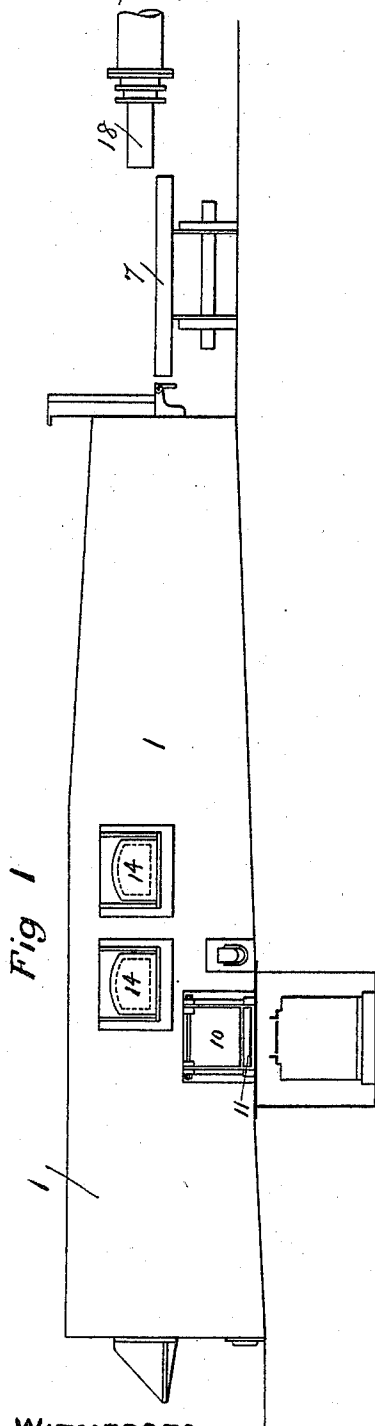


F. H. DANIELS.

FURNACE FOR HEATING INGOTS, BILLETS, BLOOMS, &c.

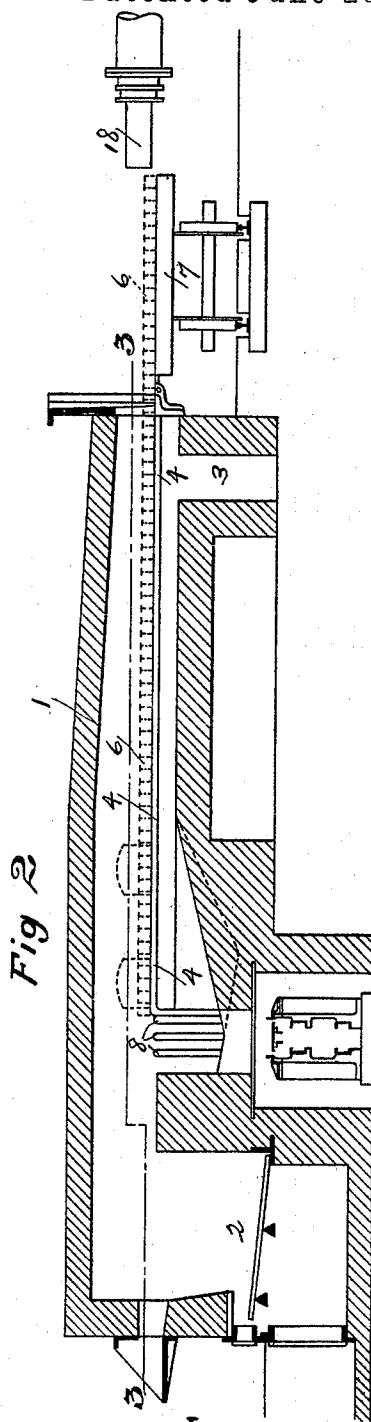
No. 585,622.

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WITNESSES

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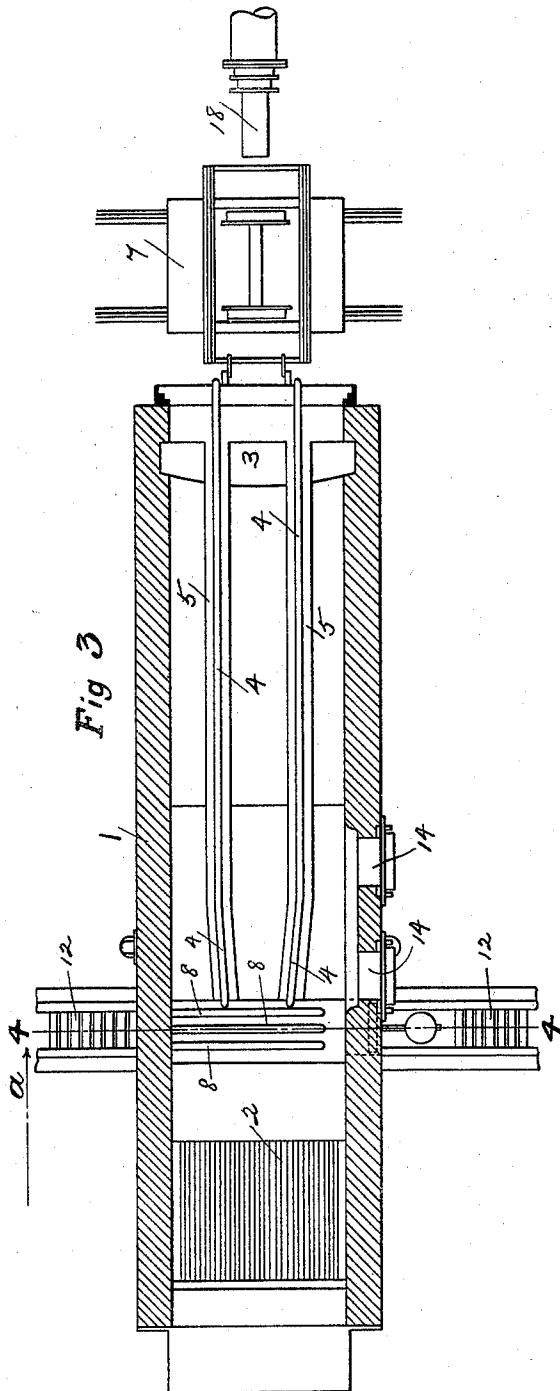


Fig 3

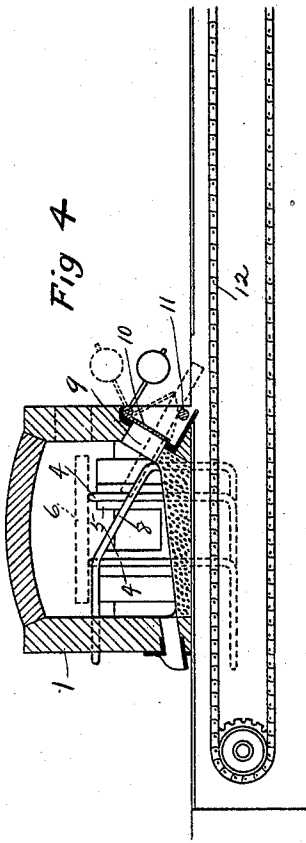


Fig 4

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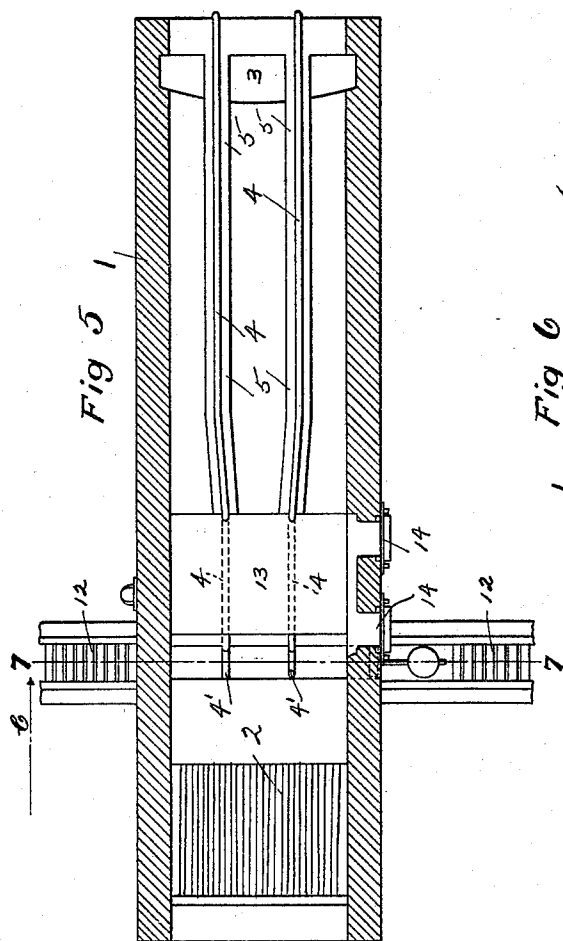


Fig 5

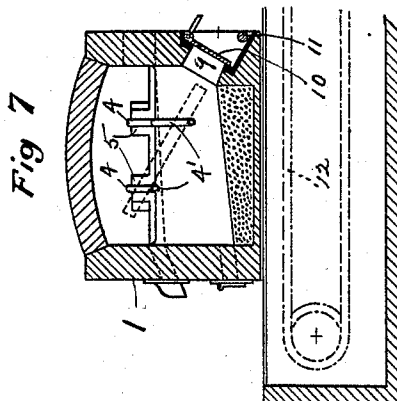


Fig 7

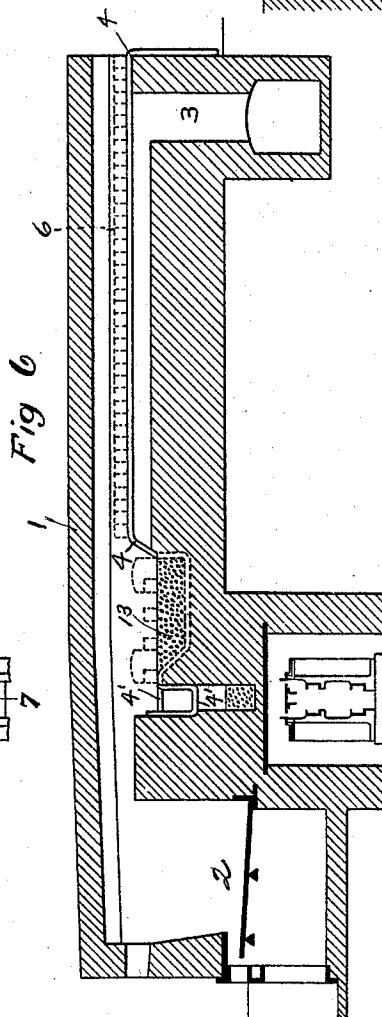


Fig 6

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UNITED STATES PATENT OFFICE.

FRED HARRIS DANIELS, OF WORCESTER, MASSACHUSETTS.

FURNACE FOR HEATING INGOTS, BILLETS, BLOOMS, &c.

SPECIFICATION forming part of Letters Patent No. 585,622, dated June 29, 1897.

Application filed April 12, 1897. Serial No. 631,727. (No model.)

To all whom it may concern:

Be it known that I, FRED HARRIS 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 Ingots, Billets, Blooms, &c., of which the following is a specification.

My invention relates to a furnace for heating ingots, billets, blooms, &c., and more particularly to an improved construction of the furnace shown and described in United States Letters Patent, No. 234,162, of November 9, 1880. In said patented furnace when the blooms have been heated they are withdrawn from the side of the furnace by the attendant, so that the operation of the furnace is not automatic.

The object of my invention is to improve upon the construction of the furnace shown in said patent and to make a furnace which is entirely automatic in its operation, so that an attendant is not required to withdraw the blooms from the furnace after they are heated, but the same are automatically discharged from the side of the furnace preferably onto an endless belt or track.

My invention consists in certain novel features of construction of certain parts of the furnace above referred to to make the same automatic in its operation, as will be hereinafter fully described.

Referring to the drawings, Figure 1 is a side view of a furnace of the description above referred to embodying my improvements. Fig. 2 is a central longitudinal vertical section of the parts shown in Fig. 1. Fig. 3 is a horizontal section taken at a point indicated by line 3 3, Fig. 2. Fig. 4 is a transverse or cross section taken at a point indicated by line 4 4, Fig. 3, looking in the direction of arrow *a*, same figure. Fig. 5 corresponds to Fig. 3, but shows a modified construction of the furnace. Fig. 6 corresponds to Fig. 2, but shows a modified construction of the furnace shown in Fig. 5; and Fig. 7 is a cross or transverse section on line 7 7, Fig. 5, looking in the direction of arrow *b*, same figure.

In the accompanying drawings, 1 is the furnace embodying my improvements. 2 is the

fireplace. 3 is the chimney, in this instance extending downwardly. 4 4 are two hollow bars or tubes supported on two walls or ridges 5, extending longitudinally in the furnace. Water is passed through said tubes to prevent them from acquiring too high a temperature, and upon these tubes the blooms are placed crosswise, side by side, as shown by dotted lines 6 in Fig. 2, and are preferably pushed onto said tubes from a car 7 through an opening in the end of the furnace.

A hydraulic cylinder 18 may be used to push the blooms from the car into the furnace and along the tubes.

As the blooms are pushed along on the tubes 4 the front one, or the one nearest the fireplace end of the furnace, will be pushed off the tubes 4 and onto the inclined tubes 8, (see Fig. 4,) which extend transversely in the furnace at the end of the track formed by the tubes 4.

The tubes 8 are bent or inclined toward the opening 9 in the side of the furnace, as shown in Fig. 4, which opening is provided with a hinged door 10. A roller 11 may be supported just below said opening, so that the blooms being pushed off from the tubes 4 will drop onto the inclined tubes 8 and by reason of the inclination or slant of said tubes will automatically pass along said tubes through the opening 9 in the side of the furnace and push open the door 10 and be discharged from the side of the furnace onto the endless track or chain belt 12, arranged in this instance under the furnace transversely thereof and in the path of the blooms as they are discharged through the opening 9 in the side of the furnace.

In some cases the blooms are not heated sufficiently in every part in passing along the tubes 4, and it is desirable to turn the blooms over to properly heat them. I therefore provide, just before reaching the discharging end of the furnace, a sand bed 13, as shown in Figs. 5 and 6, on which the blooms are discharged from the tubes 4. Through one or more doors 14 in the side of the furnace the operator, by means of hooks, can reach the blooms to turn or roll them over on said sand bed 13 until they reach the end thereof, when they drop onto the extension 4' of the tubes

4, which are bent, as shown in Fig. 7, to cause the bloom to be automatically discharged through the opening 9 in the side of the furnace.

5 The advantage of my improvements over what is shown in Patent No. 234,162, above referred to, is that the furnace is made entirely automatic in the operation of heating the blooms, so that after being pushed into
10 the end of the furnace and heated by the flames passing under and around them they are automatically discharged laterally from the side of the furnace without requiring the services of an attendant to withdraw them
15 from the furnace.

It will be understood that the details of construction of the furnace shown in the drawings and above described may be varied, if desired, and particularly the construction
20 or arrangement of the tubes or hollow bars 8, or equivalent devices, by means of which the blooms, &c., are automatically discharged laterally from the side of the furnace.

I believe myself to be the first to provide
25 means or mechanism for automatically discharging laterally or in the direction of their length the heated blooms or causing them to be discharged from the side of the furnace without the intervention of an attendant, as
30 has been customary heretofore.

Having thus described my invention, what

I claim as new, and desire to secure by Letters Patent, is—

1. In a furnace for heating ingots, billets, blooms, &c., the combination with the longitudinal way along which the billets are
35 advanced and on which they are supported while being heated, of an inclined way within the furnace at the end of and extending crosswise of the longitudinal way to receive
40 the billets as they drop one by one from the longitudinal way, and a lateral discharge-door on the prolongation of the inclined way through which the successive billets as they
45 descend the inclined way by gravity are discharged end foremost, substantially as and for the purposes hereinbefore set forth.

2. In a furnace for heating ingots, billets, blooms, &c., the combination of the longitudinal way along which the billets are
50 advanced and on which they are supported while being heated, the inclined way within the furnace extending crosswise of the longitudinal way to receive the billets one by
55 one and to direct them end foremost to a lateral discharge-door, and a sand bed between the two ways, substantially as and for the purposes hereinbefore set forth.

FRED HARRIS DANIELS.

Witnesses:

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