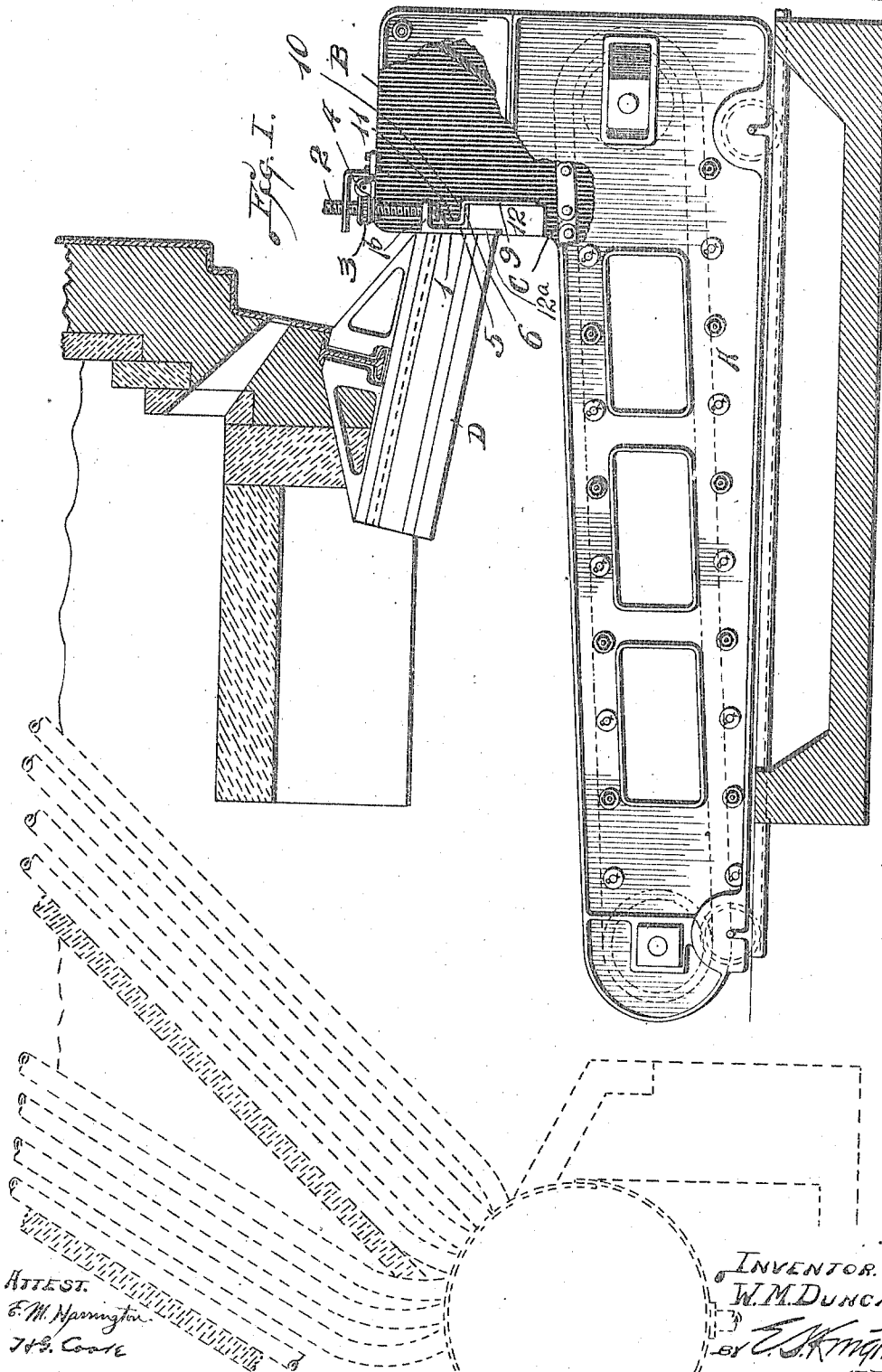


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W. M. DUNCAN.
GATE FOR MECHANICAL STOKERS.
APPLICATION FILED MAY 6, 1909.

Patented Mar. 8, 1910.

2 SHEETS—SHEET 1.



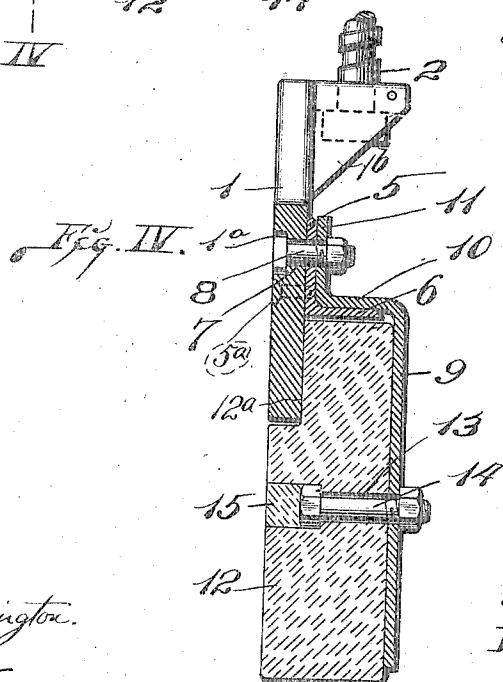
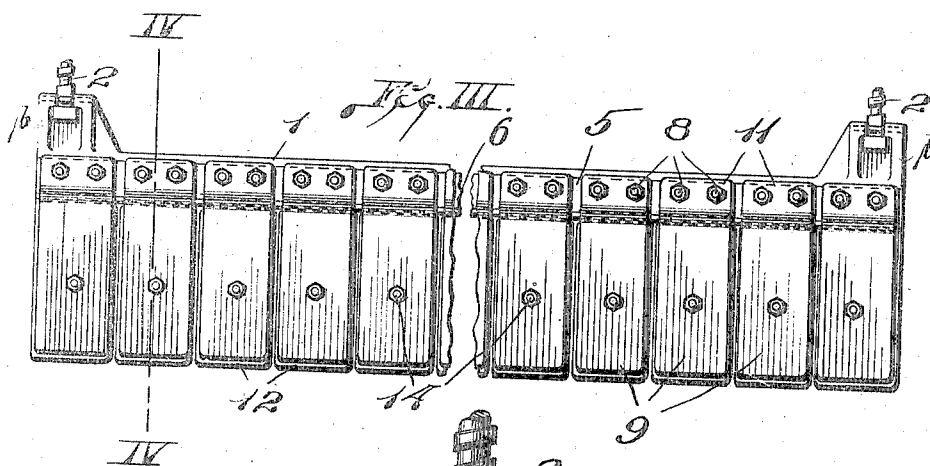
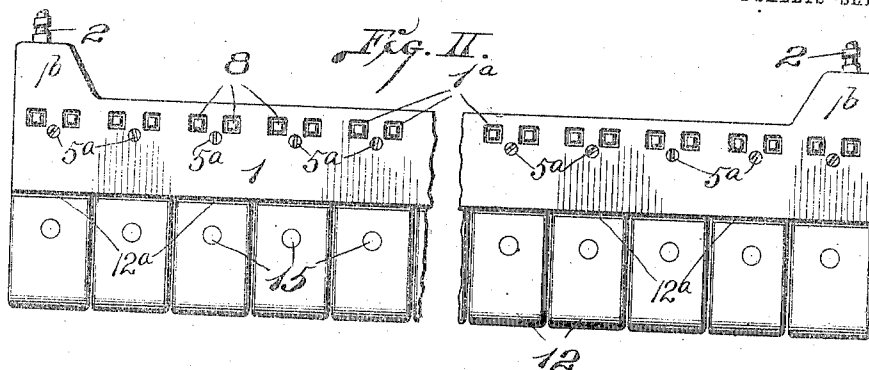
ATTEST
F. M. Harrington
J. H. Coate

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W. M. DUNCAN.
BY E. J. Knight
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UNITED STATES PATENT OFFICE.

WILLIAM MILLEN DUNCAN, OF ALTON, ILLINOIS.

GATE FOR MECHANICAL STOKERS.

951,499.

Specification of Letters Patent.

Patented Mar. 8, 1910.

Application filed May 6, 1909. Serial No. 494,343.

To all whom it may concern:

Be it known that I, WILLIAM M. DUNCAN, a citizen of the United States of America, residing in Alton, in the county of Madison and State of Illinois, have invented certain new and useful Improvements in Gates for Mechanical Stokers, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification.

My invention relates to a vertically slidable gate for use in mechanical stokers and whereby delivery of fuel to the traveling grate of the mechanical stoker may be regulated according to different grades and sizes of fuel.

The invention has for its object the production of a gate of the kind named in which there are a plurality of fireproof members detachably connected to a carrier and which may be readily separated, when impaired, from the carrier to be replaced by new sections.

Figure I is a view partly in vertical section and partly in elevation of portions of a furnace and mechanical stoker and my gate incorporated in the stoker. Fig. II is a rear elevation of my gate, the central portion of the gate being broken out. Fig. III is a front elevation of the gate, the central portion of the gate being broken out. Fig. IV is a vertical cross section of my gate taken on line IV—IV, Fig. III.

In the accompanying drawings: A designates the side frames of a mechanical stoker, between which at their forward ends and forming the upper part of said side frames is a hopper B, (see Fig. I.) The side frames serve as supports for a traveling grate C that is operable in part at the bottom of the hopper B, and said side frames are preferably incorporated into a track that permits of the stoker elements being moved outwardly, although such construction is not essential in so far as my improvement is concerned.

D is an ignition arch supported above the traveling grate C in a furnace in which the stoker is used, and adjacent to which my gate is located to serve as a means for regulating the movement of fuel upon the traveling grate from the hopper B to the fire chamber of the furnace.

No invention *per se* is herein claimed for the parts shown in Fig. I other than the gate, these parts having been described

merely for the purpose of explaining the location and utility of my gate.

1 designates a carrier bar, having countersinks 1^a and socket lugs 1^b (see Figs. II to IV, inclusive,) which constitutes the upper portion of my gate and is adjustably supported by suitable means such as vertical screw threaded hanger rods 2 fitted to the socket-lugs 1^b of the carrier bar at their lower ends. These hanger rods have preferably secured thereon and have fitted thereto worm wheels 3 that are engaged by worms as indicated at 4, (Fig. I,) and through the medium of which said worm wheels may be rotated upon the hanger rods for the purpose of raising and lowering the carrier bar 1 with the parts detachably connected thereto and which enter into the construction of my gate as will hereinafter appear.

5 designates a hanger rail suitably secured by screws 5^a to the carrier bar 1 at its front side, this hanger rail being of right angle shape in cross section, (as seen in Figs. I and IV) and having one (6) of its wings extending horizontally and forwardly from the carrier bar. The carrier bar 1 is provided with bolt holes 7 that receive bolts 8 which extend through the carrier bar and also preferably through the vertical wing of the hanger rail 5. These bolts preferably have their heads located at the rear sides of the carrier bar and seated in the countersinks 1^a in the carrier bar so that their ends are flush with the rear face of the carrier bar, (as seen most clearly in Fig. IV.)

9 designates detachable hanger plates having horizontal portions 10 at their upper ends that rest upon the horizontal wing of the hanger rail 5, and vertical portions 11 fitting against the vertical wings of said hanger rails. The horizontal wing of the hanger rail, therefore serves as a support for the hanger plates 9, and said hanger plates are detachably secured to the carrier bar 1 by the bolts 8 which pass through bolt holes in the vertical portions 11 of the hanger plates, there being preferably two of the bolts 8 for each hanger plate, as illustrated in the drawings.

12 indicates sections of fireproof material, preferably fireclay, that are attached independently of each other to the hanger plates 9 and which are, therefore, susceptible to being removed from the carrier bar 1 when the hanger plates are detached therefrom.

Each section 12 is provided with a bolt hole 13 that receives a bolt 14 centrally positioned in the section and extending through the corresponding hanger plate whereby the section is detachably connected to the hanger plate in order that it may be separated therefrom in the event of its becoming impaired in service. The head of each bolt 14 is preferably countersunk into the section 12 in which it is located, and the cavity between the head of the bolt and the inner face of the section is closed by a filler 15 of fireclay. Each section 12 has a recess 12^a which receives the lower edge of the carrier bar.

It will be seen that in the event of either of the fireproof sections 12 of my gate becoming impaired in service, said sections may be readily replaced by new sections without disturbance of the other sections. The only acts necessary for the replacing of the previously used section by a new one being the disconnection of the hanger plate 9 supporting section by the removal of the nuts from the bolts 8 that connect said plate to the carrier bar and the removal of the end bolt 14 that connects the fireproof section to the hanger plate, the attachment of a new fireproof section, and the attachment of the hanger plate to the carrier bar. It is obvious that to effect a saving of time in the attaching of a new fireproof section in place of one that has become impaired, the fireproof sections to be subsequently used may be kept on hand attached to carrier plates, in order that they may be immediately attached to the carrier bar upon the removal of the previously used fireproof section and its hanger plate.

I claim:

1. A gate of the character described comprising a carrier bar having bolt holes, a hanger rail having a horizontal wing, and a vertical wing formed with bolt holes registering with the bolt holes of the carrier bar, means for securing the hanger rail by its vertical wing to the carrier bar, a detachable hanger plate formed with a bolt hole, a horizontal portion seating on the horizontal flange and a vertical portion formed with bolt holes registering with the bolt holes of the hanger rail and the carrier bar, a section formed with a bolt hole, and bolts detachably securing the vertical portion and the carrier bar together, and the section, detachably, to the hanger plate.

2. A gate of the character described comprising a carrier bar having bolt holes formed with countersinks, a hanger rail having a horizontal wing, and a vertical wing formed with bolt holes registering with the bolt holes of the carrier bar, means for securing the hanger rail by its vertical wing to the carrier bar, a detachable hanger plate formed with a bolt hole, a horizontal portion seating on the horizontal flange and a vertical portion formed with bolt holes registering with the bolt holes of the hanger rail and the carrier bar, a section formed with a bolt hole and bolts having their heads located in the countersinks and detachably securing the vertical portion and the carrier bar together, and means securing the section detachably to the hanger plate.

3. A gate of the character described comprising a carrier bar having bolt holes, a hanger rail having a horizontal wing, and a vertical wing formed with bolt holes registering with the bolt holes of the carrier bar, means for securing the hanger rail by its vertical wing to the carrier bar, a detachable hanger plate formed with a bolt hole, a horizontal portion seating on the horizontal flange and a vertical portion formed with bolt holes registering with the bolt holes of the hanger rail, and the carrier bar, a section formed with a bolt hole having a countersink and a filler, and bolts detachably securing the vertical portion and the carrier bar together, and the section detachably to the hanger plate.

4. A gate of the character described comprising a carrier bar having bolt holes, a hanger rail having a horizontal wing and a vertical wing formed with bolt holes registering with the bolt holes of the carrier bar, means for securing the hanger rail by its vertical wing to the carrier bar, a detachable hanger plate formed with a bolt hole, a horizontal portion seating on the horizontal flange, and a vertical portion formed with bolt holes registering with the bolt holes of the hanger rail and the carrier bar, a section formed with a recess receiving the carrier bar and with a bolt hole, and bolts detachably securing the vertical portion and the carrier bar together, and the section detachably to the hanger plate.

WILLIAM MILLEN DUNCAN.

In the presence of—

J. N. CRAWFORD,

WALTER L. FULLEMAYER.