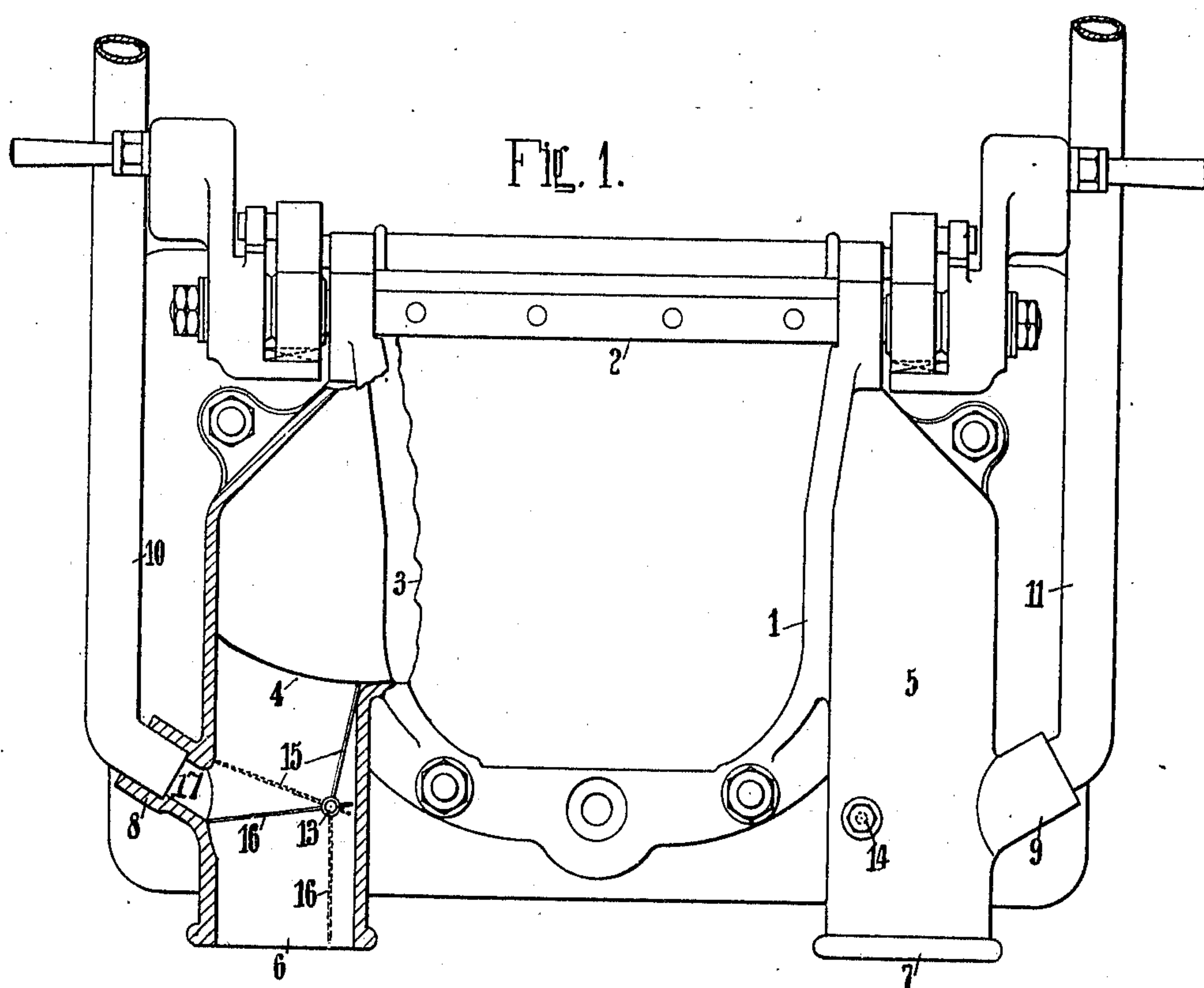


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2 SHEETS--SHEET 1.



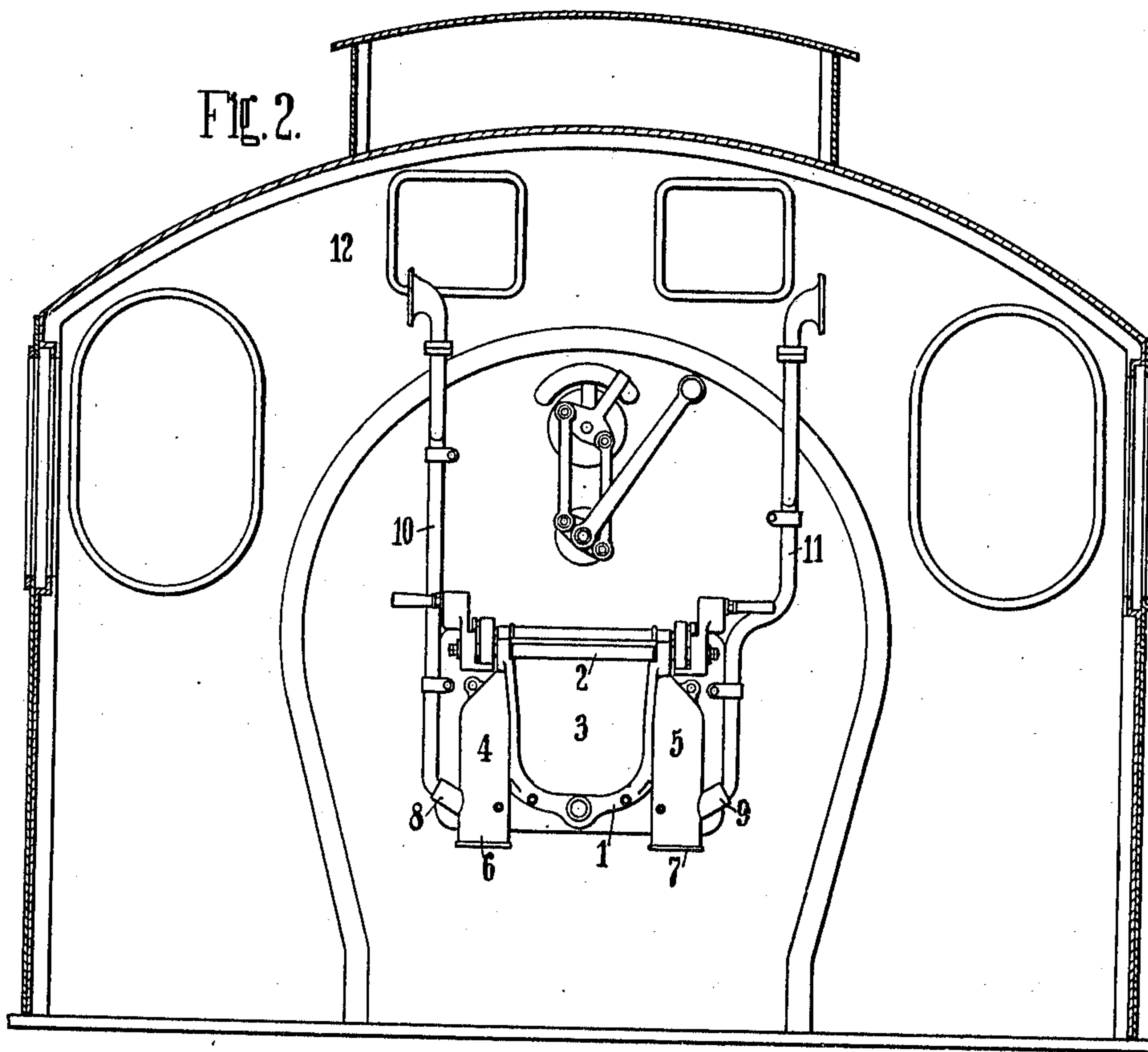
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G. DE GRAHL.
DOOR FRAME FOR LOCOMOTIVE BOILER FURNACES.
APPLICATION FILED JULY 8, 1910.

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Patented Apr. 25, 1911.

2 SHEETS—SHEET 2.



Witnesses
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UNITED STATES PATENT OFFICE.

GUSTAV DE GRAHL, OF ZEHLENDORF, NEAR BERLIN, GERMANY.

DOOR-FRAME FOR LOCOMOTIVE-BOILER FURNACES.

990,254.

Specification of Letters Patent.

Patented Apr. 25, 1911.

Application filed July 8, 1910. Serial No. 571,031.

To all whom it may concern:

Be it known that I, GUSTAV DE GRAHL, a subject of the German Emperor, and residing at Zehlendorf, near Berlin, Germany, have invented certain new and useful Improvements in Door-Frames for Locomotive-Boiler Furnaces, of which the following is a specification.

My invention relates to door-frames for locomotive boiler furnaces.

Attempts which have been made to utilize the draft in the lateral air flues in the door-frame for ventilating the cab failed principally owing to the bottom inlets of the lateral flues connected with the ventilating tubes having to be kept closed in order to obtain the intended ventilating action. Consequently particles of clinker and coal settled in the bottom part of the lateral air flues and soon stopped up at this place the ends of the ventilating tubes.

A primary object of my invention is to remedy this defect. I attain this end by arranging angular dampers in the lateral air flues in the door-frame, the top parts of which dampers regulate the admission of the secondary air to the fire box, whereas the bottom parts either close the bottom inlets of the lateral air flues from the open air or keep the bottom inlets of these flues open, so that any particles of clinker and coal which collect can slide out of the same.

One illustrative embodiment of my invention is represented by way of example in the accompanying drawing, wherein:—

Figure 1 is an elevation, partly in section, showing the door-frame, whereas Fig. 2 is a section on a smaller scale through the cab.

Referring to the drawing, 1 designates the door-frame, in which the shaft 2 carrying the inwardly-opening door 3 is journaled. Laterally of the fire door the door-frame has the two air flues 4, 5 which are connected below through inlets 6 and 7, respectively, with the open air and are each provided

with a lateral socket 8 and 9, respectively. These sockets receive the ventilating tubes 10 and 11, respectively, which extend to the top part 12 of the cab, as shown in Fig. 2. Angular dampers or valves 15, 16, of which only one is visible in the drawing, are journaled by means of bolts 13 and 14, respectively, in the lateral air flues 4 and 5, respectively.

When the dampers 15, 16 occupy the position shown in full lines in Fig. 1, the admission of air through the inlets 6, 7 is shut off by the parts 16, so that owing to the vacuum in the fire box air is sucked from the top part of the cab through the ventilating tubes 10, 11 into the lateral air flues 4, 5 and from these into the fire box, so that the cab is well ventilated. The admission of secondary air is stopped by the parts 15 when in the position indicated in dotted lines. Should particles of coal or ash have settled on the part 16 when the damper was open, the same can slide off this part as soon as it is lowered into the position shown in dotted lines. Therefore it is quite impossible for the opening 17 into the ventilating tubes to be stopped up.

I claim:—

1. The combination with a door-frame of a furnace, having lateral air-flues opening with the lower part into the open air, and with the upper part into the furnace, of ventilating-tubes opening into said flues and extending to the top part of the cab, of valves pivoted in each of said flues and adapted to shut off the lower part of said flues from the open air.

2. The combination with the door-frame of a furnace having lateral air-flues opening with the lower part into the open air, and with the upper part into the furnace, of ventilating-tubes opening into said flues and extending to the top part of the cab, of two dampers connected with each other, including an obtuse-angle and being pivoted in

each of said flues, one of said dampers being adapted to shut off the upper part of the said flue from the ventilating-tube and to regulate the admission of secondary air into
5 the furnace, the other one being adapted to shut off the lower part of the said air-flue from the open air, when the admission of secondary air through said ventilating-tube

into the furnace is opened, and to open, when the said admission is shut off.

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

GUSTAV DE GRAHL.

Witnesses:

WOLDEMAR HAUPT,
HENRY HASPER.

Copies of this patent may be obtained for five cents each, by addressing the "Commissioner of Patents, Washington, D. C."
