No. 627,825. Patented June 27, 1899.

G. LENTZ.

FURNACE CHARGING APPARATUS.

(Application filed Feb. 11, 1898.)

(No Model.)

FIG. I.

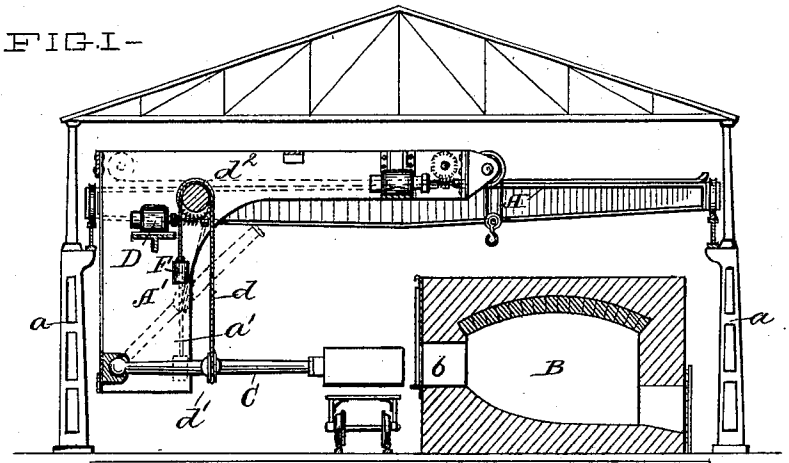


FIG. II.

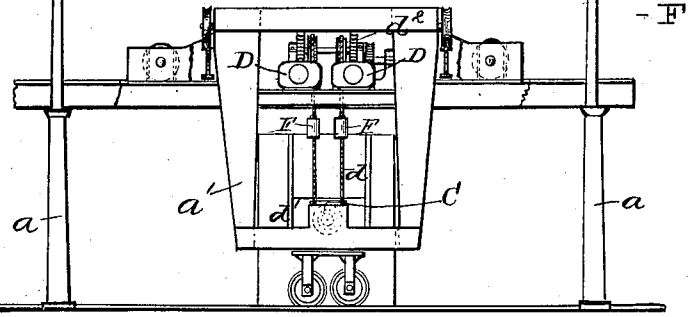
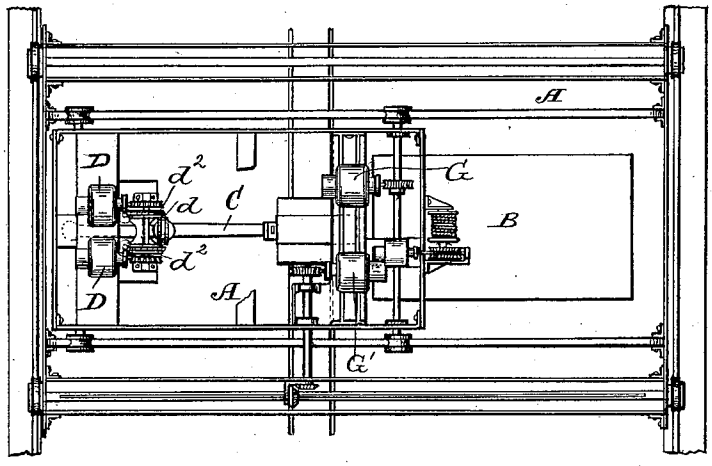


FIG. III



WITNESSES:

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FURNACE-CHARGING APPARATUS.

SPECIFICATION forming part of Letters Patent No. 627,825, dated June 27, 1899.

Application filed February 11, 1898. Serial No. 669,900. (No model.)

To all whom it may concern:

Be it known that I, GUSTAVE LENTZ, a subject of the Emperor of Germany, and a resident of Dusseldorf, Germany, have invented a new and useful Improvement in Furnace-Charging Apparatus, of which the following is a specification, the principle of the invention being herein explained and the best mode in which I have contemplated applying that principle so as to distinguish it from other inventions.

The annexed drawings and the following description set forth in detail certain mechanism embodying the invention, such disclosed means constituting but one of various mechanical forms in which the principle of the invention may be used.

In the said annexed drawings, Figure I represents a transverse sectional view of an open-hearth furnace, showing the charging apparatus in elevation. Fig. II represents an end elevation of said apparatus, and Fig. III a top plan view.

An overhead crane A, running upon tracks mounted upon suitable supports *a*, is provided with a carriage A′, running upon transverse tracks upon the crane, which carriage is hence capable of being transversely moved. Embraced within the territory of said crane and located between the supports thereof is an open-hearth furnace B, provided with the charging-door *b*. Suitable means are provided whereby the charging-load may be transported to the vicinity of said door in charging-boxes. Pivoted at one end to a downwardly-extending portion *a′* of the carriage is a peel C, capable of being rotated upon its axis, and is supported near its middle in a bight of a pitch-chain *d*, which passes around a sheave *d′*, mounted upon a ball-and-socket joint supported on the peel, the peel thus being capable of axial rotation and angular movement in said sheave. The two ends of the said bight each pass over a sheave d^2, mounted above in the carriage, and are rotated by suitable independent motors D and D′. At the extremities of said chain are hung counterweights F to counterbalance the weight of the load when supported by the peel. The free end of the latter is provided with suitable means for grasping the charging-boxes. A motor G is provided to operate the carriage, and a motor G′ is provided to traverse the crane.

In operating the apparatus the crane is brought into a suitable position, the charging-box secured to the end of the peel, and both motors D and D′ rotated so as to rotate the sheaves d^2 in a direction such that both ends of the chain *d* are drawn up so as to cause the ends of said bight to remain stationary relatively to each other, by which operation it is seen that an angular movement of the peel upon its pivot is effected, whereby the end of the peel is raised. On the end being raised to the proper height for the insertion of the box into the furnace-door the carriage is moved forward and the box enters the charging-door. This having been accomplished, one of the sheaves d^2 is rotated independently of the other or both rotated in a direction such that one chain end is drawn up and the other lowered. Either operation causes the ends of the bight to move in opposite directions relatively to each other. This causes the peel to rotate upon its axis, and the contents of the box are thus emptied onto the bottom of the furnace. A reversal of the above operation then takes place.

By embracing the entire furnace in its territory and making the crane of the overhead variety it may be utilized in making furnace repairs, in which case the peel is drawn up, as shown by the dotted lines Fig. I.

Other modes of applying the principle of my invention may be employed instead of the one explained, change being made as regards the mechanism herein disclosed, provided the means covered by any one of the following claims be employed.

I therefore particularly point out and distinctly claim as my invention—

1. In a furnace-charging apparatus, the combination with a peel pivoted at one end, of means for swinging the peel upon said pivot, said means adapted to rotate the peel upon its axis, substantially as set forth.

2. In a furnace-charging apparatus, the combination with a peel pivoted at one end, of means for rotating said peel upon its axis, said means adapted to swing the peel upon its pivot, substantially as set forth.

3. In a furnace-charging apparatus, the combination with a pivoted peel axially rota-

tive, of two motors for conjointly operating to impart to said peel angular movement upon its pivot, and adapted to rotate said peel on its axis, substantially as set forth.

4. In a furnace-charging apparatus, the combination with a pivoted peel axially rotative, of two independent motors for acting conjointly to impart to said peel angular movement upon its pivot, and to act independently to rotate said peel on its axis, substantially as set forth.

5. In a furnace-charging apparatus, the combination of a pivoted peel axially rotative and supported in the bight of a chain, means for raising said chain so as to cause the ends of said bight to remain stationary relatively to each other, and means for effecting movement of the chain to cause said ends to move in opposite directions relatively to each other, substantially as set forth.

6. In a furnace-charging apparatus, the combination of an overhead crane having a transversely-movable carriage and embracing the furnace between its supports, means for transversely moving said carriage, a peel pivoted at one end upon said carriage, means mounted upon the latter for swinging the peel upon its pivot said means adapted to rotate said peel upon its axis, substantially as set forth.

7. In a furnace-charging apparatus, the combination of a peel pivoted at one end in a bearing and capable of axial rotation therein, of a sheave mounted upon said peel, the latter capable of axial rotation and angular movement in said sheave, a chain passing around said sheave and means for actuating said chain to impart to said peel angular movement upon said pivot, and means for actuating said chain to impart axial rotative movement to said peel, substantially as set forth.

8. In a furnace-charging apparatus, the combination of a peel pivoted at one end in a bearing and capable of axial rotation therein, a sheave mounted upon said peel, the latter capable of axial rotation and angular movement in said sheave, a chain passing around said sheave, and means for actuating said chain to impart to said peel angular movement upon its pivot, said means adapted to actuate said chain to impart axial rotative movement to said peel, substantially as set forth.

Signed by me this 24th day of December, 1897.

GUSTAVE LENTZ.

Attest:

WILLIAM ESSENWEIN,
T. N. BUTLER.