

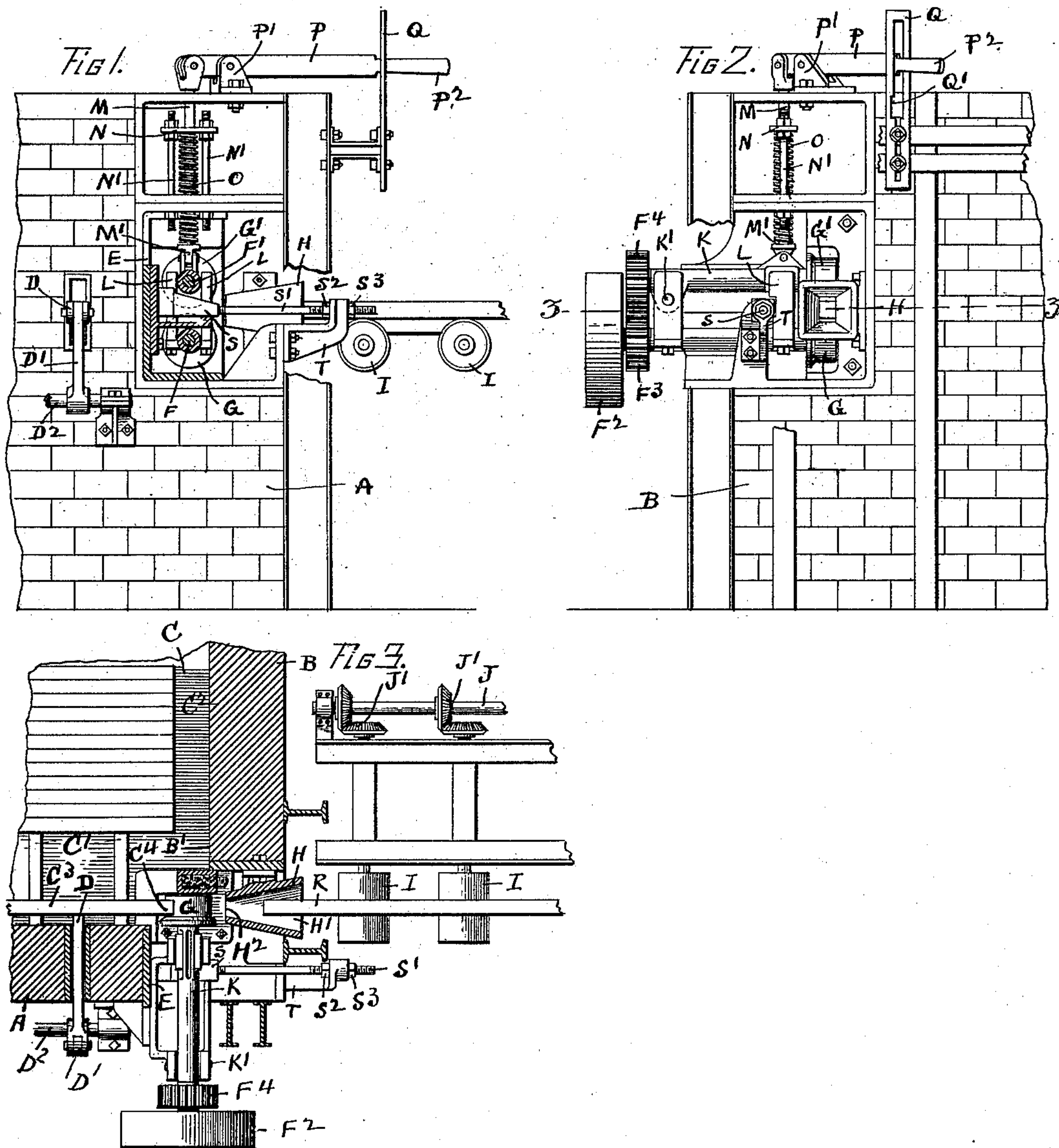
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V. E. EDWARDS.
FEEDING MECHANISM FOR BILLET HEATING FURNACES.

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NO MODEL.



WITNESSES.

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FEEDING MECHANISM FOR BILLET-HEATING FURNACES.

SPECIFICATION forming part of Letters Patent No. 756,946, dated April 12, 1904.

Application filed November 18, 1901. Serial No. 82,758. (No model.)

To all whom it may concern:

Be it known that I, VICTOR E. EDWARDS, a citizen of the United States, residing at Worcester, in the county of Worcester and Commonwealth of Massachusetts, have invented a new and useful Improvement in Feeding Mechanism for Billet-Heating Furnaces, of which the following is a specification accompanied by drawings forming part of the same, in which—

Figure 1 represents an end view of a portion of a billet-heating furnace provided with my improved feeding mechanism shown partly in vertical sectional view through the feed-rolls G and G'. Fig. 2 is a side view of a portion of a billet-heating furnace provided with my improved feeding mechanism, and Fig. 3 is a plan view of my improved feeding mechanism shown in horizontal sectional view on line 3-3, Fig. 2.

Similar reference-letters refer to similar parts in the different views.

My present invention relates to a billet-feeding mechanism of a furnace by which the billets are fed into the heating-chamber of the furnace and into proper position to be acted upon by a reciprocating pushing mechanism of the class commonly employed in billet-heating furnaces, by which the billet, after having been inserted in proper position in the heating-chamber, is pushed by a broadside movement toward the delivery end of the chamber; and my invention consists in the construction and arrangement of parts as hereinafter described, and set forth in the annexed claims.

Referring to the accompanying drawings, A denotes a portion of one of the end walls; B, a portion of one of the side walls, and C a portion of the heating-chamber of a billet-heating furnace which may be of any known form or type of construction. The heating-chamber C is preferably provided with a longitudinal track C' for the support of a series of billets C² during the process of heating. The billets in the series C² are successively inserted in the heating-chamber in the position of

the billet C³, which rests upon the longitudinal track C' and in front of a series of reciprocating pushing-bars, one of which is shown at D. The pushing-bars D are pivoted to the top of radial arms, one of which is shown at D' attached to a shaft D², to which an oscillating motion is imparted by any well-known actuating mechanism now employed in billet-heating furnaces for that purpose, said actuating mechanism not being shown in the present drawings, as its construction and operation will be well understood by those conversant with this class of heating-furnaces.

It has been the custom heretofore in one class of billet-heating furnaces to provide an opening in the end wall of the furnace in front of a reciprocating pushing mechanism with means for properly interposing a billet between said opening and the pushing mechanism, so that the billet would be pushed by a sidewise movement into the heating-chamber. In another class of billet-heating furnaces it has been the practice to enter the billet into the heating-chamber by an endwise movement through a small opening in the side wall of the furnace at the receiving end of the heating-chamber and to move the billet transversely to the heating-chamber into proper position in front of the pushing-bars in order that the billet may be pushed by a sidewise movement along the billet-supporting track C'. In the last-named class of furnaces it requires considerable time and labor to move the billet by hand into proper position in front of the pushing-bars to be moved along the longitudinal track C'.

It is the object of my present invention to provide mechanical means by which the billet is moved within the heating-chamber without the employment of manual labor. To accomplish this result, I insert a metal framework E into the walls of the furnace at one corner of the furnace and at the receiving end of the heating-chamber provided with bearings for a pair of shafts F F'. The lower shaft F is driven from any suitable motive power by means of a belt-pulley F², and the upper shaft

F' is driven from the lower shaft by means of the spur-gears F³ F⁴. The inner ends of the shafts F F' overhang their bearings and carry feed-rolls G G' in proper position to project
 5 a billet fed between them over the longitudinal track C' and immediately in front of the pushing mechanism. The feed-rolls G G' are placed within the inner surface B' of the side wall B, so that when the billet C³ has been released
 10 from the action of the feed-rolls G G' its rear end C⁴ will have been advanced the desired distance into the heating-chamber.

In front of and in position to conduct a billet to the feed-rolls G G', I place a funnel-shaped
 15 guide-trough H with its outer end H' considerably larger than the billet in cross-section, and with its inner end H² reduced to substantially the area in cross-section of the billet. In front of the funnel-shaped guide-trough H
 20 I place a series of rotating conveyer-rolls I, which are driven by a rotating shaft J through the miter-gears J'. The upper shaft F' of the feed-rolls is journaled in a sleeve K, pivoted near its outer end at K' to the fixed framework
 25 by which the inner end of the sleeve K is capable of a slight rising and falling motion between the guides L to allow the upper feed-roll G' to be raised and lowered. The sleeve K is pivoted to a vertical rod M, which slides
 30 through a yoke N, supported by and vertically adjustable on the screw-threaded posts N', which are held in the frame E. The rod M carries a spring O, inserted between the yoke N and a shoulder M' on the rod, by which a
 35 downward pressure is exerted to crowd the upper roll G' against the billet as it passes between the feed-rolls. The upper end of the vertical rod M is connected to one end of a lever P, which is pivoted to a bracket P', and
 40 the opposite end P² of the lever passes through a slotted plate Q, provided with a notch Q', adapted to engage the lever and hold the roll G' in a raised position. As the billet passes through the rolls G G' it is drawn through
 45 the guide-trough H, and its advancing end is projected forward over the longitudinal track C'.

The sleeve K, in which the upper shaft F' is journaled, is supported near its inner end
 50 upon the inclined upper surface of a wedge-shaped block S, which is capable of sliding in ways transversely to the sleeve K. The wedge-shaped block S is attached to a rod S', which passes through a bracket T and is ad-
 55 justable therein by means of the nuts S² S³ in order to move the wedge-shaped block S, and thereby raise or lower the support for the inner end of the sleeve K for the purpose of varying the normal opening between the feed-
 60 rolls G G' and allow the space between the feed-rolls to be adjusted for billets of different sizes.

The operation of my improved feeding device is as follows: The space between the feed-
 65 rolls having been adjusted by means of the

wedge-shaped block S, the billet is presented to the open outer end of the guide-trough H by the rotation of the conveyer-rolls I and its advancing end guided by the trough H to the feed-rolls G G'. The forward movement of
 70 the billet is continued by the action of the feed-rolls G G' until it is projected forward and over the longitudinal track C' and in front of the pushing-bars D far enough to cause the
 75 billet when pushed sidewise by the pushing-bars D to be moved over the longitudinal track C' and against the series of billets C².

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

1. In a furnace for heating billets, the combination with the heating-chamber and a track for billets extending lengthwise through said heating-chamber, of a pushing mechanism for pushing the billets along said track and a pair of feed-rolls one placed above the other and
 80 inserted in an opening in the walls of the furnace with their axes within the plane of the inner surfaces of the end and side walls of the furnace, said rolls being arranged to feed a
 85 billet transversely to said track and in front of said pushing mechanism, substantially as described.

2. In a furnace for heating billets, the combination with the heating-chamber and a longitudinal track for billets inclosed within said
 90 chamber, of a pair of feed-rolls arranged to feed a billet into said chamber and transversely to said track, said rolls being inserted within an opening in the walls of the furnace
 95 with the axes of said rolls placed within the plane of the inner surfaces of the end and side walls, whereby the billet is delivered on said track, substantially as described.

3. In the billet-feeding mechanism of a furnace, the combination with the heating-chamber and a track for billets lengthwise said
 100 chamber, of a pair of feed-rolls one above the other with their axes located within the planes of the inner surfaces of the end and side walls of the furnace with the opening between said
 105 rolls in the plane of said track.

4. The combination with the heating-chamber of a furnace of feed-rolls for feeding a billet into said chamber and transversely thereto, said rolls being at one side of and
 110 within said chamber and having their axes placed within the plane of the inner side of the side wall, substantially as described.

5. The combination with the heating-chamber of a furnace, of a pair of feed-rolls having their axes placed within the plane of the inner side of the side wall of said chamber, a funnel-shaped guide-trough by which a billet is conducted to said rolls and means for moving the billet into said guide-trough, and a
 115 track for the billets arranged lengthwise the heating-chamber and parallel with the axes of said feed-rolls, substantially as described.

6. In the billet-feeding mechanism of a furnace, the combination of a lower feed-roll jour-
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naled in fixed bearings, an upper feed-roll journaled in bearings capable of a tilting motion, whereby said upper feed-roll can be raised or lowered and means for tilting said bearings, substantially as described.

7. The combination of rolls G and G', a tilting sleeve forming the bearing of roll G', a rod M pivotally connected with said sleeve, a lever P by which said rod is raised and spring O applied to said rod to press it downwardly, substantially as described.

8. The combination of rolls G and G', a tilting sleeve forming the journal-bearing of roll G', a wedge-shaped support beneath said sleeve, means for adjusting said support transversely to said sleeve and a spring by which

said sleeve is pressed downwardly, substantially as described.

9. In the billet-feeding mechanism of a furnace, a pair of feed-rolls carried on the ends of a pair of shafts, gears connecting the opposite ends of said shafts, with one of said shafts pivotally supported near its geared end and capable of being rocked on its pivot, whereby its feed-roll is raised or lowered, substantially as described.

Dated this 12th day of November, 1901.

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Witnesses:

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