

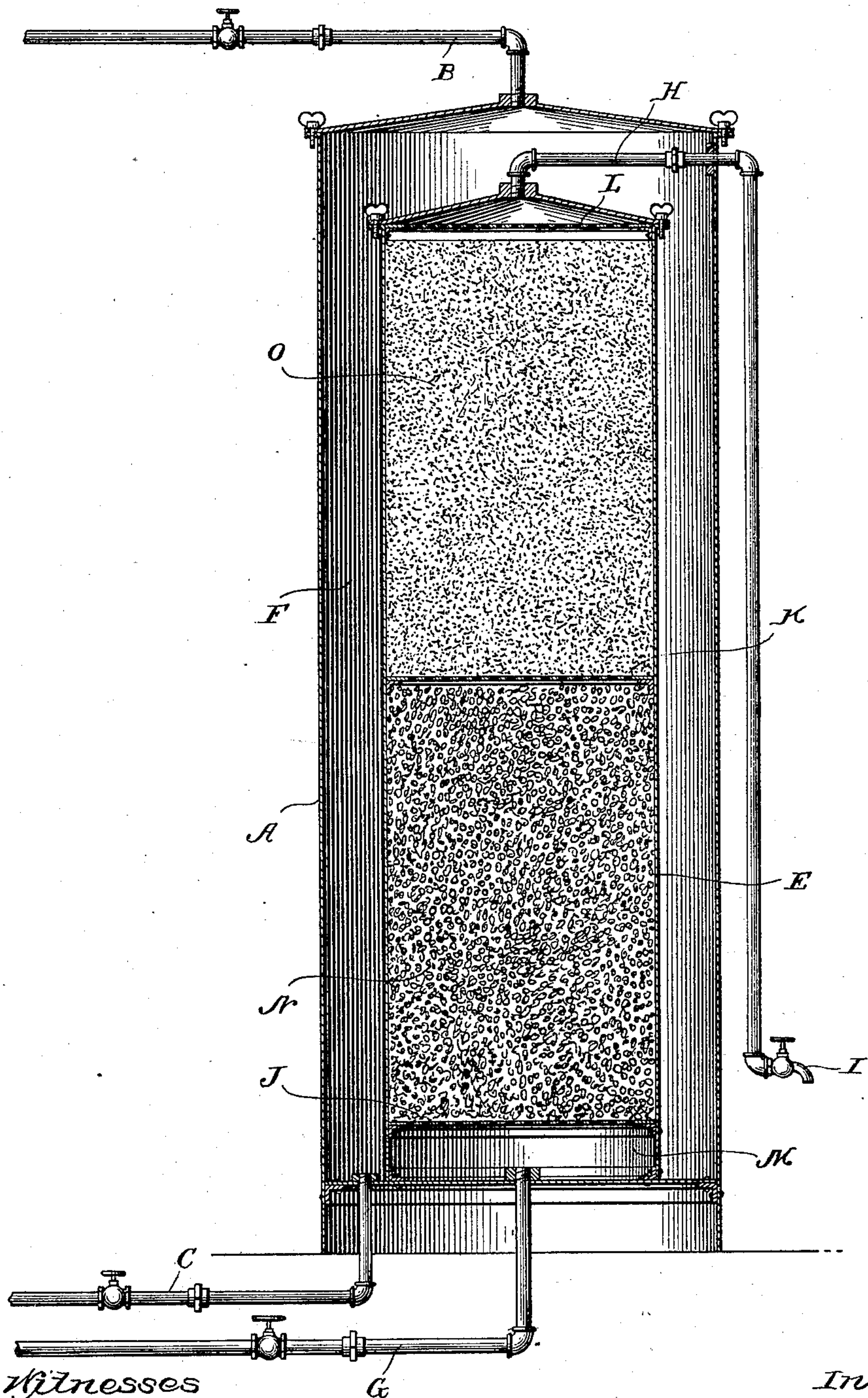
No. 630,327.

Patented Aug. 8, 1899.

E. S. CLOWER.
WATER FILTER, HEATER, AND COOLER.

(Application filed Dec. 7, 1898.)

(No Model.)



Witnesses

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UNITED STATES PATENT OFFICE.

EDWIN S. CLOWER, OF PHILADELPHIA, PENNSYLVANIA.

WATER FILTER, HEATER, AND COOLER.

SPECIFICATION forming part of Letters Patent No. 630,327, dated August 8, 1899.

Application filed December 7, 1898. Serial No. 698,543. (No model.)

To all whom it may concern:

Be it known that I, EDWIN S. CLOWER, a citizen of the United States, residing at Philadelphia, in the county of Philadelphia and State of Pennsylvania, have invented a certain new and useful Improvement in Water Filters, Heaters, and Coolers, of which the following is a specification.

My invention relates to a new and useful improvement in water filters, heaters, and coolers, and has for its object to provide an apparatus which may be interposed between the water-supply pipe and an ordinary domestic boiler and which in operation will raise the temperature of the supply-water before reaching the boiler, will filter the water in passing from the boiler to the withdrawal-faucet, and at the same time cool the water during its filtration to nearly the same temperature as the supply-water.

With these ends in view this invention consists in the details of construction and combination of elements hereinafter set forth and then specifically designated by the claims.

In order that those skilled in the art to which this invention appertains may understand how to make and use the same, the construction and operation will now be described in detail, referring to the accompanying drawing, forming a part of this specification, in which the apparatus embodying my improvement is shown in vertical section.

In carrying out my invention as here embodied I provide a cylindrical outer casing A, closed at both ends and having a supply-pipe B connected with the top thereof in order that the supply-water may be admitted at this point and permitted to flow downward and again pass from the apparatus through the pipe C, which leads to the domestic boiler. An inner cylindrical casing E is inclosed within the outer casing and is of such diameter as to leave a space F. This cylinder is secured to the bottom of the outer casing, and the return-pipe G enters the bottom thereof, and this return-pipe coming from the boiler is for conveying the heated water to the inner cylinder. A pipe H leads from the top of the inner cylinder and has one or more faucets I connected therewith for the withdrawal of the water, as occasion may require. The inner cylinder E is the filter proper, be-

ing divided into compartments by the partitions J, K, and L, the lower compartment M serving as a receptacle for the heated water flowing through the pipe G, the compartment N being preferably filled with coke or other suitable material for filtering the water in its passage therethrough, while the compartment O is preferably filled with charcoal to further filter and purify the water in its passage to the pipe H. The partitions J, K, and L are perforated to permit the ready flow of this water. By this arrangement it will be seen that the supply-water flowing into the apparatus through the pipe B will be at its lowest temperature at the point of entry; but during its passage through the space F it will come in contact with the inner cylinder E and in so doing absorb heat therefrom which has been imparted to said inner cylinder by the upflowing of the hot water from the pipe G. The temperature of the supply-water being thus raised before it reaches the pipe C, it will pass to the boiler in the best condition for the still further raising of its temperature to the desired point. After being heated the water will then return through the pipe G to the inner cylinder E and of course will be of the highest temperature at the point of entering said cylinder, while during its passage through the filtering material its temperature will be gradually lowered by the absorption of heat therefrom by the inflowing supply-water, as before set forth, until the upflowing water reaches the pipe H, when its temperature will be nearly, if not quite, the same as the supply-water at this point. This is a most desirable arrangement, since in a single apparatus the supply-water is heated before entering the boiler, after the manner of a feed-water heater for steam-boilers, while the hot water during its filtration is cooled, and thus delivered in the best condition for use. Another advantage of my improvement is that the water being heated before being introduced into the filtering-cylinder is far more susceptible to filtration than when at a lower temperature, and as the water has been heated to high temperature in the boiler all disease-germs will have been destroyed, so that the water delivered at the faucet will be both mechanically and chemically pure.

The cost of my apparatus is small, and, there

being no mechanism attached thereto, it is exceedingly durable.

Having thus fully described my invention, what I claim as new and useful is—

5 1. A filtering apparatus consisting of an outer casing, an inner cylinder so located within the outer casing as to form a space therebetween, a supply-pipe connected with the outer casing, a pipe for permitting the
10 outflow of the supply-water, this last-named pipe being connected with a boiler, a return-pipe leading from the boiler to the inner cylinder, filtering material located within the inner cylinder, and a pipe leading from the top
15 of the inner cylinder to one or more faucets, as specified.

2. In combination, an outer casing and an inner casing, the latter being divided into
20 suitable compartments containing filtering material, a pipe leading to the top of the outer casing, a pipe leading from the bottom of the outer casing to a boiler, a return-pipe lead-

ing from the boiler to the inner casing, and a pipe leading from the top of the inner casing to withdrawal-faucets, as specified. 25

3. A filter consisting of an outer casing and a cylinder located therein forming a space through which the supply-water may flow on its way to the boiler, a pipe leading from this space to the boiler, a pipe leading from the
30 boiler to the cylinder, and a pipe leading from the top of the cylinder to suitable faucets whereby the inflowing supply-water will be raised in temperature before reaching the
35 boiler, and the return-water during its filtration will be cooled by the supply-water, as specified.

In testimony whereof I have hereunto affixed my signature in the presence of two subscribing witnesses.

EDWIN S. CLOWER.

Witnesses:

CHAS. J. SCHAEFER,
W. H. CLOWER.