

No. 608,250.

Patented Aug. 2, 1898.

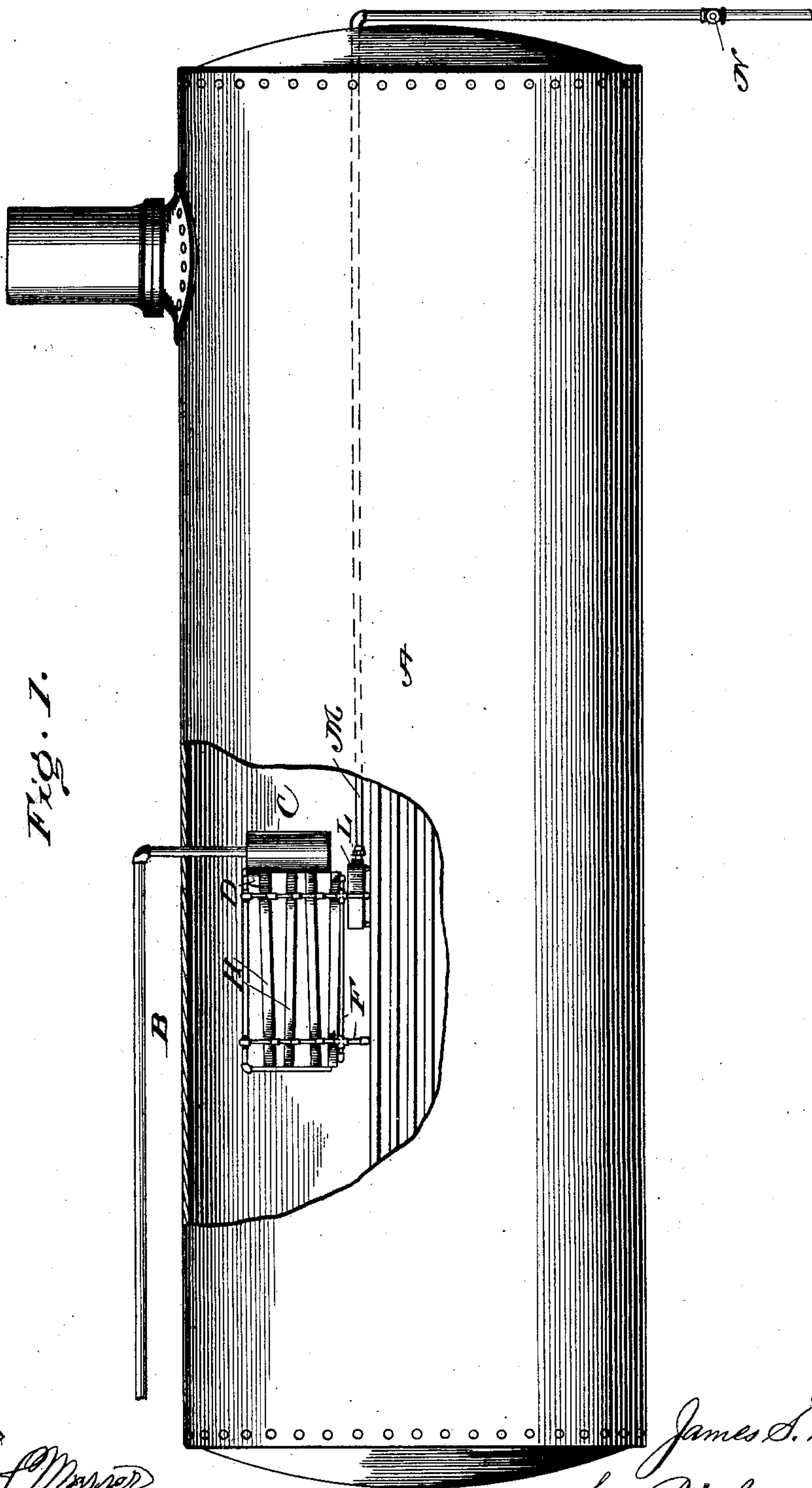
J. S. CALKINS.

DEVICE FOR PURIFYING FEED WATER.

(Application filed Sept. 3, 1897.)

(No Model.)

2 Sheets—Sheet 1.



Witnesses

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*Walter Williams.*

Inventor

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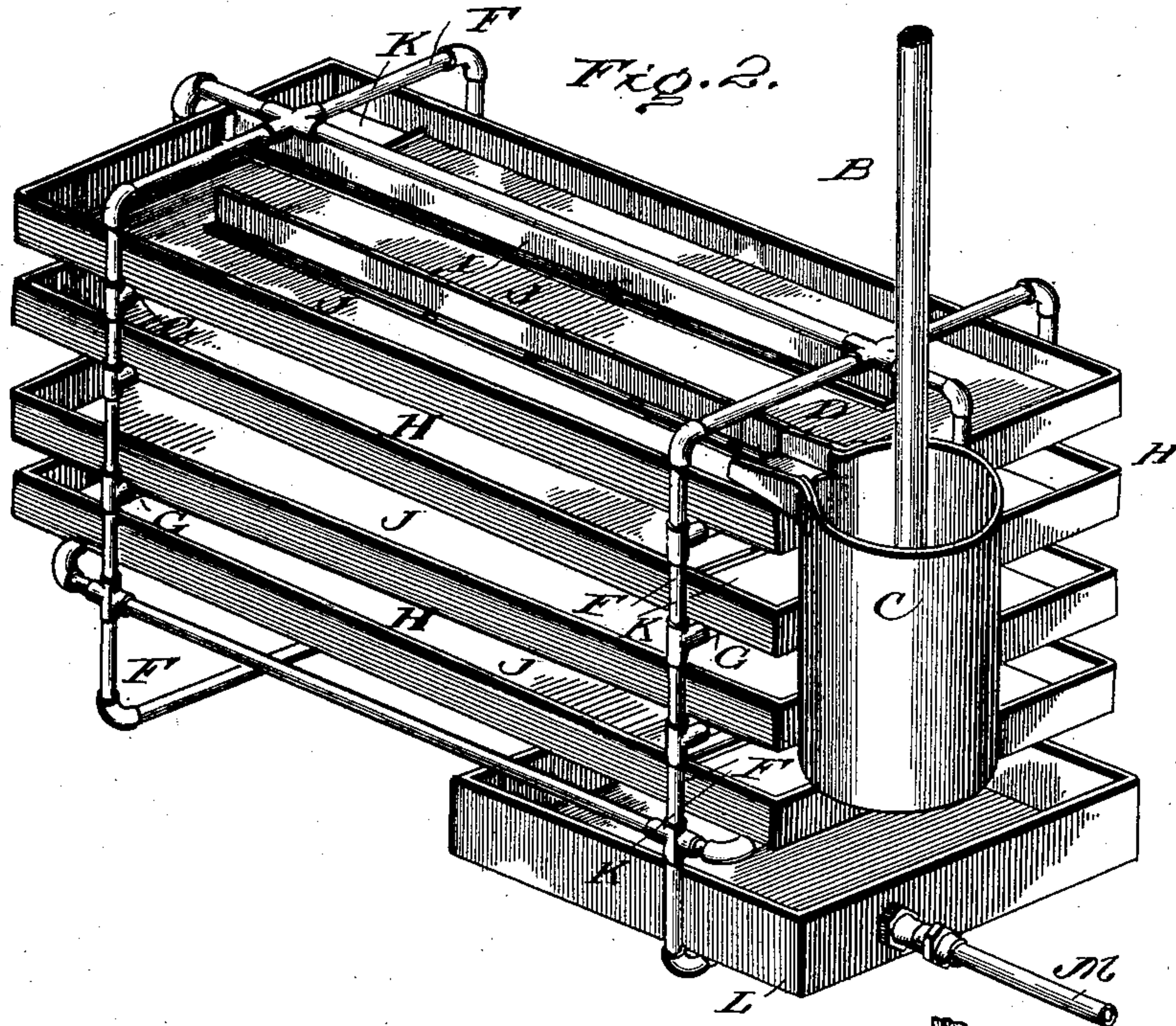


Fig. 3.

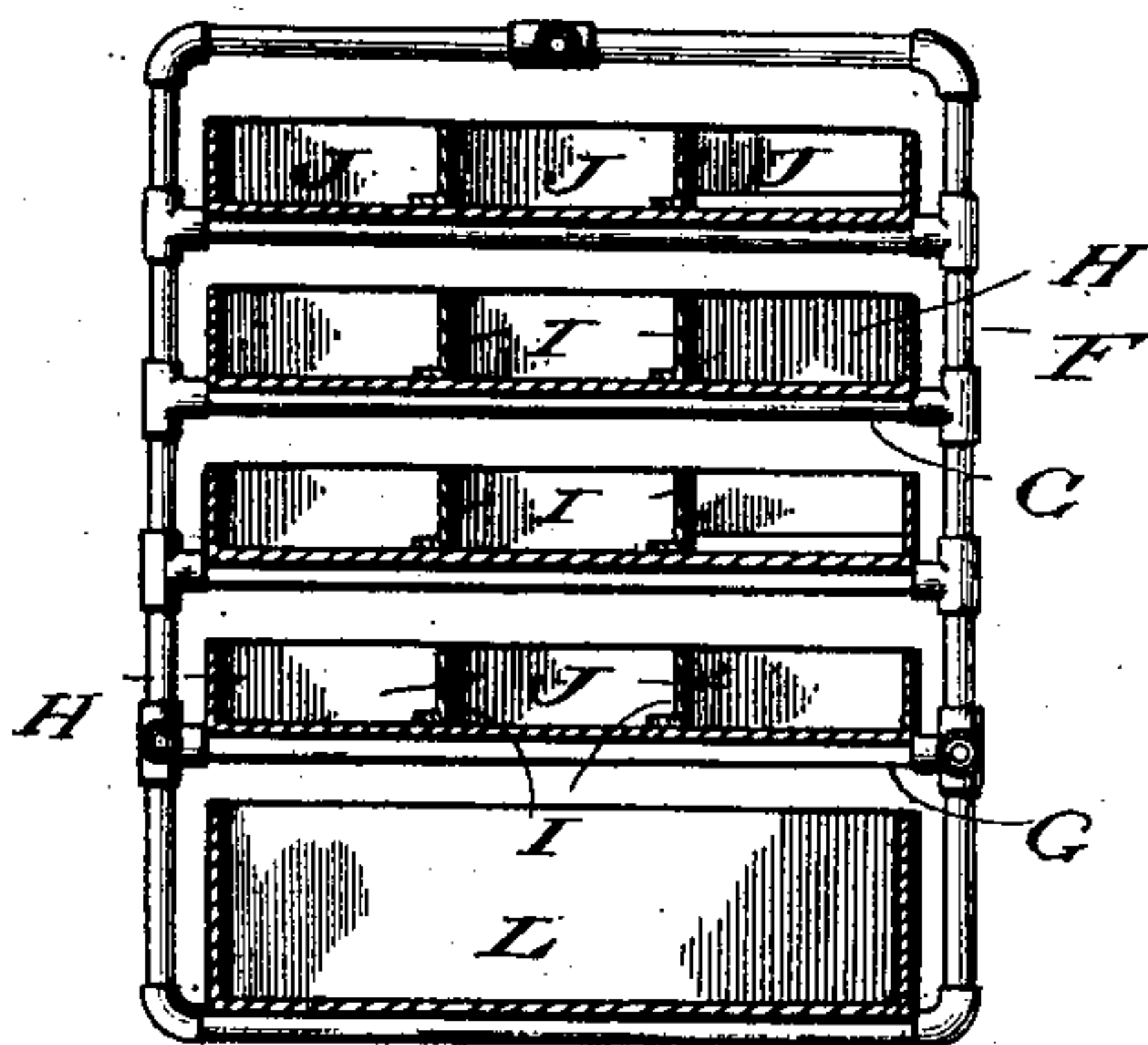


Fig. 5.

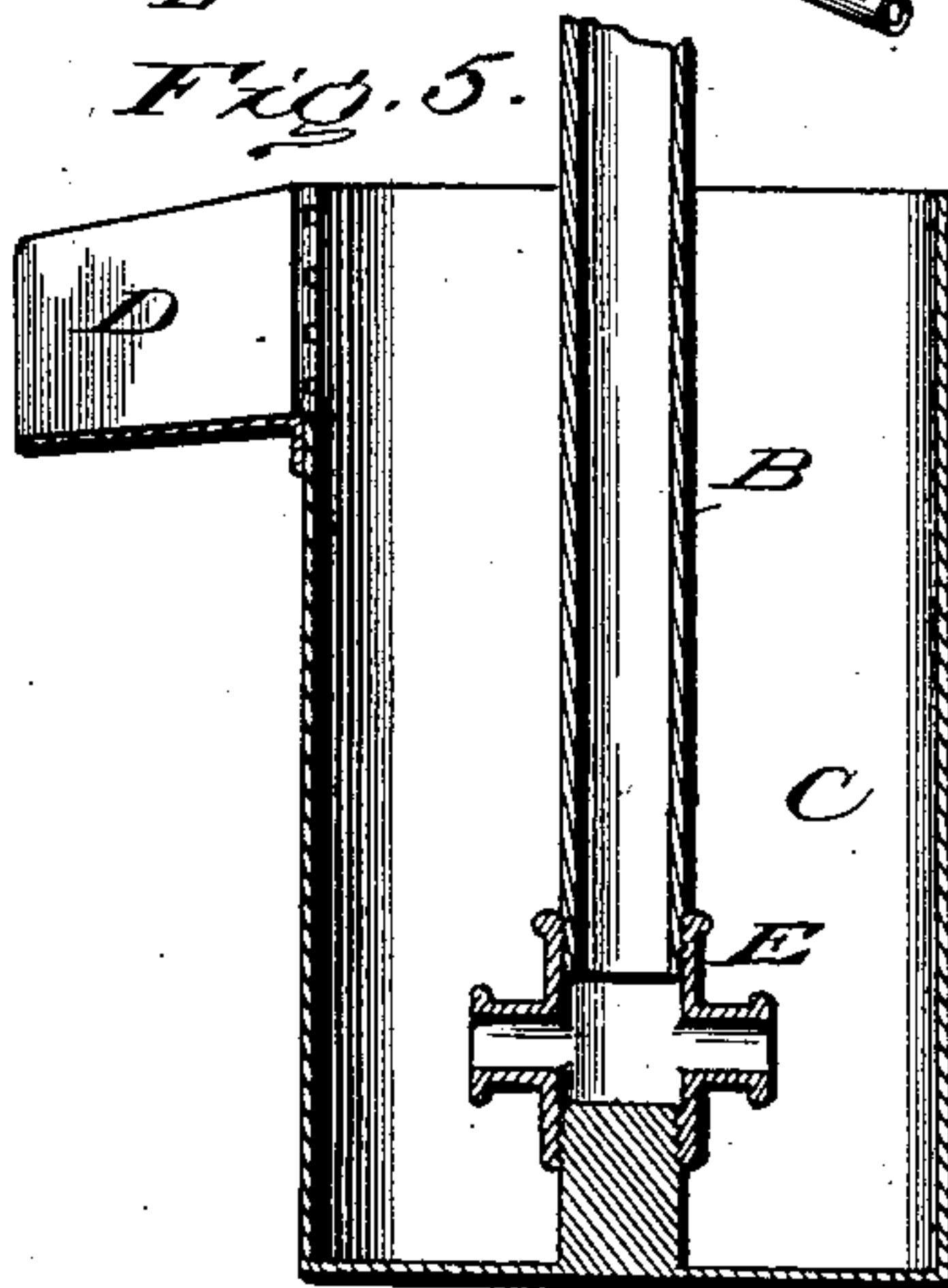
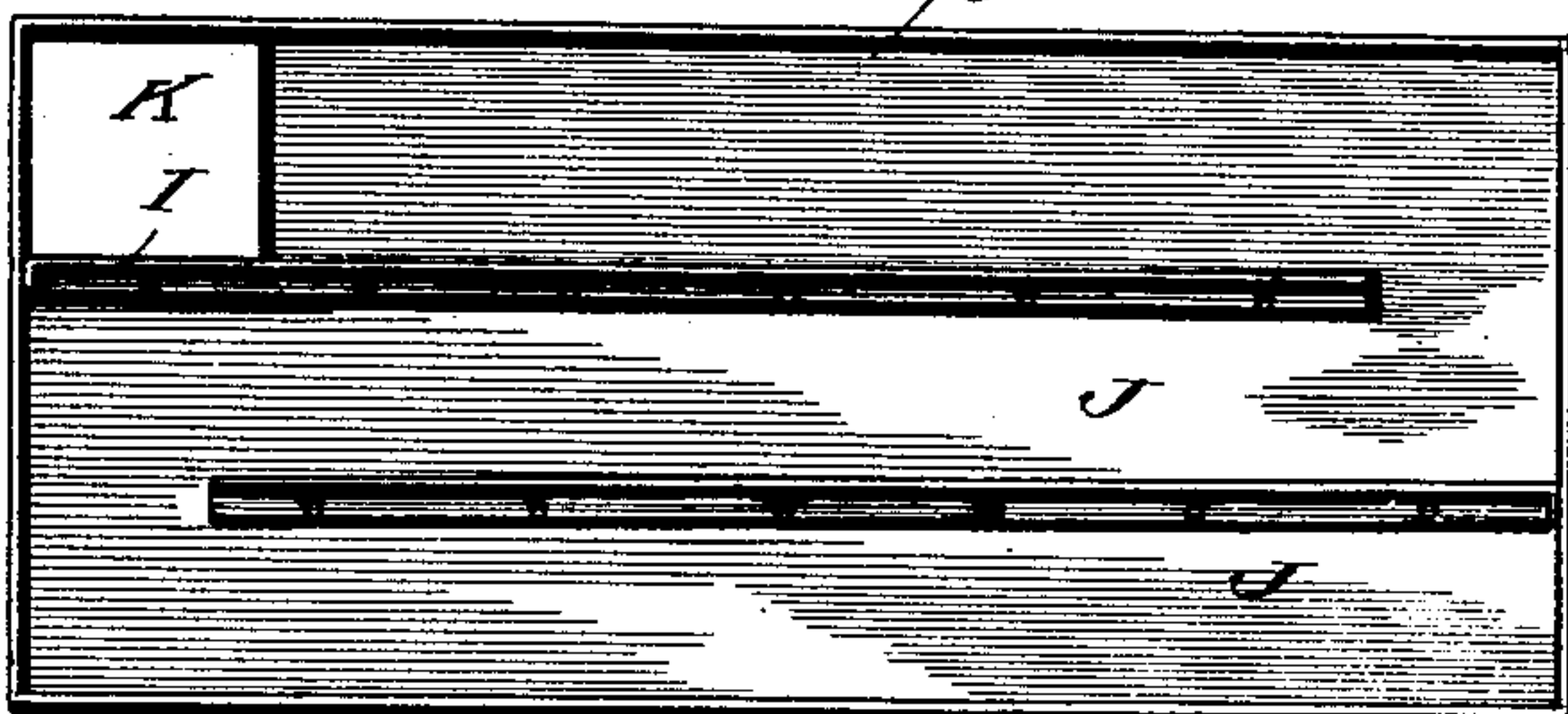


Fig. 4.



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# UNITED STATES PATENT OFFICE.

JAMES STANLEY CALKINS, OF HASTINGS, MICHIGAN, ASSIGNOR OF ONE-HALF TO THOMAS S. BRICE, OF SAME PLACE.

## DEVICE FOR PURIFYING FEED-WATER.

SPECIFICATION forming part of Letters Patent No. 608,250, dated August 2, 1898.

Application filed September 3, 1897. Serial No. 650,457. (No model.)

*To all whom it may concern:*

Be it known that I, JAMES STANLEY CALKINS, a citizen of the United States, residing at Hastings, in the county of Barry and State of Michigan, have invented certain new and useful Improvements in Devices for Purifying Feed-Water; and I do 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 the letters of reference marked thereon, which form a part of this specification.

My invention is a device for removing impurities from the water fed into steam-boilers; and it consists in certain novel features hereinafter described and claimed.

In the accompanying drawings, which fully illustrate my invention, Figure 1 is an elevation of a steam-boiler, partly broken away, showing my device in position therein. Fig. 2 is an enlarged perspective view of the device. Fig. 3 is a cross-section of the same. Fig. 4 is a plan view of one of the trays, and Fig. 5 is a sectional view of the receiver.

The boiler A may be of any preferred construction and forms no part of my invention. The feed-pipe B, which leads from the pump, passes through the side or top of the boiler and enters a receiver C. The said receiver is a cylindrical vessel having a spout D leading laterally from its upper end. The lower end of the feed-pipe is secured centrally to the bottom of the receiver, and thereby supports the same. Just above the bottom of the receiver the feed-pipe is provided with a rose or series of outlets E, through which the water is discharged into the receiver. Resting upon the boiler-flues or suspended within the boiler above the flues is an open frame F, having one or more cross-bars G, on which I rest a series of trays H, having longitudinal partitions I, the alternate partitions of each tray terminating a short distance from the opposite ends of the same, so as to present the open spaces J and provide a tortuous passage for the water through the tray. Each tray is further provided at one corner with a discharge-opening K, and the trays are so arranged that the opening in each tray is diagonally opposite the opening in the preceding tray. Below the bottom tray I secure

within the frame a pan L, which receives the water from the lowermost tray and from which a blow-off pipe M leads outside the boiler, the said pipe being provided with a valve N, as clearly shown.

The operation of the device will, it is thought, be readily understood. The water entering through the feed-pipe fills the receiver and overflows therefrom into the uppermost tray. After passing tortuously through the said tray it falls onto the second tray and passes over the same in like manner as over the first tray. After passing over and through all the trays the water is collected in the sediment-pan and overflows from the same into the boiler. In its passage from the receiver to the sediment-pan the water is gradually heated, so that after overflowing onto the flues it is quickly converted into steam. The sediment which usually collects in the bottom of the boiler is deposited in the sediment-pan and may be readily removed through the blow-off pipe by opening the valve therein, when the steam in the boiler will at once force it out. Some sediment will also be deposited in the receiver, which can be easily cleaned, as will be readily understood.

The device is very simple in its construction, can be applied to any boiler, and can be easily repaired.

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

The combination with a steam-boiler, of an open frame supported therein above the flues, a series of trays supported in the said frame one above another, each of said trays having a series of longitudinal partitions, a sediment-pan secured in the open frame below the lowermost tray, a blow-off pipe leading from the sediment-pan, a feed-pipe entering the boiler adjacent to one end of the frame, a receiver secured to and supported by the lower end of the feed-pipe and provided with a spout projecting over the uppermost tray, and a rose or discharge formed on the feed-pipe just above the lower end of the same.

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

JAMES STANLEY CALKINS.

Witnesses:

JAMES A. SWEEZEY,  
WM. B. SWEEZEY.