(No Model.)

H. CASSARD.

WATER PURIFIER.

No. 525,316. Patented Aug. 28, 1894.

Fig. 1.

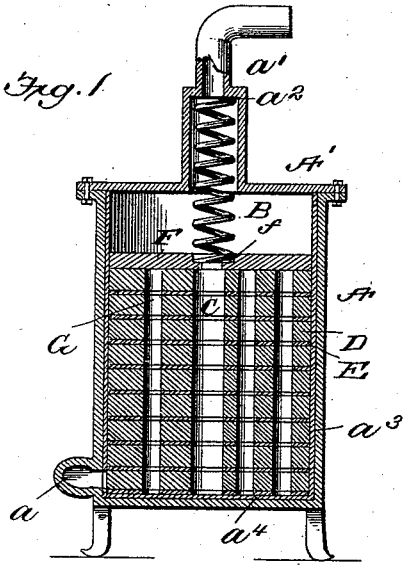


Fig. 3.

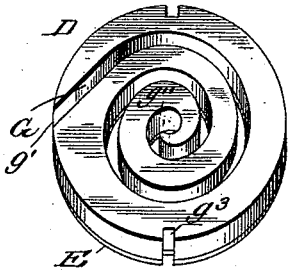


Fig. 4.

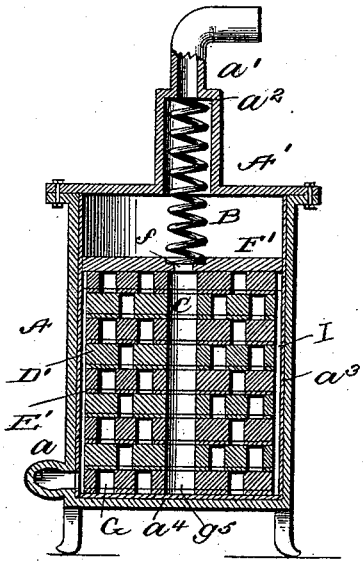


Fig. 2.

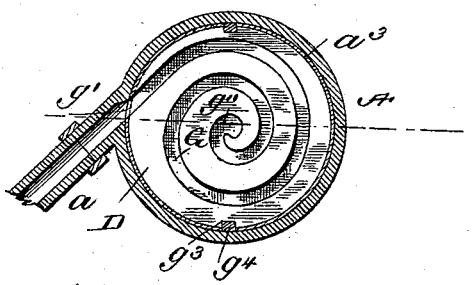


Fig. 6.

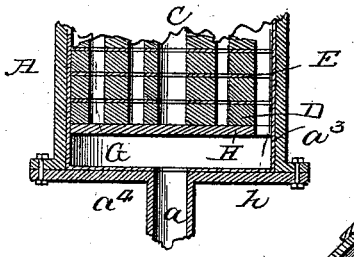


Fig. 5.

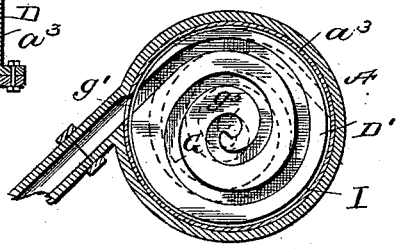
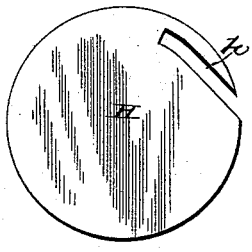


Fig. 7.



Witnesses
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UNITED STATES PATENT OFFICE.

HERBERT CASSARD, OF CHICAGO, ILLINOIS, ASSIGNOR OF ONE-HALF TO HAMPTON WOODS, OF SAME PLACE.

WATER-PURIFIER.

SPECIFICATION forming part of Letters Patent No. 525,316, dated August 28, 1894.

Application filed October 11, 1893. Serial No. 487,863. (No model.)

To all whom it may concern:

Be it known that I, HERBERT CASSARD, a citizen of the United States, residing at Chicago, in the county of Cook and State of Illinois, have invented certain new and useful Improvements in Water-Purifiers; and I do hereby 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 letters of reference marked thereon, which form a part of this specification.

The present invention relates particularly to the class of purifiers in which there is a voltaic pile inclosed in the chamber or gland through which the feed-water flows before entering the boiler, and the object of the present invention is to provide a compact pile that shall present to the action of the water a large amount of surface with a view to securing the greatest efficiency combined with a compact and simple construction.

To this end the invention consists of a voltaic pile having a spiral or circuitous channel for the flow of the water through or within the pile, as hereinafter fully described and set forth.

In the accompanying drawings: Figure 1 is a vertical sectional view of a feed-water purifier constructed according to the present invention. Fig. 2 is a longitudinal sectional view of the same taken through the pile. Fig. 3 is a detached perspective view of one of the plates of the pile. Figs. 4 and 5 are respectively longitudinal and transverse sections of a modified embodiment of the invention; and Figs. 6 and 7 illustrate a construction of gland wherein there is an end inflow for the water.

A is a cylinder constituting the purifier chamber, the same having an inlet pipe, a, entering through the side of the cylinder at the bottom, and an outlet pipe, a', through the center of the head A'. The outlet pipe, a', is enlarged for a short distance and a spiral spring B is incased in this enlargment; the shoulder a^2 in the pipe forms a seat for the upper end of the spring and the lower end of the spring bears against a plate F on the top of the voltaic pile, C. The voltaic pile is built up of round plates of zinc and copper, D and E, or other elements, which nearly fill the inclosing cylinder A, space enough only being left within the shell around the pile for it to be easily inserted. The cylinder has an insulating lining, a^3, and the pile rests on an insulating base plate, a^4. The cap plate F has a central opening, f, and the end of the spring D is seated in the groove around the opening. The spring and cap plate operate to compress the pile and hold the plates thereof in contact. The plates of the voltaic pile are made with a spiral opening, G, starting at the circumference as at the point, g', (Fig. 3) and winding in toward the center of the plate, where the opening, ends as at g'. This spiral opening may take any winding form within the plates, and the plates may be square or of any other shape; the essential feature being the channel for the flow of water from the perimeter of the pile in toward the center, or vice versa. Each plate also has one or more key seats g^3.

When the plates are set up to form a voltaic pile the openings, G, in the several plates register with each other, and a bar, g^4, of any suitable insulating material, (lead even will ordinarily answer the purpose,) fitted in the line of key seats, locks the plates in position. A pile is thus formed with a convolute channel starting at the circumference and terminating in the central flue or opening, which extends through the pile from end to end. This central flue registers with the opening, f, in the cap plate F and the pile is placed in the cylinder A so that the inlet pipe, a, is opposite to the circumferential entrance to the spiral or convolute channel. The water flowing through the purifier, enters from the inlet pipe, a, and flows through the spiral or convolute channel in the plates until it reaches the center and thence through the center of the cap plate F, to the outlet pipe a'. The thin copper plates of the pile need not necessarily have the spiral opening, only the central hole, in which case the convolute channel will be divided by the copper plates into a line of spiral channels.

In the modification illustrated by Figs. 4 and 5 a water channel I is left around the pile between the same and the containing cylinder, this space however being closed in at the top by the cap plate F' which extends out to the walls of the chamber. In this case the

plates D′ and E′ of the pile are set so that the spiral openings of contiguous plates will not register except at the central part thereof, and the result is that instead of the pile having a convolute channel leading from the circumference into the center, there is a central flue g^5, extending through the pile from end to end with numerous spiral channels leading thereinto from the circumference; these spiral channels starting at different points on the outer face of the pile, according to the position given the different plates in setting them in place. In this case the water entering the purifier flows around the pile and in through the numerous spiral channels to the center main channel, and then out as before.

In the form illustrated by Figs. 6 and 7 the inflow pipe, *a*, is in the bottom of the purifier cylinder, and the voltaic pile, C, is supported on a plate H, raised above the bottom of the cylinder. This plate has, near its edge, a slot, *h*, conforming in shape to the outer portion of the spiral channel, G, in the voltaic plates; and the voltaic plates with their spiral openings in alignment, are placed on the supporting plate, H, so that the slot, *h*, in the plate, H, registers with the corresponding portion of the spiral channel in the voltaic plates. In this case the inflowing water enters the chamber beneath the plate H, and then passes through the slot, *h*, into the spiral channel in the voltaic pile and then out as in the form of the device first described.

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

1. In a water purifier, the combination of a casing with inlet and outlet pipes, a voltaic pile having a channel leading from the perimeter to the center of the pipe and a cap plate having a central opening, substantially as and for the purpose set forth.

2. In a water purifier, the combination of a shell or casing having inlet and outlet pipes, a voltaic pile having a channel therethrough from the perimeter to the center, and a spring-pressed covering plate having a central opening registering with the central opening of the pile, substantially as set forth.

3. In a water-purifier, a voltaic pile having a central passage therethrough and a channel leading from the perimeter to said central passage and a cap-plate having a central opening registering with said central passage, substantially as specified.

4. In a water-purifier, a voltaic pile having a central passage therethrough and numerous transverse openings from the perimeter of the pile to said central passage and a cap-plate having a central opening registering with said central passage, substantially as set forth.

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

HERBERT CASSARD.

Witnesses:
STORY B. LADD,
L. C. STRIDER.