

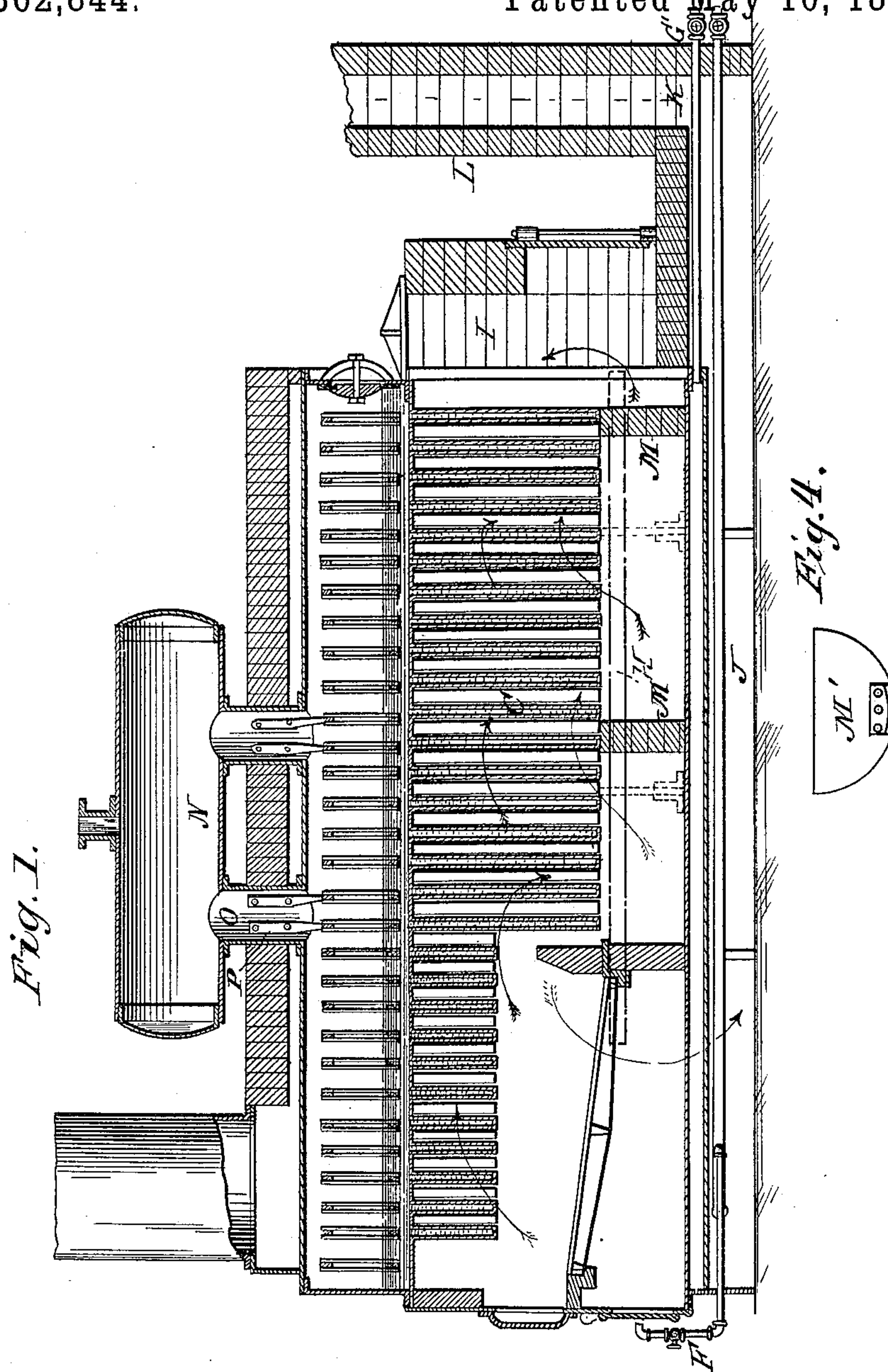
(No Model.)

2 Sheets—Sheet 1.

G. KINGSLEY.  
STEAM BOILER.

No. 362,844.

Patented May 10, 1887.



WITNESSES:  
*Fred G. Dieterich*  
*Edw. W. Byrre*

INVENTOR:  
*Geo. Kingsley*  
BY *Munn & Co*  
ATTORNEYS.

(No Model.)

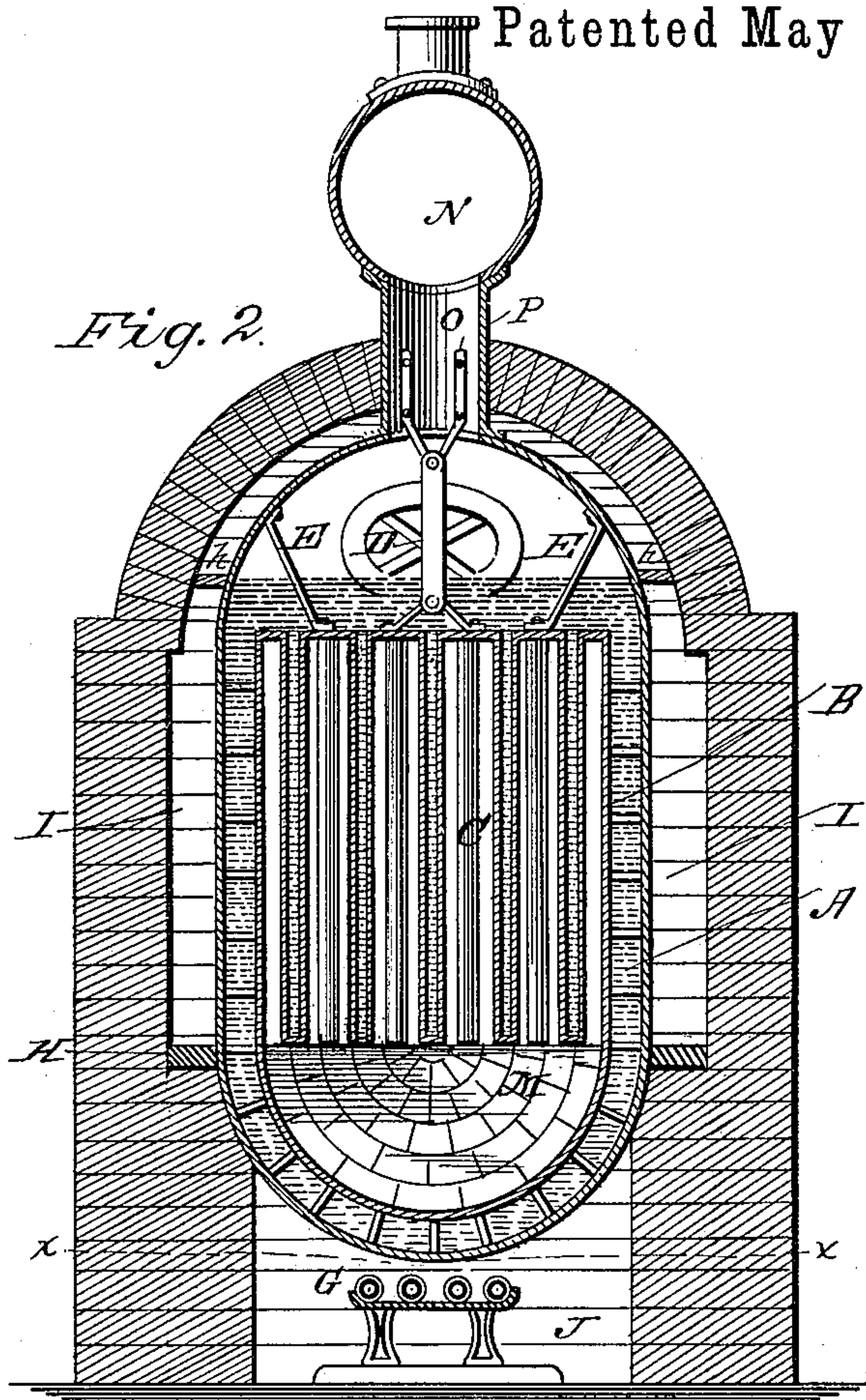
2 Sheets—Sheet 2.

G. KINGSLEY.

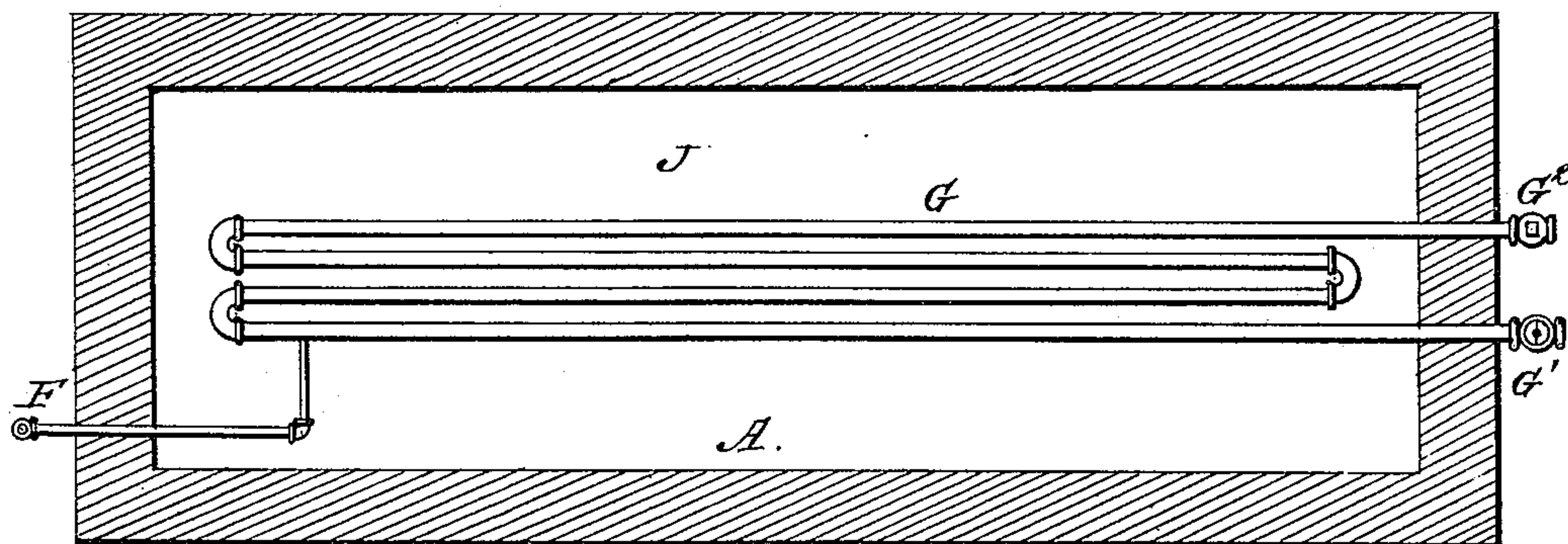
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*Fig. 3.*



WITNESSES:

*Fred L. Dieterich*  
*Edw. W. Byer.*

INVENTOR:

*Geo. Kingsley*  
BY *Munn & Co*

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# UNITED STATES PATENT OFFICE.

GEORGE KINGSLEY, OF LEAVENWORTH, KANSAS, ASSIGNOR OF ONE-HALF  
TO ENOS HOOK, OF SAME PLACE.

## STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 362,844, dated May 10, 1887.

Application filed February 25, 1887. Serial No. 228,899. (No model.)

*To all whom it may concern:*

Be it known that I, GEORGE KINGSLEY, of Leavenworth, in the county of Leavenworth and State of Kansas, have invented a new and  
5 useful Improvement in Steam-Boilers; and I do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification.

10 My invention is in the nature of certain improvements upon the steam-boiler for which Letters Patent were granted me July 31, 1883, No. 282,330; and it consists in the peculiar construction and arrangement of parts, which  
15 I will now proceed to describe.

Figure 1 is a vertical longitudinal section; Fig. 2, a vertical transverse section. Fig. 3 is a horizontal section through line *xx* of Fig. 2, and Fig. 4 is a side view in detail of one  
20 form of deflector for the hot currents in the fire-chamber.

In the figures, A represents the outer shell; B, the inner shell, having a flat crown-sheet, with drop-tubes C extending down into the  
25 fire-space; and E are braces extending from the crown-sheet upwardly to the outer shell.

The water occupies a position between the outer shell, A, and the inner shell, B, and covers the crown-sheet a few inches, and descends into the drop-tubes, which give great  
30 steaming-surface. As so far described, the construction does not differ materially from that shown in my previous patent. The boiler is set, however, with a space, I, on each side  
35 between the outer shell and the brick-work or casing, and with a space, J, beneath the boiler. The spaces I on the sides communicate at the rear end of the boiler with the fire-chamber, and at the front ends these spaces I commu-  
40 cate with the space J under the boiler, the spaces I and J being separated by horizontal partitions H on each side, which extend to within about four feet of the front end of the boiler. The space J under the boiler at its rear  
45 end communicates with a chimney or smoke-stack, L.

In the space, J, beneath the boiler is placed a feed-water coil and purifier, G, which has an inlet-valve, G', at the rear, and a bend, F,

with a valve in it, at its front end, which enters 50 the boiler. This coil not only serves as a feed-water heater, but it purifies the water by allowing the sediment to deposit therein; and for cleaning it out a second valve, G<sup>2</sup>, is provided at the rear of the boiler. (See Fig. 3.) 55

Now, as the products of combustion pass from the fire-chamber they enter the side spaces, I I, at the rear, on each side, then pass to the front, heating the outside of the shell of the boiler. Then, descending around the front ends of the  
60 partitions H, they enter the space J below the boiler, where they heat the lower surface of the boiler and also the feed-water coil G, and thence pass outwardly to the rear into the smoke-stack. 65

In order to throw the hot-air currents and flames well up into the drop-tubes in the fire-chamber, I put two rows, M M, of loose brick in the open space behind the bridge-wall beneath the long tubes, setting them up flush  
70 with the bottoms of the long tubes. The first row of bricks I place about half-way between the bridge-wall and the back end of the boiler and the second row I place near the back end. These bricks get red-hot and set fire to all of  
75 the gases and force them with all hot air up among the tubes, which is an improvement. In the place of these brick deflectors, I may use removable deflectors M', which are of a semi-circular shape to correspond with the bottom  
80 of the fire-chamber back of the bridge-wall, and have projecting feet or flanges at the bottoms, whereby they stand erect upon their own bases by simply being placed in position. Two  
85 or more of these deflectors set in the fire-chamber, as shown, and throw the flames and hot currents up among the drop-tubes, thereby greatly increasing the steaming capacity of these tubes and securing an economy in fuel. These de-  
90 flectors may be readily lifted out or turned around to permit the bottom of the fire-chamber to be cleaned.

N is a dry-steam chamber connecting with the top of the boiler by pipes P. In these pipes are arranged a number of braces, O, in  
95 addition to the usual braces, which braces O are riveted to the inner periphery of the pipes and connect with the crown-sheet. This not



only makes a strong connection for bracing the crown-sheet, but also stiffens the connection of the pipes P.

5 K is a blow-off pipe, with valve for removing sediment from the bottom of the boiler.

Having thus described my invention, what I claim as new is--

1. The combination, with the outer casing, of the boiler composed of an outer shell and 10 inner shell, with flattened crown-piece, and drop-tubes communicating with the water-space and descending into the fire-space of the inner shell, horizontal partitions H H, dividing the space between the outer shell and the outer 15 casing into side chambers, I I, and bottom chamber, J, the rear ends of the side chambers being in communication with the fire-chamber, and their front ends communicating with the bottom chamber, and the feed-water coil G, arranged in the bottom chamber, substantially 20 as and for the purpose described.

2. The combination of the outer casing, the boiler composed of an outer shell and inner shell, with flattened crown-piece, and drop-

tubes communicating with the water-space 25 and descending into the fire-space of the inner shell, the said boiler being set in the casing, so as to form a partition separating the space between the boiler and casing into side spaces, I I, and bottom chamber, J, the rear ends of 30 the side chamber being in open communication with the rear end of the fire-chamber in the boiler, and the side spaces, I, and bottom chamber, J, being in open communication with each other at the front end, substantially 35 as and for the purpose described.

3. The combination, with the outer wheel, A, having pipes P, connecting with a dry-steam chamber, of the inner shell having flattened crown-sheet with drop-tubes, and braces 40 communicating with said crown-sheet and extended up into and fastened to the inner periphery of the pipes P, substantially as and for the purpose described.

GEORGE KINGSLEY.

Witnesses:

CLARENCE E. BURY,  
DAVID F. SLADE.