(No Model.)

T. H. CHADWICK.

FURNACE DOOR.

No. 469,894. Patented Mar. 1, 1892.

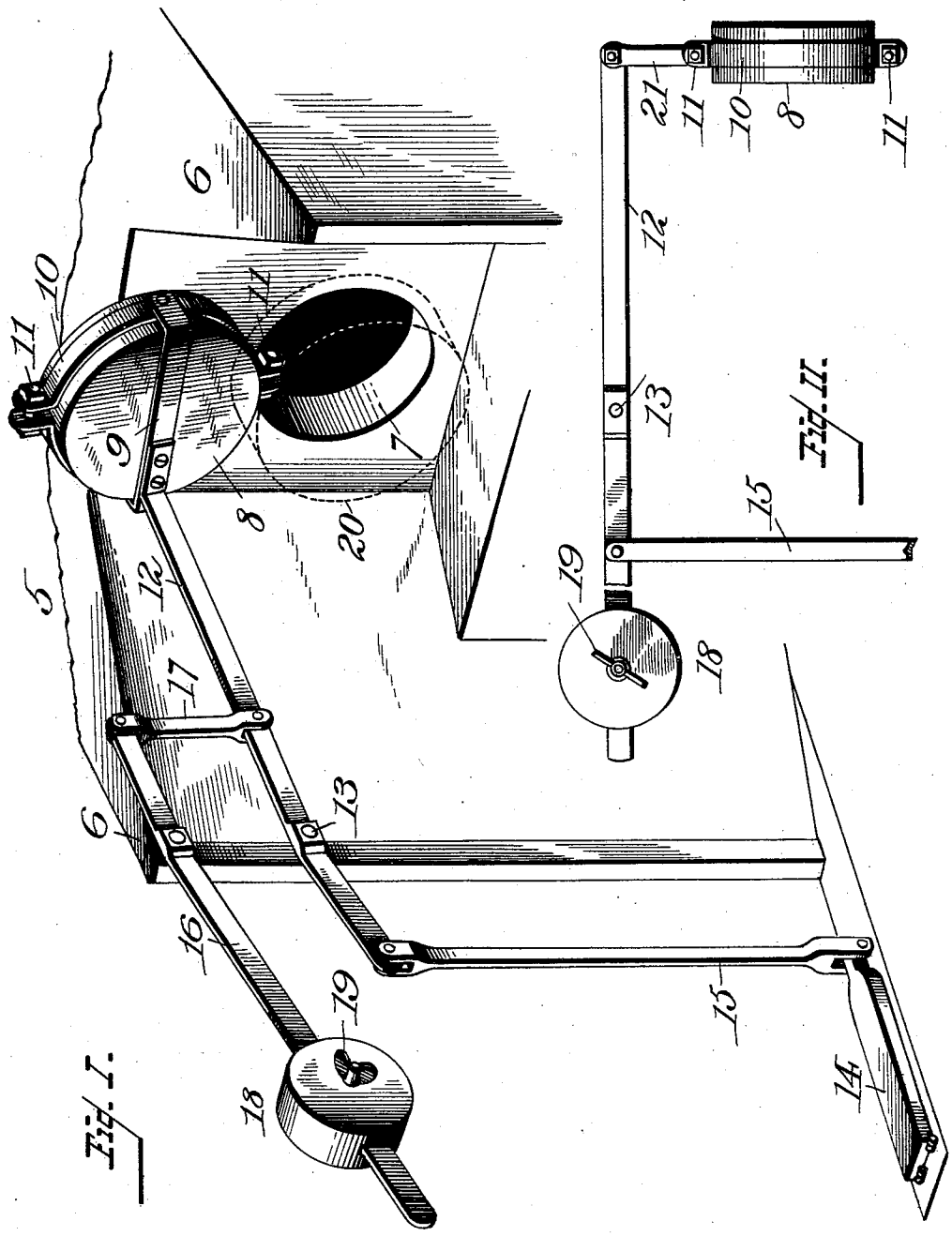

Fig. I.

Fig. II.

WITNESSES,

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UNITED STATES PATENT OFFICE.

THOMAS HOOTON CHADWICK, OF JEANNETTE, PENNSYLVANIA.

FURNACE-DOOR.

SPECIFICATION forming part of Letters Patent No. 469,894, dated March 1, 1892.

Application filed October 3, 1891. Serial No. 407,628. (No model.)

To all whom it may concern:

Be it known that I, THOMAS HOOTON CHADWICK, a citizen of the United States, residing at Jeannette, in the county of Westmoreland and State of Pennsylvania, have invented certain new and useful Improvements in Furnace-Doors; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to that class of furnaces which are used for melting glass and metals.

Heretofore it has been common for glass-workers to leave the ring or aperture through which the glass is removed from the furnace open while they stand in front of it at work, because it is difficult for the worker to close a door while both of his hands are occupied in handling his blow-pipe with the glass thereon, this work requiring expedition and dexterity to handle the glass while it is in a suitable condition. There are many disadvantages resulting from thus keeping the ring open, some of which are as follows: First, the heat escaping from the ring is wasted, requiring more fuel to raise the glass to its proper temperature, and the workman is exposed to this escaping heat, whereby he is disabled from doing as much work or doing it as comfortably as he otherwise would; second, the cold air rushing into these holes frequently forms streaks in the glass, which it is impossible to remove and which materially damage its quality; third, furnaces usually have rings or openings on opposite sides, and the wind frequently rushes in at one opening and drives the heat of the furnace out through the opposite opening to the great danger of any workman who may chance to be at that opening.

The object of my invention is to obviate these difficulties and such others as may arise from open-ringed furnaces; and to this end my invention consists in the construction and combination of parts forming a "furnace-door" and its operating mechanism, hereinafter described and claimed, reference being had to the accompanying drawings, in which—

Figure I is a perspective view of the front of a portion of a furnace, showing my door in an open position ready for the glass to be taken therefrom; and Fig. II shows in side elevation a modification of the door-hangings.

5 represents a furnace of any usual construction, and particularly that class of furnaces which are called "tanks," in which 6 represents the partition-walls, which project forward of the ring or mouth 7.

8 represents the door, preferably made of fire-clay and hung in a yoke 9 by means of a parted band 10, the ends of which are secured together by screw-bolts 11, whereby the fragile fire-clay may be securely held without crumbling. This yoke is supported upon a lever 12, which is pivoted to any suitable support, such as one of the partition-walls 6, at 13.

14 represents a treadle hinged to the floor or to any suitable support thereon and connected with the lever 12 by a rod 15.

16 represents an auxiliary lever pivoted to the same partition-wall at a point some distance above the lever 12 and connected with the said lever by means of a rod 17.

18 represents a balance-weight fitted to slide upon the lever 16 and to be secured thereon by a binding-screw 19, whereby the weight may be adjusted upon the arm of the lever, as may be required to properly balance the door, so that it may be easily operated. This balance-weight is so arranged that the door in its normal position remains closed, as shown in dotted lines 20.

When the operator wishes to open the furnace, he presses one foot upon the treadle 14, whereby the door will be quickly raised, so that he may use both hands to handle his blow-pipe in gathering and removing glass from the ring or mouth 7. As soon as he has accumulated upon the pipe the amount of glass required and withdraws the pipe, he removes his foot from the treadle and permits the door to automatically close itself by gravity, thus protecting his back from the heat of the furnace while he turns to work upon the glass.

The lever 12, which supports the door, is placed at right angles to the plane of the face of the door in order that the door may be thereby kept from swinging to and from the face of the furnace, and the lever is offset to carry it to one side out of the way of the operator when at work, and for the same reason

the auxilary lever 16 is introduced to support the balance-weight clear above the operator's head.

There are various ways in which the door may be hung to the lever, whereby the door will come down to its normal level and the balance-weight be still kept out of the way—such, for example, as that shown in Fig. II, in which the weight 18 is supported directly upon the arm of the lever, while the door is connected to the opposite arm of the same lever by means of a rod 21; or it may be done by some one of the various well-known expedients—such as cords or chains running over pulleys to connect some portion of the lever-works with a balance-weight; but I prefer the form here shown as being more readily applied to such furnaces as are now in use.

Fire-clay is selected as the best material for doors, because metals become scaled by the intense heat of the furnace, and droppings of such scale would damage the glass.

Having thus fully described my invention, what I believe to be new, and desire to secure by Letters Patent, is the following:

1. The combination, in furnace-doors, of a fire-clay body in suitable form, a parted metallic band surrounding the said body and secured together at its ends by a screw-bolt, and a yoke and lever supporting the door-body by means of the band, substantially as described.

2. The combination, with a furnace, of a door located in front of its ring or mouth and hung upon a lever located at right angles with the plane of the said mouth and offset to one side of the front of the mouth, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

THOMAS HOOTON CHADWICK.

Witnesses:

E. M. DAWSON,

M. C. HILLYARD.