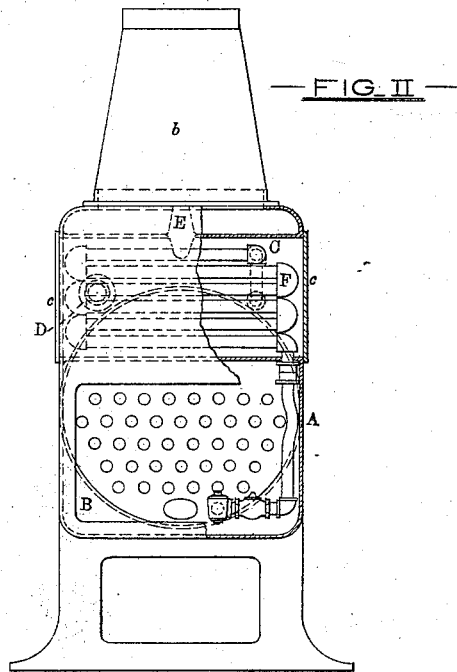
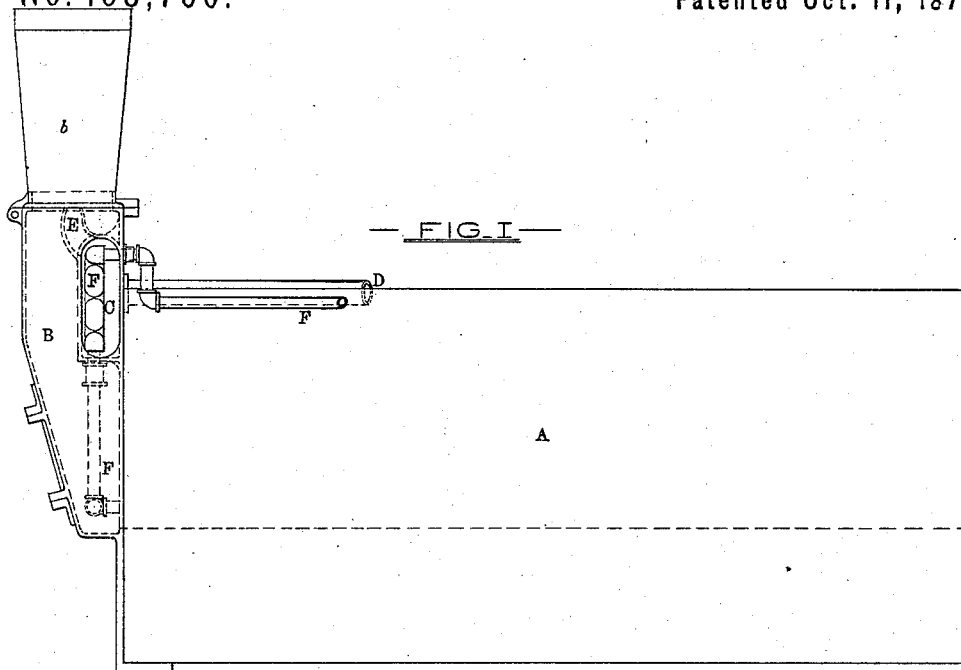


G. L. McCAHAN.
Feed-Water Heater.

No. 168,760.

Patented Oct. 11, 1875.



— WITNESSES —

H. A. Daniels
W. Burris

— INVENTOR —

George L. McCahan,
by G. H. W. J. Howard
Atty.

UNITED STATES PATENT OFFICE.

GEORGE L. McCAHAN, OF BALTIMORE, MARYLAND.

IMPROVEMENT IN FEED-WATER HEATERS.

Specification forming part of Letters Patent No. **168,760**, dated October 11, 1875; application filed May 28, 1875.

To all whom it may concern:

Be it known that I, GEORGE L. McCAHAN, of the city of Baltimore and State of Maryland, have invented certain new and useful Improvements in Feed-Water Heaters, of which the following is a specification; and I do hereby declare that in the same is contained a full, clear, and exact description of my said invention, reference being had to the accompanying drawing, and to the letters of reference marked thereon.

My invention relates to a feed-water heater in which the water is heated by the indirect application thereto of the exhaust steam and the heated gases, and other products of combustion, in their passage to the smoke-stack, as hereinafter fully described.

In the description of my invention which follows, due reference must be had to the accompanying drawing, forming a part of this specification, and in which—

Figure 1 is a side view of a boiler having my improved heater attached thereto; and Fig. 2 a front view of the same, partly in section.

Similar letters of reference indicate similar parts in both views.

A is the boiler proper, which is of the portable type, and adapted to have the engine bolted to the upper part thereof. B is a box fitted to the front of the boiler for the purpose of conducting the gases, after leaving the fire-tubes, to the stack *b*. C is the heater constructed to be secured within the box B, or formed of a portion of the same. In either case the heater is open at its ends and furnished with removable doors *c*. D is the ex-

haust-pipe, which carries the exhaust-steam from the engine to the heater, from which it escapes by means of the pipe E to the stack. The feed-pipe F leading from the feed-pump to the boiler, enters the heater near to the top thereof, and after passing through the same, in the form of a coil or gang, connects with the boiler below the fire-tubes.

By reference to the drawing it will be seen that the heater, in which the feed-pipe is inclosed, is heated in two ways: by the exhaust-steam from the engine, and by the gases issuing from the fire-tubes.

The heater, as described, is cheaply constructed and effective in its operation, and its economy, as regards the saving of fuel, will be apparent when it is understood that the heat absorbed from the gases issuing from the fire-tubes, would under other circumstances escape to the smoke-stack and be lost.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent of the United States, is—

The box B, having formed within it the heating-compartment C and escape-pipe E, said compartment C having open ends and removable doors *c*, as and for the purpose specified.

In testimony whereof I have hereunto subscribed my name this 4th day of May in the year of our Lord 1875.

GEORGE L. McCAHAN.

Witnesses:

GEO. W. TAYLOR,
J. D. CORNS.