No. 689,628. Patented Dec. 24, 1901.

J. VAN DEVELDE.

STEAM BOILER FURNACE.

(Application filed Mar. 22, 1901.)

(No Model.)

Fig. 1.

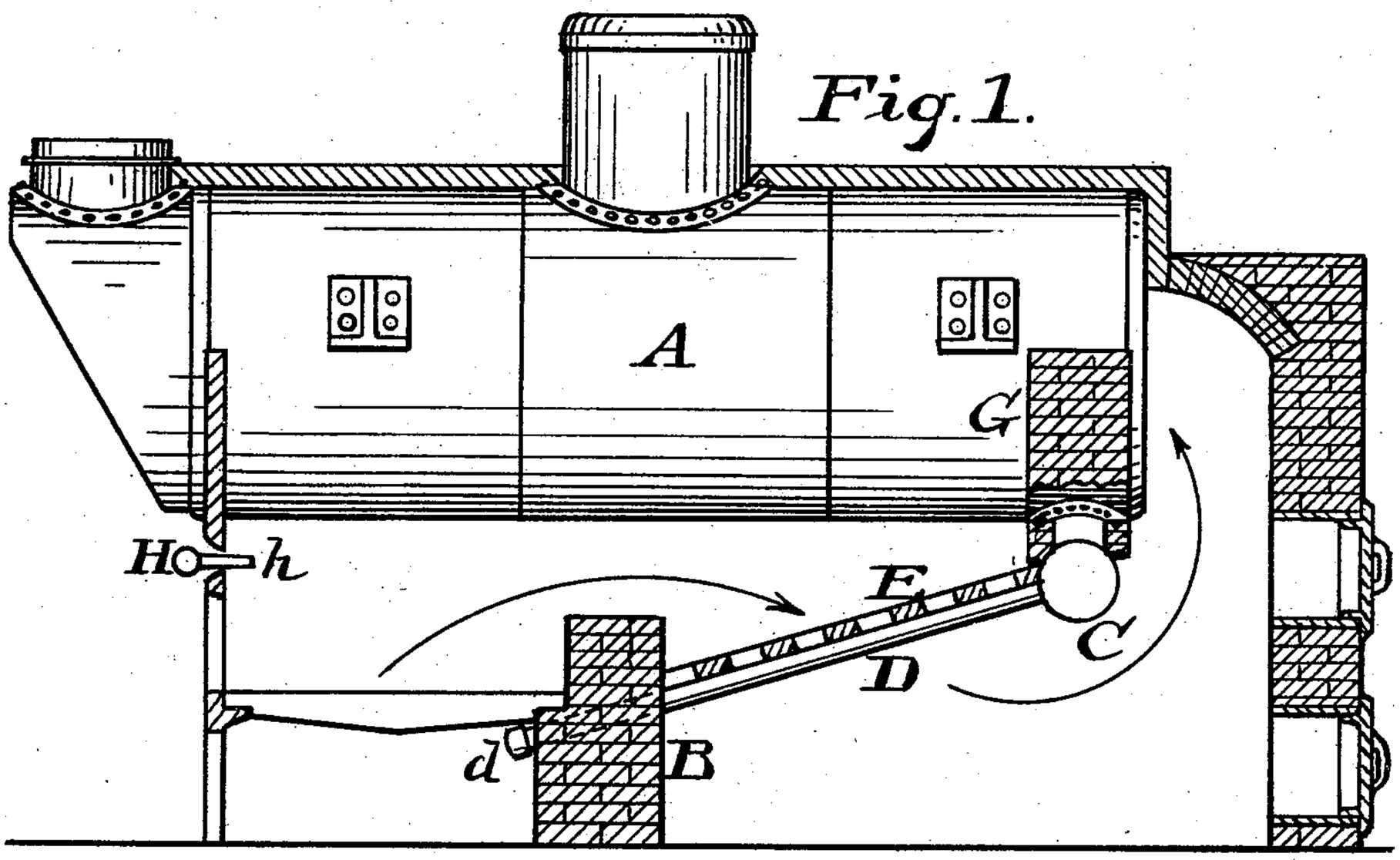

Fig. 2.

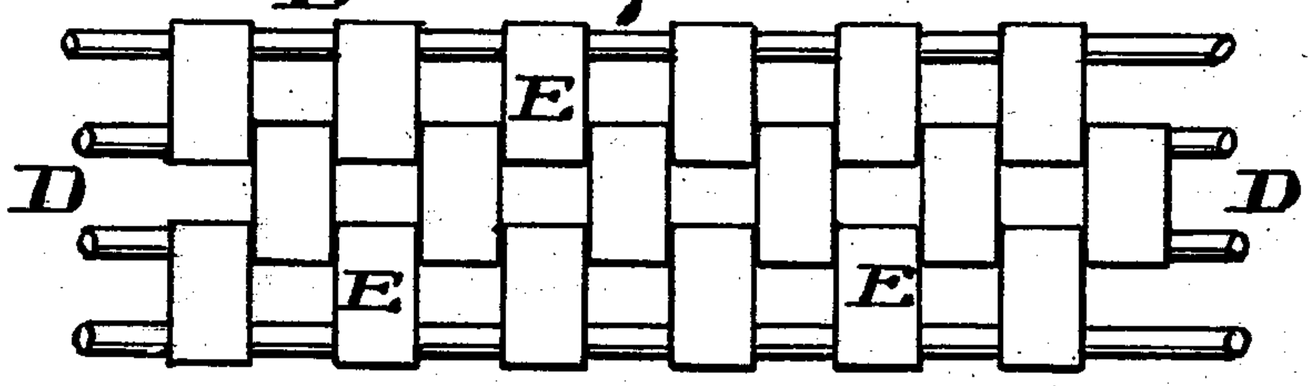

Fig. 3.

Fig. 4.

E

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UNITED STATES PATENT OFFICE.

JOHN VAN DEVELDE, OF CLEVELAND, OHIO.

STEAM-BOILER FURNACE.

SPECIFICATION forming part of Letters Patent No. 689,628, dated December 24, 1901.

Application filed March 22, 1901. Serial No. 52,451. (No model.)

To all whom it may concern:

Be it known that I, JOHN VAN DEVELDE, a citizen of the United States of America, and a resident of Cleveland, Cuyahoga county, Ohio, have invented certain new and useful Improvements in Steam-Boiler Furnaces, of which the following is a specification.

This invention relates to steam-boiler furnaces; and it consists in the new construction and combination of elements for obtaining complete and perfect combustion of the fuel, whereby greater efficiency and economy are the results.

The main and essential feature of the invention consists in the application of water-tubes connected to the rear part of the boiler, with their forward ends supported in the bridge-wall and supporting non-combustible tile or slag, forming a great heat retaining and radiating auxiliary to the furnace-back of the bridge-wall, substantially as described.

In the accompanying drawings, Figure 1 is a side elevation of a boiler and furnace, partly in section, showing my invention. Fig. 2 is a top or plan view of a portion of the said water-tubes and the tiles arranged in open order. Fig. 3 is a sectional view of one of the water-tubes. Fig. 4 is a detached view of one of the tiles.

A represents a common horizontal tubular boiler, with its ordinary setting. B is the common bridge-wall supporting the rear ends of the grate-bars.

C is a drum suitably attached crosswise to the under side at or near the rear end of the boiler.

D D are circulating water-tubes attached to the said drum and extending forward on a downward inclination and have their forward ends supported in the bridge-wall with their ends protruding under the grate-bars and into the ash-pit. Their ends are closed with caps *d*. This permits of access for cleaning or blowing out said tubes. These circulating-tubes consist of two tubes D and D′, Fig. 3, the outer one D being secured to the drum. The inner one is open at both ends and is supported centrally in the outer one. The upper ends of the inner ones extend a short distance into the drum. Their opposite and lower ends are in open communication with the outer tubes, so that the circulation will be in lines, as shown by the arrows.

E E are tiles made of any suitable non-combustible material and are laid on the tubes D D in alternate order, as seen in Fig. 2, thus providing an open checkered medium for retarding and causing a thorough commingling of the product of combustion, aided by a suitable blast of air, as at H *h*, in the front of the boiler-setting. G is a baffle-wall built at the end of the boiler and supported on the drum C, thus providing a kind of inverted rear bridge-wall, whereby the draft from furnace must take the course through said checkered tile-surface, as indicated by the arrows. These tiles become incandescent with a white heat, so that only the water-tubes will support them. Thus the heating efficiency of the furnace is very greatly increased. Slag may be substituted for the tile.

Having described my invention, what I claim is—

In steam-boiler furnaces, the combination with a boiler, a drum attached to the under side of the boiler, a baffle-wall supported on said drum, and a series of water-tubes connected to said drum and extending forward to and supported by the bridge-wall; of tiles or slag supported on said tubes, substantially as described and for the purpose specified.

Signed by me at Cleveland, Ohio, this 19th day of March, 1901.

JOHN VAN DEVELDE.

Witnesses:
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