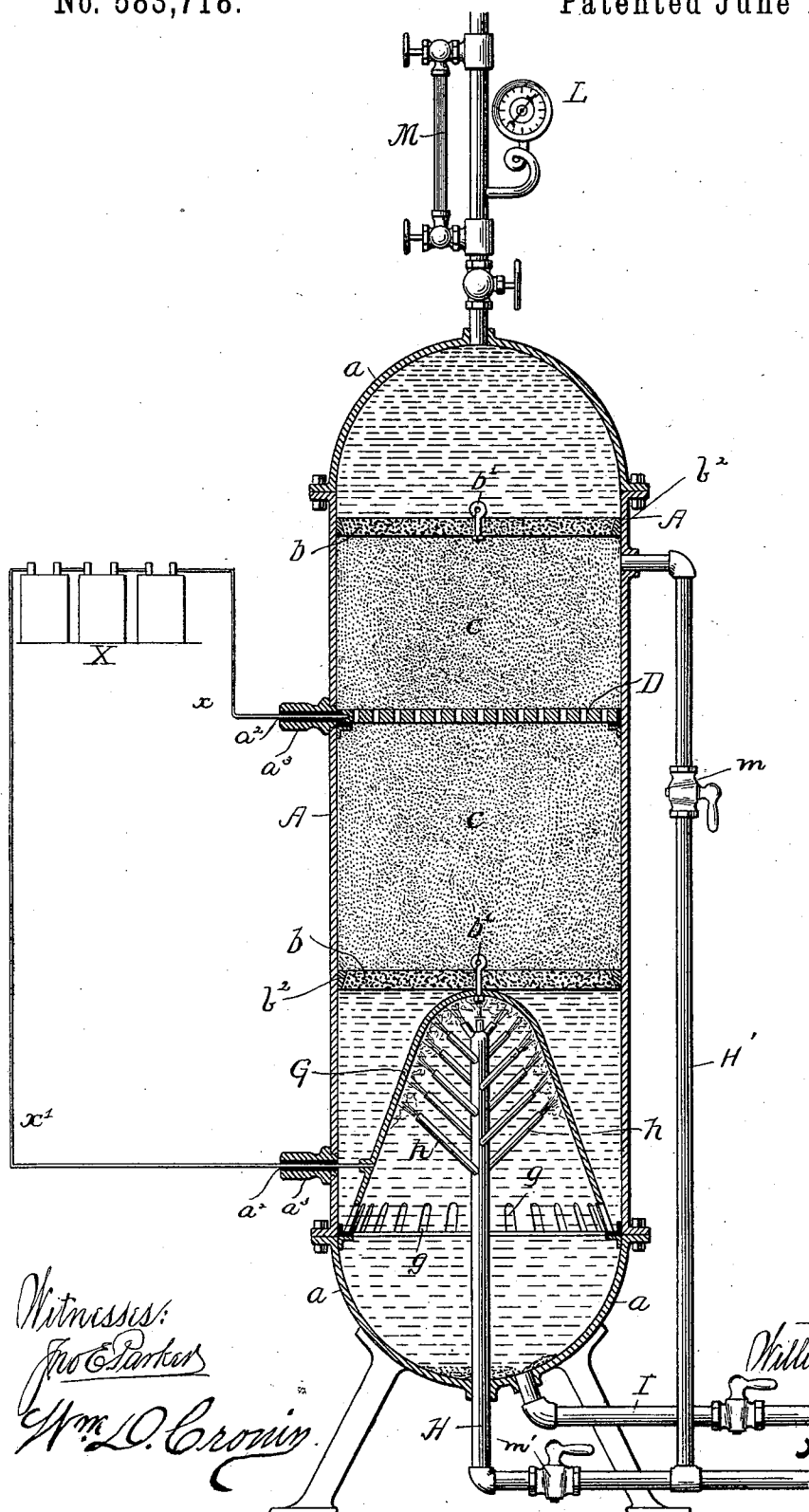


(No Model.)

W. L. TETER.
ELECTRIC WATER FILTER.

No. 583,718.

Patented June 1, 1897.



Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM L. TETER, OF PHILADELPHIA, PENNSYLVANIA.

ELECTRIC WATER-FILTER.

SPECIFICATION forming part of Letters Patent No. 583,718, dated June 1, 1897.

Application filed June 19, 1896. Serial No. 596,132. (Specimens.)

To all whom it may concern:

Be it known that I, WILLIAM L. TETER, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented certain new and useful Improvements in Electric Water-Filters, of which the following is a specification, reference being had therein to the accompanying drawing.

My invention relates to filters for liquids, and is more especially adapted for the filtration of water.

The object is to produce a device of this character of comparatively inexpensive construction which will operate automatically in separating the contained foreign matter from the water during its passage therethrough. Furthermore, the object is to destroy all germs and sterilize the water by the application of a current of electricity and thereby render the water absolutely pure.

With these and other objects in view the invention consists in certain novel features and combinations and arrangements of parts, to be more fully described hereinafter.

The accompanying drawing is a central vertical sectional elevation of a filter constructed in accordance with my invention.

Referring to the drawing, A represents a vertically-supported cylindrical casing formed, preferably, of galvanized iron and having its ends closed by semiglobular removable covers or heads *a*, which may be secured thereon in any well-known manner. Arranged within the casing are two porous partitions *b*, of any suitable filtering material, dividing the interior of the casing into three main chambers. In the central chamber between the two partitions is placed suitable filtering material *c* in either a loose or hard-packed state, as may be found desirable. This substance may be charcoal, gravel, or the like. The porous partitions are securely fixed in position by a filling *b'* of cement placed between their peripheries and the inner surface of the wall of the casing, and to facilitate their removal each partition is provided with a centrally-arranged ring-bolt *b'*, which affords a tool or hand hold.

In the central chamber containing the filtering medium is a perforated disk or plate D, formed of conducting material and suitably

secured in position in such manner as to be insulated from the casing. This plate is connected by a wire *x* to one pole of a battery or series of batteries X, and the opposite pole of such battery is connected by a wire *x'* to a cone G, formed of conducting material and insulated from the casing. The wires *x* *x'* pass through suitable bushings *a*², having internal collars or rings *a*³ of insulating material surrounding the wires.

The cone G is situated in the lower chamber and is provided with a series of openings *g* at its lower edge for the escape of the water.

The supply-pipe H enters at the lower end of the filter and is continued up to a point within the cone, where it is provided with a series of upwardly-extending radiating jet-pipes *h*, placed at an angle to the surface of the cone in such manner that the water entering under pressure will be forced in a series of jets toward and in contact with the inner surface of the cone and will be separated into drops, so that it may be brought more readily and thoroughly into contact with the cone, and as the latter is in an electric circuit the water will be charged with the current and the germs and minor organisms which it contains will be destroyed and precipitated to the bottom of the filter, whence they may be drawn off with the dirt and other foreign matters through the pipe I.

During the passage of the water through and from the first into the second or central chamber it will be relieved of the larger particles of foreign substances, as well as a portion of the contained germs, and upon entering the last-mentioned chamber its travel is through an electrically-charged field formed by the traverse of the current between the plate D and the cone G, where the remaining germs will be precipitated and destroyed by the action of the current, and the liquid enters the last or upper chamber and is discharged therefrom in a clear and pure state.

To secure the highest efficiency in the action of the current upon the liquid and without decomposing the same, a current of low voltage is employed.

On one side of the casing is a pipe H', connected at one end to the main water-supply pipe, and at the opposite end connected near the upper end of the filtering-chamber. On

this pipe H' is a valve *m*, and on the supply-pipe is a valve *m'*, so that when occasion requires the supply of water to the filter through the pipe H may be cut off and the water directed through the pipe H' to a point near the upper end of the filter, the direction of flow of the water being reversed and the valve *i'* on the waste-pipe I being opened to permit the escape of the dirty water and accumulated dirt.

In practice the water in the filtering operation enters through the pipe H and, after being discharged through the jet-pipes *h*, passes through the openings *g* at the base of the cone G, and from thence passes up through the porous partitions *b* and the filtering material and finally escapes through the outlet-pipe N.

In practice it is found desirable to employ a pressure-gage L and a water-tube M, as illustrated in the drawing, by means of which the working of the filter may be more readily determined.

It will be understood that I do not wish to limit myself to the exact construction and arrangement of parts herein illustrated and described, as many changes may be made without departing from the spirit of my invention.

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

1. A process of filtering liquids, said process consisting in forcing the liquid in minute streams or jets against a positive metallic electrode, and in its divided state subjecting each jet to the action of a current of electricity, then forcing said water up through a filtering medium and at the same time passing a current of electricity through the water, substantially as specified.

2. A filter comprising a casing provided with requisite inlets and outlets, porous partitions dividing the filter into a series of cham-

bers, filtering material situated in one of said chambers, a perforated disk in one of said chambers forming one terminal of an electric circuit, a metallic cone in a lower chamber forming the opposite terminal of the circuit, and a source of electricity to which said disk and cone are connected, substantially as specified.

3. The combination of the casing, a series of porous partitions dividing the filter into an upper, a lower, and central chambers, filtering material in the central chamber, a perforated disk in the central chamber forming one terminal of an electric circuit, a conical plate in the lower chamber forming the opposite terminal of the electric circuit, said conical plate having a series of openings in its lower edge, a liquid-supply pipe leading to a point within the cone, a series of jet-pipes extending from the supply-pipe and adapted to throw the water in a series of minute streams against the inner surface of the cone, and a source of electricity to which the perforated disk and the cone are connected, substantially as specified.

4. A filter comprising a casing provided with requisite inlets and outlets, and having removable heads, porous partitions dividing the interior of the casing into three chambers, suitable filtering material filling the central chamber, a perforated metallic disk arranged within the central chamber, a cone-shaped plate in the lower or entrance chamber, a source of electricity, and connections between the disk and cone and the source of supply, substantially as specified.

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

WILLIAM L. TETER.

Witnesses:

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WALTER W. CALMORE.