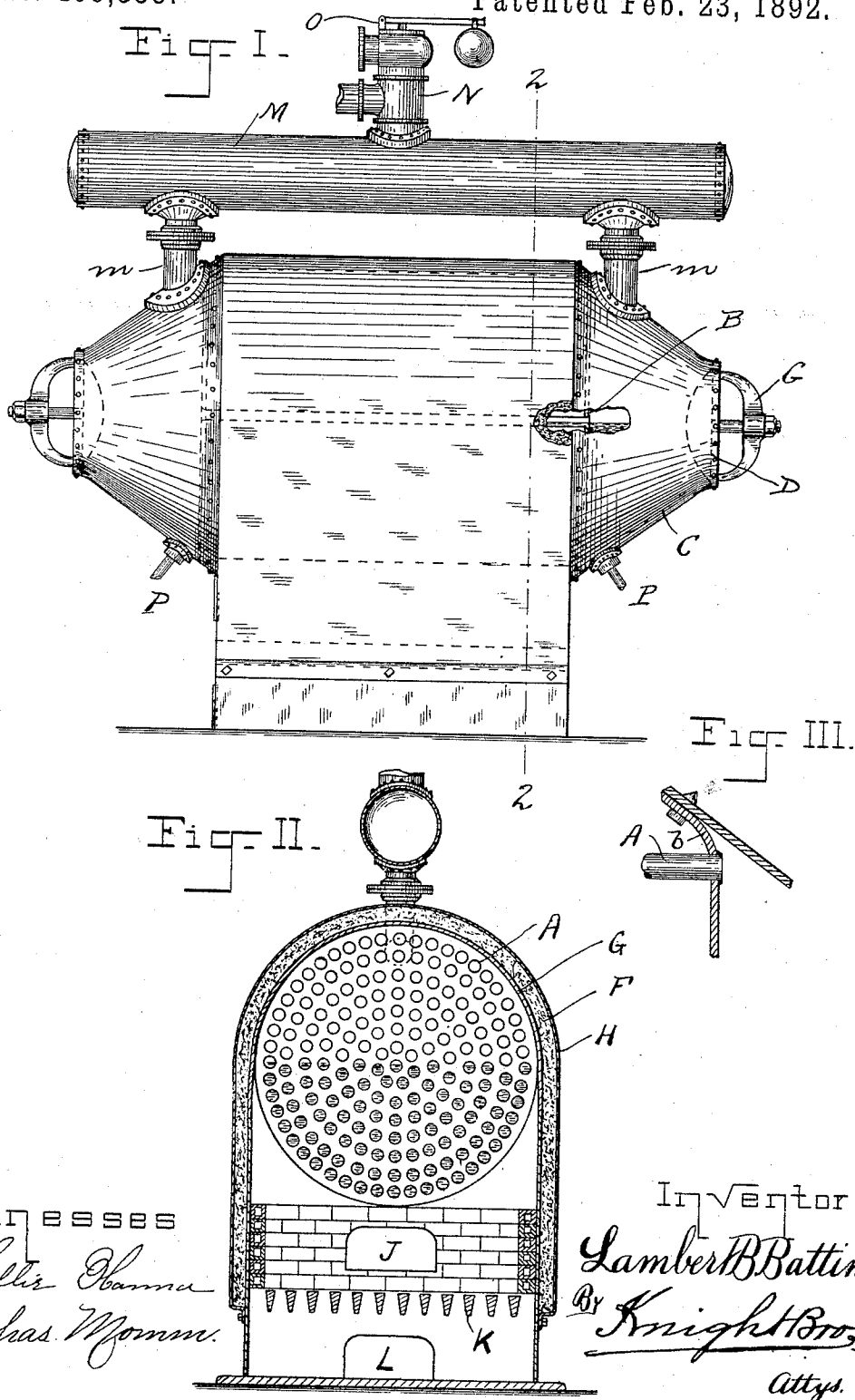


(No Model.)

L. B. BATTIN.
WATER TUBE BOILER.

No. 469,533.

Patented Feb. 23, 1892.



UNITED STATES PATENT OFFICE.

LAMBERT B. BATTIN, OF ELIZABETH, NEW JERSEY.

WATER-TUBE BOILER.

SPECIFICATION forming part of Letters Patent No. 469,533, dated February 23, 1892.

Application filed September 5, 1891. Serial No. 404,880. (No model.)

To all whom it may concern:

Be it known that I, LAMBERT B. BATTIN, a citizen of the United States, residing at Elizabeth, in the county of Union, and State of New Jersey, have invented certain new and useful Improvements in Water-Tube Boilers, of which the following is a specification.

My invention relates to an improvement in boiler-heads, providing a frustum-shaped head or cover to the tubes of water-tube boilers, and providing in the end thereof a man-hole or other suitable means of entrance, whereby access can be had to the interior of the head, so that the boiler can be easily cleaned or any part of it can be removed or renewed with little difficulty.

The particular construction of the frustum-shaped head will also more effectually resist the internal pressure of steam-boilers than where a flat or cylindrical head is employed, and at the same time the large number of stay-bolts heretofore employed in boilers of this kind can be dispensed with, as the frustum-shaped head will serve in lieu of such bolts.

My invention consists in the novel features of construction hereinafter described and claimed.

Referring to the accompanying drawings, which form a part of this specification, Figure 1 represents a side elevation of one of my improved water-tube boilers. Fig. 2 represents a sectional view on the line 2 2, Fig. 1; and Fig. 3 represents a detail view hereinafter referred to.

In the drawings, A represents one of a number of tubes of a water-tube boiler whose ends extend through and are expanded over the tube-sheets B.

At C, I show a frustum-shaped boiler-head

riveted to the inbent flange *b* of the tube-sheet, as shown in Fig. 3. These heads are provided at their outer ends with man-holes D, having covers E.

F is an asbestos-packing lining between casings G and H.

At J, I show a fire-box, at K grate-bars, and at L the ash-pit. The steam-chamber is shown at M and the steam-outlet at N, the valve being shown at O.

At P, I show water-introducing pipes. The steam-chamber is connected by pipes *m* with the heads.

It will be seen that by means of the construction I have described the particular form of frustum-shaped head will resist a more than ordinary interior pressure and is adapted to work more satisfactorily than the ordinary flat surfaces that are thrown over boiler-tubes. At the same time this particular construction eliminates the great number of stay-bolts heretofore employed for fastening the tube-sheet to the head. By dispensing with these stay-bolts access can be had to the interior of the tubes for repairs and cleaning much more readily than heretofore.

Having thus described my invention, the following is what I claim as new therein and desire to secure by Letters Patent:

The combination of a series of tubes, tube-sheets to which the tubes are secured, having inbent flanges, frustum-shaped heads secured to the inbent flanges, having suitable man-holes and covers, a steam-chamber, and pipes by which the steam-chamber is connected with the heads, substantially as described.

LAMBERT B. BATTIN.

Witnesses:

J. W. WHEAN,
WILLIAM WHELAN.