

No. 654,774.

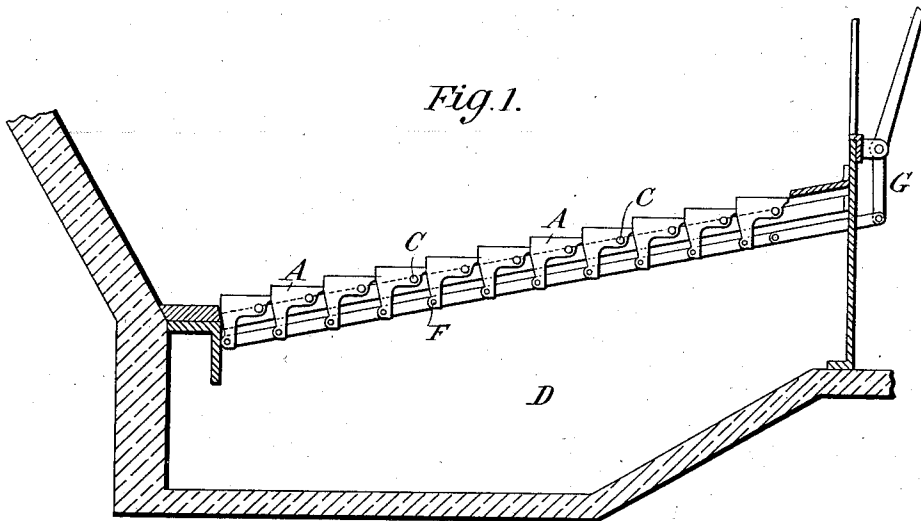
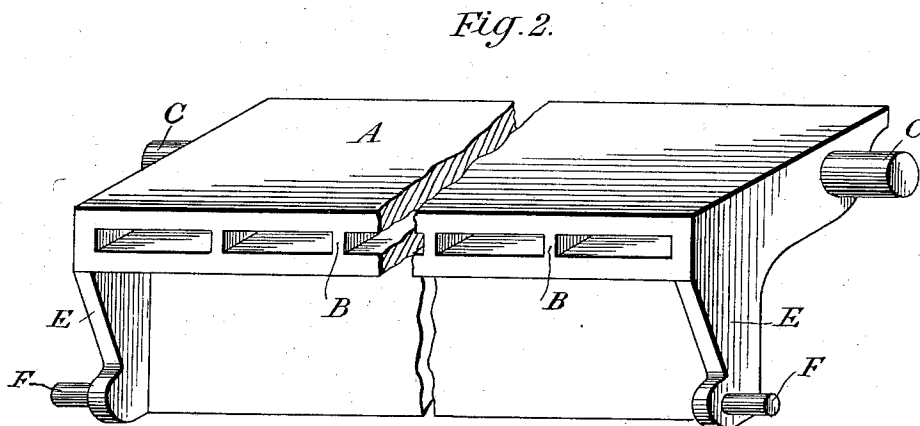
Patented July 31, 1900.

W. R. WOOD.
COMBUSTION FURNACE.

(Application filed Aug. 19, 1899.)

(No Model.)

2 Sheets—Sheet 1.



WITNESSES.

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2 Sheets—Sheet 2.

Fig. 3.

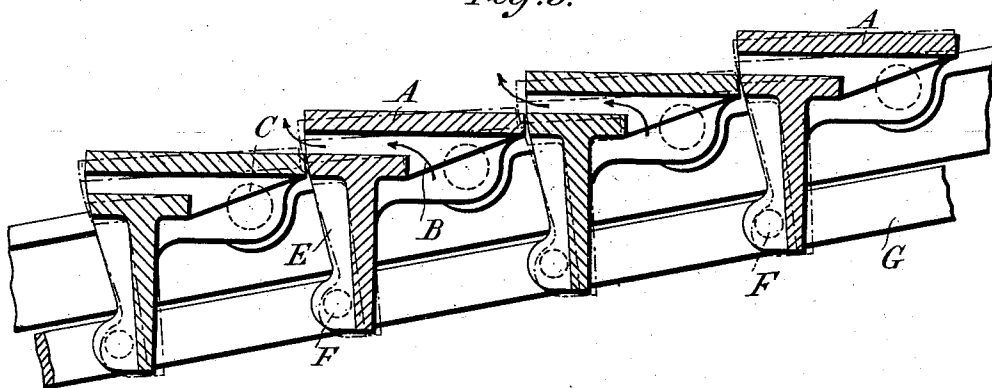


Fig. 4.

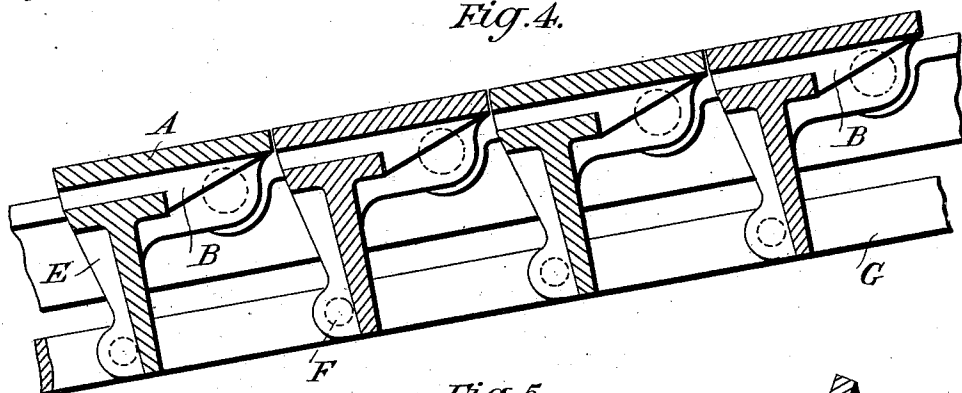
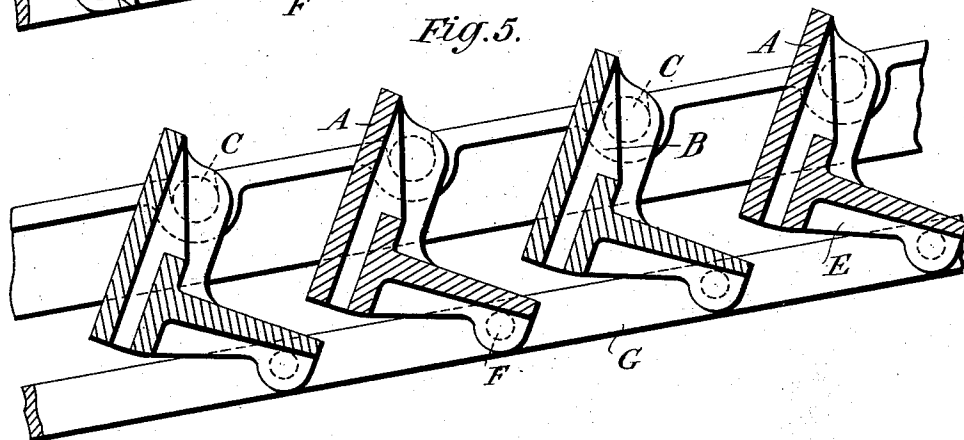


Fig. 5.



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UNITED STATES PATENT OFFICE.

WILFRED ROTHERY WOOD, OF LONDON, ENGLAND.

COMBUSTION-FURNACE.

SPECIFICATION forming part of Letters Patent No. 654,774, dated July 31, 1900.

Application filed August 19, 1899. Serial No. 727,759. (No model.)

To all whom it may concern:

Be it known that I, WILFRED ROTHERY WOOD, engineer, a citizen of the United States of America, residing at 18 Walbrook, in the city of London, England, have invented certain new and useful Improvements in Combustion-Furnaces, of which the following is a specification.

It has heretofore been proposed to use rising and falling and also reciprocating grate-bars in furnaces of various forms, the objects being to keep the fuel from caking or massing together to too great an extent and also to keep the draftways clear. Hollow bars through which air is injected and stepped bars have also been proposed.

The present invention relates to what may be called a "hollow-bar stepped furnace;" and it consists in so forming and mounting the bars that when in their normal position there is free access for the natural or forced draft through the bars and fuel and no tendency of the fuel to pass between the bars to the ash-pit, the bars being kept cool by the air passing through them and the amount of draft-inlet being capable of regulation by varying the position of the bars, which may be moved until at the extreme limit of their working position the draft is entirely cut off and an even dead-plate furnace-bottom produced, the bars in reaching this position having a cutting or shearing action on any fuel or material lying in or adjacent to the draft-inlets, which are thereby kept clear, which is a point that has hitherto been difficult to secure when using certain classes of fuel. Further movement may be imparted to the bars, so as to form discharge-openings between them and secure the dumping of any desired quantity of ashes to the ash-pit.

In order that the invention may be clearly understood, reference is made to the accompanying drawings, in which—

Figure 1 represents a side view of a furnace composed of a series of the improved bars, the side of the furnace being removed. Fig. 2 is a perspective view, upon a larger scale, of one of the grate-bars. Fig. 3 is a sectional view through a number of the bars when in position for full draft. Fig. 4 is a like view when the draft is entirely cut off and a dead-plate

furnace is produced, and Fig. 5 a similar view when the bars are in position for discharging the ashes into the ash-pit.

In the drawings the bars A have a substantially box-like cross-section, the top and bottom being when necessary supported and held by connecting-ribs B. Each bar is supplied with trunnions or supports C, which find bearings (not shown) in the walls of the furnace or wind-box D. The downwardly-projecting leg B of the bar is provided with a pin F or other device adapted to engage with the bar G, so that all the bars may be operated in unison. When the bars are in the position indicated in Fig. 3, full draft will pass from wind-box D to and through the bars, as indicated by arrows, and to reduce such draft it will be only necessary to slightly move the bars until the rear upper solid portion of each bar partially closes the opening in the next adjacent bar, as indicated by dotted lines in Fig. 3, while further movement completely cuts off the draft and at the same time effectually cuts or shears off any fuel or gummy matters adhering at the outlets of the draft-openings. When the bars are in this position, as indicated in Fig. 4, a dead-plate is produced which can be readily raked or scraped to loosen any adhering fuel, and the ashes may be discharged by further movement of the bars into the position indicated in Fig. 5, and it is only when such bars are in this position that there is any tendency of the fuel or ashes to pass through them.

What is claimed is—

1. In combustion-furnaces, grate-bars having substantially box-like cross-sections the space within the bars forming the draft-inlet to the furnace and the top sections of such bars forming the furnace-bottom and the lower part of such bars in combination with the top of the next adjacent bar forming a stop-plate extending rearward from the draft-opening to prevent the fuel passing between said bars when in working position, substantially as described.

2. In combustion-furnaces, grate-bars having substantially box-like cross-sections the space within the bars forming the draft-inlet to the furnace, and means for moving such bars so as to cause the rear top section of one bar to move across the draft-opening between

the top and bottom section of the next adjacent bar to partially or entirely close the draft, substantially as described.

3. In combustion-furnaces grate-bars having substantially a box-like cross-section and through which the draft passes and means for moving such bars and causing the rear top face of one bar to cut or shear across the draft-outlet of the next adjacent bar substantially as described.

4. In combustion-furnaces, grate-bars having substantially a box-like cross-section and through which the draft passes the top of such bars forming the furnace-bottom and the lower part of such bars in combination with the top of the next adjacent bar forming a stop-plate to prevent fuel passing between such bars when in working position, and means for moving such bars to form a dead-plate, substantially as described.

5. In combustion-furnaces, grate-bars having substantially a box-like cross-section and through which the draft passes the top of such bars forming the furnace-bottom and the lower part of such bars in combination with the top of the next adjacent bar forming a stop-plate to prevent fuel passing between such bars when in working position, and means for moving such bars to form a dead-plate and finally to open the spaces between the bars for discharge of fuel or ashes, substantially as described.

In testimony whereof I have hereunto set my hand in the presence of two subscribing witnesses.

WILFRED ROTHERY WOOD.

Witnesses:

PHILIP M. JUSTICE,
FRED C. HARRIS.