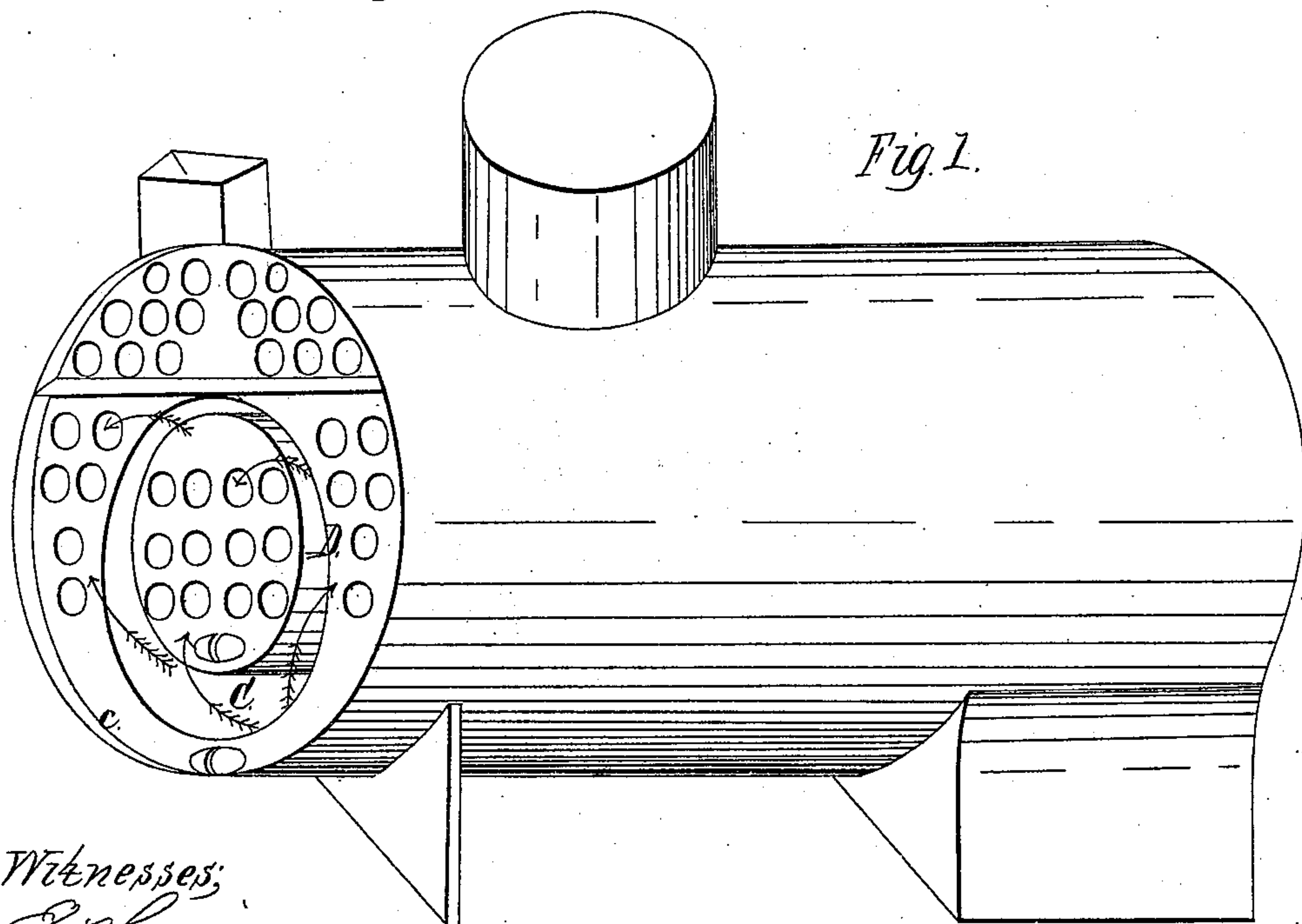
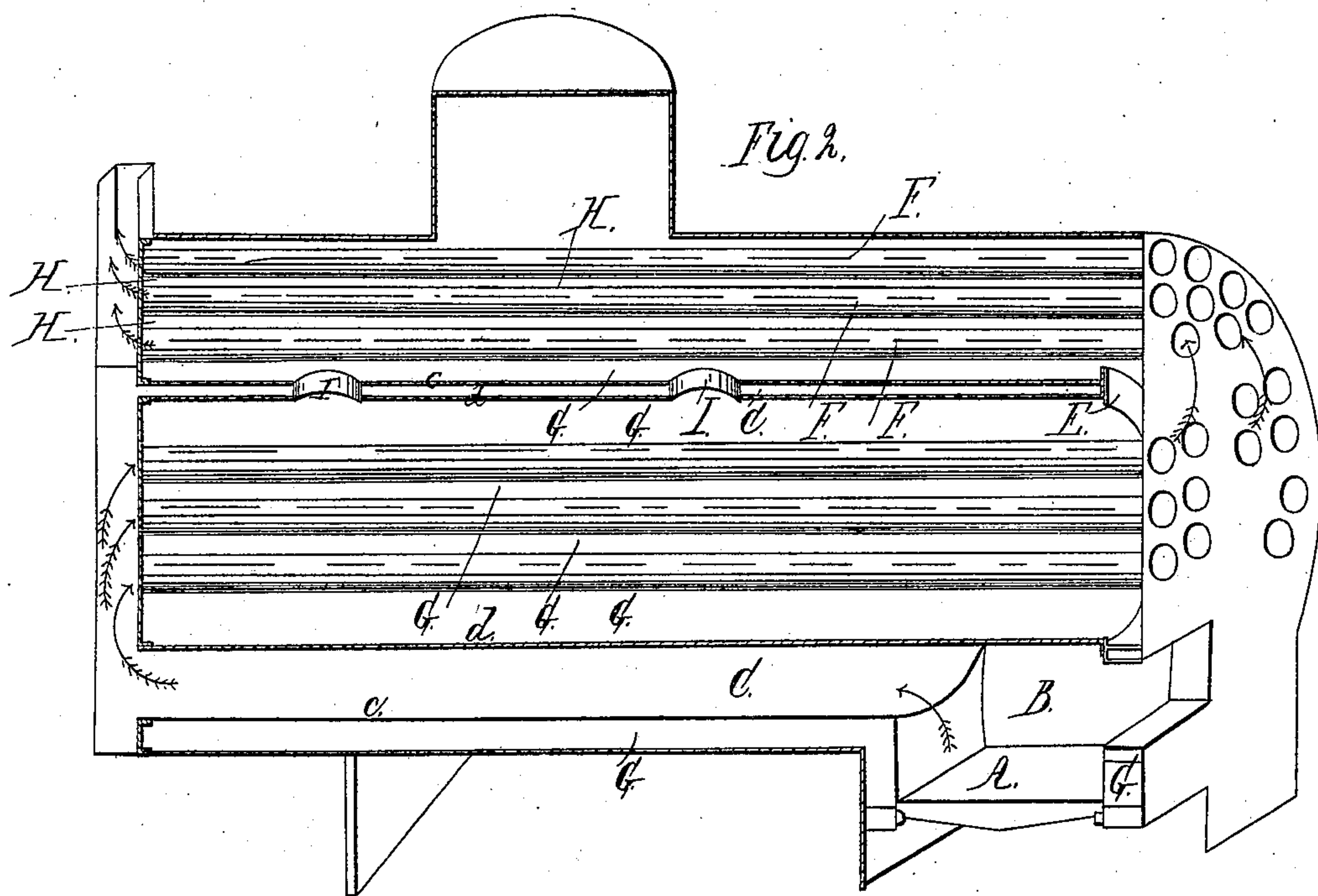


*W. W. Crane,*  
*Steam-Boiler Fire-Tube.*  
*N<sup>o</sup> 38,812.                      Patented June 9, 1863*



*Witnesses;*  
*J. Segorine*  
*Geo. H. Kow*

*Inventor;*  
*W. W. Crane*

# UNITED STATES PATENT OFFICE.

WELLSLY W. CRANE, OF AUBURN, NEW YORK.

## IMPROVED STEAM-BOILER.

Specification forming part of Letters Patent No. 38,812, dated June 9, 1863.

*To all whom it may concern:*

Be it known that I, WELLSLY W. CRANE, of Auburn, in the county of Cayuga, in the State of New York, have invented a new and Improved Mode of Constructing Steam-Boilers; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, and to the letters of reference marked thereon.

The nature of my invention consists in constructing steam-boilers in a peculiar manner, for the purpose of increasing the fire-surface, whereby I am enabled to construct steam-boilers of smaller dimensions, obtaining at the same time a larger number of horse-power, and likewise to evaporate a greater quantity of water with less fuel than any other description of boiler known.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction.

First, I employ a cylinder or shell with a fire-box attached in the usual manner, for the external part of my steam-boiler; second, I employ a smaller cylinder, than the first-named cylinder to form the external surface of my combustion-flue; third, I employ a smaller cylinder than the aforesaid second cylinder to form the internal surface of my aforesaid combustion-flue, the two last-mentioned cylinders being attached to the inside head-sheet of the fire-box, as shown in the accompanying drawing, and which form crown-sheets to the aforesaid fire-box.

Figure 1 represents a steam-boiler with my

invention attached. Fig. 2 is a section of the same.

A, Fig. 2, represents the grate-bars, and B the fire-box.

C, Fig. 1, and C C, Fig. 2, represent my combustion-flue.

c, Fig. 1, and c c, Fig. 2, represent the cylinder forming the external surface of my aforesaid combustion-flue.

D, Fig. 1, and d d, Fig. 2, is the cylinder forming the internal surface of said combustion-flue.

E E, Fig. 2, represent the inside head-sheet of fire-box with the two cylinders C and D attached, and its center cut out to the inside diameter of cylinder D, Fig. 1, and d d, Fig. 2, for the purpose of giving free circulation for the water in said boiler.

F F F F F F, Fig. 2, represent the small flues; G G G G G G G, the water-space, and H H the steam-space.

I I, Fig. 2, represent the cylindrical rings connecting the two cylinders D and C together, forming circulating-openings to all parts of the aforesaid boiler. The upper set or last return-flues F F F are for the purpose of superheating the steam.

What I claim as my invention, and desire to secure by Letters Patent, is—

The cylinder D, or its equivalent, in combination with the cylinder C and fire-box B, for the purposes herein set forth.

Witnesses: WELLSLY W. CRANE.

J. SEGOINE,  
JACOB R. HOW.