(No Model.) 2 Sheets—Sheet 1.

G. W. SLOANE.

FEED WATER HEATER.

No. 257,396. Patented May 2, 1882.

Fig. 1.

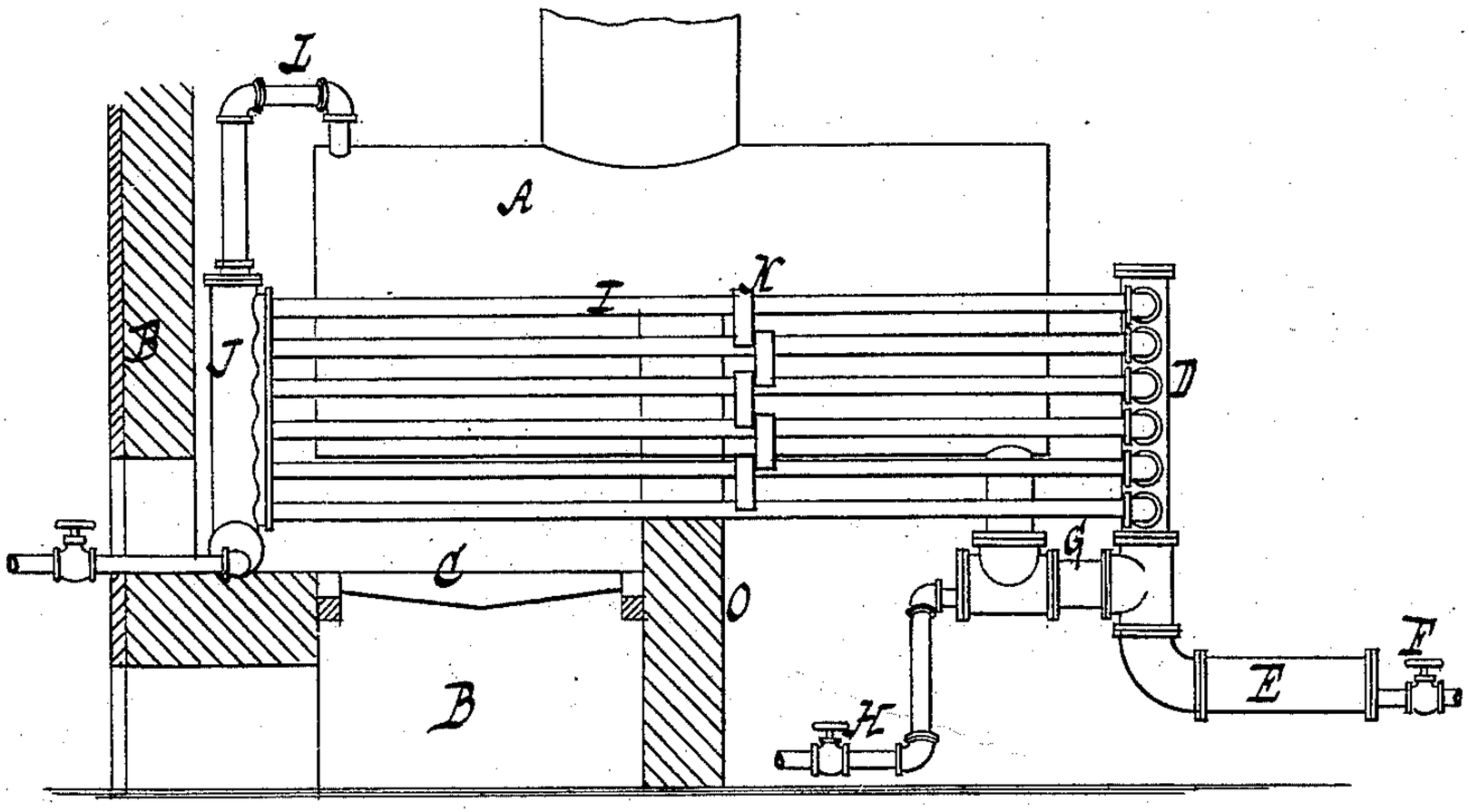


Fig. 3

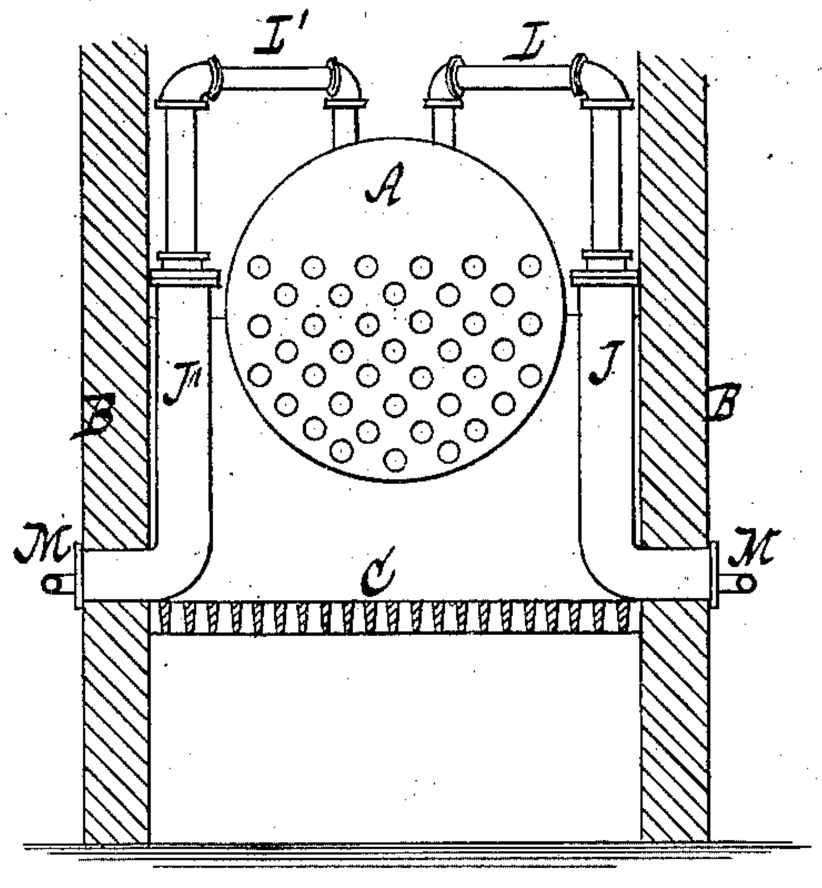
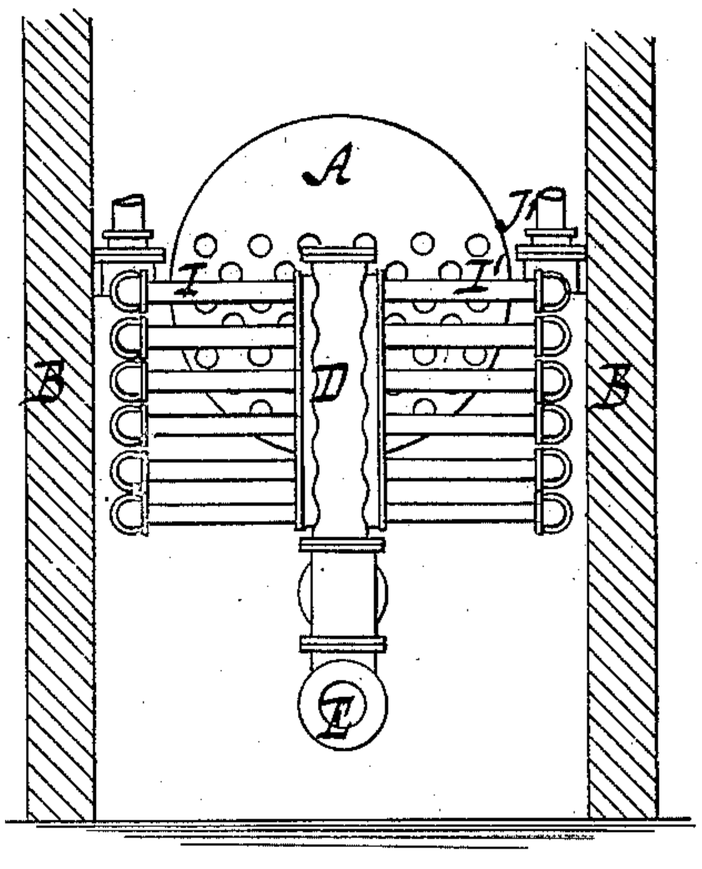


Fig. 2.



WITNESSES:

Otto Hufland

William Miller

INVENTOR

George W. Sloane.

BY Van Santvoord & Hauff

his ATTORNEYS

(No Model.) 2 Sheets—Sheet 2.

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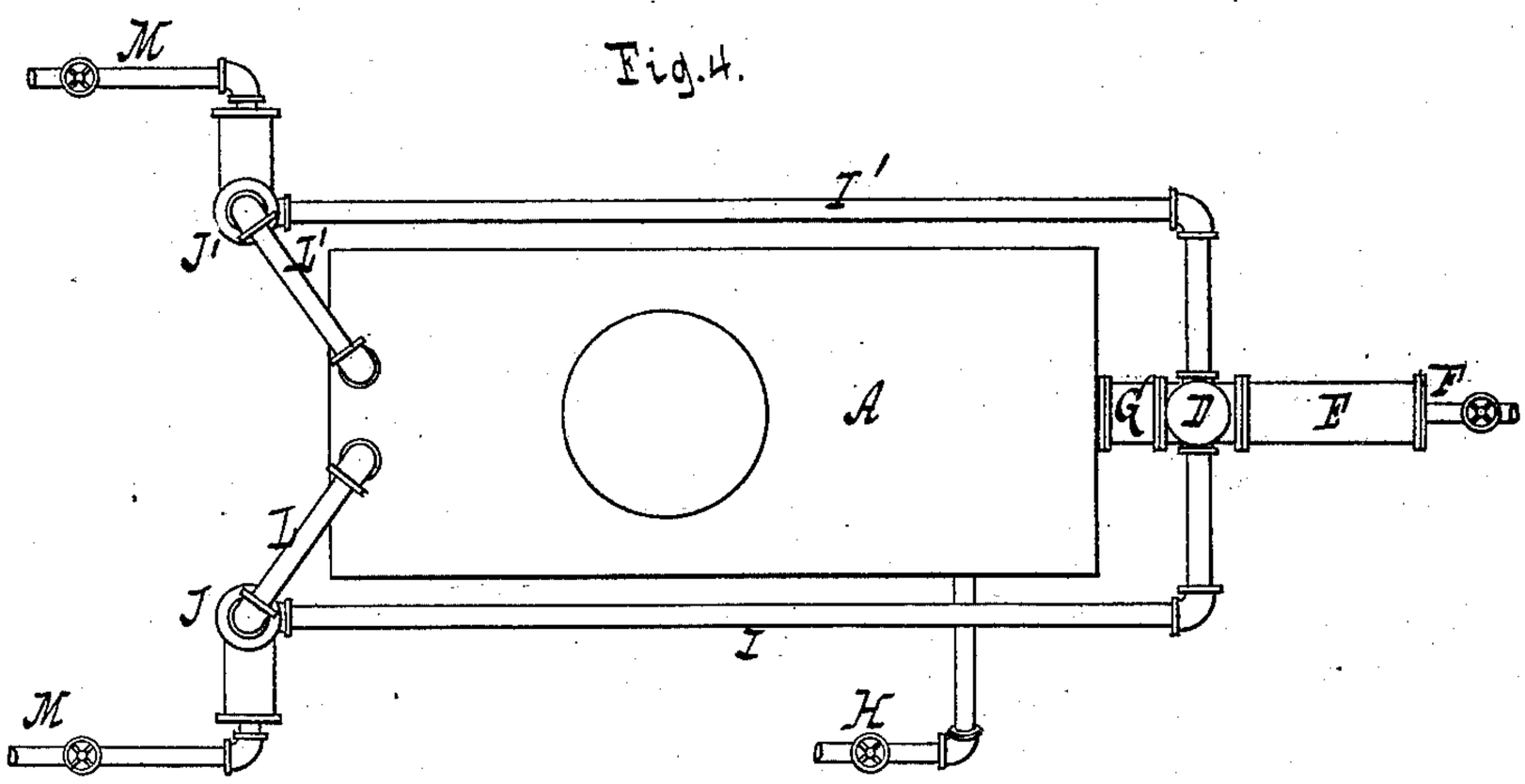
Fig. 4.



WITNESSES:

Otto Hufeland

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UNITED STATES PATENT OFFICE.

GEORGE W. SLOANE, OF GREEN POINT, NEW YORK.

FEED-WATER HEATER.

SPECIFICATION forming part of Letters Patent No. 257,396, dated May 2, 1882.

Application filed March 2, 1882. (No model.)

To all whom it may concern:

Be it known that I, GEORGE W. SLOANE, a citizen of the United States, residing at Green Point, in the county of Kings and State of New York, have invented new and useful Improvements in Feed-Water Heaters, of which the following is a specification.

This invention relates to an improvement on that class of feed-water heaters which I have described in Letters Patent No. 248,516, granted to me October 16, 1881.

My present invention consists in the peculiar construction of the feed-water heater, as hereinafter shown and described, the object being to reduce the cost of the apparatus and to simplify its construction without reducing its effect.

In the accompanying drawings, Figure 1 represents a side view. Fig. 2 is an end view from the rear. Fig. 3 is an end view from the front. Fig. 4 is a plan view.

Similar letters indicate corresponding parts.

The letter A designates the steam-boiler. B are the furnace-walls, and C are the grate-bars.

At or near the rear end of the boiler is situated a drum, D, which, in the example shown in the drawings, is placed in a vertical position, but which may be placed in a horizontal position either beneath or above the level of the boiler.

From the bottom parts of the drum extends a pipe, E, provided with a blow-off cock, F, and another pipe, G, which leads into the water-space of the boiler and connects with the feed-pipe H.

From each side of the drum D extend a series of pipes, I I′, along both sides of the boiler and into drums J J′, which are situated over the fire-place, so as to be exposed to the direct action of the fire. From the top part of these drums extend pipes L L′ into the steam-space of the boiler, each drum having its separate connection for this purpose, and from the bottom part of each of said drums extends a blow-off pipe, M. The pipes I I′ are connected by stays N, and the lowest pipe in each series rests at about the center of its length upon a pillar, O, of fire brick or other suitable material, so that said pipes are prevented from sagging down. The tops of the drums D J J′ are below the mean water-line of the boiler, so that when the boiler is filled with water to said line all said drums and also the pipes I I′ become filled with water, which rises in the pipes L L′ to a level with the water in the boiler. If the fire is started, the water in the drums D J J′ and in the pipes I I′ becomes heated, as well as that in the boiler, and a circulation of water is established through the drums J J′, pipes I I′, drum D, and the boiler, and the water in these drums and pipes, which are fully exposed to the action of the fire, is quickly heated, so that steam is generated therein, which passes through the pipes L L′ into the boiler. At the same time the feed-water, before it enters the boiler, is heated to a degree nearly equal to the temperature of the water in the boiler, so that it does not cool off the boiler, and the steam of the boiler is not condensed by the introduction of the feed-water.

From this description it will be seen that in my present apparatus the drum D is brought in connection with the two drums J J′, and through these drums with the boiler, whereas in my former patent, No. 248,516, each of the two drums D has its separate connections with the corresponding drum, L, and with the boiler.

By my present invention I have reduced the number of parts required for the apparatus, and I have obtained three connections between the drum D and the steam-boiler—one through the pipe G with the water-space and two through the pipes L L′ with the steam-space. Furthermore, those portions of the pipes I I′ which extend from the drum D form a protection for the rear wall of the boiler, and they are exposed to the action of the heated gases emanating from the fire-flues of the boiler, so that the water contained therein is rapidly heated to a high temperature. By these means a more uniform circulation of water through the drums D J J′, their connections, and the boiler is insured, and at the same time the cost of the whole apparatus is reduced.

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

The combination, substantially as hereinbefore described, of the boiler A, the drums D J J′, the pipes I, leading from the drum D into the drum J, the pipes I′, leading from the drum D into the drum J′, the pipe G, and the pipes L L′, forming a triple connection between the drum D and the boiler.

In testimony whereof I have hereunto set my hand and seal in the presence of two subscribing witnesses.

GEORGE W. SLOANE. [L. S.]

Witnesses:
W. HAUFF,
E. F. KASTENHUBER.