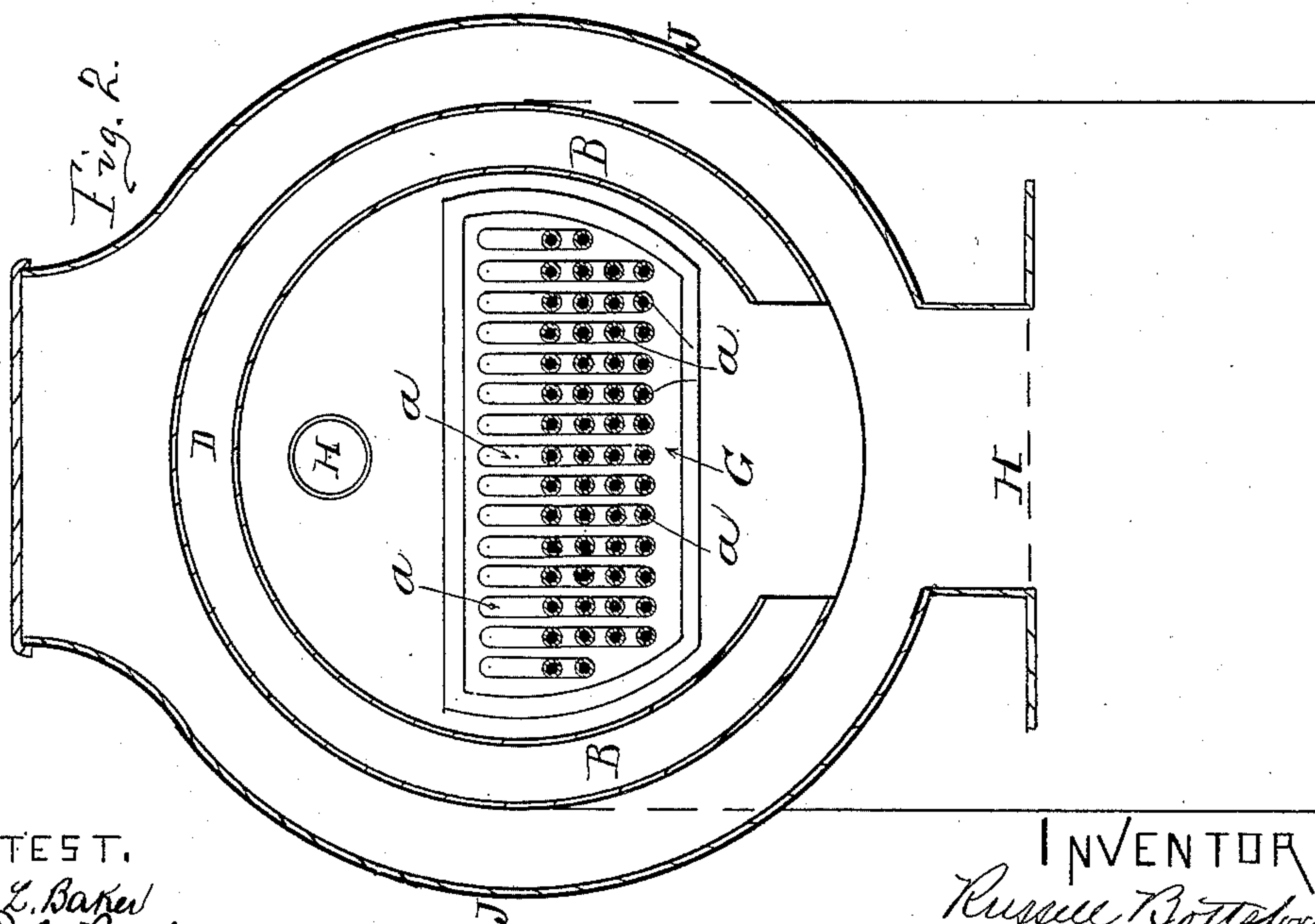
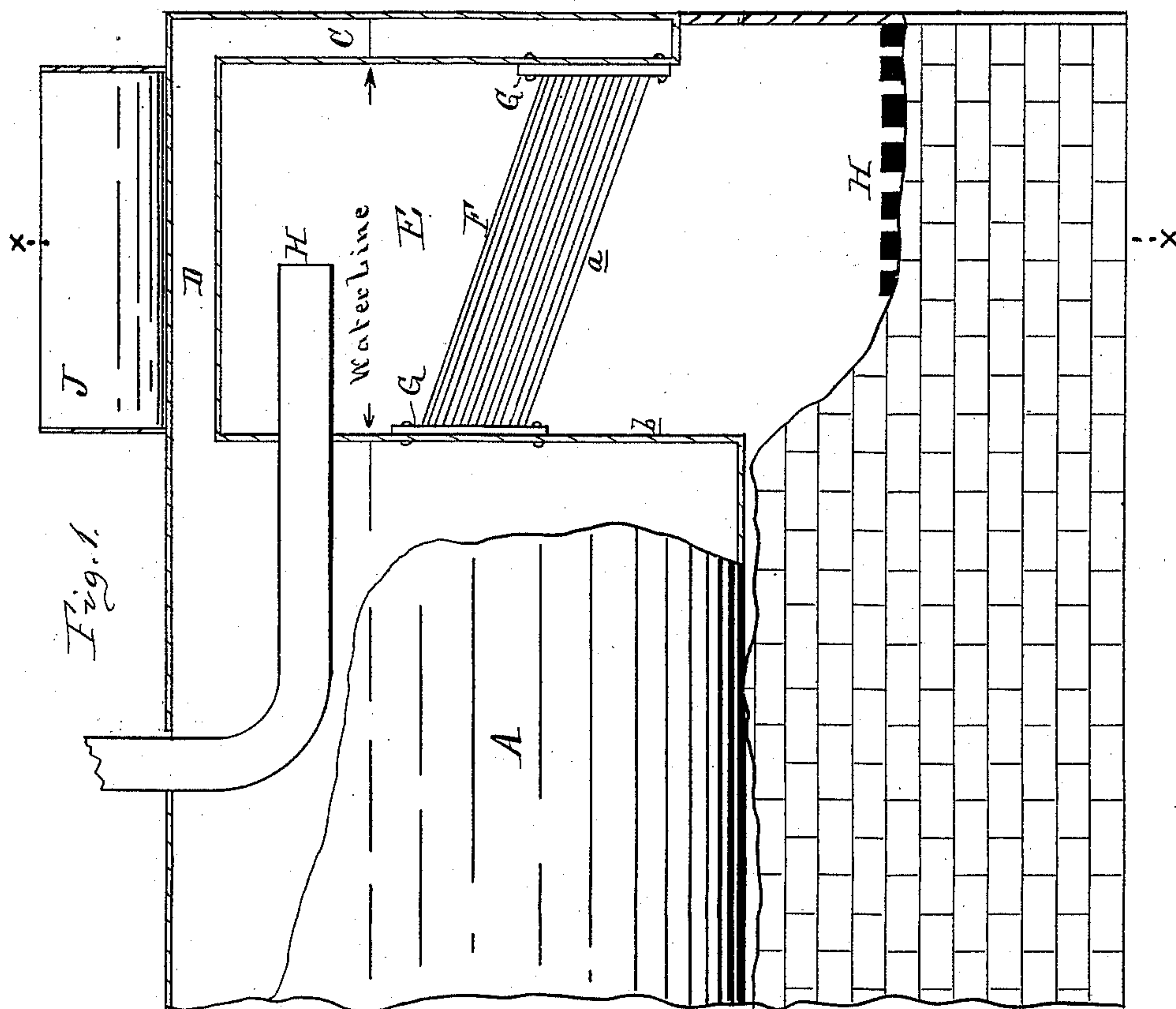


(No Model.)

R. BOTTSFORD.
STEAM BOILER.

No. 445,689.

Patented Feb. 3, 1891.



ATTEST.
O. L. Baker
Q. J. Deane

INVENTOR
Russell Bottsford
By Osborne & Co. Attys

UNITED STATES PATENT OFFICE.

RUSSELL BOTTSFORD, OF CLEVELAND, OHIO.

STEAM-BOILER.

SPECIFICATION forming part of Letters Patent No. 445,689, dated February 3, 1891.

Application filed June 9, 1890. Serial No. 354,757. (No model.)

To all whom it may concern:

Be it known that I, RUSSELL BOTTSFORD, a citizen of the United States, residing at Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Steam-Boilers, of which the following, with the accompanying drawings, is a specification.

This invention relates to certain new and useful Improvements in the construction of steam-boilers.

The invention has for its object the construction of a boiler wherein shall be combined simplicity of arrangement of parts, economy in the consumption of fuel, and the construction of a self-feed from a magazine to the grate-surface.

The invention consists in the peculiar construction, arrangement, and combination of the parts, as hereinafter described and claimed.

Figure 1 is a side elevation of my improved boiler, partially in section. Fig. 2 is a vertical cross-section on the line *xx* of Fig. 1.

In the accompanying drawings, which form a part of this specification, A represents the main portion of my improved boiler, and which is provided with the side water-legs B and the front water-leg C. The two side legs are connected together at their tops by the steam-space D, which also communicates with the front vertical leg C, as is clearly shown in the drawings. This construction of the front part of the boiler forms a combustion-chamber E, in which I place a manifold F, said manifold consisting of a series of small pipes or tubes *a*, which communicate at their ends with the manifold heads G. These heads G are bolted or otherwise secured to front head *b* of the boiler A below the water-line and to the inner shell of the front water-leg C in such a manner as will bring the tubes of the manifold upon the desired incline, as shown in Fig. 1.

H is the smoke-pipe, which projects into the combustion-chamber, as shown, and passes back through the boiler A to any desired point of exit therefrom. This boiler is designed to be set up in any ordinary boiler-front and to be bricked in and provided with a grate, as at H in Fig. 2, the rectangular

outlines in such figure being designed to represent a boiler-front.

J represents a shell, which constitutes a magazine for holding fuel. This magazine conducts the fuel to the grate down upon the outside of the side water-legs, and is preferably constructed in sections that can be securely bolted together, the feet of the sections being designed to be built in with the masonry.

By this construction and arrangement of parts I provide a boiler wherein steam can be very quickly and economically generated, as the water within the manifold is in close proximity to the fire, and the tubes being small the water contained in them becomes heated almost instantly, and as it thus expands a continuous circulation of water is kept up through the manifold and the water-legs. The fuel being fed by the magazine to the grate below avoids the necessity of frequently opening the "fire-doors" for the purpose of stoking, and in this I save a great amount of heat that would otherwise escape, while the side feed also serves as a jacket to the combustion-chamber outside of the side water-legs and retains the heat where it will do the most effective work.

What I claim as my invention is—

In a steam-boiler, the combination of the main boiler A, provided with side and front water-legs B C, respectively, and inclosing a combustion-chamber having a smoke-outlet H, a series of inclined water-conducting tubes *a*, communicating with the foot of the front water-leg C and with the head *b* of the main water-holding section A of the boiler below the water-line thereof, and a shell J, adapted to embrace the side water-legs and form a magazine for conducting fuel to the grate below, the parts being constructed, arranged, and operating in the manner and for the purposes described.

In testimony whereof I affix my signature, in presence of two witnesses, this 2d day of June, 1890.

RUSSELL BOTTSFORD.

Witnesses:

H. S. SPRAGUE,
O. L. BAKER.