J. H. DUNAVON.

GRATE BAR.

APPLICATION FILED JULY 6, 1911.

1,010,243. Patented Nov. 28, 1911.

Fig. 1.

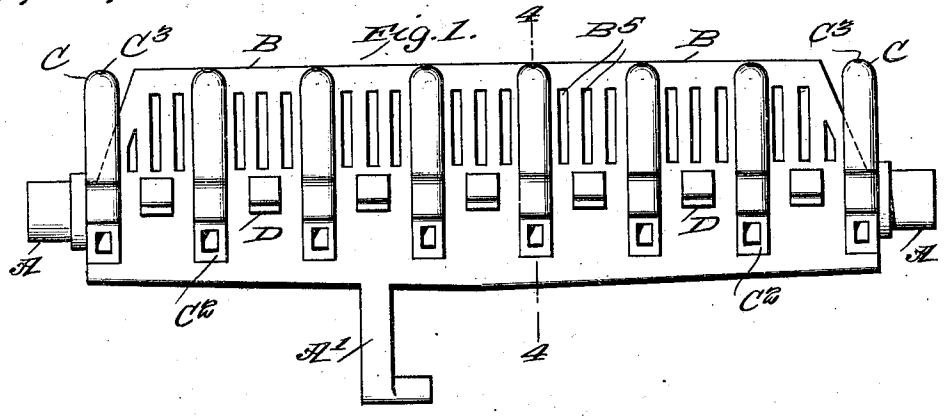


Fig. 2.

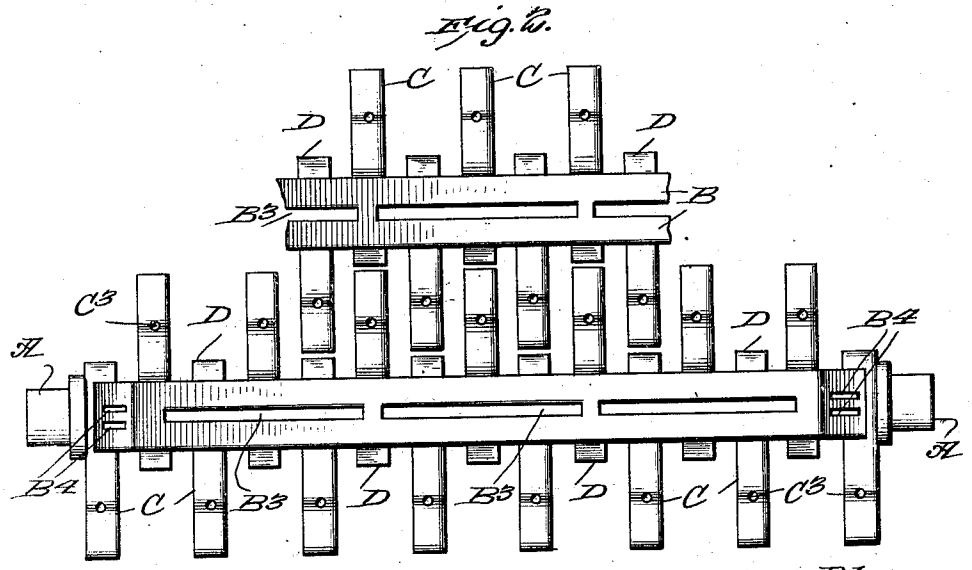


Fig. 3.

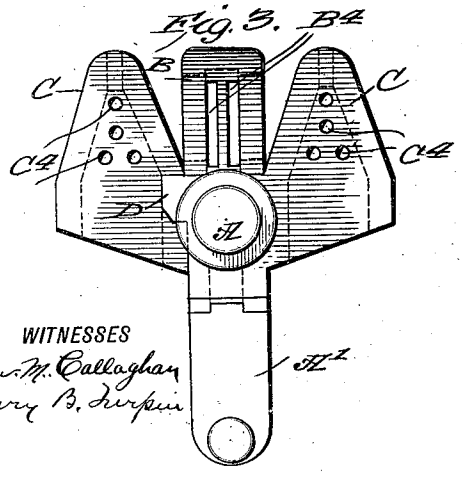
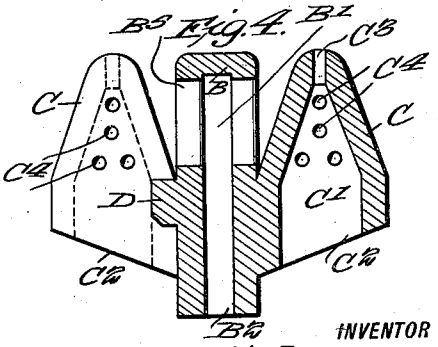


Fig. 4.



WITNESSES

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GRATE-BAR.

1,010,243. Specification of Letters Patent. Patented Nov. 28, 1911.

Application filed July 6, 1911. Serial No. 637,059.

To all whom it may concern:

Be it known that I, JAMES HENRY DUNAVON, a citizen of the United States, and a resident of Pueblo, in the county of Pueblo and State of Colorado, have invented certain new and useful Improvements in Grate-Bars, of which the following is a specification.

This invention is an improvement in grate bars adapted for use in locomotive or other coal burning engines or boilers, or furnaces where grates are desired; and the invention has for an object to provide a novel construction whereby the supply of air or oxygen to the fire can be increased to secure a better combustion; and the invention consists in certain novel constructions and combinations of parts as will be hereinafter described and claimed.

In the drawing Figure 1 is a side view of a grate bar embodying my invention. Fig. 2 is a top plan view thereof, a portion of an adjacent coöperating bar being shown. Fig. 3 is an end view of the grate bar. Fig. 4 is a cross section on about line 4—4 of Fig. 1.

The grate bar is provided at its ends with trunnions A, by which it may be journaled so it can be rocked in any suitable manner, it may be by means connected with a depending crank arm A′, as shown, and the crank arm has a central or body portion in the form of a longitudinally extending hollow bar B, whose internal chamber B′ is open at the bottom B^2 and opens at B^3 longitudinally along the top of the body portion B by means of the slots B^3 and the ends of the body portion slope downwardly toward the trunnions A and are provided with slots B^4, the sides of the body portion being slotted at B^5 so that the air admitted at B^2 may discharge longitudinally along the top, laterally along the sides and also at the sloped ends of the body portion as will be readily understood from the drawing. The lateral fingers C of the bar are in the pyramid form best shown in Figs. 3 and 4 and these fingers alternate on opposite sides of the body portion B, are made hollow with their recesses C′ open at the bottom C^2 and they are provided with discharge openings C^3 at their crowns and with discharge openings C^4 facing toward the opposite ends of the grate bar.

It will be noticed that the grate bar presents in end view and in section, the short upwardly projecting portions all of which are open at the bottom and are provided with discharge openings leading to the fire surface so that in operation the fire will be ventilated in all directions from the underlying grate bar so that the smoke will be eliminated and the amount of coal and cinders that now discharge from the stack and waste, will now be consumed with fire, the advantages in the economy of coal and in the effective heating being readily appreciated.

As best shown in Fig. 2, I provide between the fingers, short projecting lugs D on each of the bars which coöperate with the fingers of the adjacent bar in producing a comparatively close grate surface.

As best shown in Figs. 3 and 4, the longitudinal body portion B and the pyramidal fingers on opposite sides thereof form upwardly projecting portions on the grate surface and are provided with discharge openings for the air, so located as to secure a distribution of the air to the fire surface in the practical operation of the invention.

It will be noticed from Figs. 3 and 4, that the fingers project upwardly to about the level of the upper side of the body portion so that they operate in a measure to guard the lateral air discharge openings of the body portion from becoming clogged by lumps of coal. At the same time any ashes or cinders that may pass through the air discharge openings of the body portion and of the fingers, will discharge freely at the lower open ends of the chambers of said parts.

I claim:

1. A grate bar mounted to rock and consisting of a hollow longitudinal body portion open at its bottom portion for the inlet of air, fingers laterally to the body portion, the said body portion having a longitudinally extending portion projecting above the plane of the body of the grate bar and provided in its upper side with longitudinally extending slots for the escape of air and also having in its sides and ends vertically elongated slots for the discharge of air, the opening at the bottom of the body portion being adapted to receive air from the ash-pan, all substantially as described, whereby the air may be taken directly from the ash-pan and may be dis-

charged through the slots in the upwardly projecting portion and the said slots will operate in practice to prevent fracture of the grate bar by the expansion and contraction thereof under variations of temperature, substantially as set forth.

2. The grate bar substantially as herein described, consisting of a hollow longitudinal body portion having an air box portion extended longitudinally over the body portion and above the plane of the said body portion and open at its bottom for the inlet of air and slotted longitudinally along its top for the discharge of air and also provided along its sides with vertical slots for the discharge of air, and hollow pyramidal fingers on the opposite sides of the body portion and projecting upwardly from a point adjacent to the base of the body portion to a point approximately in a plane with the upper side of the body portion, said fingers being open at the bottom for the inlet of air and being provided at their upper sides or crowns with discharge openings and also with discharge openings at their opposite sides in the direction of length of the bar, all substantially as and for the purposes set forth.

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