

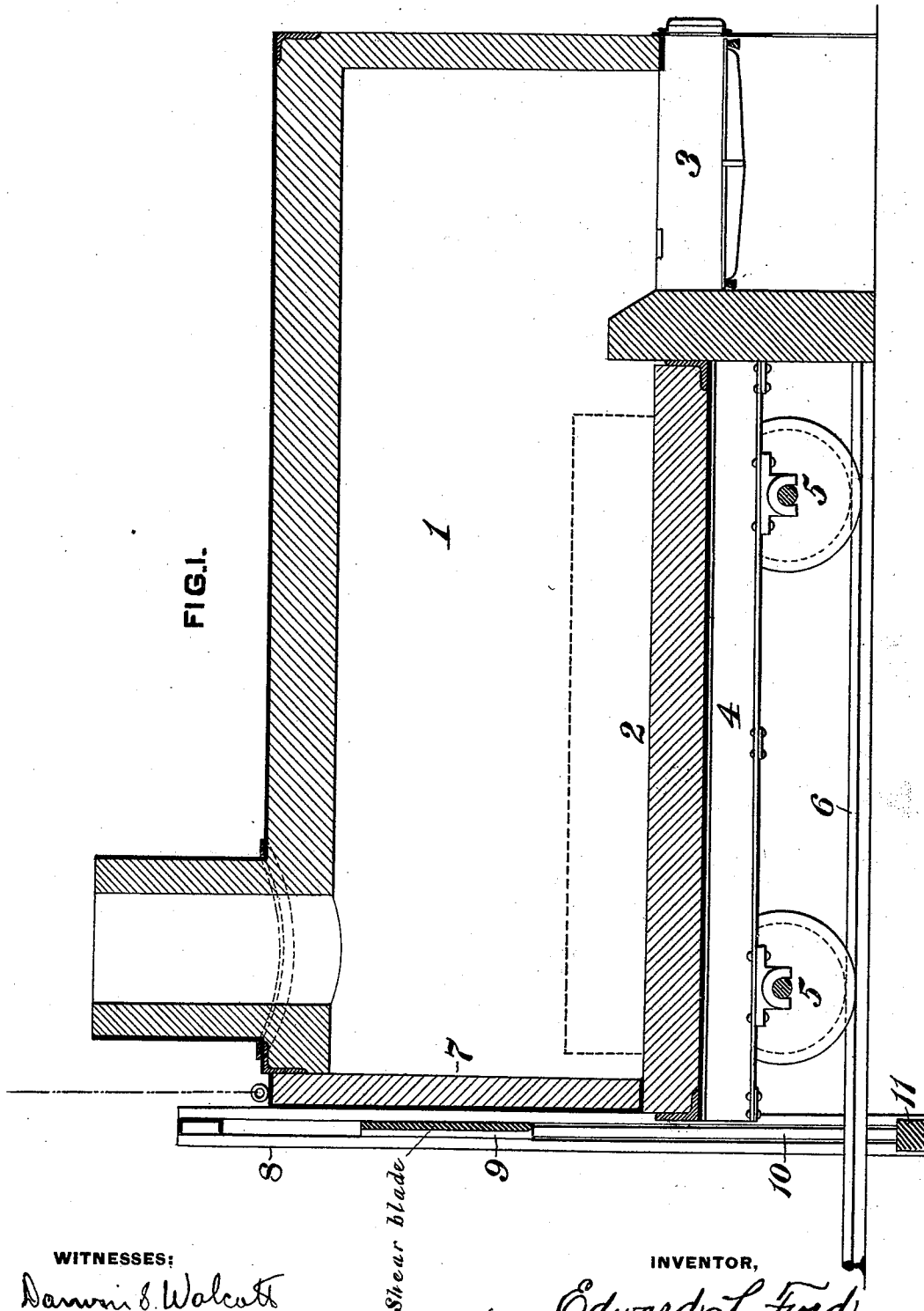
(No Model.)

2 Sheets—Sheet 1.

E. L. FORD.
FURNACE.

No. 513,100.

Patented Jan. 23, 1894.



WITNESSES:

Danville S. Walcott
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INVENTOR,

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(No Model.)

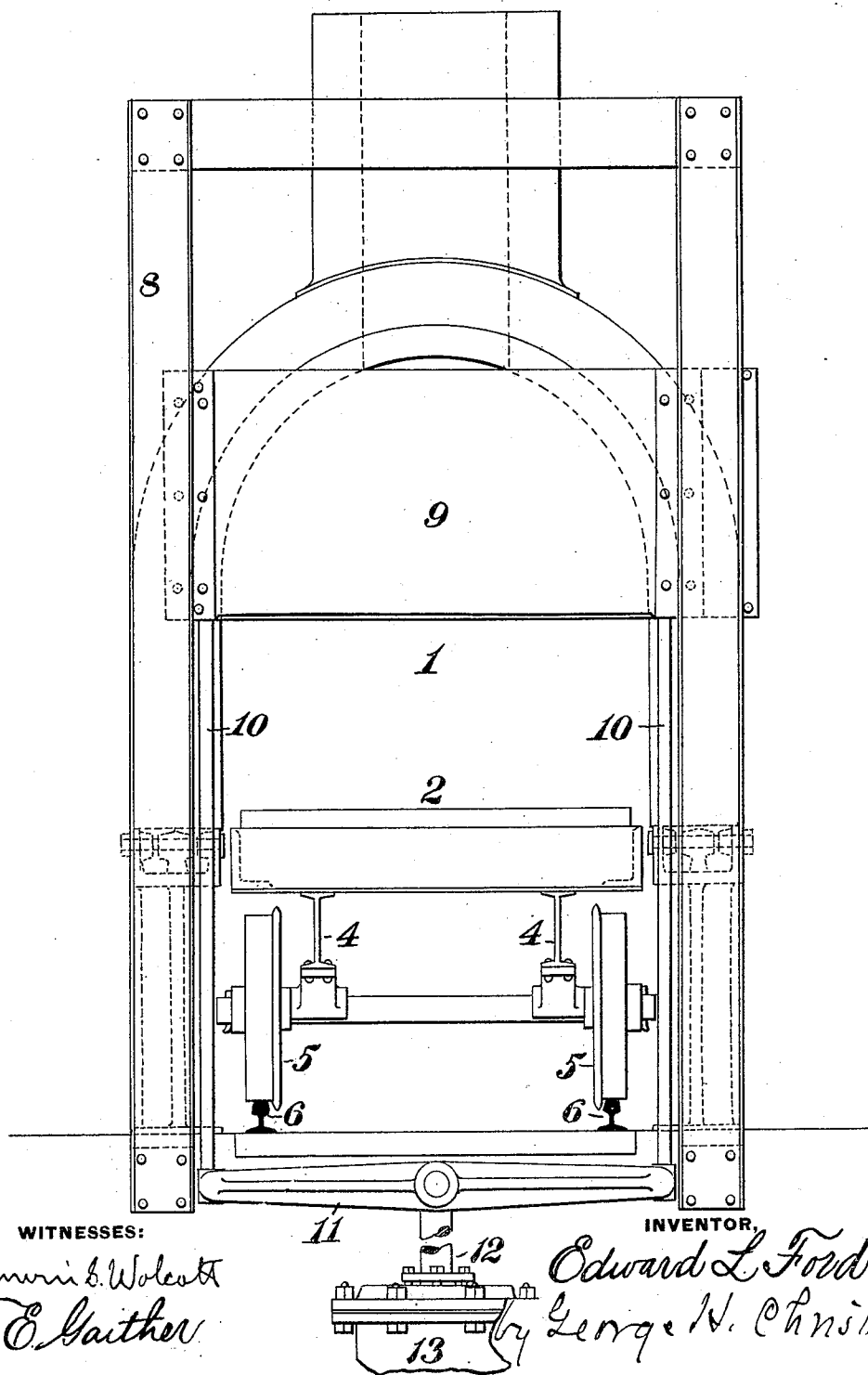
2 Sheets—Sheet 2.

E. L. FORD.
FURNACE.

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FIG. 2.



UNITED STATES PATENT OFFICE.

EDWARD L. FORD, OF YOUNGSTOWN, OHIO.

FURNACE.

SPECIFICATION forming part of Letters Patent No. 513,100, dated January 23, 1894.

Application filed February 1, 1893. Serial No. 460,598. (No model.)

To all whom it may concern:

Be it known that I, EDWARD L. FORD, a citizen of the United States, residing at Youngstown, in the county of Mahoning and State of Ohio, have invented or discovered certain new and useful Improvements in Furnaces, of which improvements the following is a specification.

The invention described herein relates to furnaces adapted for the storage of ingots, billets, puddle balls, &c., where they may be kept in a heated condition, or the temperature of the metal slightly raised, until they can be transferred and worked by rolls and hammer, &c.

It frequently happens that the ball, ingot or billet, when the latter is formed in a rotary puddler, is larger than can be conveniently or effectively worked in the rolls or under the hammer, and it is therefore necessary to divide the ingot, ball or bloom into two or more parts which are to be separately worked.

It is a further object of this invention to provide suitable means in connection with a furnace whereby the ingot, ball or bloom can be divided, and the portions not required for immediate use may be retained in a heated condition.

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

In the accompanying drawings which form a part of this specification, Figure 1 is a sectional elevation of my improved furnace and shearing attachment, the plane of section being through the longitudinal axis of the furnace, and Fig. 2 is an end elevation of the furnace.

In the practice of my invention, the furnace 1 is made of sufficient length to permit of the insertion therein, and on the hearth 2 of the furnace, of the longest bloom, ball or ingot which it is probable will be made in the plant to which the furnace belongs. At one end of the furnace is formed a fire chamber 3, in which may be burned either solid fuel, gas, or a liquid fuel.

The hearth 2 of the furnace is formed by a frame 4, consisting of suitable structural beams, and mounted on suitable trucks 5. The wheels of these trucks are arranged on

rails 6, which extend beyond the end of the furnace a distance at least equal to the length of the hearth, so that the latter may pass entirely out of the furnace for convenience in placing an ingot, ball or bloom thereon. The bed of the hearth is formed by brick or other refractory material supported by the frame 4. The rear end of the furnace is made open so as to permit the passage of the movable hearth just described, and any load which may be placed thereon, into and out of the furnace. The furnace is closed above the hearth by a sliding door 7, which is preferably supported in its lower position by the hearth.

At the end of the furnace, and preferably in such close proximity thereto as to form portions of the guide for the door, is erected a frame 8, the vertical posts thereof being arranged a distance apart, preferably a little greater than the width of the hearth, so that the latter may pass freely between them. These vertical posts serve as guides for the shear-blade 9, which is attached near its ends to rods 10, connected at their lower ends to the cross-head 11, which, in turn, is connected to the piston rod 12, of a fluid pressure cylinder 13.

In the use of my apparatus, the furnace having been properly heated, the ingot, ball or bloom is placed upon the hearth 2, which is run out for that purpose, and after the ingot or ball has been placed thereon, is pushed back into the furnace, and the door 7 thereof closed. The ingot, ball or bloom will thus be kept hot until such time as it can be worked by the hammer or rolls. If the ingot, ball or bloom is larger than is desirable to be worked at one time by the hammer, the hearth 2 is run out of the furnace until so much of the ingot or ball as is to be worked, is beyond the line of movement of the shear-blade 9, whereupon the latter is moved down, dividing the ingot or ball at the desired place. The part thus severed is then transferred to the hammer, and the hearth again returned to the furnace, and the door 7 lowered, so as to keep the remaining portion of the ingot, ball or bloom hot until such time as it or any portion thereof is to be transferred to the hammer. This arrangement of a shearing mechanism adjacent to a heating or soaking furnace, permits of the ready separation or di-

vision of a bloom, ball or ingot into any required number of parts, and the working of such parts under a hammer or rolls, while the remaining portions are kept in a heated condition.

5 I claim herein as my invention—

1. A heating or soaking furnace having in combination therewith a shearing mechanism, and means for moving an ingot, ball or
10 bloom out of the furnace and under the shearing mechanism, substantially as set forth.

2. A heating or soaking furnace having in

combination therewith a hearth movable into and out of the furnace, and a shearing mechanism arranged to shear or divide an ingot, 15 ball or bloom resting upon the hearth, substantially as set forth.

In testimony whereof I have hereunto set my hand.

EDWARD L. FORD.

Witnesses:

W. R. MERRICK,
F. D. JONES.