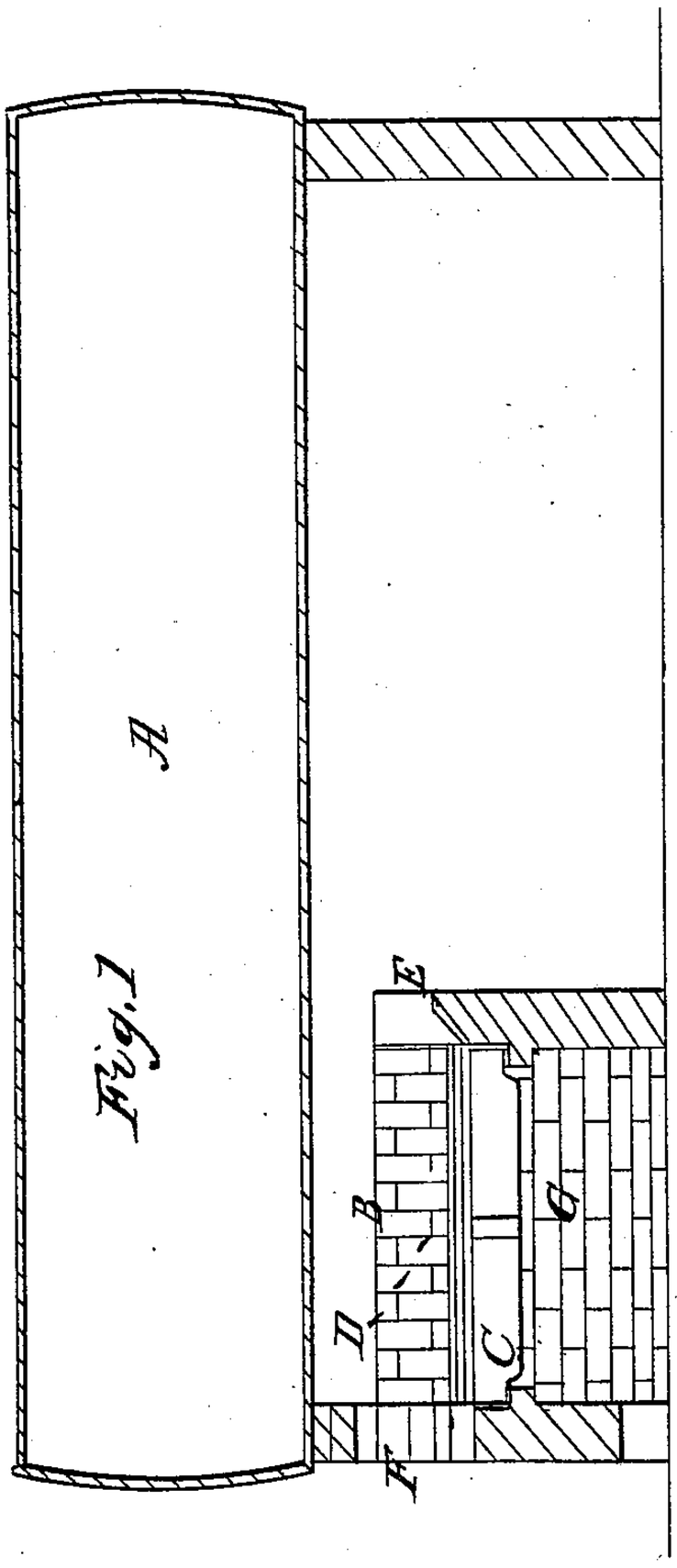
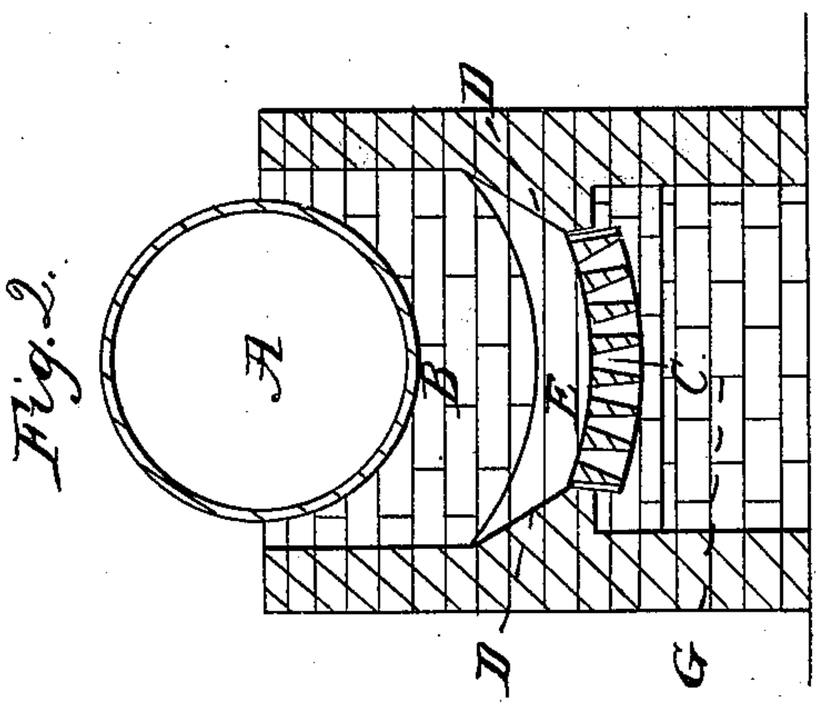
H. Clarke,

Furnace Grate.

No. 37,608. Patented Feb. 10, 1863.





Witnesses:

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UNITED STATES PATENT OFFICE.

HORATIO CLARKE, OF DEDHAM, MASSACHUSETTS.

IMPROVEMENT IN STEAM-BOILER FURNACES.

Specification forming part of Letters Patent No. **37,608**, dated February 10, 1863.

To all whom it may concern:

Be it known that I, HORATIO CLARKE, a citizen of the United States of America, and a resident of Dedham, in the county of Norfolk and State of Massachusetts, have made a new and useful invention or improvement having reference to the furnaces of steam-boilers; and I do hereby declare the same to be fully described in the following specification and represented in the accompanying drawings, making part thereof.

Of such drawings, Figure 1 denotes a longitudinal section of a steam-boiler and furnace provided with my improvement. Fig. 2 is a transverse section thereof, it being taken through the fire-grate.

My improvement consists mainly in a grate constructed with the upper surface curved transversely and concentrically or thereabout with the curved fire-surface of the boiler, the object of my invention being not only to enable the grate to clear itself to better advantage of ashes, but to maintain the fuel when in it at an even distance from the fire-surface of the boiler; or, in other words, at a much better distance with respect to the same and for heating it than would be the case with a horizontal or plane surface grate as usually made.

My invention also consists not only in the arrangement of both the upper surfaces of the grate and bridge concentric with the fire-surface of the boiler, but in so arranging such surfaces and combining with them inclined jambs in manner as hereinafter described

In the drawings, A denotes the boiler, which is cylindrical, and is placed over the furnace or fire-place B. The grate is represented at C, its jambs being shown at D D, while E is the fire-bridge, F the mouth of the furnace, and G the ash-pit.

From the drawings it will be perceived that the grate on its upper surface is parallel to the under surface of the boiler both longitudinally and laterally, and that the bridge is curved on its upper surface in correspondence or concentrically with the curve of the boiler and that of the grate. The jambs D D are inclined to the vertical plane and terminate at the termini of the bridge and the grate, as shown in Fig. 2.

The upper surface of each grate-bar is more or less inclined, and therefore by reason of such the ashes will be discharged from the bars to better advantage than if their upper surfaces were horizontal. Furthermore, the peculiar form of the grate causes the coals or fuel to fall or concentrate itself more or less under the middle part of the boiler. The bridges and the jambs at the same time operate to cause the flame and heated volatile products of combustion to be kept well and evenly up to the boiler, and much better than would be the case were the jambs vertical on their inner surfaces and the upper surface of the bridge horizontal.

I claim as my invention—

1. The grate constructed in a curved form and arranged concentrically, or about so, with the curved fire-surface of the boiler, substantially as described.

2. I do not claim a curved bridge and a straight grate in a furnace; but a curved grate in combination with a curved bridge, their upper surfaces being arranged substantially as described with the fire-surface of the boiler.

3. The curved grate and the curved bridge, arranged with their upper surfaces concentric with the fire-surface of the boiler, in combination with jambs arranged in the inclined manner with respect to them, substantially as described.

HORATIO CLARKE.

Witnesses:

E. P. CRANE,

JAMES FOORD.