No. 616,602. Patented Dec. 27, 1898.

E. H. CARROLL.

FURNACE FOR HEATING BILLETS.

(Application filed Apr. 25, 1898.)

(No Model.)

Fig. 1.

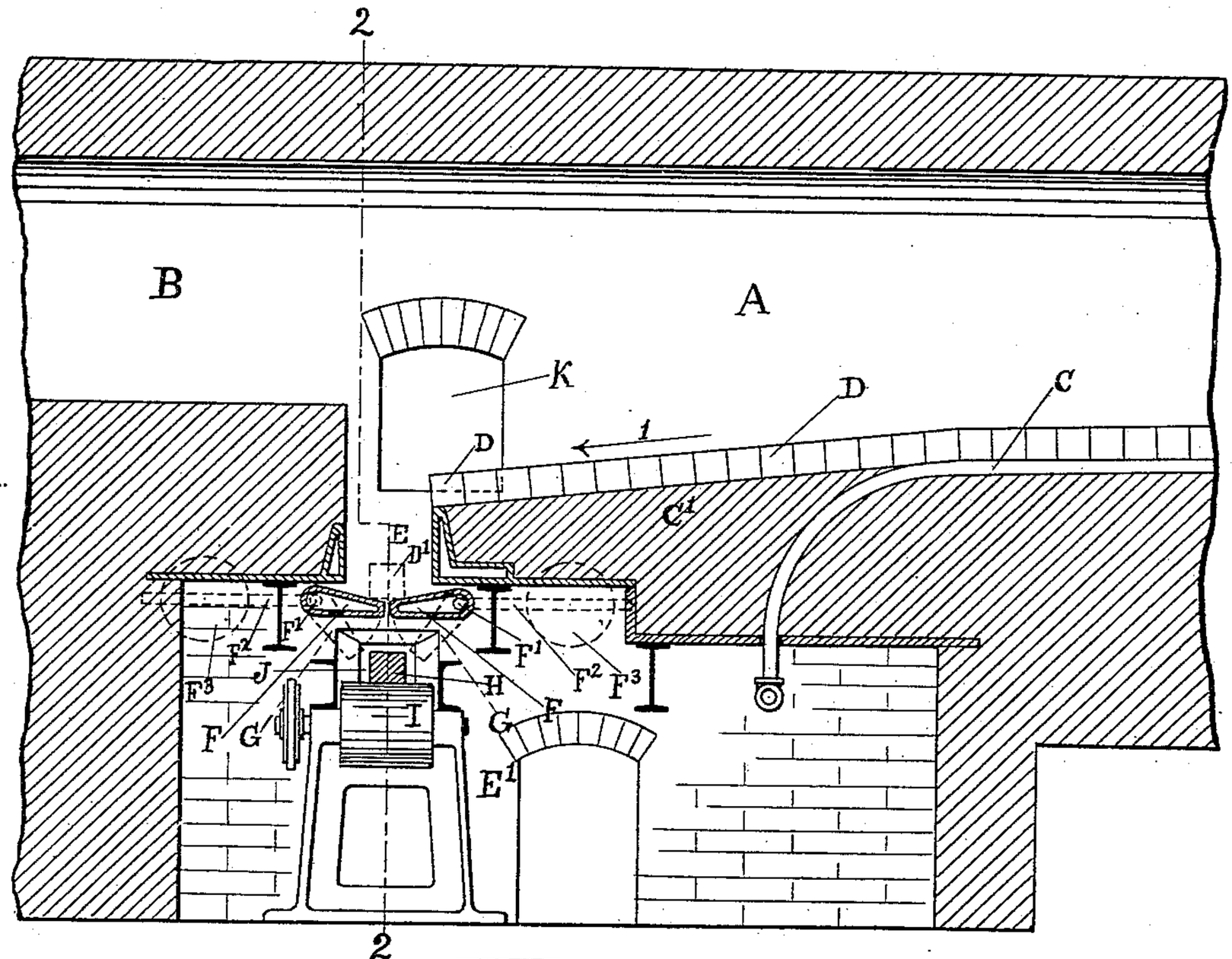
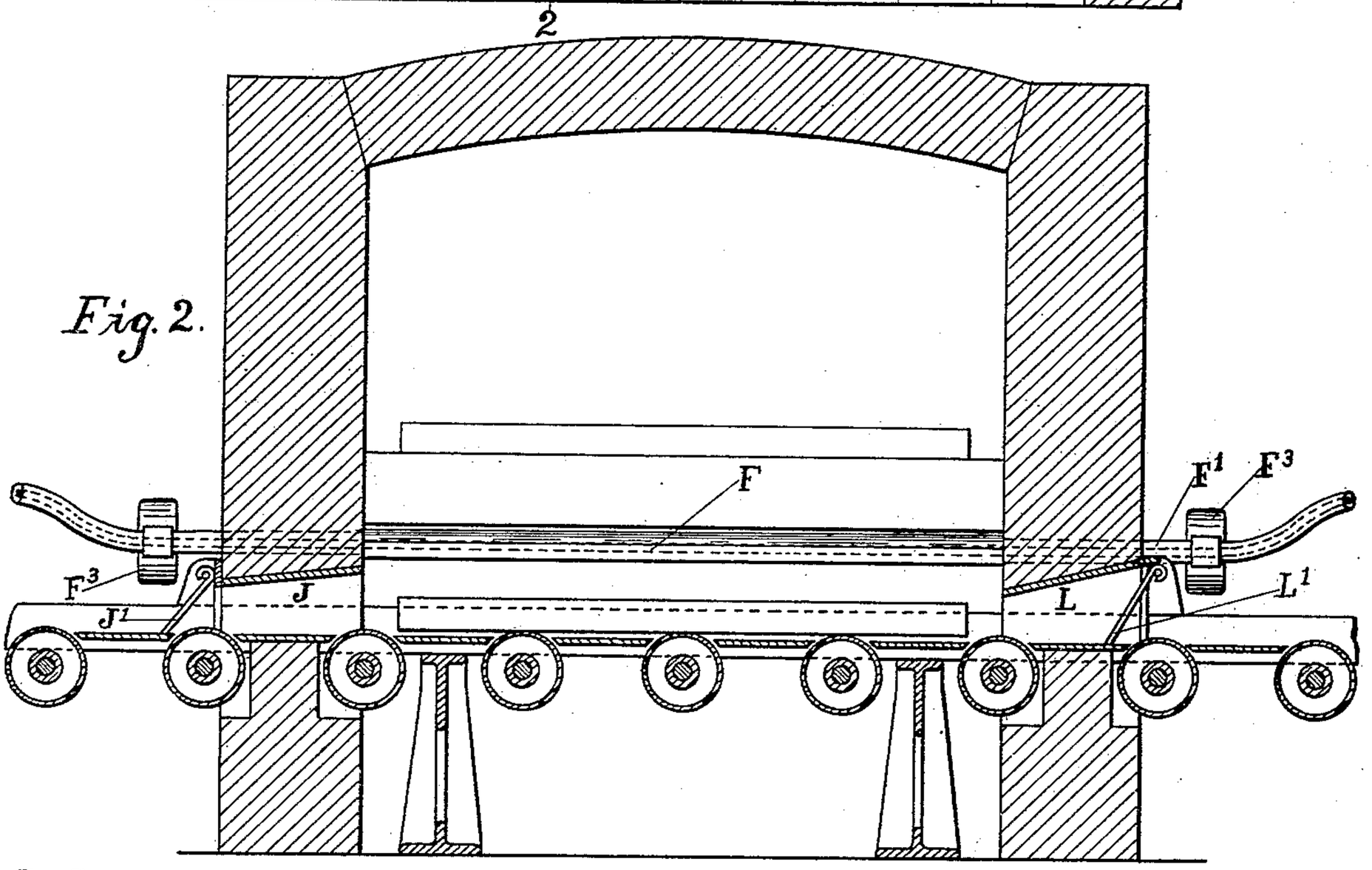


Fig. 2.



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ELBERT H. CARROLL, OF WORCESTER, MASSACHUSETTS, ASSIGNOR TO THE MORGAN CONSTRUCTION COMPANY, OF SAME PLACE.

FURNACE FOR HEATING BILLETS.

SPECIFICATION forming part of Letters Patent No. 616,602, dated December 27, 1898.

Application filed April 25, 1898. Serial No. 678,715. (No model.)

To all whom it may concern:

Be it known that I, ELBERT H. CARROLL, a citizen of the United States, and a resident of Worcester, in the county of Worcester and State of Massachusetts, have invented a new and useful Improvement in a Furnace for Heating Billets, of which the following is a specification, accompanied by drawings forming a part of the same, in which—

Figure 1 represents a longitudinal sectional view of a portion of a furnace for heating billets embodying my invention, the drawings showing one-half of the furnace comprising the delivery end, the opposite or admission end being of any ordinary and well-known form of construction. Fig. 2 is a vertical sectional view on line 2 2, Fig. 1.

Similar letters refer to similar parts in both figures.

Referring to the drawings, A denotes the heating-chamber, B a conduit for the admission of gaseous fuel, and C a track formed of water-pipes, along which a rod or billet D is fed in the direction of the arrow 1 by means of a pushing mechanism (not shown) upon a hearth C′ of sand or other material capable of withstanding an intense heat.

At the end of the hearth C′ is an opening E, leading downward to a chamber E′ and closed by a pair of swinging doors F F, hung upon gudgeons or shafts F′ F′ and normally held in a horizontal position by means of levers F^2, attached to the shafts F′ and carrying counterweights F^3. The swinging doors F F are located, preferably, a short distance below the plane of the hearth C′, so that as the row of billets are pushed along the advancing billet in the row will be pushed off the hearth C′ into the opening E, falling upon the center of the swinging doors F F in the position indicated by the broken lines at D′ and resting upon the free edges of the doors F F.

The counterweights F^3 F^3 are so adjusted upon the levers F^2 F^2 that the weight of a billet resting at D′ upon the doors F F will cause the doors F F to swing downward into the position shown by broken lines at G G, thereby allowing the billet to fall upon a conveyer I, as shown at H, when the doors F F are again restored to their normal horizontal position by means of the counterweights F^3 F^3.

The conveyer I is of any well-known form of conveying apparatus, such as rolls or an endless chain, and is positively driven so as to convey the billet H, resting thereon, by an endwise movement transversely to the furnace through an opening J in one of the side walls of the furnace. K denotes a door in the side wall of the furnace to allow admission to the heating-chamber for any desired purpose.

The conveyer-rolls I extend transversely across the furnace, and in the opposite side wall to the opening J is a similar opening L in alinement with the opening J and closed by a door L′, swinging inward, allowing a billet from a second furnace to be fed through the openings L and J to a rolling-mill, thereby enabling two furnaces to be used side by side or in series.

The operation of my improved furnace is as follows: The row of billets D are pushed forward as each successive billet is admitted at the admission end of the furnace in the usual and well-known manner, causing each of the billets as they approach the end of the hearth C′ to fall into the opening E upon the doors F F, which swing downward by the weight of the billet, delivering the billet upon the positively-driven conveyer I, which moves the billet through the opening J, either upon a second conveyer outside the walls of the furnace or to an attendant. The doors F F as they swing downwardly assume an oblique position, as shown by the broken lines G G, Fig. 1, forming a trough by which the billet is held centrally between the axes of the doors, and each door serves as a guide to conduct the billet upon the center of the conveyer I and in alinement with the opening J in the side wall of the furnace, which is restricted in size to approximately the size, in cross-section, of the billet, and the opening J is closed by a door J′, swinging outwardly, so that the conveyer I is inclosed within a closed chamber, thereby preventing the undue radiation of heat from the billet prior to its delivery through the opening J.

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

1. In a furnace for heating billets, the combination with a heating-chamber, provided with a downward opening for the delivery of

billets, of a pair of swinging doors hinged upon each side of said opening with the free edges of said doors beneath the central portion of the opening and a conveyer placed beneath the free edges of the doors whereby said doors serve as guides by their downward motion to deliver a billet upon the central section of said conveyer, substantially as described.

2. In a furnace for heating billets, the combination with a heating-chamber, provided with a downward opening for the delivery of billets, of a conveyer-chamber beneath said opening, a conveyer contained in said conveyer-chamber and arranged transversely to said heating-chamber, a restricted opening J in the side wall of the furnace in alinement with the central portion of said conveyer for the delivery of billets through the side wall of the furnace and means for controlling the delivery of a billet from said heating-chamber upon the central portion of said conveyer, and in alinement with the restricted opening J, substantially as described.

3. In a furnace for heating billets, the combination with a heating-chamber, provided with a downward opening for the delivery of billets, of a conveyer-chamber placed beneath said opening, a conveyer contained in said conveyer-chamber and transversely to said heating-chamber, means for delivering a billet from said heating-chamber upon the central portion of said conveyer, a restricted opening J for the delivery of billets in one of the side walls of the furnace and in alinement with the central portion of said conveyer, a restricted opening L in the opposite side wall of the furnace and opposite to the opening J for the admission of billets from outside the furnace to said conveyer, substantially as described.

4. In a furnace for heating billets, the combination with a heating-chamber, provided with a downward opening for the delivery of billets from said chamber, of a conveyer-chamber beneath said opening, a conveyer contained in said conveyer-chamber and transversely to said heating-chamber, restricted openings J and L in the side walls of the furnace and in alinement with said conveyer, swinging doors closing said restricted openings and swinging in the direction of the movement of the conveyer, whereby they are automatically opened by the passage of a billet, and means for controlling the delivery of a billet centrally upon said conveyer, substantially as described.

Dated this 22d day of April, 1898.

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Witnesses:

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A. R. BRIGHAM.