(No Model.) 2 Sheets—Sheet 1.

R. NEIL & J. MORRISON.

BOILER FOR HOT WATER HEATERS.

No. 384,461. Patented June 12, 1888.

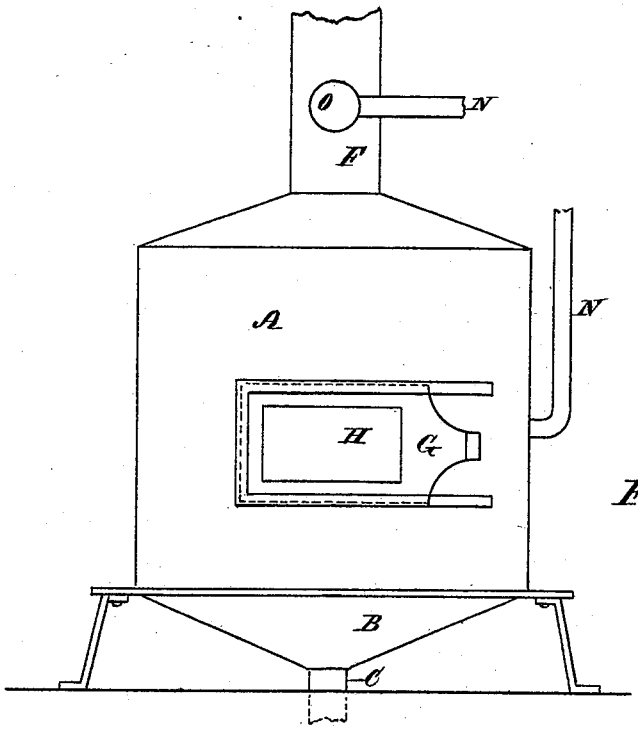

Fig. 1.

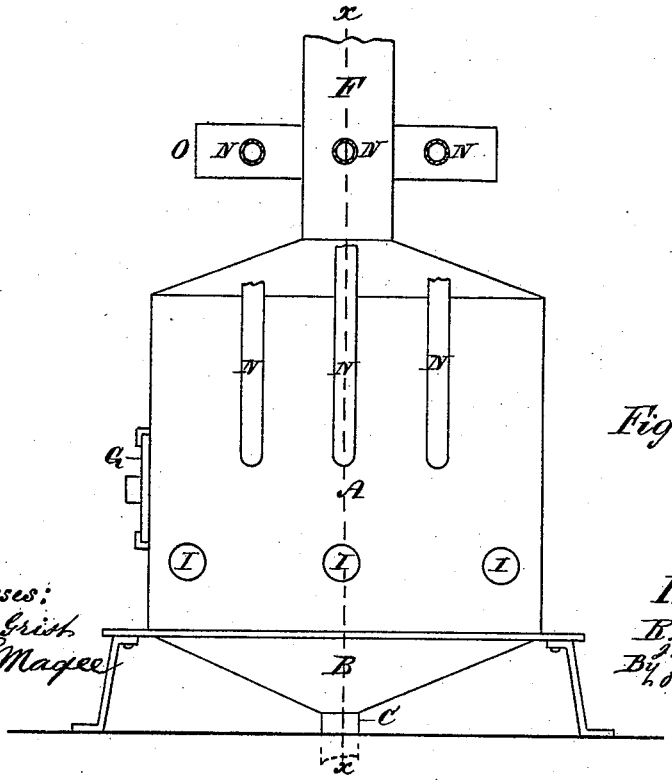

Fig. 2.

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(No Model.) 2 Sheets—Sheet 2.

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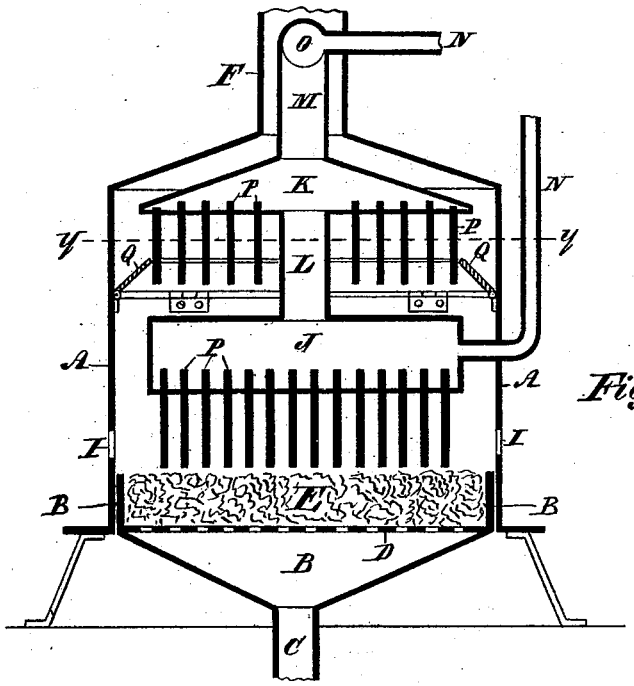

Fig. 3.

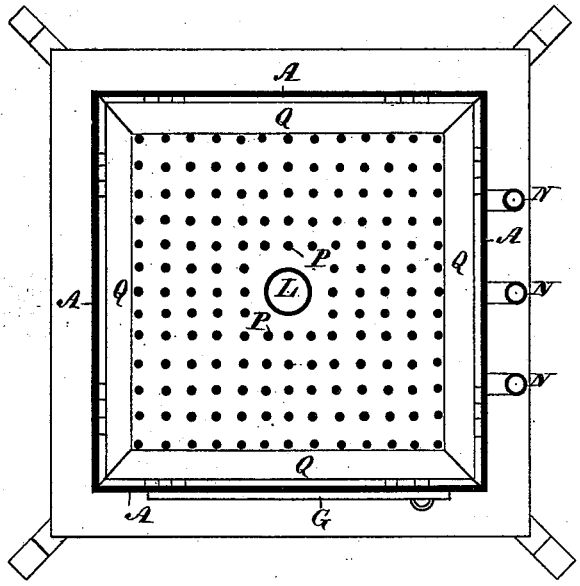

Fig. 4.

Witnesses:
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UNITED STATES PATENT OFFICE.

ROBERT NEIL AND JOHN MORRISON, OF QUEBEC, QUEBEC, CANADA.

BOILER FOR HOT-WATER HEATERS.

SPECIFICATION forming part of Letters Patent No. 384,461, dated June 12, 1888.

Application filed September 3, 1887. Serial No. 248,735. (No model.)

To all whom it may concern:

Be it known that we, ROBERT NEIL and JOHN MORRISON, both of the city of Quebec, in the Province of Quebec, in the Dominion of Canada, have jointly invented certain new and useful Improvements in Boilers for Hot-Water Heaters; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, in which—

Figure 1 is a front elevation of our improved boiler. Fig. 2 is a side elevation of the same. Fig. 3 is a vertical section on line *x x*, Fig. 2; and Fig. 4 is a horizontal section on line *y y*, Fig. 3.

Our invention has for its object to construct a hot-water-circulating sectional boiler in which either gas or coal may be used as fuel, and be adapted for heating railway-cars, &c., by a system of circulating-pipes.

Our invention consists in the construction and combination of parts, as will hereinafter be fully described, and specifically pointed out in the claims.

In the drawings, A is the outside shell or casing of the furnace B and boiler. The furnace B is provided with an inlet-pipe, C, and a perforated floor, D, by which gas entering pipe C is distributed over the extent of floor, and, when ignited, fires the asbestus E in the upper part of the furnace.

F is a chimney at the top of the shell or casing. This shell or casing has at the side a sliding door, G, provided with a mica pane, H, for observing combustion, and holes I to admit air to the furnace.

J is the lower horizontal section, and K the upper horizontal conical section, of the boiler, said sections being adapted to contain water, and arranged one above the other, and both sections being connected by a central pipe, L.

M is a pipe extending from the top of the upper section into the chimney, and said pipe branches off or divides through the chimney F to form a header, O, to connect with the circulating-pipes N, and the sections are provided with pendent copper conductors P, which pass through the bottom of the sections J K and enter the interior to conduct heat from the exterior of the boiler to the water within. The header being located within the chimney the heated products of combustion are utilized to heat the water in the header in their upward passage through the chimney.

The circulating-pipes N, as usual, connect with the header, and the returns enter the lowermost section to cause circulation through the pipes.

Any number of boiler-sections may be connected to the sections J K, according to the duty required of the circulating-pipes, and any number of circulating-pipes and returns may be connected to the header and lower section of the boiler.

Q are deflectors or dampers hinged to the four sides of the shell below the level of the upper boiler-section and resting their outer edges against the conductors to form a hood to deflect the heat among the conductor-bars P before passing over the top of the section.

When solid fuel is used, the asbestus is dispensed with, and the fuel laid upon the floor D, or a grate substituted therefor.

The gas for consumption is compressed and stored in a reservoir carried in the train, and is fed to the furnace through a pipe connecting with the inlet C, the supply being controlled by a valve suitably located in the feed-pipe.

We are aware that heat-conducting bars are old and well known, and therefore disclaim the provision of such bars, broadly considered.

We claim as our invention—

1. A heater comprising a shell, A, a boiler formed with a lower horizontal water-section, J, the upper horizontal water-section, K, and a pipe, L, connecting the sections, and the deflectors or dampers Q, hinged to the shell and surrounding the boiler, substantially as described.

2. A heater comprising a shell, A, a boiler formed with a lower horizontal section, J, the upper horizontal section, K, having pendent bars P suspended over the lower section, and

a pipe, L, connecting the sections, and the deflectors or dampers Q, surrounding the boiler, hinged to the shell, and resting against the bars, substantially as described.

3. A heater comprising a shell, A, a boiler formed with a lower horizontal section, J, having pendent bars P suspended over the furnace, the upper horizontal section, K, having pendent bars P suspended over the lower section, and a pipe, L, connecting the sections, and the deflectors or dampers Q, substantially as described.

ROBERT NEIL.
JOHN MORRISON.

Witnesses:
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Of Quebec City, Notary Public.