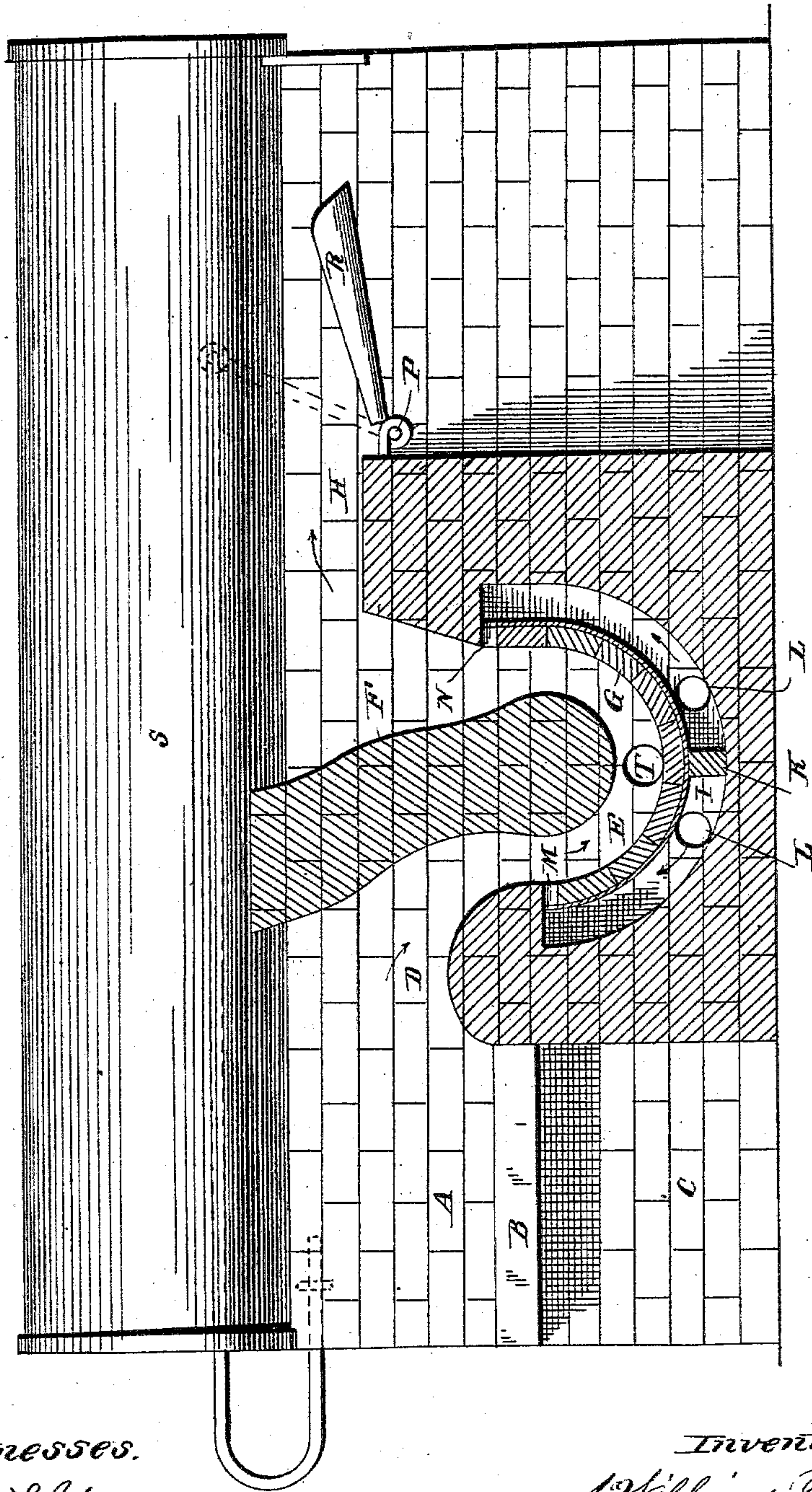


(No Model.)

W. P. HALL.
BOILER FURNACE.

No. 283,708.

Patented Aug. 21, 1883.



Witnesses.
Edwin L. Jewell.
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UNITED STATES PATENT OFFICE.

WILLIAM P. HALL, OF PIQUA, OHIO.

BOILER-FURNACE.

SPECIFICATION forming part of Letters Patent No. 283,708, dated August 21, 1883.

Application filed June 5, 1883. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM P. HALL, a citizen of the United States, residing at Piqua, in the county of Miami and State of Ohio, have invented certain new and useful Improvements in Boiler-Furnaces, of which the following is a specification, reference being had therein to the accompanying drawing.

This invention relates to certain improvements in steam-boiler furnaces; and it has for its objects to provide for supplying heated air to the products of combustion on their passage through the furnace, in order to thoroughly consume the same, intensify the heat, and economize fuel, as more fully hereinafter specified. These objects I attain by the means illustrated in the accompanying drawing, in which is represented an elevation of my furnace with one of the side walls removed.

The letter A indicates the fire-box of the furnace. B indicates the grate-bars, and C the ash-pit, which may be of the usual construction.

At the rear of the fire-box is a curved abutment, D, which serves to prevent the coal, when fed into the furnace, from passing back into the curved flue E, which is formed by the deflector F and the curved wall G, which is set in the masonry of the furnace, and which consists of a metallic plate lined with fire-clay or brick. The flue at its rear widens out, as indicated in the drawing, and communicates with the slack by means of a straight flue, H.

The letter I indicates a flue, below the flue above mentioned and parallel with it, which is provided with a transverse partition, K, which divides it into two parts, each of which communicates with the open air by means of apertures L, the said flue communicates at one end with the flue E at a point directly back of the fire-box, through a series of small apertures, as indicated by the letter M, and at the other end with said flue E at the point

where it begins to widen, as indicated by the letter N, through a series of similar apertures. At the rear of the straight flue is pivoted in suitable bearings a crank-shaft, P, which is provided with a damper, R, by means of which the draft may be regulated.

The letter S indicates the boiler, which may be of any suitable description, which is set upon the side walls of the boiler and upon a curved seat at the top of the deflector, so as to compel the products of combustion to pass through the curved flue before mentioned.

The letter T indicates an opening in the wall of the furnace leading into the lower part of the flue E, by means of which any substance that may accumulate in said flue may be removed. The said opening may be closed by means of a suitable door while the furnace is in operation.

The operation of my invention will be readily understood in connection with the above description.

The smoke and hot gaseous products of combustion pass down through the flue E, and are supplied with hot air when entering and leaving the flue, thus providing for their thorough consumption and creating an intense heat, and wholly utilizing the fuel. Dampers may be used at the draft-openings L to regulate the air admitted to flue I.

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

The combination, in a boiler-furnace, of the parallel flues E and I, the dividing-partition K, and the passages L, M, and N, substantially as and for the purpose specified.

In testimony whereof I affix my signature in presence of two witnesses.

W. P. HALL.

Witnesses:

J. J. MCCARTHY,
CHAS. D. DAVIS.