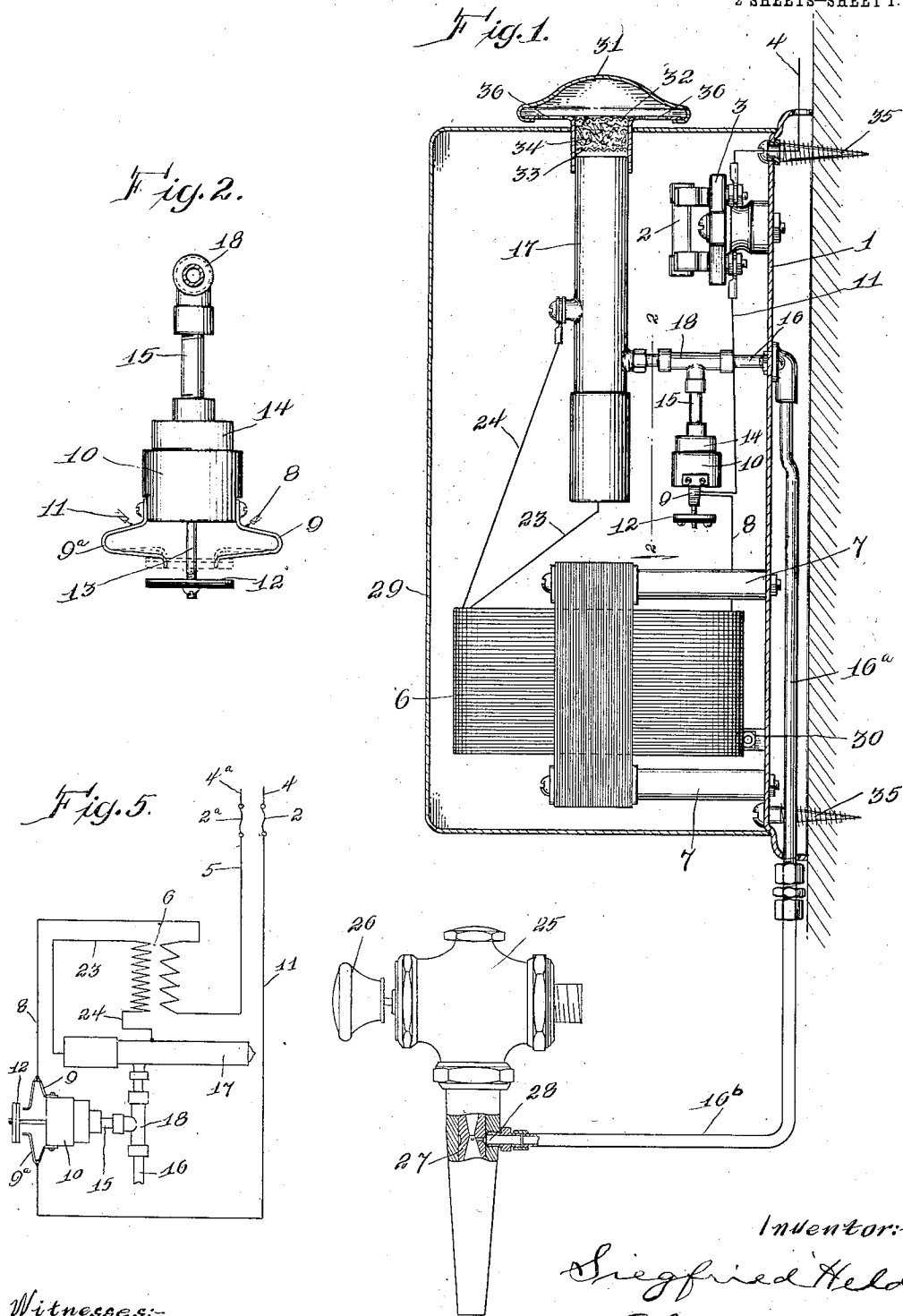


S. HELD.
WATER PURIFYING APPARATUS.
APPLICATION FILED AUG. 29, 1912.

1,065,246.

Patented June 17, 1913.

2 SHEETS-SHEET 1.



Witnesses:
Arthur Hooley
E. Newstrom.

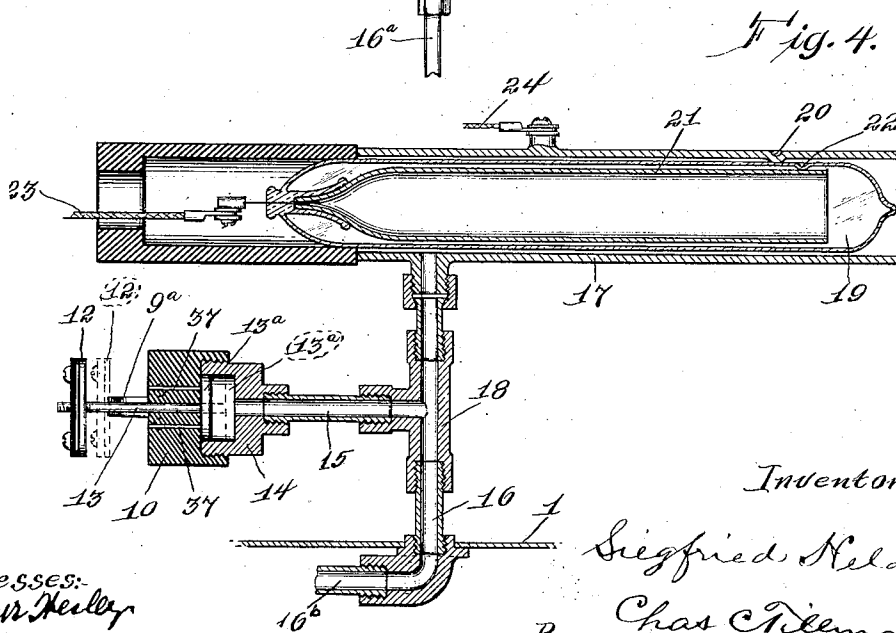
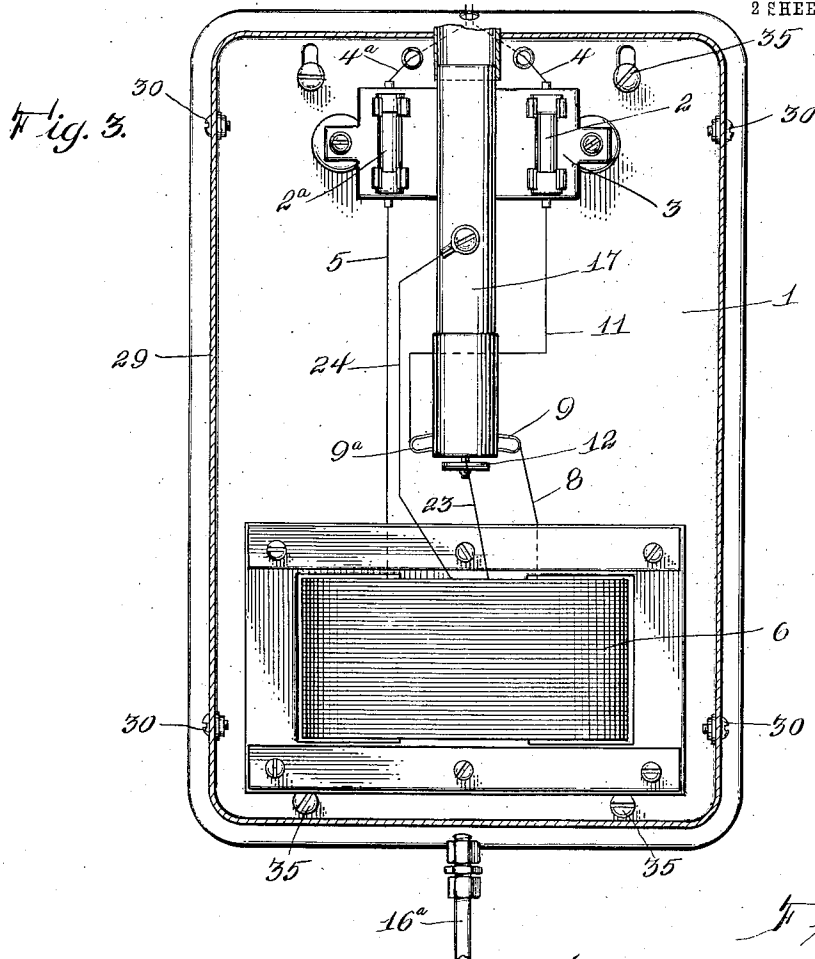
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Inventor:

Siegfried Held

By Chas. C. Tillman
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Witnesses:
Arthur Healy
E. Newstrom.

UNITED STATES PATENT OFFICE.

SIEGFRIED HELD, OF CHICAGO, ILLINOIS, ASSIGNOR TO THE HELD COMPANY, OF CHICAGO, ILLINOIS, A CORPORATION OF ILLINOIS.

WATER-PURIFYING APPARATUS.

1,065,246.

Specification of Letters Patent.

Patented June 17, 1913.

Application filed August 29, 1912. Serial No. 717,727.

To all whom it may concern:

Be it known that I, SIEGFRIED HELD, a subject of the Emperor of Austria-Hungary, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Water-Purifying Apparatus, of which the following is a specification.

My invention relates to devices for sterilizing water by means of ozonized air. Its objects are to provide a simple, low priced and effective apparatus which will occupy little space; which may be easily attached to any household water supply system; which will not be likely to get out of order, and which will require current only when in actual service. I attain these objects by the novel construction shown in the accompanying drawings in which—

Figure 1, is a side elevation of the preferred embodiment of my invention with the base, casing and dust filter shown in section with and the water dispensing faucet shown in diagram. Fig. 2, is an enlarged sectional view of the circuit closer which forms part of my invention. Fig. 3, is a face view, with the casing in section. Fig. 4, is an enlarged section through the ozone generating part of my invention and the circuit closer for same, and Fig. 5, is a diagram showing the electrical connections.

Referring specifically to the drawings, 1, indicates a base preferably of enameled metal supporting a pair of fuses 2—2^a, mounted upon an insulated base 3.

4 and 4^a, are wires connecting the fuses with a source of electric current such as the 110 volt circuit commonly used for lighting purposes.

5, is a wire connecting fuse 2^a, with the primary winding of a step-up transformer 6, supported by legs 7, upon the base 1. The wire 8, connects the other end of the primary winding with a contact 9, mounted upon an insulating body 10. The wire 11, connects an oppositely disposed contact 9^a, with the fuse 2. A metal ring 12, is fixed to the outer end of a rod 13, which is reciprocated in the insulating body 10, and 13^a, is a piston fixed to the other end of the rod 13.

14, is a metal cylinder attached at one end to the body 10, and at the other end to a tube 15. A similar tube 16, is mounted to the base 1, and supports an aluminum tube 17, which latter forms one terminal of the ozone

generating part of my invention. This tube 16, is connected to the tube 15, by a T-joint 18. A glass tube 19, sealed at both ends and supported centrally within the aluminum tube 17, by a series of inward projections 20, formed on the latter, is adapted to hold another aluminum tube 21. This tube 21, forms the other terminal of the ozone generator, and is sealed in the glass tube 19, and held clear of its walls by indentations 22, in the glass tube. A conductor 23, connects the inner aluminum tube 21, with the secondary winding of the transformer 6, and 24, is a wire connecting the other end of the secondary winding with the outer aluminum tube 17, of the ozonizer.

A faucet 25, (indicated in diagram in Fig. 1) is connected to a water supply pipe and operated by a spring returned button or pivot 26. An inner nozzle 27, is mounted within the faucet and communication between this inner nozzle and the tube 16, is established through suitable piping 16^a and an aerating pipe 16^b. The nozzle 27, causes a jet of water to be projected past the opening 28, of the piping 16^a, which jet will produce a partial vacuum at this point and thus create a suction of air through the piping 16^a, the aerating pipe 16^b and tubes 16, and 15. The details of this, my preferred form of faucet, are more fully set forth in my co-pending application executed August 26th, 1912, for improvements in a faucet.

The cover or casing 29, which houses the various parts of my apparatus is fastened to the base 1, by means of screws or the like, as at 30, and the base 1, in turn is mounted to a wall, or the like. A mushroom-shaped cap 31, having a tubular portion passing through a hole in the top of the casing 29, is fitted tightly over the upper end of the aluminum tube 17. 32, and 33, are wire gauze screens mounted within the tubular portion of the cap 31, the space between them being filled with an air filtering material 34, such as cotton.

The rod 13, being vertical, the combined weight of the contact ring 12, the rod 13, and portion 13^a, will normally hold these parts in the position shown in Fig. 1, and in full lines in Fig. 3, and leave the transformer disconnected from the current supply wires 4 and 4^a. When water is turned on at the faucet 25, the suction of air through the aerating piping 16^a, 16^b, and

tubes 16, will also cause a suction through the adjoining tube 15, thereby causing the outer air to press through the perforations 37, in the body 10, against the piston 13^a, and bring the ring 12, into contact with the terminals 9 and 9^a. This part of my apparatus therefore, forms a suction actuated valve, operating a circuit-closer which will keep the current connected to the transformer 6, as long as the suction continues, which is as long as the faucet 25, remains open and water is passing therethrough, thereby supplying a high tension current through the wires 23, and 24, to the aluminum tubes 17, and 21, respectively. As these tubes are separated by a good dielectric, such as the glass tube 19, which entirely incloses the inner tube 21, the high tension can not produce a crackling series of sparks but will create a silent discharge between the outside of the glass tube 19, and the inside of the aluminum tube 17. As this discharge occurs in the circular passage between the dielectric 19, and the tube 17, through which air is drawn by the suction at the faucet, oxygen in this air is converted into ozone, and the ozonized air will be drawn into the piping 16^a and aerating pipe 16^b through the T-joint 18, and tube 16. Consequently the water supplied by the faucet 25, will continuously be mixed with ozonized air and the ozone in the air will act upon bacteria and other impurities in the water. When the water is turned off at the faucet, suction of air through the tube 15, stops and the weight of the reciprocating parts 12, 13, and 13^a, will cause the circuit closer to drop and thereby disconnect the transformer from the supply circuit. It will then be seen that my apparatus will use current for the ozonizer only while water is being drawn from the faucet, and will automatically start and stop the ozonizer when the faucet is opened and closed. Moreover, it will be noted that the mushroom-shaped cap 31, which forms the air inlet for the ozonizing tubes and hence for the aerating pipe 16^b, has no openings on its upper surface. Consequently dust can not readily settle in it and if any should enter through the openings 36, it will be kept out of the apparatus by the filtering material or medium 35, so that the water will be aerated or mixed with ozonized but dust free air. To attach my purifying device to the water supply of any house or

building, it is only necessary to substitute the faucet 25, for the regular faucet and to fasten the apparatus to an adjacent wall or the like, in a vertical position.

I am aware that apparatuses of this class have been used before in which switching mechanism have been attached to the faucet and which embody complications and delicate parts which I avoid by the suction actuated circuit-closer of my device.

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

1. A water purifying apparatus including a nozzle connected to a source of water supply, an aerating pipe terminating in a faucet past which pipe the nozzle projects a stream of water, a circuit-closer for the ozonizer, said circuit-closer being actuated by the suction of air through the aerating pipe, and an ozonizer connected to the aerating pipe.

2. A water purifying apparatus including a nozzle connected to a source of water supply, an aerating pipe terminating in a faucet past which pipe the nozzle projects a stream of water, and an ozonizer connected to the aerating pipe, a valve operated by the suction of air through the aerating pipe, and a circuit-closer actuated by the valve.

3. A water purifying apparatus including a nozzle connected to a source of water supply, an aerating pipe terminating in a faucet past which pipe the nozzle projects a stream of water, and an ozonizer connected to the aerating pipe, a valve operated by the suction of air through the aerating pipe, and a circuit-closer actuated by the valve, the valve being returned by gravity upon discontinuance of the suction, thereby opening the circuit of the ozonizer.

4. A water purifying apparatus including an air inlet passage for aerating the water, means for creating a suction of air through the said passage into the water, an ozonizer within the said passage, a source of electric current, a valve adjacent to the passage and actuated by the suction of air through the passage, a contact member carried by the valve, terminals with which the said member will contact when the valve is actuated, thereby connecting the ozonizer with the source of current.

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Witnesses:

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