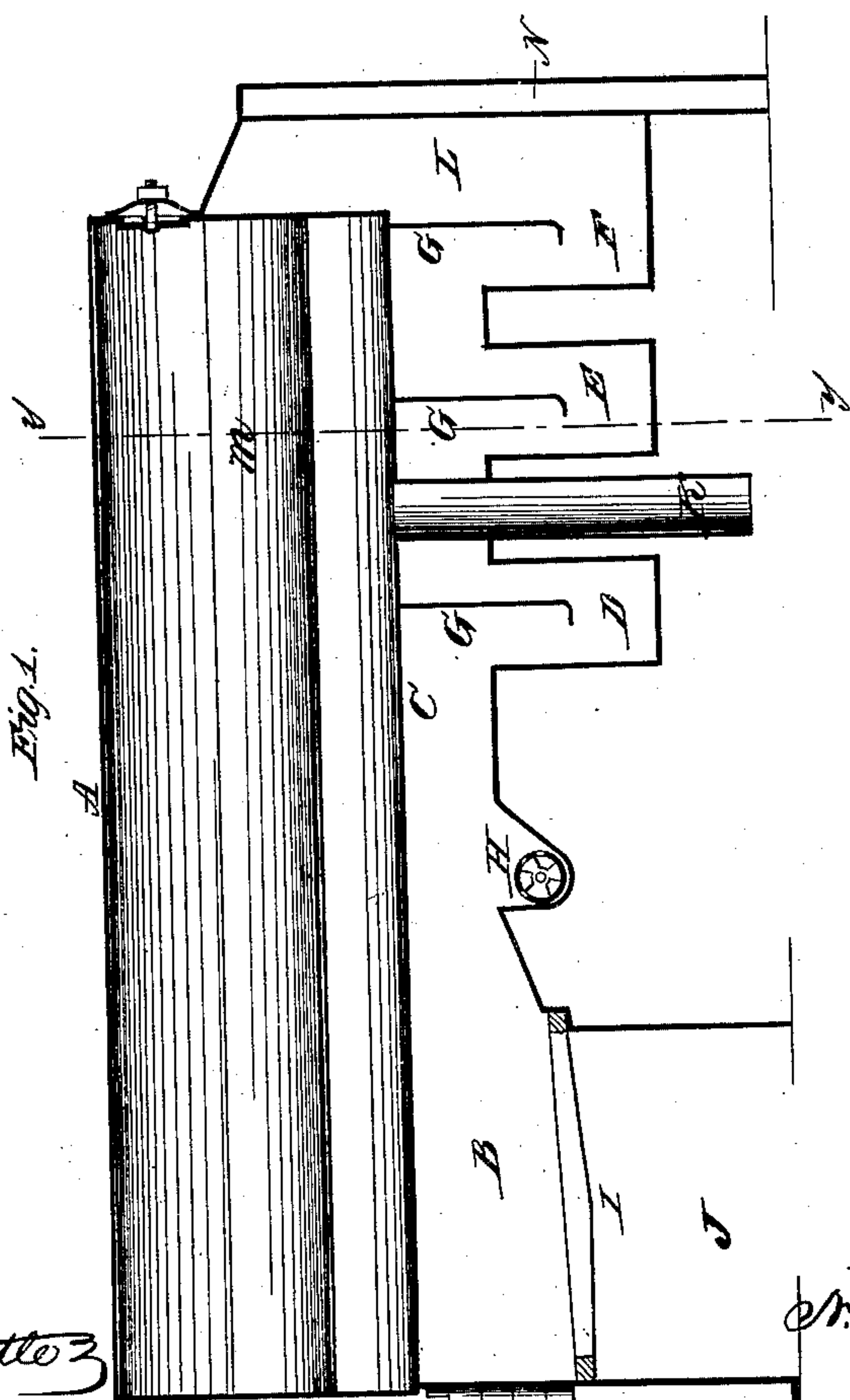
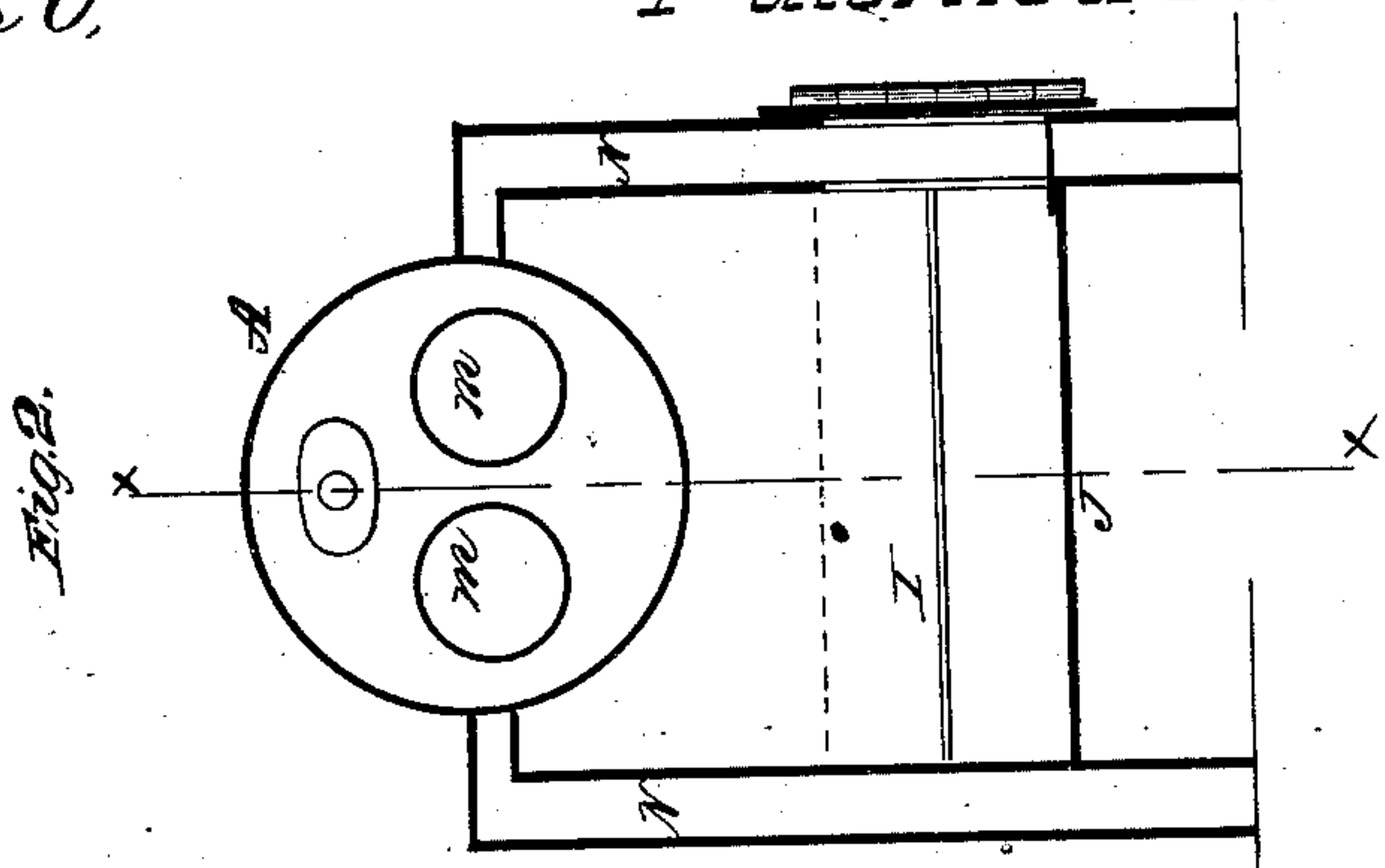


N. L. Carpenter,
Steam-Boiler Furnace,
No 78,426, Patented June 2, 1868.



Witnesses.
W. C. Ashkettle
J. A. Fraser

Inventor.
N. L. Carpenter
Munroe
Attorney

United States Patent Office.

N. L. CARPENTER, OF NATCHEZ, MISSISSIPPI.

Letters Patent No. 78,426, dated June 2, 1868.

IMPROVEMENT IN STEAM-BOILER FURNACES.

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

TO ALL WHOM IT MAY CONCERN:

Be it known that I, N. L. CARPENTER, of Natchez, in the county of Adams, and State of Mississippi, have invented a new and improved Spark-Arrester; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable those skilled in the art to make and use the same, reference being had to the accompanying drawings, forming part of this specification.

This invention relates to a new and improved method of arresting sparks from steam-engine-boiler furnaces, (either locomotive or stationary.)

And the invention consists in sinking vertical wells or recesses, at a stated distance apart, in the brick, mason, or other work beneath the boiler, and providing the wells and the boiler-furnace flue with incombustible deflecting-plates, and also in the provision made for supplying the products of combustion with air, as will hereinafter be more fully described.

Figure 1 is a vertical longitudinal section, through the line *x x* of fig. 2, of a steam-boiler, showing the arrangements for arresting the sparks and for supplying air to the furnace-flue.

Figure 2 is a vertical transverse section through the line *y y* of fig. 1.

Similar letters of reference indicate corresponding parts.

A is the boiler, which, in this example of my invention, is a two-flue stationary boiler.

B is the fire-box.

C is the fire-flue.

D, E, and F represent the sunken wells in the flue.

G represents the deflecting-plate, made of any incombustible material whatever.

H is a transverse perforated air-tube, with an adjustable register or valve at one or both ends, by which the admission of air is governed.

I represents the grate-bars.

J is the ash-pit.

K is the water-pipe.

L is the smoke-chamber.

M indicates the flues through the boiler.

N represents the water-leg.

The wells or recesses D, E, and F, are sunken down from the bottom of the main flue C, as seen in the drawing.

The deflecting-plates G are attached to the boiler, or to the work which supports the boiler, and hang down into these wells, as represented.

The products of combustion, in their passage from the fire-box to the smoke-chambers, (and the interior flues of the boiler) impinge against these plates, and descend after each collision, and again rise into the flue.

At each collision with the plates, the sparks which are carried along with the current of smoke and heated gases are deposited in the wells, so that the wells or recesses D, E, and F form, in fact, a part of the main fire-flue.

For the purpose of producing a more perfect combustion of the heated gases, smoke, and sparks, I place in or near the bridge-wall a perforated air-tube, with a register or valve at one or both ends, by which the admission of air is regulated.

By supplying the requisite quantity of oxygen to the products of combustion at this point, a much more perfect combustion of the fuel and smoke is produced, and consequently fuel is saved, and the sparks to be arrested are diminished in number.

Having thus described my invention, I claim as new, and desire to secure by Letters Patent—

1. In combination with a steam-boiler, the wells or recesses D, E, and F, (more or less in number,) and the deflecting-plates G, arranged substantially as and for the purposes herein shown and described.

2. In combination with the wells D, E, and F, and plates G, the perforated air-tube H, substantially as and for the purposes described.

N. L. CARPENTER.

Witnesses:

LEVI H. WEEKS,

WM. F. MELLER.