

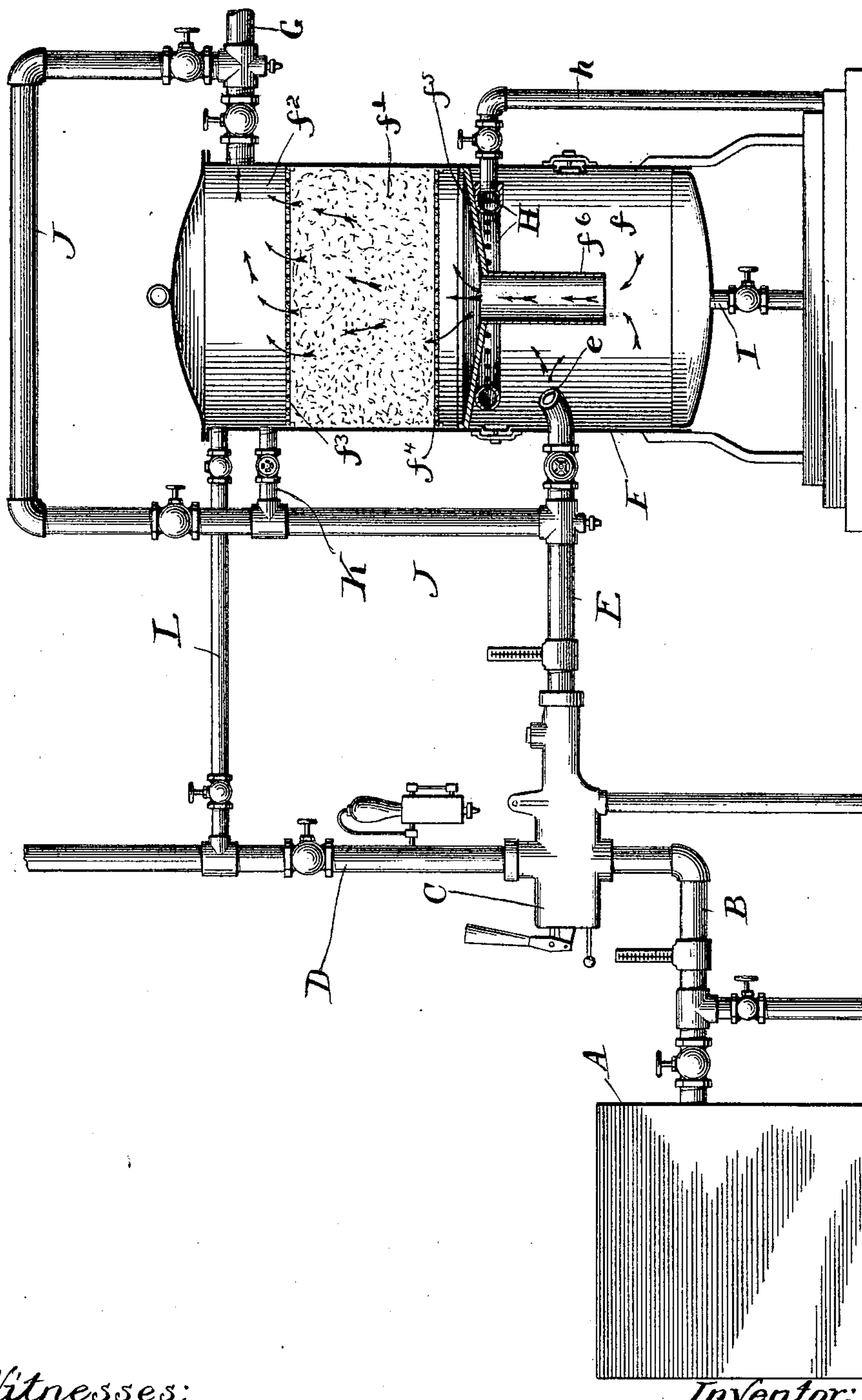
No. 631,571.

Patented Aug. 22, 1899.

N. L. HAYDEN.
FEED WATER PURIFIER.

(Application filed Feb. 10, 1899.)

(No Model.)



Witnesses:
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UNITED STATES PATENT OFFICE.

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FEED-WATER PURIFIER.

SPECIFICATION forming part of Letters Patent No. 631,571, dated August 22, 1899.

Application filed February 10, 1899. Serial No. 706,144. (No model.)

To all whom it may concern:

Be it known that I, NORMAN L. HAYDEN, a citizen of the United States of America, residing at New York, in the county of New York and State of New York, have invented certain new and useful Improvements in Feed-Water Purifiers, of which the following is a specification.

My invention relates to certain improvements in feed-water purifiers, the object being to more effectually trap the dirt and sediment as well as the particles held in suspension in the water and prevent them from passing to the boiler.

The invention is illustrated by means of a side elevation of an apparatus, shown in the drawing, the purifier proper being shown in diametrical vertical section to reveal the interior construction thereof.

Referring to the drawing, A represents a hot-well, from which leads a water-pipe B, discharging into an ejector C, supplied with steam by means of a steam-pipe D. The injector forces the water heated by the steam through the pipe E into the purifier proper, F. This purifier consists of an inclosed vessel having a lower settling-chamber f , an intermediate filtering-chamber f' , filled with suitable filtering material, and an upper pure-water chamber f^2 , from which a pipe G leads to the boiler. The filtering material is confined between two perforated partitions f^3 f^4 , and a little below the latter is a diaphragm f^5 , preferably inclined downward toward its central portion and there provided with a downwardly-extending tubular portion f^6 . The inlet-pipe E has a nozzle e discharging the heated water into the purifier beneath the diaphragm f^5 and above the level of the bottom of the tubular portion f^6 thereof. The heating of the water aids the deposit of the sediment contained therein, and time for such deposit is insured by the diaphragm f^5 and the pipe f^6 , which prevent the water from passing directly upward. A perforated coil H is laid just below the diaphragm f^5 and leads into a discharge-pipe h , through which the floating impurities may be drawn off. A discharge-pipe I, leading from the bottom of the purifier, provides means for drawing off the sediment. From the pipe E a branch J leads upward over the purifier and connects with the pipe G to enable the purifier to be cut out of the system for cleaning or for other

purposes. A branch pipe K leads from the pipe J into the pure-water chamber of the purifier, which is intended for use in washing out the filtering material. A branch pipe L leads from the steam-pipe directly into the pure-water chamber of the purifier and is intended for use in blowing out the impurities from the purifier.

I claim as new and desire to secure by Letters Patent—

1. In a feed-water purifier, a casing having a closed chamber, a central outlet-pipe extending downward into said chamber, a discharge-pipe, for sediment at the bottom of the chamber, a discharge-pipe, for light impurities, leading from the upper part of the chamber and an inlet-pipe below the top of the casing and above the bottom of the outlet-pipe, the distance of the inlet-pipe below the top of the casing being sufficient to avoid forcing the floating impurities downward and to permit said impurities to gather in the top of said casing and the extension of the outlet-pipe below the inlet-pipe being sufficient to compel the sediment in the water to travel in a downward direction before it can enter the outlet-pipe; substantially as described.

2. In a feed-water purifier, the combination with a casing having a closed chamber, of an outlet-pipe extending centrally downward into said chamber, discharge-pipes for impurities, leading, respectively, from the top and bottom of the chamber, and an inlet-pipe below the top of the chamber and above the lower end of the outlet-pipe; said inlet-pipe being inclined, to give a cyclonic action on the water in the chamber, and its distance below the top of the chamber being sufficient to avoid forcing the floating impurities downward and to permit said impurities to gather in the top of the chamber, and the extension of the outlet-pipe below the inlet-pipe being sufficient to compel the sediment in the water to travel downward before it could enter the outlet-pipe, substantially as set forth.

In witness whereof I have hereunto set my hand, at Chicago, in the county of Cook and State of Illinois, this 3d day of February, A. D. 1899.

NORMAN L. HAYDEN.

Witnesses:

CHAS. O. SHERVEY,
S. BLISS.