

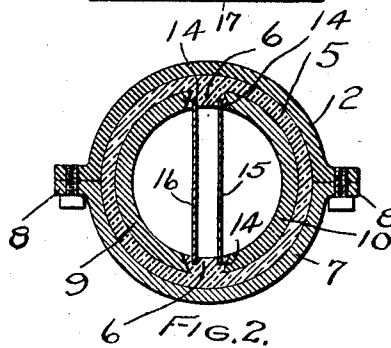
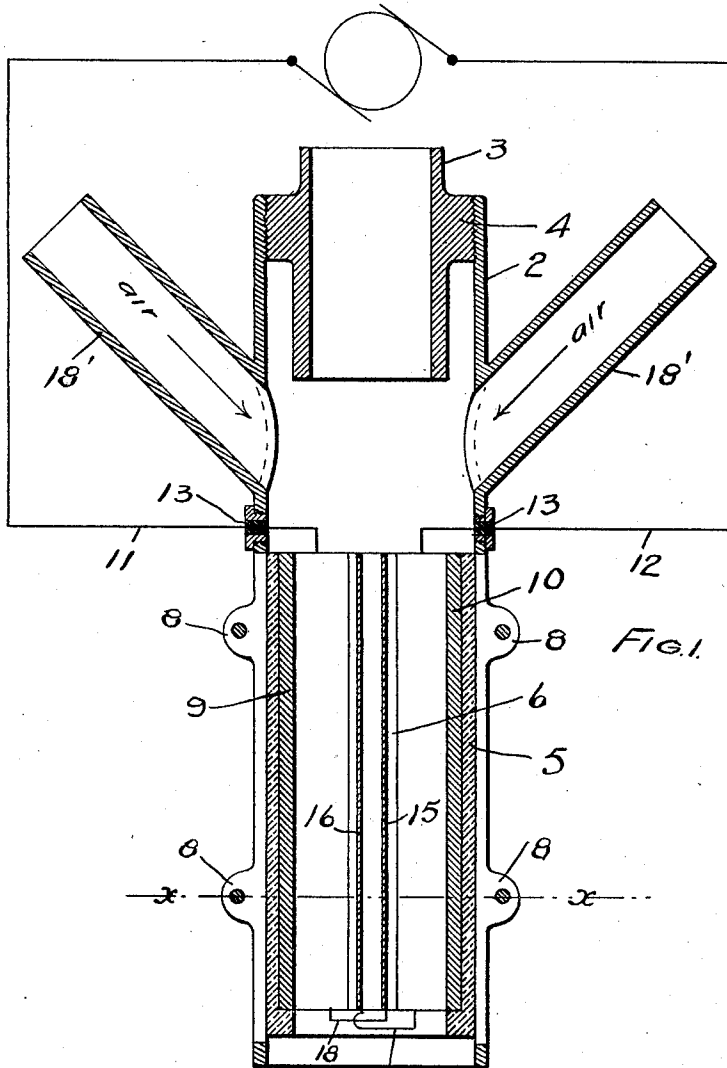
No. 718,935.

PATENTED JAN. 20, 1903.

J. JOHNSON.  
WATER PURIFIER.

APPLICATION FILED SEPT. 23, 1902.

NO MODEL.



witnesses.  
*E. G. Hauke*  
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Inventor  
*Joseph Johnson*  
By *Paul Paul*  
his attorneys.

# UNITED STATES PATENT OFFICE.

JOSEPH JOHNSON, OF MINNEAPOLIS, MINNESOTA, ASSIGNOR OF ONE-HALF  
TO CLAUS MUMM, OF MINNEAPOLIS, MINNESOTA.

## WATER-PURIFIER.

SPECIFICATION forming part of Letters Patent No. 718,935, dated January 20, 1903.

Application filed September 23, 1902. Serial No. 124,508. (No model.)

*To all whom it may concern:*

Be it known that I, JOSEPH JOHNSON, of Minneapolis, in the county of Hennepin, State of Minnesota, have invented certain new and useful Improvements in Water-Purifiers, of which the following is a specification.

My invention relates to devices for purifying water and other liquids; and the object of the invention is to provide a device which will thoroughly and rapidly purify water or other liquids by rendering bacteria and all disease-bearing germs innocuous and cause water that was previously impure to be perfectly safe and wholesome for drinking purposes.

Other objects of the invention will appear from the following detailed description.

The invention consists generally in various constructions and combinations, all as hereinafter described, and particularly pointed out in the claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a longitudinal section of a water-purifier embodying my invention. Fig. 2 is a transverse section on the line *xx* of Fig. 1.

In the drawings, 2 represents a metal pipe of suitable length and diameter open at each end and provided in its receiving end with a nipple 3, to which the water-supply pipe or hose is attached, and having an exterior threaded ring 4, preferably integral with the nipple and fitting the threaded end of the pipe 2. Near the opposite end of the pipe I provide a cylindrical insulator 5, of any suitable material, preferably glass or porcelain, on account of their being impervious to water, and hence remaining non-conductors when submerged, and this insulator fits snugly within the pipe and is provided on its inner surface with longitudinally-arranged dovetailed ribs 6. The insulator may be inserted into the pipe in any suitable way; but for convenience I prefer to divide the pipe horizontally for a portion of its length, forming a semicylindrical cover 7, having lugs or ears 8, that are bolted or otherwise secured to corresponding ears on the other half of the pipe. Between the ribs 6 within the cylindrical insulator I provide semicylindrical contact

plates or electrodes 9 and 10, having beveled edges to fit the sides of said ribs and be wedged firmly between them and completely insulated from the pipe. These plates are connected, respectively, by wires 11 and 12, which pass through insulated holes 13 in the walls of the pipe, with the opposite poles of a suitable electrical generator capable of furnishing a current of sufficient intensity to destroy all animal or vegetable life in the water when the circuit is closed between the plates by the water flowing past the same. To increase the surface to which the water will be exposed in the pipe, I prefer to provide grooves 14 in the faces of the ribs 6 and arrange flat plates 15 and 16 therein connected, respectively, by wires 17 and 18 with the plates or electrodes 9 and 10. These plates 15 and 16, as well as those heretofore described, are of any suitable conducting material, preferably copper, that will not become corroded by the exposure to the water. In the walls of the pipe extending obliquely therefrom above the point where the electrodes are arranged I prefer to provide air-tubes 18', which may be integral with the pipe or not, as preferred, and have open outer ends through which air may flow into the pipe and mixing with the stream of water flowing past thoroughly aerate before it reaches the electrodes. The disintegrating effect of air upon organic substances is well understood, and it is also well known that running water on account of its constant exposure to air is free from impurities. It is evident, therefore, that the water flowing past the suction air-tubes will become impregnated with oxygen, and if the water has become tainted or impure by reason by the presence of animalculae or organic matter it will to a certain degree be purified before reaching the electrodes. As soon as the water enters that part of the pipe between the electrodes the circuit will be closed and the stream subjected to a current of sufficiently-high potential to destroy all animal or vegetable life that may have escaped the previous treatment by aeration, so that when the water is discharged from the apparatus it will be thoroughly purified, safe, and palatable for drinking purposes.

I claim as my invention—

1. The combination, with a pipe, of an insulator provided therein and fitting snugly against the walls thereof, electrodes arranged within said insulator and having their edges supported within grooves in the inner walls thereof, said electrodes being insulated from each other and connected respectively with the opposite poles of an electrical generator. 5
2. The combination, with a pipe, of a cylindrical insulator provided therein and having longitudinal ribs on its inner surface, of semi-cylindrical electrodes within said insulator and fitting snugly between said ribs against the walls of said insulator, said electrodes being insulated from each other and connected respectively with the opposite poles of an electrical generator. 10
3. The combination, with a suitable pipe, of a cylindrical insulator provided therein and having longitudinal ribs on its inner surface, of curved plates fitting within said insulator between said ribs and connected respectively with the opposite poles of an electrical generator, and plates connecting said ribs between said curved plates and having suitable connections respectively with said curved plates. 20
4. The combination, with a pipe, of the cylindrical insulator provided therein and having the longitudinal dovetailed ribs 6, of curved electrodes 9 and 10 having beveled edges to fit between said ribs and connected respectively with an electrical generator, and flat electrodes 15 and 16 connected respectively with said plates 9 and 10 and supported between said ribs. 30
5. The combination, with a pipe having receiving and discharge openings, of electrodes provided within said pipe and connected respectively with the poles of an electric generator, and air-tubes arranged to conduct currents of air into the receiving end of said pipe upon each side of the stream of liquid passing therethrough, the outer ends of said pipes 45

being open to the atmosphere, substantially as described.

6. The combination, with a pipe having receiving and discharge openings, of electrodes provided near said discharge-opening and insulated from the pipe and from each other and connected respectively with a suitable source of electricity, and air-tubes obliquely arranged in the walls of said pipe between said electrodes and said receiving-opening, substantially as described. 50

7. The combination, with a pipe, of a cylindrical insulator provided therein and having longitudinal ribs provided with grooves or recesses that extend nearly but not entirely through the lower end of said insulator, curved electrodes having their edges within said grooves and supported upon the closed lower ends thereof, said electrodes being connected respectively with the opposite poles of an electrical generator. 60

8. The combination, with a pipe 2, of an insulating-cylinder 5 fitting snugly therein and having longitudinal grooves, electrodes having edges adapted to enter said grooves and connected respectively with the opposite poles of an electrical generator. 70

9. The combination, with a suitable pipe, of an insulating-cylinder fitting snugly therein and provided with longitudinal ribs 6 having grooves extending lengthwise thereof that are substantially V-shaped in cross-section, curved electrodes fitting snugly against said insulator and having beveled edges to enter said grooves and be wedged firmly therein, and suitable connections provided respectively between said electrodes and an electrical generator. 80

In testimony whereof I have hereunto set my hand this 19th day of September, 1902. 85

JOSEPH JOHNSON.

In presence of—

RICHARD PAUL,  
C. G. HANSON.