

(No Model.)

F. H. DANIELS.  
FURNACE FOR HEATING BILLETS.

No. 294,370.

Patented Mar. 4, 1884.

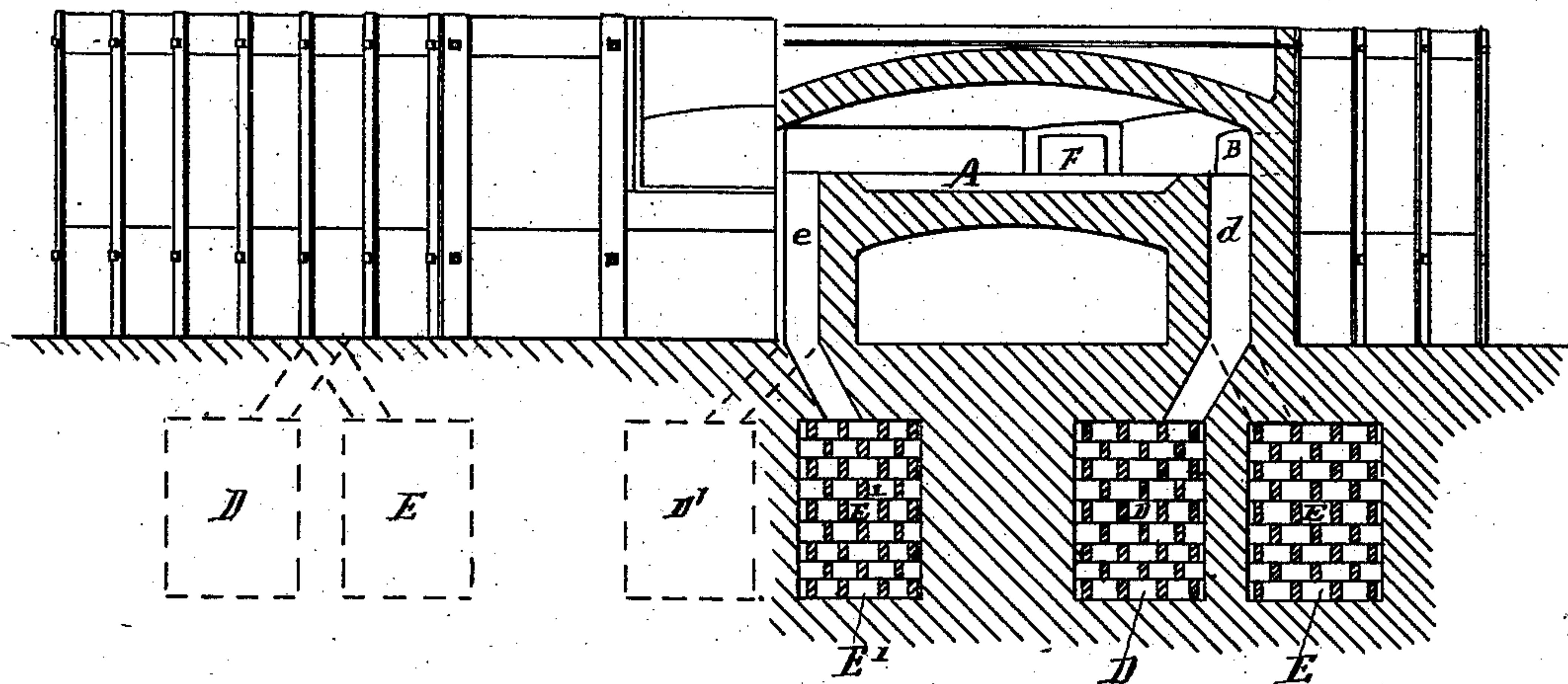
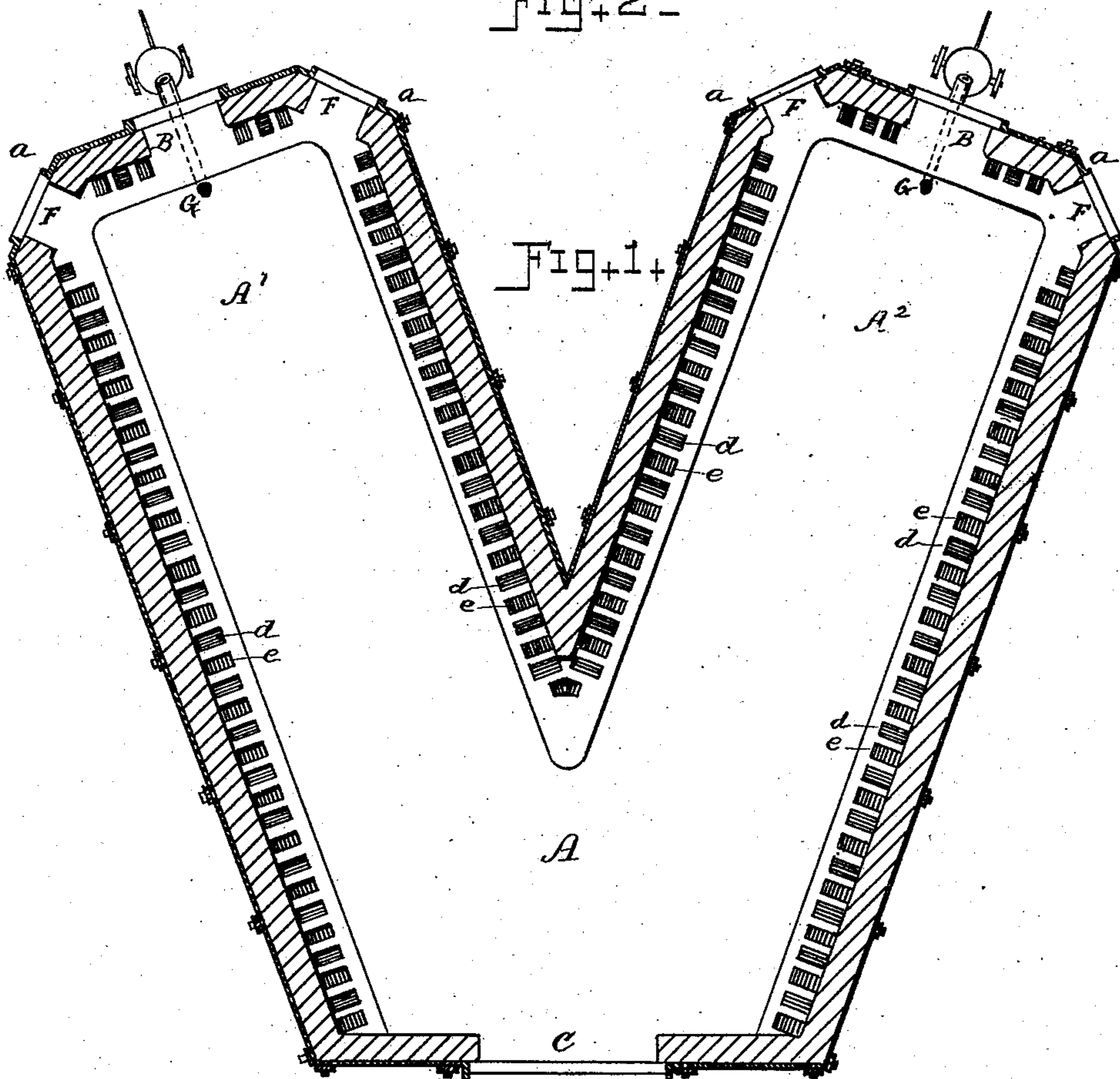


Fig. 2.



WITNESSES—  
Geo. M. Rice 2<sup>d</sup>  
Austin W. Matthews—



INVENTOR—  
 Fred H. Daniels  
 By Chas. H. Burlingame  
 Atty.



# UNITED STATES PATENT OFFICE.

FRED H. DANIELS, OF WORCESTER, MASSACHUSETTS.

## FURNACE FOR HEATING BILLETS.

SPECIFICATION forming part of Letters Patent No. 294,370, dated March 4, 1884.

Application filed June 21, 1883. (No model.)

*To all whom it may concern:*

Be it known that I, FRED H. DANIELS, a citizen of the United States, residing at Worcester, in the county of Worcester and State of Massachusetts, have invented certain new and useful Improvements in Furnaces for Heating Billets or Bars for Rod-Rolling Mills; and I declare the following to be a description of my said invention sufficiently full, clear, and exact to enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, which form a part of this specification.

The object of my present invention is to provide a furnace for heating billets or bars for wire-rod-rolling mills, in which a large quantity of material in long billets can be heated, and from which the billets can be conveniently fed to the rolling mechanism, so that the operations of rolling rods can be effected with greater speed and without delays for the heating of the billets; also, to afford means in a heating-furnace for permitting access to the interior at the angles of the hearth to facilitate the placing of the bars in position, or for their more convenient handling or withdrawal from the furnace. These objects I attain by constructing the furnace in the manner shown and described, the particular subject-matter claimed being hereinafter definitely specified.

In the drawings, Figure 1 is a sectional plan view of a furnace illustrating the nature of my invention; and Fig. 2 is a part front elevation and part vertical sectional view of the same.

One feature of my improvement consists in making the furnace in V shape, or with two receiving-sections at the feeding end, which sections converge and unite in a manner to permit of the billets being withdrawn from either feeding-section directly to the rolling-mill through a single door located at the delivery end, thus giving ample opportunity for inserting the bars, an increased extent of heating-space upon the hearth, and convenient delivery to the rolling-mill at a single position.

A denotes the hearth, formed in two sections or divisions, A' and A<sup>2</sup>, at the feed end of the furnace.

B indicates the feed-doors, and C the delivery-door.

d and e indicate, respectively, the passages

for gas and air to enter the reverberatory chamber from the heating-chambers D D' and E E', the operation of the furnace being in the present instance on the Siemens regenerative principle.

The apparatus for changing the direction of currents, being well known and not of my invention, is not herein shown.

The angles a of the furnace are beveled, or made of octagon form, and are provided with doors F, entering the interior through said angles, which doors permit access to the corners of the hearth, and are of great convenience and utility in the handling and placing of the long bars (which are some twenty feet, more or less, in length) in proper position and parallel with each other, since they enable an attendant to guide the billets within the furnace while they are being shoved in by way of the door B, or to roll the bars to or from one side, as may be required. These doors F are here shown only at the feed end of the furnace; but the delivery end of a furnace could be made octagon and provided with the doors F in similar manner, if desired.

The construction of a billet-heating furnace for wire-rod-rolling mills with doors F at the angles is a feature of my invention.

I do not desire to confine my invention to a furnace operating on the Siemens principle, as it is applicable to furnaces in which other principles of heating are employed.

The walls, roof, and hearth of the furnace may be constructed of the ordinary materials and the parts properly braced and supported, as may be required.

G indicates the slag-passages from the hearth A' A<sup>2</sup> to the exterior of the furnace.

In the working of the furnace the two sections A' and A<sup>2</sup> may be charged and drawn in relays, each comprising one-half the area of one of the sections A' or A<sup>2</sup>, three relays of billets being in the furnace at one time, the fourth relay being fed in while the first relay is being drawn out; consequently the capacity of the furnace is greatly increased over that of an ordinary furnace, and the rolling can be performed at much greater speed without surpassing the capacity of the furnace to deliver thoroughly-heated billets, while the billets are delivered at a single position at the head of the rolling-mill, so as to avoid the inconven-

ience that would attend the use of two independent furnaces of ordinary construction.

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

- 5 1. A furnace for heating billets for rod-rolling mills, constructed, substantially as shown and described, with two heating-sections, A' A<sup>2</sup>, adapted for receiving long billets, which sections converge and unite in a manner to  
10 permit the withdrawal of the billets at the delivery end at a single place of discharge, as set forth.

2. A furnace for heating long billets for

wire-rod-rolling mills, provided with feeding-in doors at one end and a discharging-door at 15 the other, and having auxiliary thereto the doors F, located in the angles formed at the divergent ends of the furnace, substantially as shown, and for the purpose set forth.

Witness my hand this 19th day of June, A. 20 D. 1883.

FRED H. DANIELS.

Witnesses:

CHAS. H. BURLEIGH,  
S. R. BARTON.