

No. 627,721.

Patented June 27, 1899.

V. E. EDWARDS.
FURNACE FOR HEATING INGOTS OR BILLETS.

(Application filed Feb. 11, 1897.)

(No Model.)

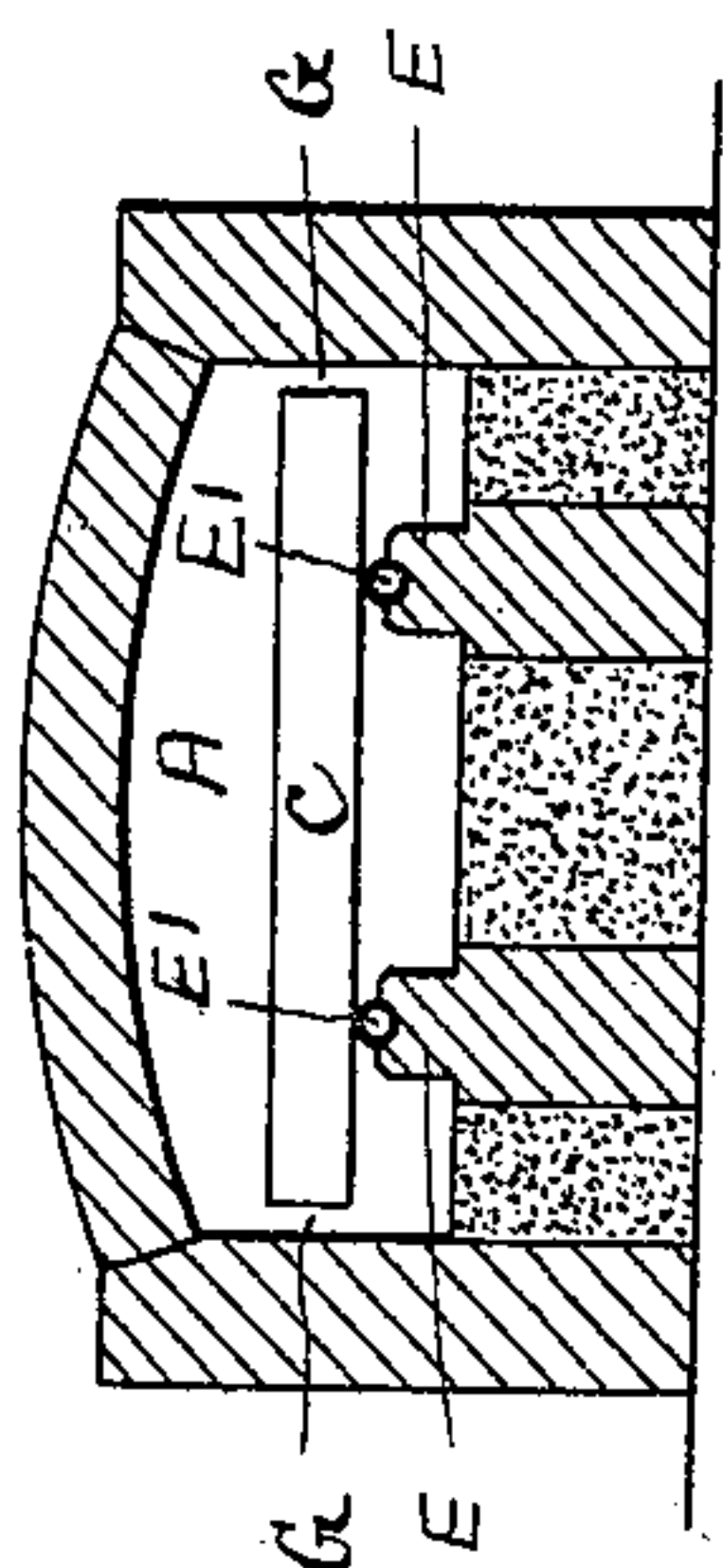


Fig. 2

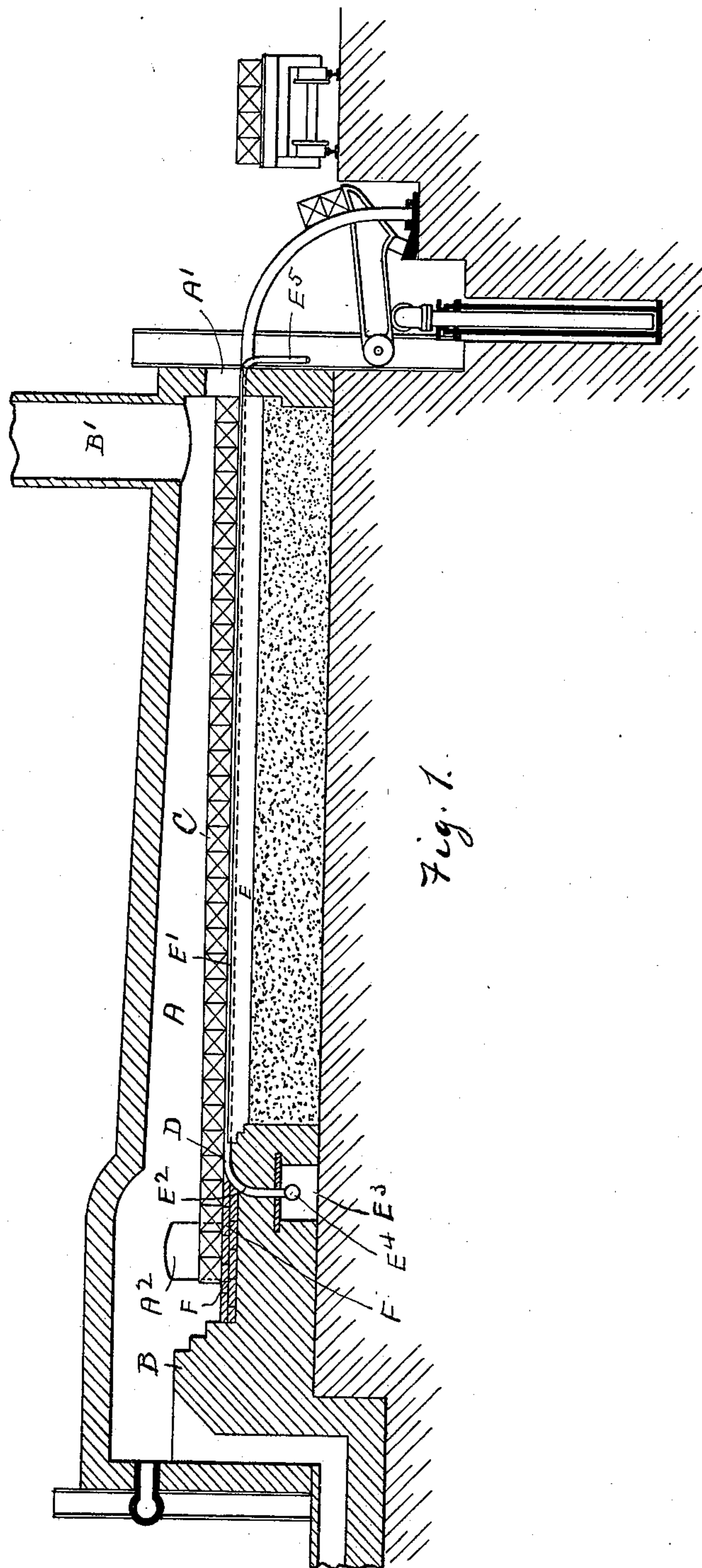


Fig. 1

WITNESSES:
McPrice
H. M. Fowler

INVENTOR:
Victor E. Edwards
By his Attorney
Rufus B. Fowler

UNITED STATES PATENT OFFICE.

VICTOR E. EDWARDS, OF WORCESTER, MASSACHUSETTS.

FURNACE FOR HEATING INGOTS OR BILLETS.

SPECIFICATION forming part of Letters Patent No. 627,721, dated June 27, 1899.

Application filed February 11, 1897. Serial No. 622,969. (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 State of Massachusetts, have invented a new and useful Improvement in Furnaces for Heating Ingots or Billets, of which the following is a specification, reference being had to the accompanying drawings, forming a part of the same, in which—

Figure 1 represents a longitudinal section of a furnace embodying my invention; and Fig. 2 is a transverse sectional view of the same on the plane indicated by the broken line 2 2, Fig. 1.

Similar letters refer to similar parts in both figures.

My invention relates to that class of furnaces in which the ingots or billets are introduced at one end of the furnace and are continuously heated while they are moved along the bed toward the opposite end of the furnace, where they are withdrawn.

In the operation of the furnace the ingots which are being heated lie in a continuous row along the bed between the charging end of the furnace and the point of delivery, each ingot being in contact with the adjacent ingots, and the introduction of an ingot at the charging end causes the entire row to be moved along the distance of a single ingot toward the point of delivery.

My invention relates particularly to the bed of the furnace, upon which the row of ingots are supported during the operation of heating; and it consists in the construction and arrangement of parts as hereinafter described, and pointed out in the annexed claims.

The row of ingots are heated by introducing a charge of commingled gas and air under combustion at the delivery end of the furnace, and the products of combustion are conducted lengthwise the chamber and escape through a flue at the charging end of the furnace. The entire row of ingots are therefore subjected to a current of hot air, which is the hottest at the advancing end of the row and gradually becomes cooler as it passes toward the escape-flue. Each ingot is received at the coolest portion of the furnace and advanced with the admission of each suc-

ceeding ingot into the zone of greater heat until the delivery-opening is reached, when the ingot has become sufficiently heated to be withdrawn from the furnace. During the continuous heating of the ingots as they are gradually moved from the coolest to the hottest portions of the furnace it is desirable to apply heat to the entire surface of the ingot, so that the mass of each ingot will be uniformly heated throughout, and to accomplish this result I build two longitudinal piers lengthwise the bed of the furnace and extending from the charging end to a point near the delivery-opening, and upon these piers are supported water-pipes, which constitute a pair of longitudinal skids, forming a track over which the ingots are moved. From the end of the track thus formed and opposite the delivery-opening of the furnace I form a solid bed of magnesite brick or brick of other suitable basic material, upon which the ingots are delivered from the track.

My improved method of constructing the bed of the furnace is shown in the accompanying drawings, in which—

A denotes the heating-chamber of the furnace, A' an opening through which the ingots are received, and A² the delivery-opening through which the ingots are withdrawn.

B denotes the bridge over which the charge of ignited gas is delivered into the heating-chamber, and B' a flue through which the products of combustion escape.

C denotes the row of ingots extending from the charging end of the furnace to the delivery-opening A². The bed upon which the row of ingots are supported between the charging end of the furnace and the point D near the delivery-opening A² is formed by a pair of longitudinal piers E, on the top of which are placed water-pipes E' E', extending lengthwise of and supported by the pier E. The pipes E' as they leave the lower ends of the piers are curved downwardly, as at E², and extend through the bed of the furnace into the chamber E³, where the pipes upon each pier are united by a cross pipe or drum E⁴. At the opposite ends of the piers E the water-pipes E' are carried through the end wall of the furnace, as at E⁵, and are connected with a source of water-supply whereby a current of water is made to circulate through the

pipes. Between the lower ends of the piers E and the bridge B, I form a solid floor F with its upper surface coincident with the plane of the track formed by the water-pipes E'.

5 The floor F is constructed of magnesite brick or other suitable basic material in order to prevent the formation of a flux of the heated iron and bed.

10 During the movement of the ingots over the rails E' the products of combustion pass over the ingots, through the spaces G, Fig. 2, at the ends of the ingots, and downwardly through the openings between the ingots, as the contact of adjacent ingots seldom extends
15 throughout their entire length, thereby securing the distribution of heat to the lower side of the ingots. The advancing end of the row of ingots as it approaches the delivery-opening A² passes off the pipes E' and
20 upon the floor F without disturbing the continuity of the row. Each ingot at the advancing end of the row is therefore pushed entirely clear of the pipes E' and supported by the solid floor of basic material by the
25 time it reaches the opening A², allowing the required manipulation of the ingots during their withdrawal and preventing the fluxing of the bed of the furnace.

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

1. The combination, in a furnace for heating ingots or billets for rolling-mills, of a pair of water-pipes, extending from the charging end of the furnace to a point near the delivery-opening of the furnace, said pipes being
35 curved downwardly through the body of the furnace with the ends of said pipes connected with a water-supply, and a floor of basic material at the curved ends of said water-pipes, having its upper surface coincident with the
40 plane of said pipes, substantially as described.

2. The combination in a furnace for heating ingots or billets for rolling-mills, of a pair of piers E, water-pipes E', supported upon
45 said piers, said pipes being curved downwardly through the bed of the furnace, a pipe, or drum, E² connecting the downwardly-curved ends of said water-pipes, and a solid floor F of basic material opposite the delivery-opening of the furnace, substantially as
50 described.

Dated this 30th day of January, 1897.

VICTOR E. EDWARDS.

Witnesses:

RUFUS B. FOWLER,
M. C. PRICE.