No. 687,728. Patented Dec. 3, 1901.

T. J. COOKSON.

FEED WATER HEATER.

(Application filed Mar. 24, 1900.)

(No Model.)

Fig. 1.

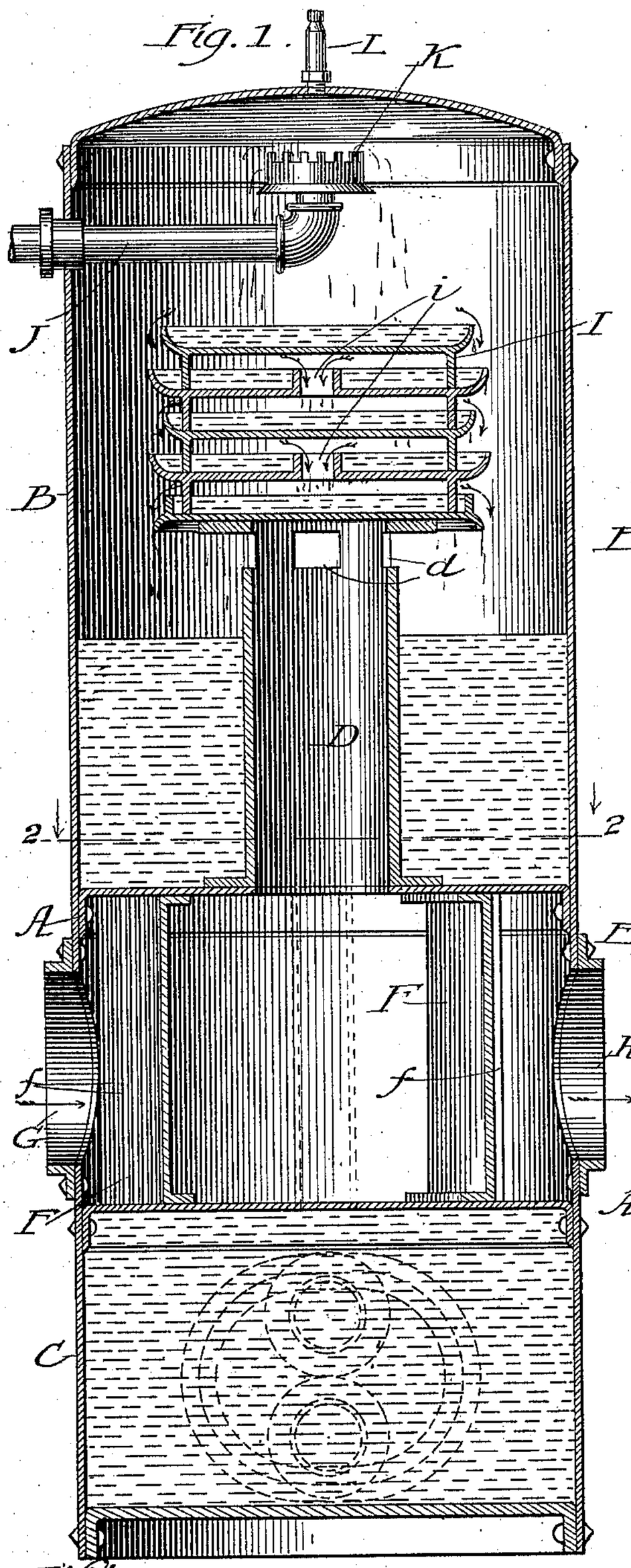


Fig. 2.

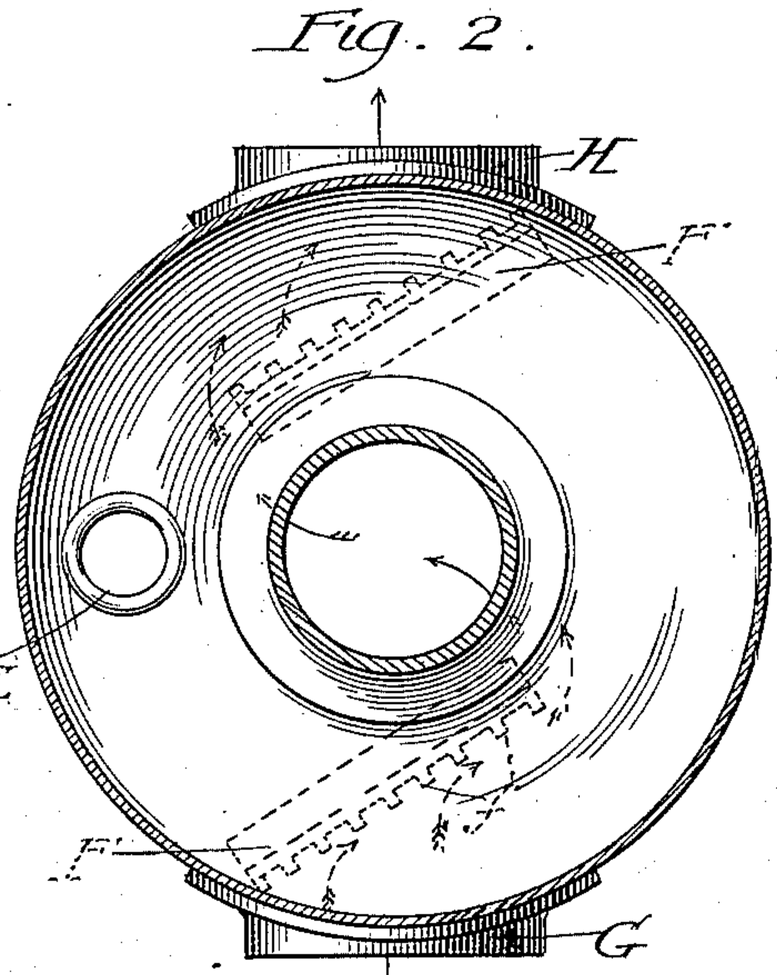
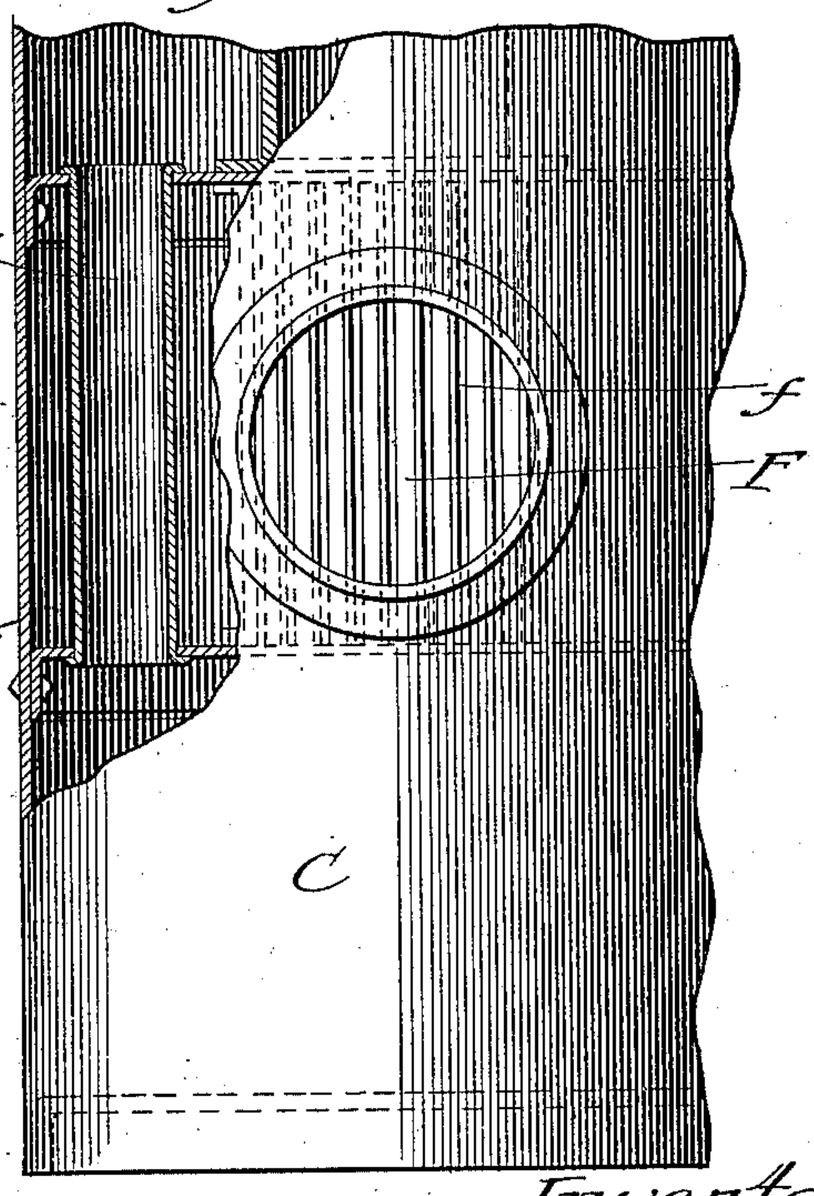


Fig. 3.



Witnesses:

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UNITED STATES PATENT OFFICE.

THOMAS J. COOKSON, OF JOLIET, ILLINOIS.

FEED-WATER HEATER.

SPECIFICATION forming part of Letters Patent No. 687,728, dated December 3, 1901.

Application filed March 24, 1900. Serial No. 10,004. (No model.)

To all whom it may concern:

Be it known that I, THOMAS J. COOKSON, a citizen of the United States, residing at Joliet, county of Will, State of Illinois, have invented a new and useful Improvement in Feed-Water Heaters, of which the following is a specification.

The object of my invention is to provide a heater in which the waste steam is utilized to heat the feed-water for the boiler and in which the steam is purified as it passes through. In most heaters of this class the steam is forced by a circuitous passage to go into the heating-chamber and brought in contact with the feed-water and exhausted from the chamber. In my patent of July 9, 1895, No. 542,331, I have shown a heater of this description; but in practice I find that steam sufficient to heat the water will be drawn into the heating-chamber by the vacuum produced by condensation if only a passage-way from the steam-chamber to the heating-chamber is provided, thereby allowing a much freer passage of the steam through the heater and a less wasteful consumption of it.

My present invention aims at providing a heater in which these advantages are obtained.

It consists of details hereinafter described, and particularly pointed out in the claims.

Figure 1 is a longitudinal sectional view of my heater. Fig. 2 is a cross-sectional view on lines 2 2, Fig. 1. Fig. 3 is a perspective view of the lower portion of my heater, partially broken away, showing the interior.

A represents the steam-chamber; B, the heating-chamber; C, the water-chamber from which the heated water is drawn off; D, the steam-pipe leading from the steam-chamber to the heating-chamber; E, the water-pipe leading from the heating-chamber to the water-chamber; F F, the baffle-plates; G, the steam-inlet; H, the exhaust; I, the water-pans; J, the water-inlet; K, the spray-pan; L, the vent-valve by which the air is allowed to escape.

The operation of my invention is as follows: The steam enters at G, strikes the baffle-plate F, where the oil and water are separated from it, passes around it, as indicated by the arrows, and out at H. The baffle-plates are interposed to prevent the steam going directly through. They are set at an angle and provided with ridges *f* to more completely extract the oil and water. They are similarly placed before both inlet and outlet, so that the flow of the steam may be reversed, being the same in either direction. The steam-pipe D leads from the chamber A into the chamber B, and the pans I are placed on top of its upper end. Openings *d* are located at its upper end to allow the steam to enter below the pans. The pans are made to overflow alternately at the edges and at the central openings *i*. They are set loosely one upon the other, so that they may be readily removed for cleaning. The water enters through the inlet J into the spray-pan K, from which it drips into the pans. The vent L is placed in the top to allow the air to be drawn off in case it accumulates there while the heater is empty. The steam entering through D strikes the cold water and is condensed, producing a vacuum. This vacuum draws more steam into the chamber B, and in this way a continuous flow of steam into the chamber takes place just sufficient to heat the water. No steam is drawn off from this chamber, there being no exhaust-outlet, none being necessary. This simplifies the heater in many ways and consumes less steam than in the usual method, only as much steam being drawn up as can be condensed by actually coming in contact with the water or by the cold of the chamber, and supplies to the chamber a uniform amount of heat according to the amount required.

The water-level in the chamber B is preserved in the usual way, and the heated water passes into the chamber C through the pipe E, where it is drawn off.

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

1. The herein-described feed-water heater, consisting of the combination of the steam-chamber A, having the inlet-port G and outlet-port H, and providing a free passage for the steam, the heating-chamber B, having the water-inlet K, at the top, and the water-outlet E, at the bottom, and the steam-pipe D,

leading from said steam-chamber to said heating-chamber, all substantially as shown and described.

2. The herein-described feed-water heater, consisting of the combination of the steam-chamber A, having the inlet and outlet ports G, H, and providing a free passage for the steam, the heating-chamber B, having the water-inlet K, at the top and the outlet E, at the bottom, and the baffle-plates F F in said steam-chamber in front of said ports, all substantially as shown and described.

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