

(No Model.)

W. H. HANNAN
COAL STOKER.

No. 523,982.

Patented Aug. 7, 1894.

Fig. 1.

Fig. 2.

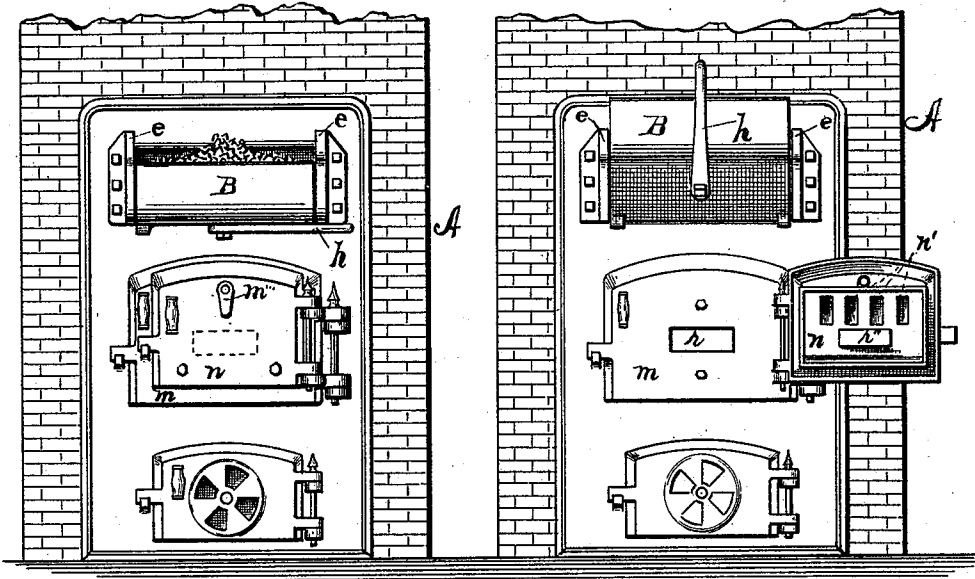
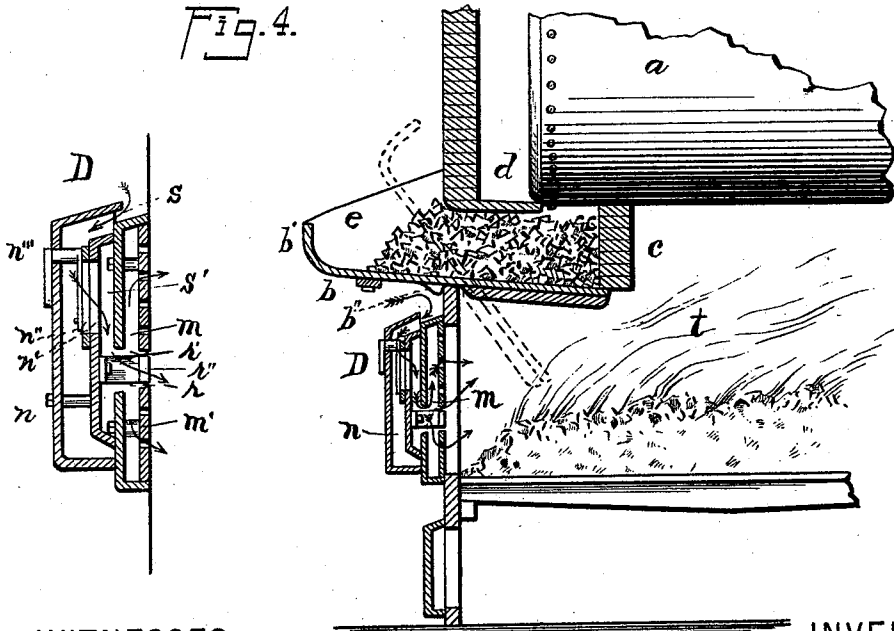


Fig. 3.

Fig. 4.



WITNESSES:

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COAL-STOKER.

SPECIFICATION forming part of Letters Patent No. 523,982, dated August 7, 1894.

Application filed June 29, 1893. Serial No. 479,162. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. HANNAN, of Syracuse, in the county of Onondaga, in the State of New York, have invented new and
5 useful Improvements in Coal-Stokers, of which the following, taken in connection with the accompanying drawings, is a full, clear, and exact description.

My invention relates to apparatus for stoking
10 boilers, in which the coal is shoveled into a receiver adapted to be dumped inwardly to deposit the coal into the fire, without opening any door; and in which the fire is raked and leveled off through a small aperture in an inner
15 door, which is substantially closed by the shutting of an outer door, said double door being also provided with draft openings and passages, to admit air onto the top of the front of the fire.

My object is to produce a tilting coal-stoker
20 mounted in a boiler front, into which the coal is shoveled, and in which the coal is more or less coked, before it is dumped onto the fire by the tilting of the receiver, so that more or
25 less of the smoke-producing gases are eliminated before it is ignited; in which the tilting of the receiver, at least substantially, closes the opening in the boiler front, thereby preventing the indraft of a large quantity of
30 cold air and the damages resultant therefrom, to the fire, the flues, the heads and the other parts of the boiler; in which the receiver when restored to its normal position after dumping tightly closes the opening in the
35 boiler front; in which the boiler front is provided with a double door, the inner section of which hollow has its inner wall perforated, its outer one solid, except that both are provided with a small opening through which a
40 hoe can be inserted for manipulating the coal dumped onto the fire, the outer section of the door being also hollow, provided with a stopper, which, normally, substantially closes said
45 opening in said inner wall of said inner door, said outer door being provided in its inner wall with slotways and with means for varying the size thereof, an intake aperture being left between the top of the outer and the inner sections of the door; and in which the
50 ash-pit door is provided with an ordinary damper to regulate the inflow of air into the

ash-pit and thence upward through the grate and fire.

My invention consists in the several novel features of construction and operation here-
55 inafter described and which are specifically set forth in the claims hereunto annexed.

It is constructed as follows, reference being had to the accompanying drawings, in which—

Figure 1, is a front elevation of a boiler
60 front, and the combined coal-receiver and stoker ready for being tilted, the main door being also closed. Fig. 2, is a like view of the same, showing the receiver tilted, and also showing the outer section of the main
65 door opened. Fig. 3, is a vertical sectional elevation of part of the boiler, boiler front, the tilting coal-receiver filled, ready to be tilted, the front door closed, grate, ash-pit and
70 ash-pit door. Fig. 4, is an enlarged vertical sectional elevation of the front-door closed.

A, is a boiler front, and *a*— is a boiler of any construction. Said front is provided with an opening, above the fire, and front
75 door, in which the coal-receiver —B— is mounted and adapted to be tilted, consisting of a metallic plate —*b*— which constitutes
80 the bottom thereof, having its front end upturned to create the front —*b'*— of said receiver. Its inner end bears against the transverse wall or baffle plate —*c*—. Its top is closed by the plate —*d*— which is supported by the vertical plates —*e*— which are secured to the front and project inwardly to the wall
85 —*c*—, and outwardly as far as the front of the plate —*b*—, and constituting the sides of said receiver, detached from the plate —*b*—. The tilting bottom —*b*— rests and rocks upon the boiler front, and when tilted, as shown by the dotted lines, is supported by the lug —*b''*—
90 upon the bottom. A bar —*h*— is pivoted upon the tilting plate and when swung around under one of the side plates —*e*—, locks the bottom and prevents any accidental tilting, as in Fig. 1, while when swung, as in Fig. 2,
95 it serves as a handle whereby the tilting can be effected, by raising the front of the receiving and tilting-plate, and then by pulling down, said plate is restored to its normal position ready to receive another charge.

D, is the front door shown as consisting of an inner section —*m*— and an outer one

—*n*—, the inner section being hinged upon the boiler front and the outer one upon the inner section. The inner section is cast or made hollow, with the back —*m'*— perforated at intervals, and with the aperture —*r*— through both the front and back. The outer section is also cast or made hollow, is provided, in the back, with the slotways —*n'*—, a slide —*n''*— and a lever —*n'''*— connected thereto projecting through the front by which the slide is operated to open or close the slots; is further provided with a bracket —*r'*— carrying a head —*r''*— which, when this section is shut, substantially closes the aperture —*r*—; and the front of this section at the top projects over the top of the inner section, leaving an opening —*s*— through which the intake air enters first the outer section, then passes through the slotways, then flows into the chamber —*s'*— between the door sections, thence through the outer aperture —*r*— into the inner section and is thence passed through the perforations into the combustion chamber —*t*—, and in its passage through the door is more or less retarded by its zigzag course, and is more or less heated and rarefied in the heating chambers, and particularly between the door sections and in the inner one, so that it enters the combustion chamber in the finest condition to combine with the products of combustion, and without doing any damage to the boiler shell, flues, &c., incident to the letting in of cold air.

As the tilting of the coal substantially closes its opening in the boiler front, substantially all indraft of cold air is there prevented.

As the coal is deposited adjacent to the front of the fire, the aperture —*r*— becomes and is used as a stoke-hole, through which the coal is spread around, the fire stirred and all the manipulations are performed, by means of the tools ordinarily used, so that the door with the stoke-hole is an accessory to the tilting coal receiver.

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

1. The combination with a boiler, a boiler front and a wall across the combustion cham-

ber below the boiler, of vertical plates secured in the front, and a tilting plate mounted between said vertical plates, in said boiler front and engaging inwardly with said wall.

2. The combination with a boiler, and a boiler front, of a vertically tilting coal-stoker having its bearing in said front and projecting into the combustion chamber, and a baffle-plate under said boiler, and across the combustion chamber, normally closing the inner end of said stoker.

3. The combination with a boiler, a boiler front, of a coal-stoker comprising a stationary top and stationary sides extending from the boiler front inwardly and connected to a baffle-plate across the top of the combustion chamber, and a tilting bottom mounted upon said boiler-front and extending inwardly to said baffle-plate and outwardly beyond said front, and adapted to close the opening in said front both when being filled and when tilted.

4. The combination with a boiler front, and a tilting coal-stoker mounted in it, of a door in said front, composed of sections, the inner one provided with a stoke-hole and the outer one with means to close said stoke-hole.

5. The combination with a boiler-front and a tilting coal-stoker, of a door in said front, composed of hollow sections, the inner one provided with a stoke hole through its walls, the outer one with a plate to substantially close said stoke-hole.

6. The combination with a boiler front and a tilting coal-stoker mounted therein, of a door in said front, composed of hollow sections having connected air-chambers, the inner section having a stoke-hole through its walls, and the outer one with a plate to substantially close said stoke-hole, and means to regulate the intake of air through said sections.

In witness whereof I have hereunto set my hand this 3d day of June, 1893.

WILLIAM H. HANNAN.

In presence of—

C. W. SMITH,
HOWARD P. DENISON.