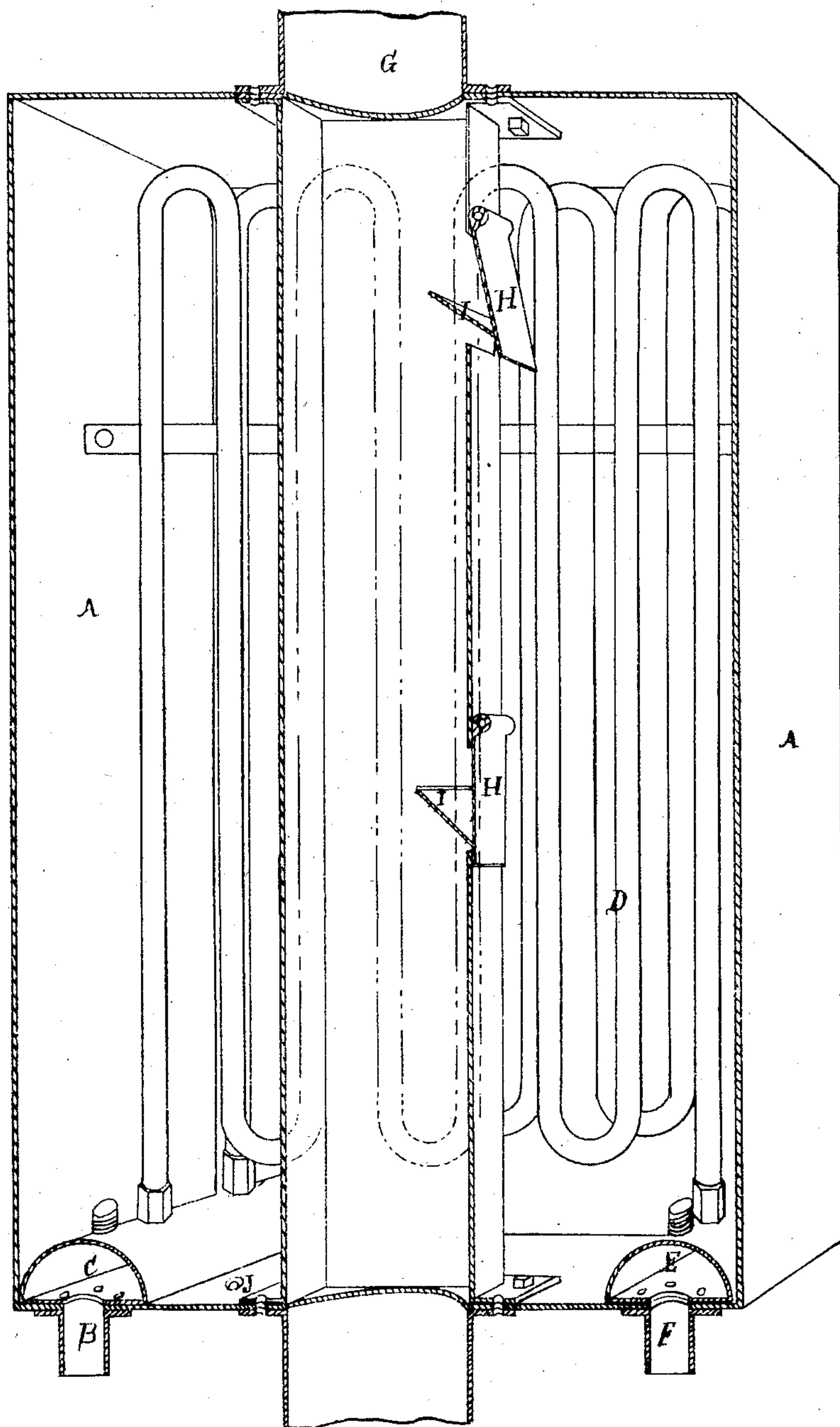


G. M. Mack.

Feed Water Heater.

N^o 76217

Patented Mar. 31, 1868.



Attest
J. W. Moughtelin
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Inventor
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United States Patent Office.

GEORGE W. MACK, OF HAMTRAMCK, MICHIGAN.

Letters Patent No. 76,217, dated March 31, 1868.

IMPROVEMENT IN FEED-WATER HEATERS FOR STEAM-GENERATORS.

The Schedule referred to in these Letters Patent and making part of the same.

TO WHOM IT MAY CONCERN:

Be it known that I, GEORGE W. MACK, of Hamtramck, in the county of Wayne, and State of Michigan, have invented a new and useful Improvement in Heaters for Low-Pressure Engines; and I do declare that the following is a true and accurate description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon, and forming a part of this specification.

The drawing is a sectional view of my invention, partially in perspective, and with the front side removed.

The invention consists in a heater for low-pressure engines, to be placed between the cylinder and the condenser; the heater being made of any suitable form, and provided with suitable coils of pipes, through which the water to be heated is forced. The heater has passing through it the exhaust-steam pipe, extending from the proper opening in the cylinder to the condenser, and is provided with proper valves and deflectors, by means of which sufficient steam is allowed to pass into the body of the heater to accomplish the desired object. As the vacuum is created in the condenser, the exhaust steam rushes through the exhaust-pipe to fill said vacuum; and, in its passage, strikes the deflectors attached to the valves, which compels the valves to open and admit a portion of the steam into the body of the heater. When the vacuum before referred to in the condenser is filled, the passage of the steam is checked, when the pressure inside the heater will close the valves and prevent the escape of the steam which has been admitted there. Any proper opening may be made in the bottom of the heater through which to draw off the water, the result of steam condensing in the heater.

Having thus described the object of my invention, I will now name its various parts as shown in the drawing.

A is the heater, made in any proper form, provided with a proper connection-pipe, B, from the pump, and leading into a chamber, C, from which extend the coil-pipes D to another proper chamber, E, from which the outlet-pipe F connects with the boiler.

In order to heat the water in its passage through the coil-pipes D, I insert, through proper openings in the top and bottom of the heater A, a proper exhaust-pipe, G, connected as hereinbefore described, and provided with valves H and deflectors I, operating as heretofore mentioned. J is an opening for the outlet of water, the result of steam condensing in the heater.

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

1. The valves H and deflectors I, in connection with the exhaust-pipe G, when operating substantially as and for the purposes described.
2. The combination of the above-named parts with the heater A, the connection-pipes B and F, the chambers C and E, the coil-pipes D, and the openings J, when constructed, arranged, connected, and operating as and for the purposes herein set forth and shown.

GEORGE W. MACK.

Witnesses:

J. W. HOUGHTLIN,
GEO. RUHLANDT.