

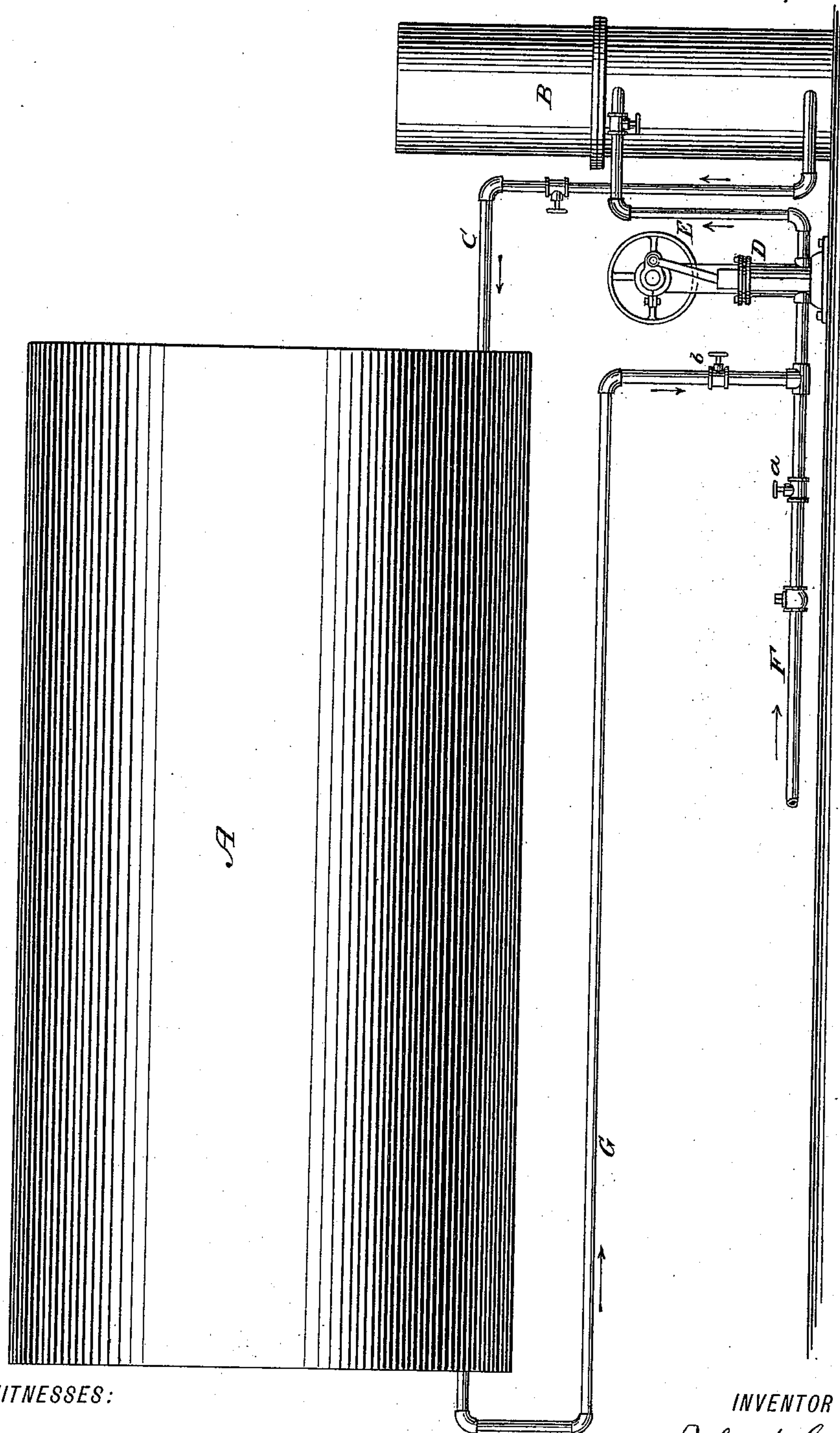
(No Model.)

J. W. HYATT.

WATER CLEANER FOR BOILERS.

No. 354,864.

Patented Dec. 21, 1886.



WITNESSES:

*Edmund Wolff.*  
*George Cook.*

INVENTOR

*John W. Hyatt,*  
BY *Rowland Cox*  
his ATTORNEY



# UNITED STATES PATENT OFFICE.

JOHN W. HYATT, OF NEWARK, NEW JERSEY.

## WATER-CLEANER FOR BOILERS.

SPECIFICATION forming part of Letters Patent No. 354,864, dated December 21, 1886.

Application filed September 7, 1885. Serial No. 176,378. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN W. HYATT, a citizen of the United States, and a resident of Newark, in the county of Essex and State of New Jersey, have invented certain new and useful Improved Water-Cleaners for Boilers, of which the following is a specification.

My invention relates to an improved water-cleaner for boilers.

It is a well-known fact that after the water in a boiler becomes heated impurities therein are set free—such, for instance, as sulphates and carbonates of lime and magnesia—and by constant boiling are concentrated and become crystalized and adhere to the interior of the boiler, forming incrustations therein and rendering it unfit for use. I am aware that in order to overcome this difficulty devices have been constructed whereby the water has been caused to pass through a filter, both previous and subsequent to its entrance into the boiler, for the purpose of extracting the impurities contained therein, the circulation being produced by a steam-pump connected with the filter and with the water-space within the boiler. The action of the pump in such case serves to circulate the boiler-fluid continuously through the filter, and thus restores it to the boiler in a purified condition. Such devices have, however, always been applied to the boiler independently of the feeding apparatus, being regarded as a separate attachment having a function quite different from the feeding devices.

My invention consists in providing such circulating-pump with two suction-pipes, one connected with the water-space within the boiler and the other connected with a feed-water supply. By this construction I am able to use the pump in three different modes. Thus I may operate it at pleasure, either for the purpose of feeding the boiler, for circulating its contents through the filter, or for circulating the boiler-fluid through the filter simultaneously with a supply of feed-water when it is desired to carry on the feeding operation without interruption.

My invention will be understood by reference to the accompanying drawing, in which A represents a steam-boiler of any construction and dimensions, and B a filter located in

any suitable place and communicating with the boiler by means of the pipe C, leading from the lower end of said filter to the forward end of the boiler. To the inlet of the filter is secured one end of the pipe E, the opposite end of which is connected with the pump D, adapted to receive the feed-water from the supply-pipe F and force it through the filter into the boiler. In the supply-pipe F, leading to the pump, is located a valve, *a*, and between said valve and pump is secured a pipe, G, leading into the rear end of the boiler and provided with a valve, *b*.

The filter may be of any desired construction; but I preferably use a filter constructed as shown and described in Letters Patent granted to me on the 6th day of March, 1883, and numbered 273,542, which filter is so constructed that the filtering-bed may be easily and readily cleansed of the impurities deposited by the water passing through it.

After the boiler has been filled the valve *a* is closed, cutting off the feed-water, and the valve *b* opened, and by means of the pump the water is forced through the filter, through the boiler, back into the filter, and so on, the latter extracting the impurities from the water before accumulating sufficiently to adhere to the boiler, and thus obviating all danger of any incrustation forming therein.

In many cases it is considered objectionable to supply the evaporation of the boiler by an intermittent feed, and in such cases the pump in my construction may be used to supply a continuous feed and to simultaneously circulate the boiler-fluid through the filter. When thus operated the valves *a* and *b* are both partially opened and their apertures regulated to secure a suitable supply of feed-water through the former valve, while the pump is run at a suitable speed to also draw some of the boiler-fluid through the valve *b*. The feed-water and the boiler-fluid thus become mingled in the pump and are propelled together through the filter and discharged after purification together into the boiler.

It will be seen from the above description that by my device the pump used for circulating the boiler-fluid through the filter may also be employed to feed the boiler, and a single pumping device may thus be made to per-

form all the three separate functions which have been described above.

As various methods have been used for causing the water to take a circuitous passage through a filter and boiler, I would have it understood that I make no broad claim to such; but

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

10 The combination, with the steam-boiler A and the filter B, having its outlet connected with the boiler, of the pump D, having its outlet E connected with the filter B and its inlet connected by the separate pipes F and  
15 G, respectively, with a feed-water supply and the water-space in the boiler, the pipes F and

G being provided with the stop-cocks *a* and *b*, and the whole being arranged and operated for the pump to replenish the water in the boiler when evaporated, or to circulate the boiler-fluid through the filter, or to feed the boiler and circulate the boiler-fluid through the filter simultaneously, as and for the purpose set forth.

Signed at New York, in the county of New York and State of New York, this 22d day of May, A. D. 1885.

JOHN W. HYATT.

Witnesses:

GEORGE COOK,  
ARTHUR L. HENTHORN.