No. 646,475. Patented Apr. 3, 1900.

# J. SWANGER.

## CHARGING AND DRAWING APPARATUS FOR HEATING FURNACES.

(Application filed Aug. 29, 1899.)

(No Model.)

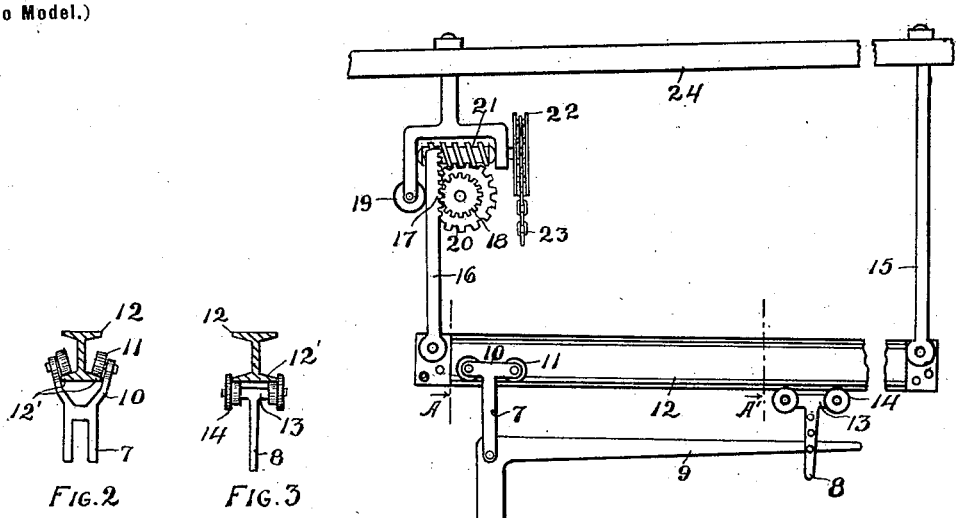





FIG. 2




FIG. 3

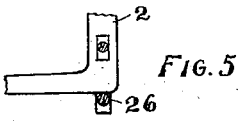


FIG. 5

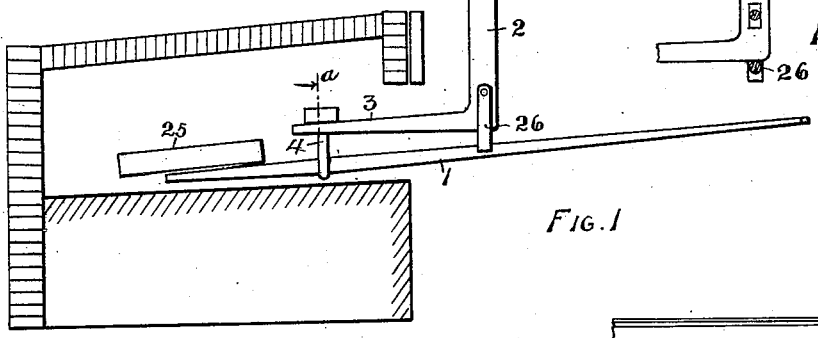


FIG. 1




FIG. 4

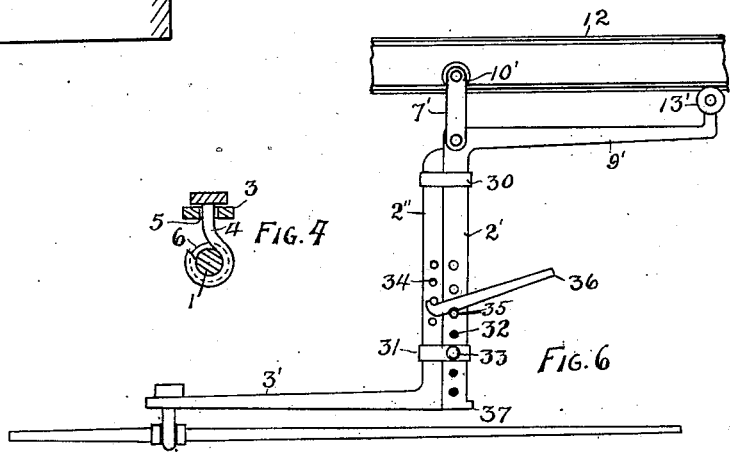


FIG. 6

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## CHARGING AND DRAWING APPARATUS FOR HEATING-FURNACES.

SPECIFICATION forming part of Letters Patent No. 646,475, dated April 3, 1900.

Application filed August 29, 1899. Serial No. 728,855. (No model.)

*To all whom it may concern:*

Be it known that I, JARED SWANGER, residing at Chester, in the county of Delaware and State of Pennsylvania, have invented certain new and useful Improvements in Charging and Drawing Apparatus for Heating-Furnaces, of which the following is a specification.

My invention relates to apparatus for carrying the "piles" or slabs of iron required to be charged and drawn in the operations of heating-furnaces. Its primary objects are to avoid carrying the "peel-supporting" mechanism over the tops of the furnaces, to provide a stable and readily-adjustable support for the peel, to provide means through which the load may be carried by gravity both in charging and drawing, and to secure universal motion in the operation of the peel.

In the accompanying drawings, Figure 1 is a side elevation illustrating my invention. Fig. 2 is a sectional view on the line A, illustrating a detail. Fig. 3 is a sectional view on the line A', illustrating a detail. Fig. 4 is a sectional view on the line *a*, illustrating the connection between the peel and the supporting-lever. Fig. 5 is a side elevation, partially in section, showing a detail of the supporting-lever; and Fig. 6 is a side elevation illustrating a modification in the construction of the carrying-bar.

Referring to the drawings, the peel 1 is supported by a substantially Z-shaped lever or carrying-bar 2, the peel being suspended from the end of the lever-arm 3 by a hook 4, which passes freely through and is swiveled in an aperture 5 in the arm, a collar 6 being formed on the peel to prevent it from moving longitudinally through its bearing. The lever 2 is supported by a hanger 7, to which it is pivoted, and by a strut 8, which engages in adjustable relation with the rearwardly-projecting lever-arm 9, as by passing a bolt through the arm and the strut, permitting the height of the arm 3 and the peel 1 to be varied. The hanger 7 depends from a truck 10, the wheels 11 of which straddle the I-bar 12 and run upon the inner faces of the flanges 12' thereof. The strut 8 depends from a truck 13, the wheels 14 of which are flanged, so as to straddle and run upon the outer faces of the I-bar flanges 12'.

The I-bar, forming the track for the trucks, is suspended at one end by the rod 15 and at the other end by the rod 16. In order to adjust the track to the inclinations required for both charging and drawing by gravity, one of the suspended rods, as 16, is alternately elevated and lowered, as may be required. This may be accomplished by providing the rod 16 with a rack 17, which is engaged by a gear-wheel 18, against which it is held by a roller 19, journaled in a fixed support. A second gear-wheel 20 is fixed to the gear-wheel 18 and is engaged by the worm 21, which is driven by a sprocket 22 and chain 23, connected therewith. This mechanism is supported by a beam 24, which, if desired, may be a member of a traveling crane, by which the mechanism may be moved into position for charging and drawing any one of a series of furnaces. To sustain the pile upon the peel, a strut 26 is hinged to the Z-lever and when allowed to fall straddles the peel and takes the upward thrust from the long arm of the peel. It will be evident that by squaring the peel-rod at the point where it is straddled by the strut the strut will serve to prevent the peel from turning in its bearing when down.

In the construction illustrated in Fig. 6 the carrying-bar is formed in two parts to effect the adjustment of the arm 3', which carries the peel, to various heights. A member 2'' extends upward from the arm 3' and has secured thereto the straps or keepers 30 and 31, through which runs the member 2', depending from the arm 9'. The part 2' is provided with holes 32, through which and the strap 31 a pin 33 is passed to hold the arm 3' at the desired elevation. Pins or studs 34 and 35 on the respective parts 2'' and 2', with the lever 36, provide means for elevating and lowering the arm 3' when the pin 33 is withdrawn, a stop 37 limiting the downward movement of the arm. The lever is sustained by a hanger 7' and a truck 10' (illustrated in end elevation in Fig. 2) and by a truck 13', bearing upon the eyebar or track 12, as illustrated in Fig. 3.

From the foregoing description it will appear that a pile upon the peel may be shifted about at will by means of the universal motion permitted by its connection with the Z-lever, and the peel-supporting arm may be adjusted to various heights for the accommodation of furnace-doors of various heights. When by

reason of the heat and weight to which it is subjected the peel becomes bent, it can be revolved in its seat or journal in the hook to the reverse position and brought back to its original shape by use. When it is desired to charge or draw, the worm-gear is operated so as to give the required inclination to the I-beam forming the track upon which gravity carries the load in the desired direction, the worm and gear then holding the track in any position to which it may be moved.

Having described my invention, I claim—

1. In a furnace charging and drawing apparatus, a track, a carrying-bar suspended from said track, said bar having a substantially-vertical member, an upper arm extending away from the furnace and connected with said track and a lower oppositely-extending arm for entering the furnace, in combination with a peel having a swiveled connection with said lower arm.

2. In a furnace charging and drawing apparatus, a track, means for varying the inclination of said track, a carrying-bar suspended from said track, said bar having a substantially-vertical member, an upper arm extending away from the furnace through which said bar is connected with said track and a lower oppositely-extending arm which enters the furnace, in combination with a peel having a swiveled connection with said lower arm.

3. In a charging and drawing apparatus, a carrying-bar having a substantially-vertical member, a forwardly-projecting arm and a rearwardly-projecting arm, a hook swiveled in said forwardly-projecting arm, in combination with a peel journaled in said hook, a hanger for supporting said carrying-bar, and a strut for sustaining said rearwardly-projecting arm, substantially as specified.

4. In a furnace charging and drawing apparatus, a track comprising a suspended eyebar, a truck which straddles said eyebar and rides upon the flanges thereof, a hanger supported by said truck, a carrying-bar suspended from said hanger, said carrying-bar having a substantially-vertical member, an upper arm extending away from the furnace through which said bar is connected with said track in combination with a lower oppositely-extending arm adapted to enter the furnace, and a peel supported by said lower arm.

5. In a furnace charging and drawing apparatus, a carrying-bar formed in relatively-adjustable parts and having means for adjusting and holding said parts relatively, said bar having an upper arm extending away from the furnace for supporting said bar, and a lower oppositely-extending arm for entering the furnace, a peel supported by said lower arm and a track for supporting said upper arm.

6. In a furnace charging and drawing apparatus, a track, a carrying-bar depending from said track having an arm extending away from the furnace and connected with said track and a substantially-vertical arm, a second carrying-bar having a substantially-vertical arm movable along said first vertical arm in adjustable relation and an arm which extends into the furnace, in combination with a peel supported by the arm which extends into the furnace.

7. In a furnace charging and drawing apparatus, a carrying-bar having a substantially-vertical member, an upper arm extending away from the furnace and a lower oppositely-extending arm which enters the furnace, in combination with a peel supported by said lower arm, and means for adjusting or varying the elevation of said bar, substantially as specified.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JARED SWANGER.

Witnesses:
JOHN THIEL,
CHARLES N. BUTLER.