(No Model.)

L. JOHNSTON.

STEAM BOILER FURNACE.

No. 333,954. Patented Jan. 5, 1886.

Fig. 1.

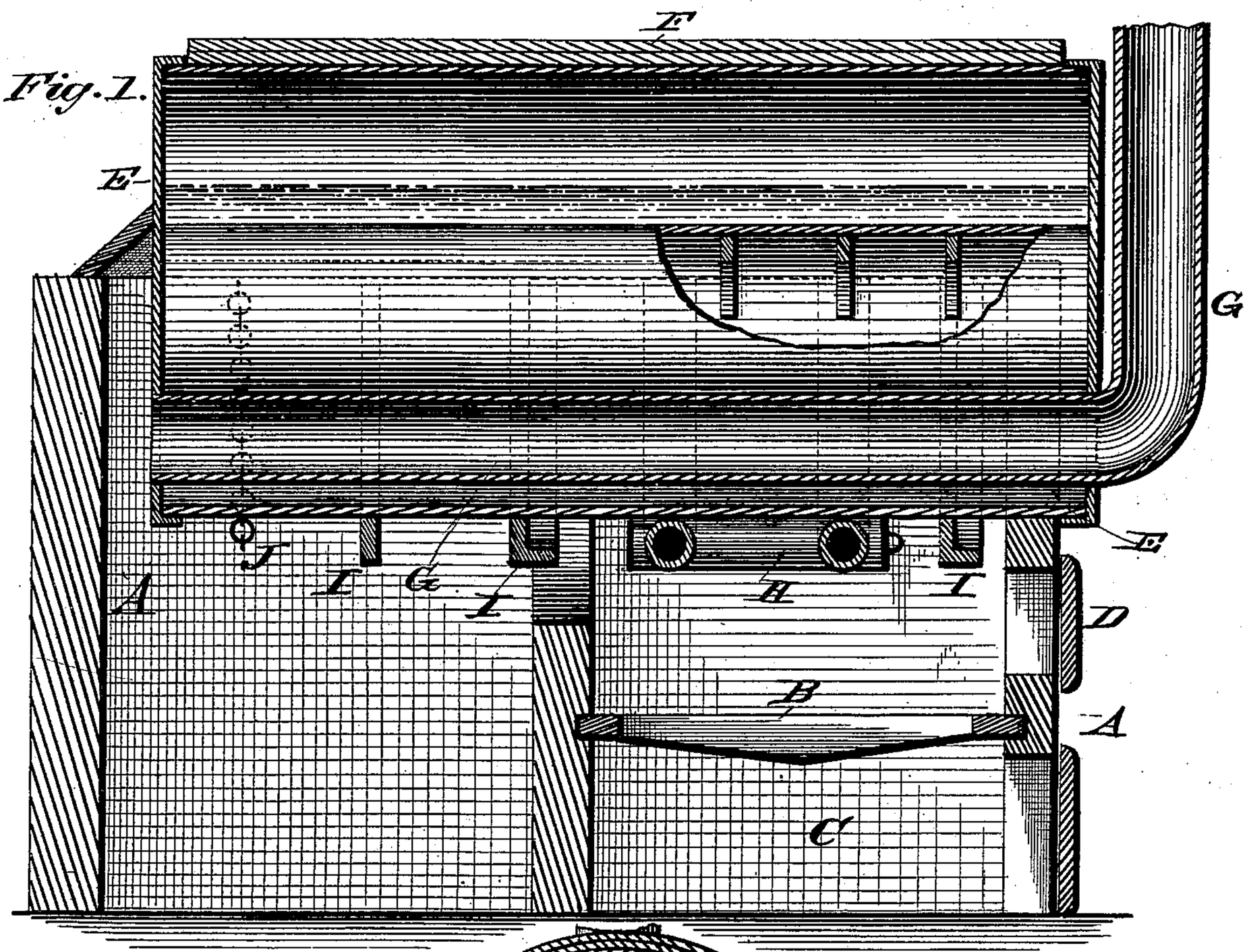
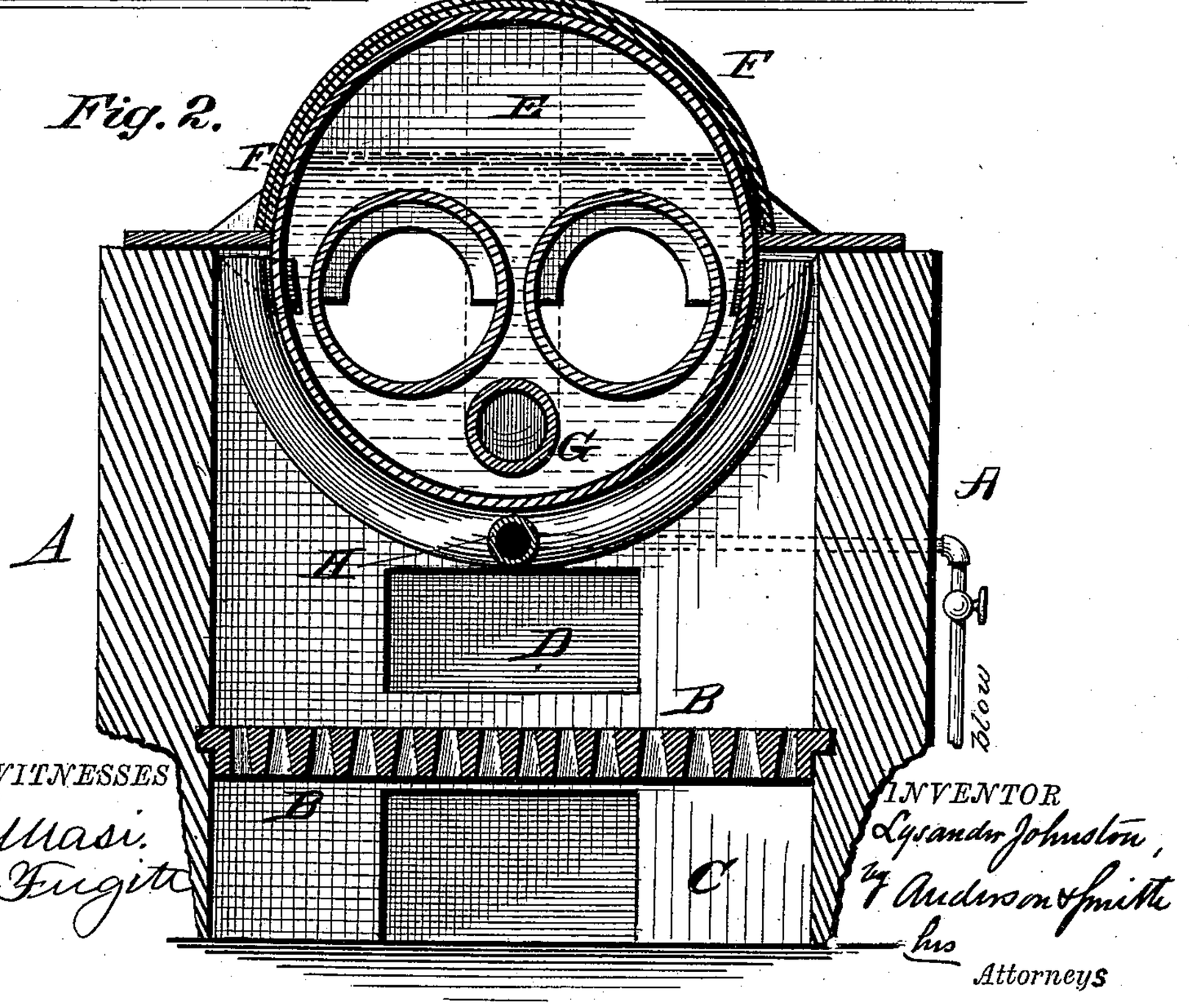


Fig. 2.



WITNESSES

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UNITED STATES PATENT OFFICE.

LYSANDER JOHNSTON, OF DANVILLE, ILLINOIS, ASSIGNOR OF ONE-HALF TO JAMES E. COE, OF SAME PLACE.

STEAM-BOILER FURNACE.

SPECIFICATION forming part of Letters Patent No. 333,954, dated January 5, 1886.

Application filed August 17, 1885. Serial No. 174,634. (No model.)

To all whom it may concern:

Be it known that I, LYSANDER JOHNSTON, a citizen of the United States, residing at Danville, in the county of Vermilion and State of Illinois, have invented certain new and useful Improvements in Steam-Boilers and Furnaces; and I do declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, and to letters or figures of reference marked thereon, which form a part of this specification.

Figure 1 of the drawings is a representation of a vertical longitudinal section. Fig. 2 is a transverse section of the same.

My invention relates to steam-boilers and furnaces; and it consists in the construction and novel combination of parts, as will be hereinafter fully described, and pointed out in the claim.

Referring by letters to the accompanying drawings, A A designate the furnace-walls, which are of brick and of the usual construction.

B designates the grate bars, C the ash-pit, and D the fire-door.

E designates the boiler, F the covering over the boiler, and G the smoke-flue, which latter is located at the front of the boiler.

The principal objects of the invention are to increase the heating capacity of the boiler and furnaces, and to consume the smoke generated by the burning of the fuel, which I accomplish by the mechanism hereinafter described in such a manner as to retain the heat between obstructions and force the smoke to pass under and through the obstructions, by which means the smoke is caused to come in contact with the obstructed heat and open direct draft, and is ignited and consumed. This process may be extended and carried through the flues of large flue-boilers, if desired.

The heating capacity or surface on boilers may be increased by using circulating-tubes or water-pipes for the obstructions under the boiler, placed at proper distances apart and connected with the boiler below the water-line on each side of the boiler, and also connected with a pipe, H, under the center of the boiler, running parallel with the boiler, and connected with the blow-off pipe or stand-pipe of the boiler. This straight pipe H is intended for cleaning out the circulating pipes or tubes.

Other obstructions may be used for holding the heat and smoke, where great boiler capacity and heating-surface are not required; and in such case the obstructions consist of metal flanges I, placed under the boiler and made fast at each end to the boiler or furnace-wall. The obstructions may also be made of fire-clay or fire-brick, linked together, or of a chain, J, drawn around the under surface of the boiler.

I am aware that it is not new to arrange a longitudinal pipe beneath a boiler, and that circulating-pipes and flanges have been arranged beneath boilers; but I am not aware that such devices have been constructed and combined in the specific manner hereinafter pointed out.

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

The boiler E, the circulating-pipe beneath the boiler, the longitudinal pipe H, connected with the circulating-pipes, and the external flanges around the under side of the boiler, all combined, constructed, and adapted to operate substantially as shown and described.

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

LYSANDER JOHNSTON.

Witnesses:
CHARLES V. GUY,
WM. H. NEWLIN.