

K. STOBRAWA.
 MEANS FOR REMOVING SLAG FROM HEARTH FURNACES.
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1,025,027.

Patented Apr. 30, 1912.

Fig. 1.

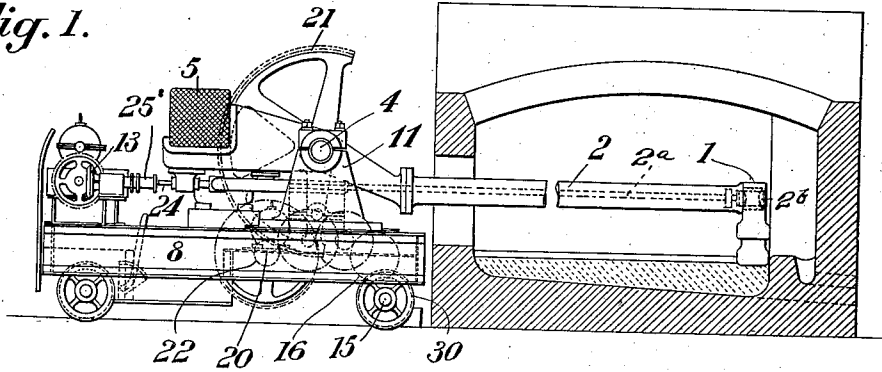
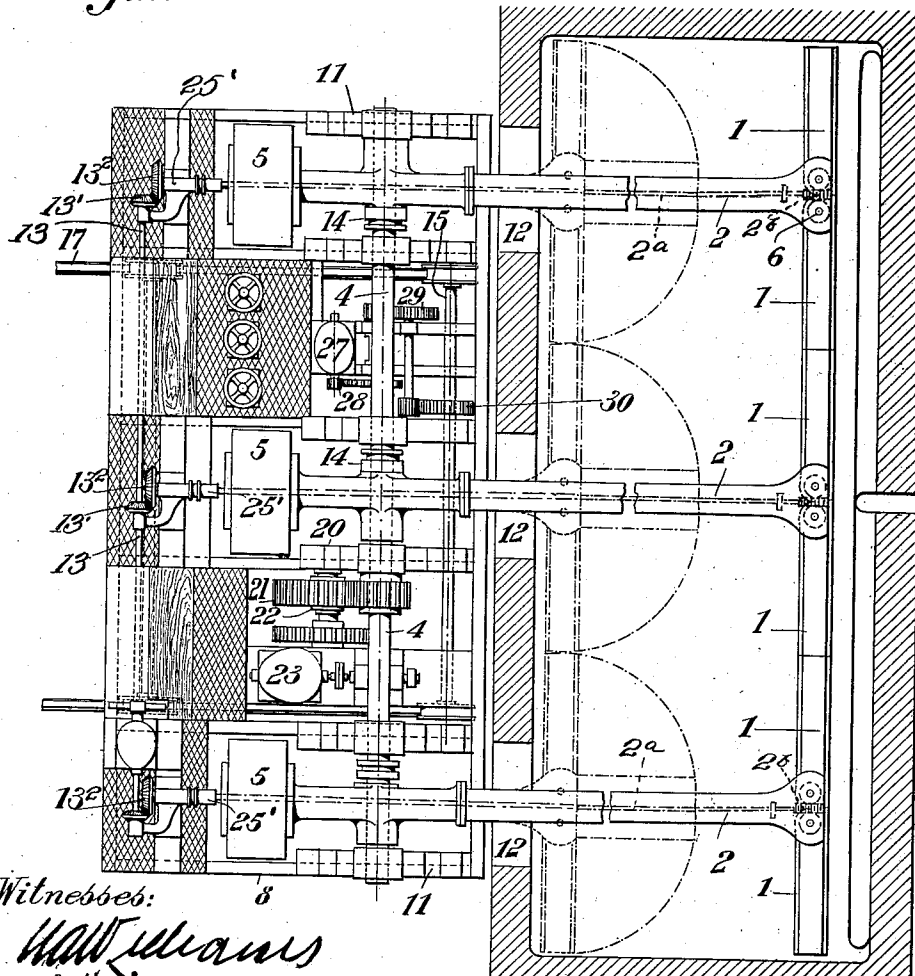


Fig. 2.



Witnesses:

Walter Adams
John Gray

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UNITED STATES PATENT OFFICE.

KARL STOBRAWA, OF GLEIWITZ, GERMANY.

MEANS FOR REMOVING SLAG FROM HEARTH-FURNACES.

1,025,027.

Specification of Letters Patent.

Patented Apr. 30, 1912.

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To all whom it may concern:

Be it known that I, KARL STOBRAWA, a subject of the German Emperor, and resident of Gleiwitz, Germany, have invented certain new and useful Improvements in Means for Removing Slag from Hearth-Furnaces, of which the following is a specification.

My invention relates to improvements in means employed for removing slag from furnaces.

The object of the invention is to provide means located adjacent the furnace for inserting and manipulating scrapers in such manner as to effectually and economically remove the slag from the molten mass.

The invention also relates to the specific details of construction and arrangement of parts, which will be hereinafter described and particularly pointed out in the claims.

In the accompanying drawings: Figure 1 is a side elevation of an apparatus for carrying out my invention, the furnace being in section. Fig. 2 is a top plan view of the same with the furnace in section.

8 indicates a truck which is placed in front of the charging doors of a hearth furnace and is moved toward and from said furnace on rails 17. On the truck 8 are standards 11, provided with bearings in which is mounted a shaft 4. The shaft 4 is provided with a toothed segment 21, which meshes with a gear 22, connected with a motor 23. Loosely mounted on the shaft 4 are levers 2, the forward ends of which are provided with floats 1, while at their rear ends they are provided with counter weights 5. The hub of each lever has a clutching member, which coöperates with clutch members 14, keyed to the shaft 4, whereby when the clutch members 14 are engaged with the corresponding clutch members on the levers, the latter will be vertically moved to properly manipulate the floats 1.

The forward end of each lever 2, is provided with two oppositely disposed floats 1 pivoted at 6, and adapted to be horizontally rotated in the furnace. The inner end of each float is formed with teeth, and passing through each lever is a shaft 2^a provided at the inner end with a worm 2^b, to engage the teeth on the ends of the floats, whereby to rotate the latter. The outer end of each shaft 2^a is provided with a square end, with which a detachable coupling 25' is designed to engage. The coupling 25' is

mounted on a stub shaft carrying a beveled wheel 13² meshing with a beveled gear 13' on a transverse shaft 13, operated by a motor 26. The truck 8 is moved toward and from the furnace by a motor 27, having gearing 28, 29, 30.

In operation the toothed segments are clutched to the shaft 4, and the latter is revolved so as to bring the levers 2 in a horizontal position. Then the detachable coupling 25' is engaged with the square end of the shafts 2^a and the motor 26 is started. This movement revolves the worms, hence turns the floats or scrapers on their pivots until they are brought together substantially parallel with the levers. The apparatus is now in position to be advanced toward the furnace to insert the floats or scrapers therein. The motor 27 is started and the apparatus is advanced until the scrapers are in the furnace, then the motor 26, is again operated to rotate the scrapers so that they will assume a position at right angle to the levers 2, as shown in full and dotted lines in Fig. 2. The coupling 25' is now disconnected, and the tooth segments are again clutched to the shaft 4, to lower the floats until they reach the molten mass in the furnace, and then the segments are again disconnected from the shaft. The motor 27 is again operated so as to reciprocate the truck, hence the floats or scrapers, which effectually removes the slag from the molten mass.

The truck having been reciprocated sufficiently to remove the slag, the scrapers are elevated by coupling the levers to shaft 4, to bring said levers into a horizontal position, then the shafts 2^a are coupled by the detachable coupling 25' and motor 26, is operated to again rotate the floats parallel with the levers, so that the truck can be removed from the furnace.

What I claim is:

1. In an apparatus for removing slag from furnaces, the combination of a truck, a rotating shaft mounted on the truck, means for rotating the shaft, levers mounted on the shaft, scrapers on the levers, means for balancing the scrapers, and means for reciprocating the truck.

2. In an apparatus for removing slag from furnaces, the combination of a truck, including an axle, a motor for operating the truck, the truck including gearing between said motor and the axle, a rotatable shaft mounted on the truck, means for rotating the shaft,

slag scrapers supported on the shaft, and counterbalancing means on the levers for causing the scrapers to float on the molten mass.

5 3. In an apparatus for removing slag from furnaces, the combination of a truck, means for operating the truck, a rotatable shaft on the truck, a toothed segment on the shaft, levers loosely mounted on said shaft, each
10 of said levers having a clutch member, clutch members on the shaft to cooperate with the clutch members on the levers whereby to lock the levers to the shaft, means engaging with the toothed segment to impart
15 motion thereto to rotate the shafts, and scrapers on the levers to remove slag when the truck is operated.

4. In an apparatus for removing slag from furnaces the combination of a truck, a plurality of levers mounted on the truck, pivoted scrapers mounted at the ends of the levers, means for horizontally rotating the scrapers, means for balancing the levers to cause the scrapers to float on the mass of

molten metal being acted on, and means for 25 reciprocating the truck and scrapers.

5. In an apparatus for removing slag from furnaces, the combination of a truck, a shaft mounted on the truck, a motor for rotating the shaft, a series of levers mounted on the 30 shaft, means for clutching the levers to the shaft, pivotally mounted scrapers at the free end of said levers each of said scrapers having gear teeth, a shaft carried by each lever, a worm on each said shaft to mesh with the 35 gear teeth on the scraper, a scraper-operating motor on the truck, means for coupling and uncoupling the lever shafts with the scraper-operating motor to control the horizontal position of the scrapers, counterbal- 40 ance for each lever, and a motor for operating the truck.

In testimony whereof I have hereunto set my hand in presence of two witnesses.

KARL STOBRAWA.

Witnesses:

ERNST BLEISCH,
PAUL RUYB.