

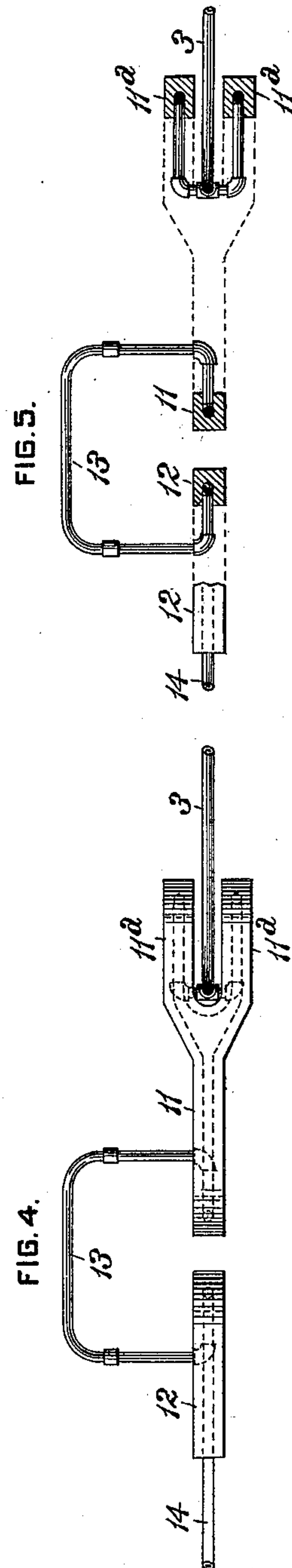
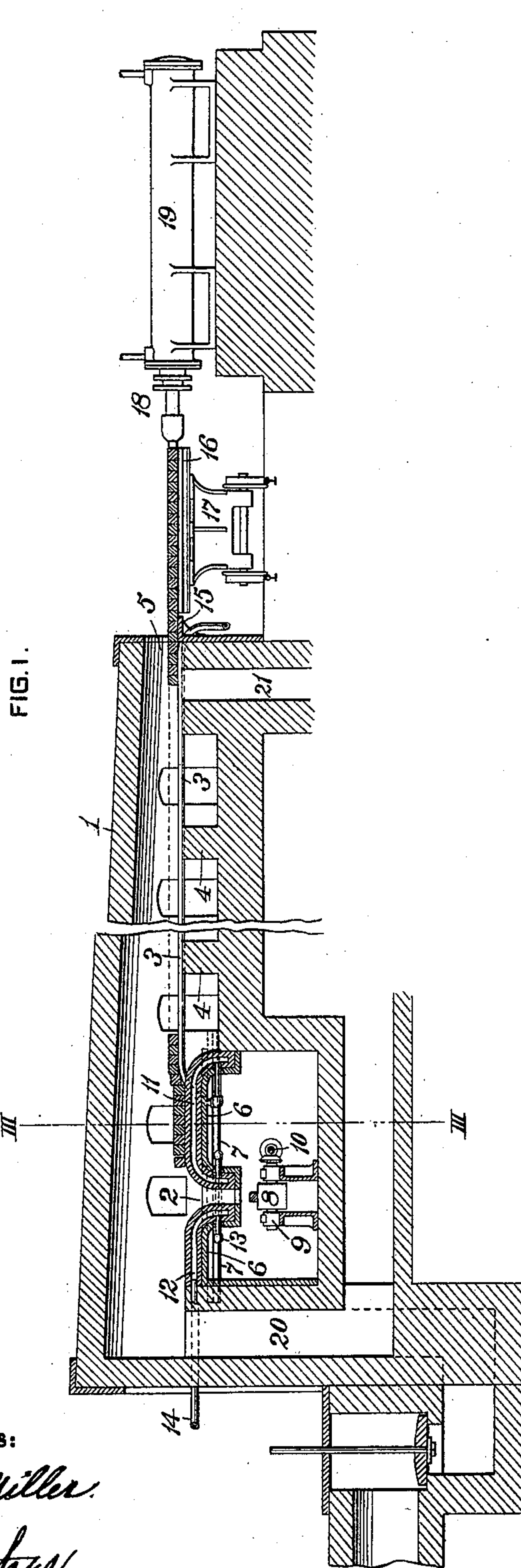
(No Model.)

2 Sheets—Sheet 1.

A. LAUGHLIN & J. REULEAUX.
HEATING FURNACE.

No. 599,182.

Patented Feb. 15, 1898.



WITNESSES:

Chas. F. Miller.
F. E. Gaithers

INVENTORS,

Alexander Laughlin &
Josef Reuleaux
by Saml. S. Wolcott
Att'y.

(No Model.)

2 Sheets—Sheet 2.

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FIG. 2.

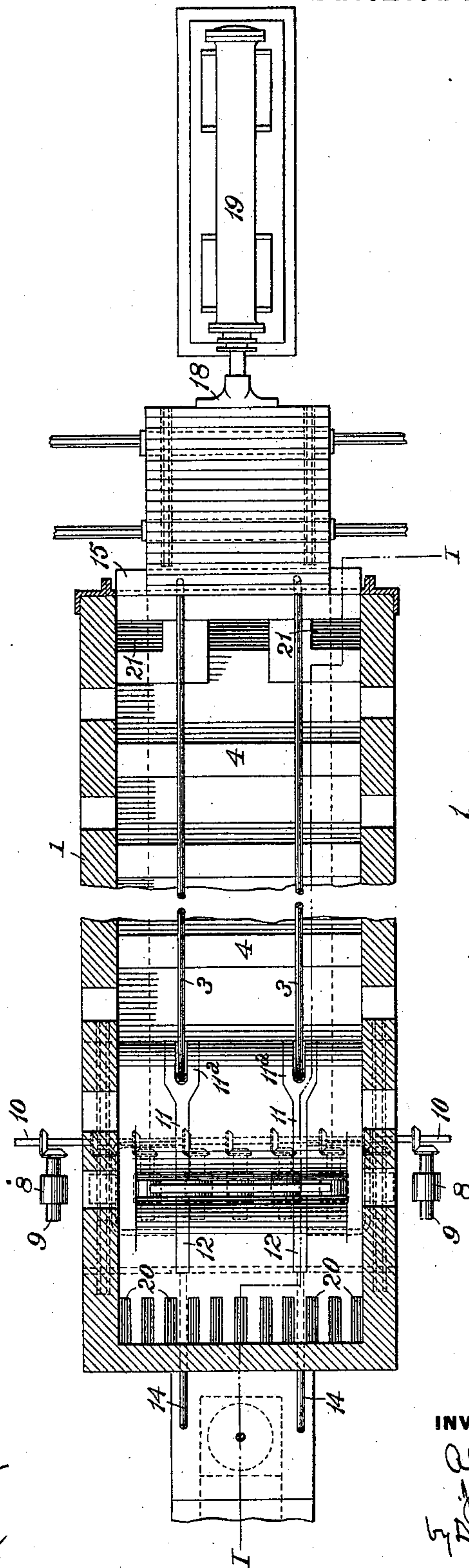
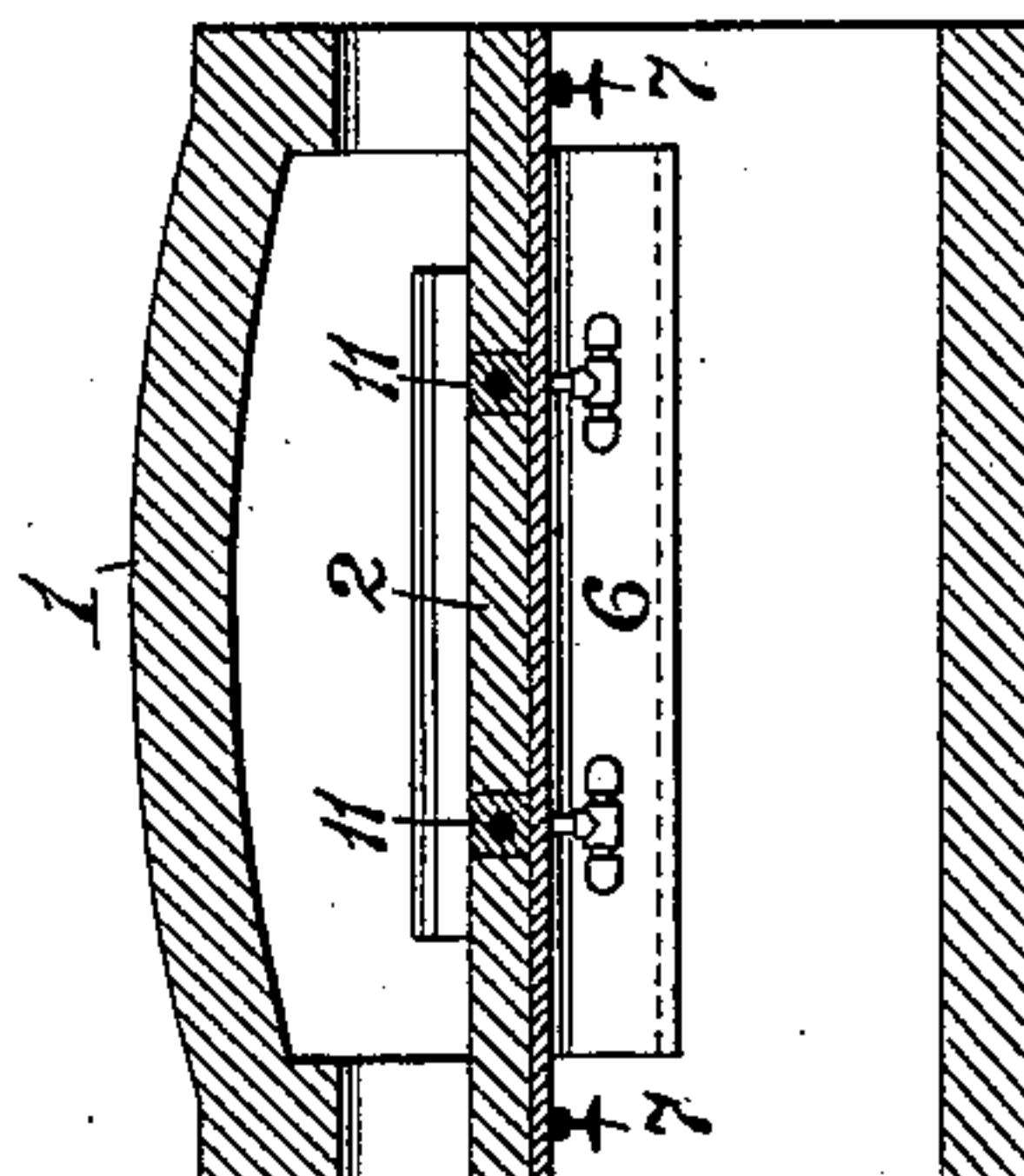


FIG. 3.



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UNITED STATES PATENT OFFICE.

ALEXANDER LAUGHLIN, OF SEWICKLEY, AND JOSEF REULEAUX, OF WILKINSBURG, PENNSYLVANIA; SAID REULEAUX ASSIGNOR TO SAID LAUGHLIN.

HEATING-FURNACE.

SPECIFICATION forming part of Letters Patent No. 599,182, dated February 15, 1898.

Application filed March 29, 1897. Serial No. 629,726. (No model.)

To all whom it may concern:

Be it known that we, ALEXANDER LAUGHLIN, residing at Sewickley, and JOSEF REULEAUX, residing at Wilkinsburg, county of Allegheny, State of Pennsylvania, citizens of the United States, have invented or discovered certain new and useful Improvements in Heating-Furnaces, of which improvements the following is a specification.

The invention described herein relates to certain improvements in continuous furnaces for heating billets, &c., wherein billets are charged into one end of the furnace and forced through the same, being subjected from the point of entrance to the point of discharge to a gradually-increasing temperature.

The object of the present invention is to provide for the arrangement of a portion of a feed-table or carrier immediately below and transverse of the hearth of the furnace, which is provided with a slot or opening through which the billets will drop onto the feed-table or carrier, whereby they are transferred to the mill or other reducing mechanism.

In general terms the invention consists in the construction and combination substantially as hereinafter more fully described and claimed.

In the accompanying drawings, forming a part of this specification, Figure 1 is a sectional view, longitudinal of the furnace, embodying our improvements. Fig. 2 is a sectional plan view of the same. Fig. 3 is a transverse section, the plane of section being indicated by the lines III III, Fig. 1; and Figs. 4 and 5 are plan and sectional detail views of the bridge-rails for carrying the billets across the hearth.

In the practice of our invention the furnace is constructed with a tunnel or flue portion 1 and with a hearth 2 immediately in the rear of the tunnel portion. In the tunnel portion, which is made of a suitable length to permit of the proper heating of the billets as they are forced through the same, are arranged rails 3, which are supported at a suitable height by means of a series of piers 4, preferably located transversely of the furnace. These rails 3 are preferably constructed in the form of pipes or tubes, the forward

ends of which, adjacent to the receiving-opening 5, are connected to any suitable source of water-supply. The hearth portion of the furnace is formed by a plate or casting 6 of sufficient width to extend entirely across the furnace, so that it will rest along its edges upon rails 7, which are supported at their ends by the side walls of the furnace at each end of the hearth, as clearly shown in Figs. 1 and 2. These rails also serve to support the side walls along the hearth portion of the furnace. This construction leaves a clear open space immediately below the hearth. The supporting plate or casting 6 is preferably formed with a depressed trough-like portion about midway of its length, said trough-like portion extending nearly across the plate or casting, as clearly shown in Fig. 2. Through the bottom of this trough or box portion is formed a slot through which the billets can drop onto the rollers 8, whose journals are mounted in suitable bearings 9. One of the journals of each of the rollers is extended for the reception of suitable bevel-gears adapted to intermesh with corresponding gears on the driving-shaft 10.

On the plate or casting 6 are arranged the bridge rails or supports 11 and 12, which are preferably curved to correspond with the contour of the plate or casting. These bridge rails or supports 11 and 12 are arranged in line with the rails or supports 3, which project between prongs 11^a, formed on the forward ends of the bridge-rails 11. The rails 3 are connected by suitable branches with passages formed in the bridge-rails 11, and the passages in the bridge-rails 11 and 12 are connected by loops 13, formed of pipes or tubes, and the rear ends of the bridge-rails 12 are connected to pipes 14, so as to permit of the escape of water therefrom. It will be seen from the foregoing that the water enters the front ends of the main rails 3, flows through the bridge-rails 11, thence into the corresponding rails 12, which are connected by the loops 13, and escapes by the pipes 14.

The spaces between the bridge-rails 11 and 12 are filled with fire-brick or other suitable material to or nearly to the upper surfaces of said rails. It will be observed by reference

to Fig. 1 that the rails 3 are arranged at their rear ends a little higher than the upper surfaces of the bridge-rails 11 and 12, so that as the ignots are shoved from the rails 3 onto the bridge-rails there will be a slight vertical movement of the billets, so as to tear them one from the other. As the rear ends of the bridge-rails 11 are downwardly curved, the same separation will occur between adjacent billets as they roll one after the other down such curved portions through the slot in the hearth.

The flues or ports 20 for the gas and air are arranged at or adjacent to the rear wall of the furnace, as shown in Figs. 1 and 2.

The front end of the tunnel portion of the furnace is provided with flues 21, leading to a stack, and with a ledge or floor-plate 15, onto which the billets to be heated are to be pushed from a platform 16 of the truck 17. This truck is arranged on rails so located as to bring the platform of the truck into line with the floor-plate and the receiving-openings of the furnace, and the billets are pushed from said platform by the piston-rod 18 of the fluid-pressure cylinder 19.

It will be observed that the piers or walls 4, supporting the rails 3, are arranged transversely of the furnace or tunnel portion thereof, and that openings are formed through the side walls of the furnace intermediate of the transverse piers or walls. This construction affords ready access to the interior of the furnace for removing any slag or cinder from between the piers or any billets which may drop from the supporting-rails. Any cinder or slag which may flow from the billets onto the hearth will be pushed by the movement of the billets down through the slot into the pit below the same, whence it can be readily removed, or the slag and cinder can be removed through side doors in line with the hearth.

We claim herein as our invention—

1. A continuous heating-furnace provided at one end with a charging-opening and with a connection to a stack and at the opposite end with flues or ports for the admission of gas, &c., in combination with an intermediate hearth provided with a slot through it for the removal of billets, &c., and a conveyer or feed-table arranged in line with and below the slot in said hearth, substantially as set forth.

2. A continuous heating-furnace provided at one end with a charging-opening and with a connection to a stack and at the opposite end with flues or ports for the admission of gas, &c., in combination with an intermediate hearth provided with a slot through it, bridge-rails supported by the hearth, rails or supports extending from the receiving-opening to the bridge-rails and a mechanism for pushing billets, &c. along such supports, substantially as set forth.

3. A continuous heating-furnace provided at one end with a charging-opening and with a connection to a stack and at the opposite end with flues or ports for the admission of gas, in combination with an intermediate hearth having a slot formed therethrough for the discharge of billets from the furnace, a conveyer or feed-table arranged below the hearth and in line with the slot, supports extending through the furnace from the charging-opening to the slot and mechanism for pushing the billets along such supports to such position relative to the slot that they will drop through the latter, substantially as set forth.

In testimony whereof we have hereunto set our hands.

ALEXANDER LAUGHLIN.
JOSEF REULEAUX.

Witnesses:

F. E. GATHER,
DARWIN S. WOLCOTT.