

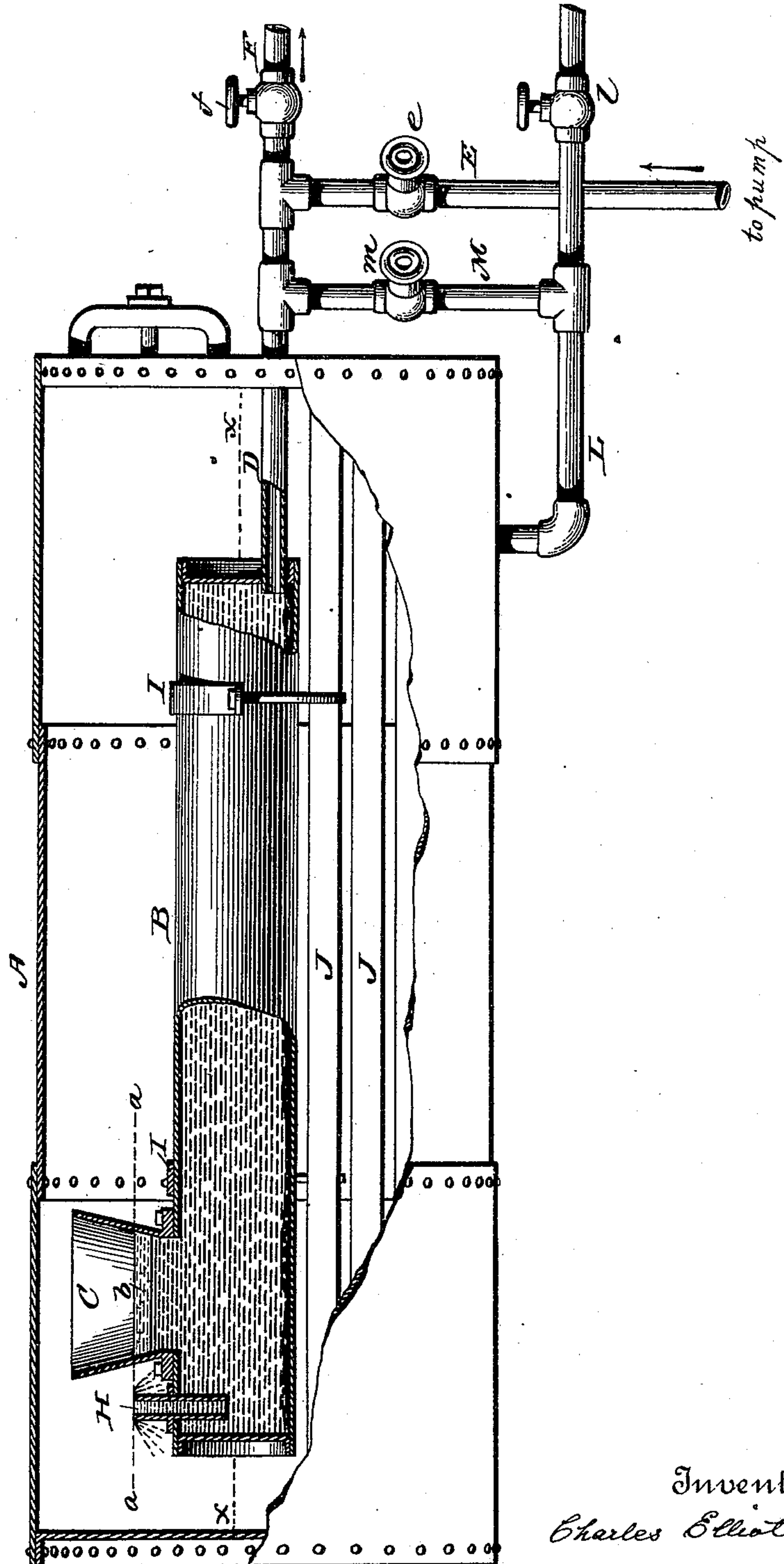
(No Model.)

C. ELLIOT.

METHOD OF AND APPARATUS FOR PURIFYING WATER FOR BOILERS.

No. 426,718.

Patented Apr. 29, 1890.



Witnesses  
*John J. L.*  
*Albert Speiden*

Inventor  
*Charles Elliot*

By his Attorney *Woodbury Lowery*

# UNITED STATES PATENT OFFICE.

CHARLES ELLIOT, OF SAN FRANCISCO, CALIFORNIA.

METHOD OF AND APPARATUS FOR PURIFYING WATER FOR BOILERS.

SPECIFICATION forming part of Letters Patent No. 426,718, dated April 29, 1890.

Application filed December 28, 1889. Serial No. 335,211. (No model.)

*To all whom it may concern:*

Be it known that I, CHARLES ELLIOT, a citizen of the United States, residing at San Francisco, in the county of San Francisco and State of California, have invented a new and useful Improvement in Methods of and Apparatus for Purifying Water for Boilers, of which the following is a specification.

Where closed settlers are used in boilers for the purpose of purifying the water before its introduction into the boiler proper, it has been observed that after blowing off the settler on the subsequent introduction of cold feed-water a vacuum is produced in the settler, resulting in a concussion which frequently bursts the tube or blows the end off. The settler being empty after blowing off, if cold water is introduced at the end opposite to the overflow and stand-pipe, a momentary condensation of the steam in that end occurs, producing a vacuum or a partial vacuum at that end, whereupon the instantaneous rush of steam entering through the stand-pipe and overflow to equalize the reduced pressure causes the concussion which is so injurious to the settler and its connections.

The object of my invention is to prevent the formation of this vacuum and the consequent concussion, and this I accomplish by letting hot water from the boiler into the settler prior to the introduction of the cold feed-water.

I have shown my invention applied to a settler of the description patented to me in Letters Patent No. 374,828, granted December 13, 1887, but do not limit myself to its use in such combination alone.

In the accompanying drawing, which illustrates my invention, and which is a side view partly broken away of my improved settler, A is the boiler.

B is the settler or body of the purifier.

C is the stand-pipe, of the full size of the tube forming the body of the settler, to which it is directly fastened, but does not extend down into it.

D is the pipe leading from the other end of the settler at or near its bottom and having the branch E, provided with the valve *e*, leading to the feed-water-supply pump.

F is the blow-off branch of pipe D, having the valve *f*.

H is the outlet or overflow by which the water from the settler escapes into the boiler.

*a a* is the water-line in the settler, and *b*

the floating matter trapped by the downwardly-extending end of the overflow H.

*x x* is the water-line in the boiler.

I I are clamps by which the settler is held in place, and J J are the boiler-tubes.

L is a pipe extending from the boiler below its water-line, in this instance from the bottom of the boiler, and *l* is the usual blow-off cock.

M is a pipe connecting the pipe L with the pipe D, and is provided with a cock *m*.

The operation of my invention is as follows: After blowing off the settler by means of pipe D F the pipe F is closed and hot water from the boiler admitted into the settler through pipes L, M, and D. The supply from the boiler is then cut off and the feed-water is admitted through pipe E.

It is evident that hot water may be introduced from the boiler into the settler by other means than by an external pipe connected to the bottom of the boiler and to the blow-off pipe, as shown, without departing from the spirit of my invention. Neither do I limit myself to the particular device shown for so introducing it; but

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

1. In a feed-water supply for steam-boilers, the method of preventing the formation of a vacuum in a closed settler therefor, which consists in first introducing hot water from the boiler into the settler, cutting off the supply of hot water, and then introducing the feed-water, substantially as described.

2. The combination, with a closed settler for purifying water located in a boiler, of a feed-water-supply pipe, a blow-off, and a controllable device for introducing water from the boiler into the settler, substantially as described.

3. The combination, with a closed settler located in a boiler, of the pipe D, the blow-off F, the feed-water-supply pipe E, and the hot-water-supply pipes L M and their respective valves, substantially as and for the purpose set forth.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

CHARLES ELLIOT.

Witnesses:

MATW. O'BRIEN,

BLYTHE H. HENDERSON.