I. P. MAGOON.

FEED-WATER HEATER.

No. 183,463. Patented Oct. 17, 1876.

fig. 1

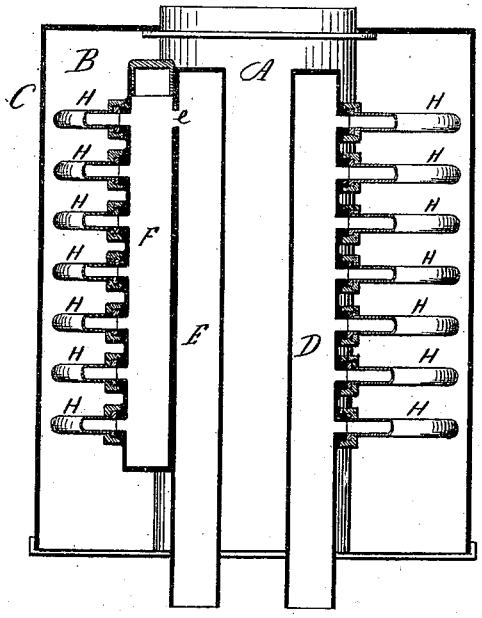
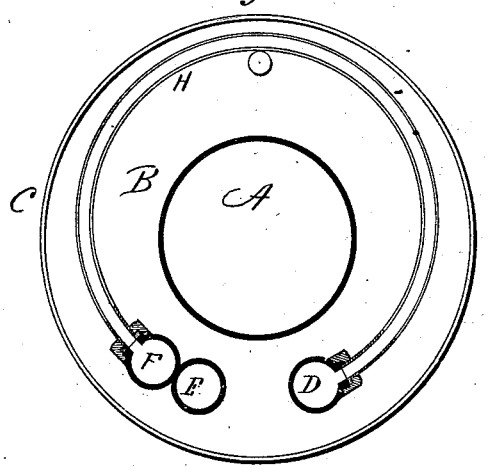


fig. 2



Witnesses.

L. H. Thurman

Clara Broughton.

Israel P. Magoon

Inventor

By Atty.

John C. Earl

UNITED STATES PATENT OFFICE.

ISRAEL P. MAGOON, OF ST. JOHNSBURY, VERMONT.

IMPROVEMENT IN FEED-WATER HEATERS.

Specification forming part of Letters Patent No. **183,463**, dated October 17, 1876; application filed September 15, 1876.

To all whom it may concern:

Be it known that I, ISRAEL P. MAGOON, of St. Johnsbury, in the county of Caledonia and State of Vermont, have invented a new Improvement in Feed-Water Heaters; and I do hereby declare the following, when taken in connection with the accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1 a sectional side view, and in Fig. 2 a transverse section.

This invention relates to an improvement in that class of feed-water heaters especially designed for locomotives, and to be arranged around the smoke-stack, so that the heat from the stack or the exhaust may be the means of heating the feed-water.

The invention consists in a series of tubes encircling the smoke-stack, within a chamber opening from a vertical or feed-water pipe, and terminating in a chamber or stand-pipe, which leads from near the top into an exit pipe or leader to the boiler, as more fully hereinafter described.

A is the smoke-stack proper, around which a chamber, B, is formed by a suitable casing, C. Into this chamber a vertical pipe, D, is arranged, to which the water from the pump is forced. E is the exit-pipe, also vertical, and leading to the boiler. Beside the pipe D the stand-pipe or water-chamber F is vertically arranged, opening into the pipe E at the top, as at *e*. From the pump-pipe D around the stack, and to the chamber F, a succession of tubes, H, are arranged, one above the other, so as to connect the said pipes D and F, and so that the water forced into the pipe D will pass freely around the stack through the several pipes H to the stand-pipe F.

The exhaust steam is admitted into the chamber B to circulate around the several pipes H, and heat the water as it gradually rises. Thus heated, the water finally passes through the aperture *e* to the leader E, thence to the boiler. The several circulating-pipes H are attached to their respective vertical pipes by nuts or union joints, so that either may be readily removed without disturbing another—as for repairs—and without removing the stack, it only being necessary to raise the shell C.

I claim—

In locomotive feed-water heaters, the combination of the vertical inlet and outlet pipes, the stand-pipe, communicating with the outlet-pipe near its upper end, and encircling-pipes connecting the inlet-pipe with the said stand-pipe, all arranged in a chamber around the smoke-stack, substantially as described.

I. P. MAGOON.

Witnesses:

GEO. W. HASKELL,

JOHN W. LEWIS.