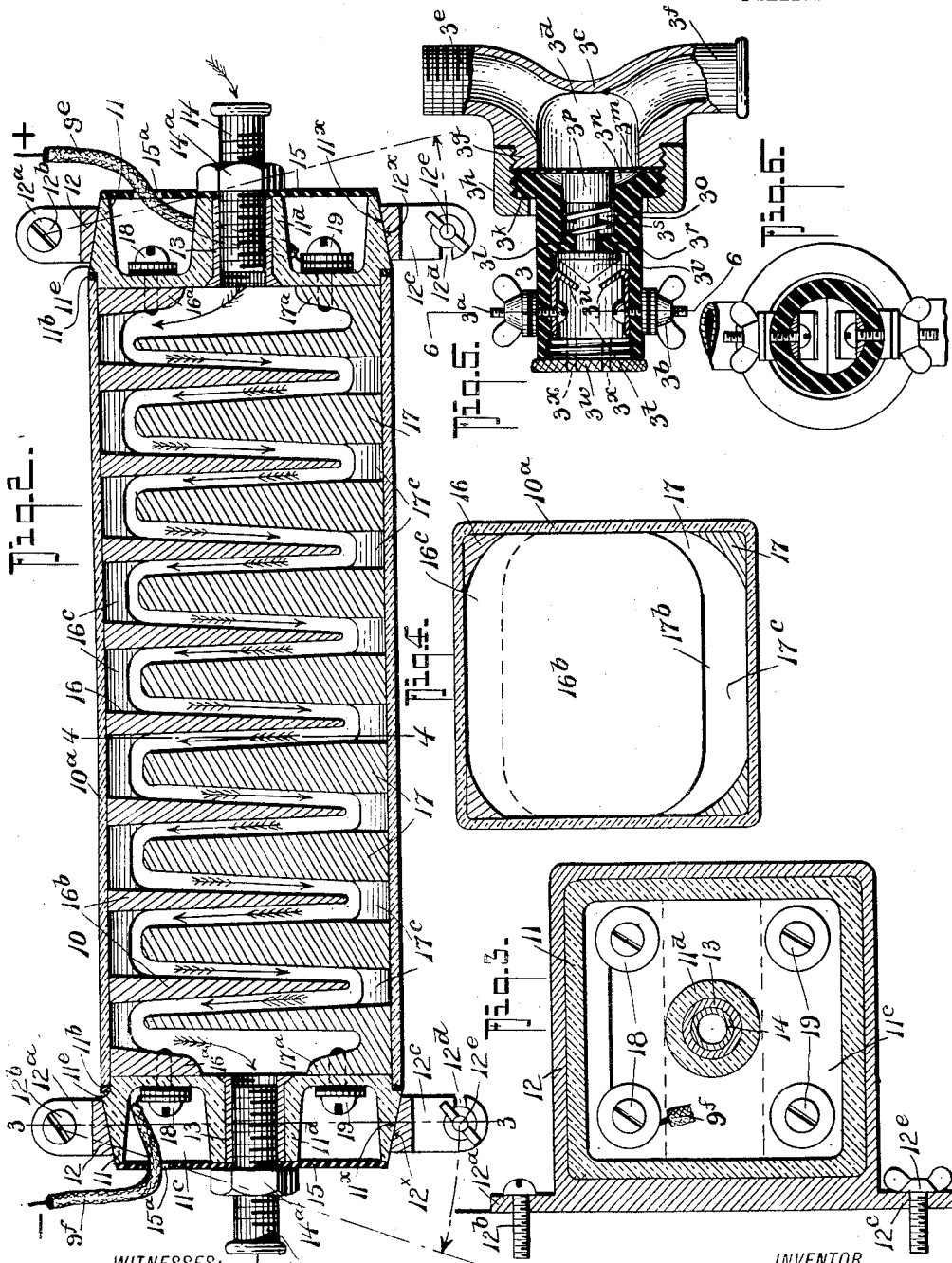
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UNITED STATES PATENT OFFICE.

ALBERT E. DIETERICH, OF WASHINGTON, DISTRICT OF COLUMBIA, AS-
SIGNOR TO WILLIAM B. SHAFFER, OF NAZARETH, PENNSYLVANIA.

WATER-PURIFYING APPARATUS.

No. 844,262.

Specification of Letters Patent.

Patented Feb. 12, 1907.

Application filed October 3, 1906. Serial No. 337,199.

To all whom it may concern:

Be it known that I, ALBERT EDGAR DIETERICH, of Washington, in the District of Columbia, have invented certain new and useful
5 Improvements in Water-Purifying Apparatus, of which the following is a specification.

My invention relates to certain new and useful improvements in water-purifying apparatus in which means are provided for
10 quickly and effectively purifying and clarifying water by chemical and electrolytic treatment.

Primarily, my invention has for its object to provide an apparatus of this character of a
15 very simple and effective construction which can be easily and cheaply manufactured and will readily serve its intended purposes.

Generically, my invention comprises means for first mechanically filtering the water as it
20 comes from the supply-pipes to remove those impurities which are in suspension and an electrolytic purifier into which the water flows from the primary filter and wherein it undergoes electrolytic action to precipitate
25 those impurities held in solution; and the invention also comprises a secondary filter into which the water from the electrolytic purifier is discharged and which serves to remove those suspended impurities precipitated by
30 the electrolytic purifier.

My invention also includes an automatic circuit-controller for the electric circuit of the electrolytic purifier, by means of which circuit-controller the circuit is closed by the water-pressure before the water passes into the
35 electrolytic purifier. Means are also provided whereby the electrolytic purifier can be made to operate on the ordinary direct-current-lighting circuit of one hundred and ten
40 volts.

The electrolytic purifier, which forms the essential part of my apparatus, generically comprises an insulating-housing in which is
45 arranged a pair of electrodes so designed and correlatively arranged as to form a zigzag water-passage from the inlet to the outlet end of the purifier.

With other objects in view than have heretofore been specified the invention also includes certain novel construction, combination, and arrangement of parts, all of which
50 will be described first in detail and then be specifically pointed out in the appended

claims, reference being had to the accompanying drawings, in which—

Figure 1 is a face view of my apparatus complete. Fig. 2 is a central vertical longitudinal section of the electrolytic purifier. Fig. 3 is a cross-section on the line 3 3 of Fig. 2. Fig. 4 is a similar view on the line 4 4 of
55 Fig. 2. Fig. 5 is a central vertical longitudinal section of the circuit-controller. Fig. 6 is a cross-section on the line 6 6 of Fig. 5.

Referring now to the accompanying drawings, in which like numerals and letters of
65 reference indicate like parts in all of the figures, 1 designates the base-plate, of porcelain, slate, or other suitable insulating upon which the apparatus is mounted.

2 designates a faucet of the ordinary type, 70 which connects with the source of water-supply. (Not shown.) To the faucet 2 the circuit-controller 3 is secured by a collar 2^a, as indicated in Fig. 1.

4 designates the primary mechanical filter, 75 which may be of any approved type—such, for instance, as the ordinary stone filter now in common use. The inlet 4^a of the filter 4 is connected, through a preferably flexible pipe 5, with the circuit-controller, while the outlet 4^b of the filter 4 connects, through a flexible
80 hose-pipe 6, with the electrolytic purifier 10, hereinafter referred to.

The outlet of the electrolytic purifier 10 is connected, through a flexible hose-pipe, with
85 the inlet 8^a of a secondary mechanical filter 8, which may be of like construction to the filter 4. The water in its pure state passes out from the outlet-spout 8^b of the filter 8.

9 designates an electric rosette, from which 90 the terminal cord 9^a may be led to the source of electric-current supply. (Not shown.) From the rosette 9 the positive terminal 9^b of the electric circuit is led to the sockets of a pair of incandescent lamps 9^c, arranged in
95 parallel, and from thence in a lead 9^d to one of the terminals 3^a of the conductor 3. The other terminal 3^b of the controller 3 connects, through a lead 9^e, with the positive electrodes of the electrolytic purifier 10. The negative
100 electrode of the electrolytic purifier 10 connects, through a lead 9^f, with the negative terminal of the rosette 9.

Referring now more particularly to Figs. 2, 3, and 4, it will be seen the electrolytic
105 purifier 10 comprises a housing, of porcelain,

glass, or any other suitable substance, which may be of any suitable design, preferably square, as shown. The housing 10^a is closed at each end by headers 11, of porcelain or other suitable substance, which headers are formed with shoulders 11^a to receive the housing 10^a and a packing-ring 11^b, as clearly shown in Fig. 2. The headers 11 are each formed with a chamber 11^c and have their outer surface beveled, as at 11^x, to fit into the beveled seats 12^x of the securing-brackets 12. The brackets 12 have ears 12^a, by means of which they are pivotally secured by screws or bolts 12^b to the base 1. The brackets 12 have ears 12^c, provided with slots 12^d to coöperate with the thumb-screws 12^e, by means of which the brackets 12 are retained in position. Each header 11 is formed with a central boss 11^d, in which a tubular bushing 13 is held, and the bushing 13 is internally screw-threaded to receive the inlet and outlet nipples 14, which have a threaded engagement with the boss 13. A check-nut 14^a holds the nipple 14 and the bushing 13, as well as a closure or guard-cap 15, in place. The cap 15 is composed of insulating material and has a central aperture to receive nipple 14, and a supplementary aperture to permit passage of the terminal leads 9^e or 9^f, as the case may be.

16 designates the negative electrode, which is of substantially comb shape in longitudinal section and provided at each end with lugs 16^a to receive the screws 18, by means of which the electrodes are secured to the headers 11 and to the lead-wire 19^f. The electrode 16 is provided with a series of equally-spaced comb-teeth or plates 16^b, preferably wedge shape in cross-section. The space between adjacent plates 16^b is cut away at 16^c to form scum-pockets in which the impurities of the water may collect when they are precipitated. The positive electrode 17 is of the same form as the electrode 16, being provided with comb-plates 17^b, pockets 17^c and lugs 17^a, as shown. The positive electrode 17 is secured to the headers 11 by screws 19, through the medium of which the lead 9^e communicates electrically with the positive electrode. The positive and negative electrodes have their comb-plates 16^b and 17^b "interlocked," as it were, and spaced apart to form a zigzag water-passage between them from one end of the housing to the other. The positive electrode 17 in practice is formed of aluminium, and I may also form the negative electrode likewise to lighten the construction.

The circuit-controller 3 comprises a metallic housing 3^c, having a chamber 3^d and an inlet-pipe portion 3^e and an outlet-pipe portion 3^f in communication with the chamber 3^d. The metallic housing 3^c has a threaded shoulder 3^g to receive the swivel-nut 3^h, which abuts the flange 3^k of the contact-car-

rying plug 3^j, of fiber or other insulating material. Between the plug 3^j and the shoulder 3^g I place a sheet of rubber 3^m to form a diaphragm, as well as to exclude water from the chamber 3ⁿ in the plug 3^j. The plug 3^j has a bore 3^o, in which the piston 3^p operates. The piston 3^p is held against the diaphragm 3^m in its projected position by a coil-spring 3^s surrounding the stem 3^r of the piston 3^p.

The plug 3^j also has a chamber 3^t, in which the contacts 3^u are secured by the terminal screws 3^a and 3^b, the circuit being closed between the contacts 3^u by the contact-bead 3^v on the piston-stem 3^r, which projects into the chamber 3^t, as clearly shown in Fig. 5. The chamber 3^t is closed by a screw-cap 3^w, provided with air-holes 3^x to permit any gases formed within the chamber 3ⁿ by arcs or otherwise to escape.

So far as described it will be seen that my invention operates as follows: The operator turns on the faucet 2, which permits the water to flow into chamber 3^d of the circuit-controller 3 and from thence through pipe 5 into filter 4. The water-pressure within chamber 3^d forces the piston 3^p inward and brings the contact 3^v against the contacts 3^u to close the electric circuit to purifier 10. After the water leaves the filter 4 it passes through the pipe 6 into purifier 10 and undergoes electrolytic purification, after which it passes out of purifier 10, through pipe 17, into filter 8, and from thence is discharged in its pure state for use. The electric current for purifier 10 serves to light up lamps 9^e, which may be colored or frosted, if desired.

To clean up my apparatus after the same has become clogged with impurities after long use, it is only necessary to disconnect pipes 6 and 8, remove and wash stones of filters 4 and 8, loosen thumb-screws 12^c and swing-brackets 12 in the direction of arrows in Fig. 2, when the purifier 10 can be removed and the parts thereof separated for cleaning by removing nipples 14 and unscrewing screws 18 and 19.

From the foregoing description, taken in connection with the accompanying drawings, it is thought that the complete construction, operation, and many advantages of my invention will be readily understood by those skilled in the art to which my invention appertains.

What I claim is—

1. An apparatus of the class described, comprising the combination with mechanical purifiers, of an electrolytic purifier, water-conductors between the mechanical purifiers and the electrolytic purifier, and means controllable by the water-pressure for controlling the electrolytic action of the electrolytic purifier before the water enters the same, substantially as shown and described.

2. An apparatus of the class described, the combination with an electrolytic purifier

including an electric circuit, of a mechanical purifier, water-conduits connecting the mechanical and the electrolytic purifiers, means for connecting said purifiers with the sources of water-supply, a circuit-controller connected in said last-named connection, said circuit-controller having means governed by the water-pressure for closing the electric circuit through the electrolytic purifier, substantially as shown and described.

3. An electrolytic purifier, comprising a housing, a pair of comb-like electrodes held in said housing, interprojected and spaced apart to form zigzag water-passages from one end of the housing to the other, closure members for the ends of the housing, and means for admitting water into one end of said housing and withdrawing the same from the other end of said housing, substantially as shown and described.

4. An electrolytic purifier comprising in combination a housing, a pair of comb-like electrodes held within said housing; closure members for the ends of said housing, means for admitting water into one end of said housing, and means for drawing the water off from the other end of said housing, and brackets coöperating with the end closures in the housing to support the same, substantially as shown and described.

5. An electrolytic purifier comprising in combination a casing, insulating closure members for the ends of said casing, comb-like electrodes within said casing, interprojected and spaced apart to form zigzag water-passages from one end of the casing to the other, means for admitting water in the one end of said casing and withdrawing the same from the other end of said casing, and means for connecting said electrodes with the electric circuit, substantially as shown and described.

6. An electrolytic purifier comprising in combination a casing, insulating closure

members for the ends of said casing, comb-like electrodes within said casing, interprojected and spaced apart to form zigzag water-passages from one end of the casing to the other, means for admitting water in the one end of said casing and withdrawing the same from the other end of said casing, means for connecting said electrodes with the electric circuit, and the bracket members for supporting said casing, substantially as shown and described.

7. A water-purifying apparatus, comprising a support, a stop-cock secured thereto and adapted to be secured to the source of water-supply, a water-pressure-operated circuit-controller, connected with said stop-cock, a mechanical filter connected with said circuit-controller, an electrolytic purifier connected with said mechanical filter, means for connecting said electrolytic purifier with the electric circuit, resistance-lamps in said connecting means, said circuit-controller being likewise connected in said connecting means, all being arranged substantially as shown and described.

8. A water-purifying apparatus, comprising a support, a stop-cock secured thereto and adapted to be secured to the source of water-supply, a water-pressure-operated circuit-controller, connected with said stop-cock, a mechanical filter connected with said circuit-controller, an electrolytic purifier connected with said mechanical filter, means for connecting said electrolytic purifier with the electric circuit, resistance-lamps in said connecting means, said circuit-controller likewise connected in said connecting means, and a second mechanical filter connected with said electrolytic purifier, all being arranged substantially as shown and described.

ALBERT E. DIETERICH.

Witnesses:

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JOHN T. SCHROTT.