

(No Model.)

G. L. BOTTUM.

STEAM BOILER.

No. 352,513.

Patented Nov. 16, 1886.

Fig 1

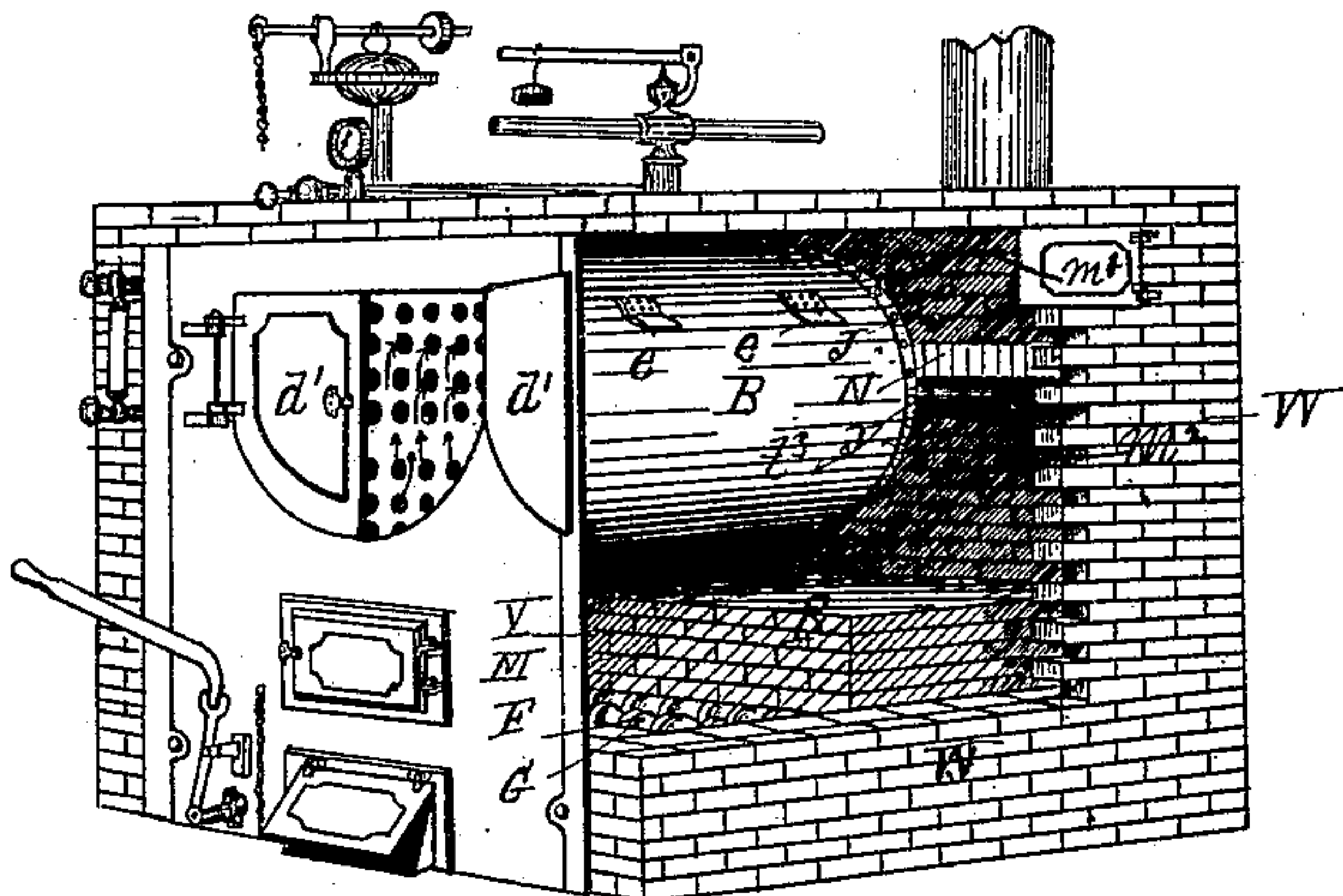
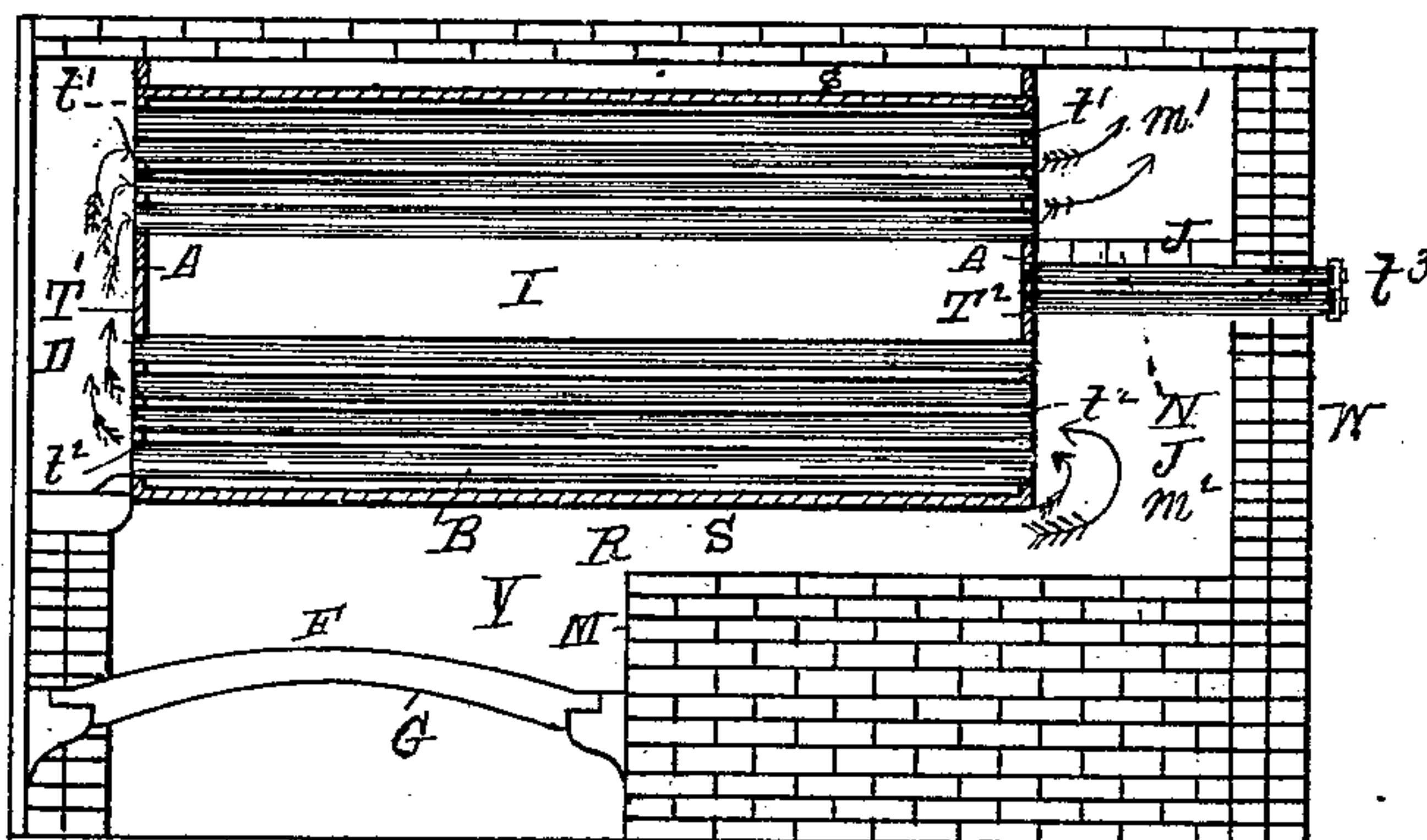


Fig 2



WITNESSES

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GEORGE LANDON BOTTUM, OF COHOES, NEW YORK, ASSIGNOR TO
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STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 352,513, dated November 16, 1886.

Application filed November 23, 1885. Serial No. 183,639. (No model.)

To all whom it may concern:

Be it known that I, GEORGE LANDON BOTTUM, of the city of Cohoes, county of Albany, State of New York, have invented new and useful Improvements in Steam-Boilers, of which the following is a specification.

My invention relates to certain improvements upon that class of steam-boilers which are made with horizontally-arranged tubular flues, the object and purpose of my invention being to improve subsisting constructions in the art; and my improvements therefore consist in the novel construction of parts and their combination, as will be hereinafter fully described, and specifically pointed out in the claim made hereto.

Accompanying this specification, to form a part of it, there is a sheet of drawings containing three figures illustrating my invention, with the same designations of parts by letter-reference used in all of them.

Of these illustrations, Figure 1 is a perspective of a steam-boiler containing my invention, it being shown in connection with the exit-flue, its fire-bed, and setting, with the walls of the latter shown as in part broken out to illustrate the relative situation of interiorly placed and connected parts, arrows being used to indicate the movement and direction of the heat evolved from the fire. Fig. 2 is a longitudinal vertical and central section of the steam-boiler shown at Fig. 1.

The several parts of the steam-boiler and its connections thus illustrated are designated by letter-reference, and the function of the parts is described as follows:

The letter B designates the boiler, and *e* the ear-plates, which are attached to its sides, and are anchored within the side walls of its setting to suspend it.

The letters T' and T² designate the end tube-sheets, and S the boiler-shell.

The letters *t'* indicate an upper series of hot-air tubes that are horizontally arranged in the shell S, and *t²* indicates a lower series of tubes that are also arranged within said shell horizontally.

The letters A designate an area in the end tube-sheets where there are no tubes, this horizontally-extended part of the boiler without

tubes being indicated at I in Fig. 2, and shown as located between the upper and lower series of tubes.

The letter F designates the fire-bed, G the grate, and W the walls in which the boiler is set, they being shown as in part broken out.

The letter M designates the bridge, Y the combustion-chamber, and R its throat for the passage of the products of combustion therefrom.

The letter J designates a rear vertical flue that is back of the boiler, and the letter N indicates a plate or partition that transversely divides off this flue into an upper part, *m'*, and a lower part, *m²*, the latter connecting by means of the throat R with the combustion-chamber Y, and being in communication with the rear ends of the lower series of tubes, *t²*, and the upper part, *m'*, of this rear vertical flue, J, connecting with the rear ends of the tubes *t'* of the upper series.

The letter D designates a front vertical flue with which both series of tubes connect at their front ends.

The letters *d'* designate doors placed on the front vertical flue for access thereto.

The letters *t³* indicate water-tubes extended rearwardly from the boiler into the space *m²* of the flue J, so as to be below the plate or partition N. These tubes are for the purpose of increasing the heating-surface of the boiler, and are in communication therewith.

The operation of the parts thus described is as follows: A fire being kindled on the grate, as the heat is evolved therefrom it rises to fill the combustion-chamber under the draft influence of the chimney, and is drawn into and through the lower part of the rear vertical flue, and from thence to pass into and through the lower series of tubes into the front vertical flue, D, from which, under the same continued impulse, it passes into and through the upper series of tubes into the upper part of the rear vertical flue, *m'*, from whence it passes to the chimney, thus making in its passage a complete return-circulation through the boiler, and which, in connection with the heat applied directly to the shell, greatly increases the evaporating capacity of the boiler.

Having thus described my invention, what I

claim, and desire to secure by Letters Patent,
is—

5 The combination, with the fire-box and the
vertical end flue, J, having partition N, of the
boiler provided with an upper and a lower se-
ries of fire-tubes, and rearwardly-extended wa-
ter-tubes projected across the end flue and
opening into the boiler and having their outer
ends closed, substantially as described.

Signed at Troy, New York, this 22d day of 10
October, 1885, and in the presence of the two
witnesses whose names are hereto written.

GEORGE LANDON BOTTUM.

Witnesses:

N. E. HOGAN,
CHARLES S. BRINTNALL.