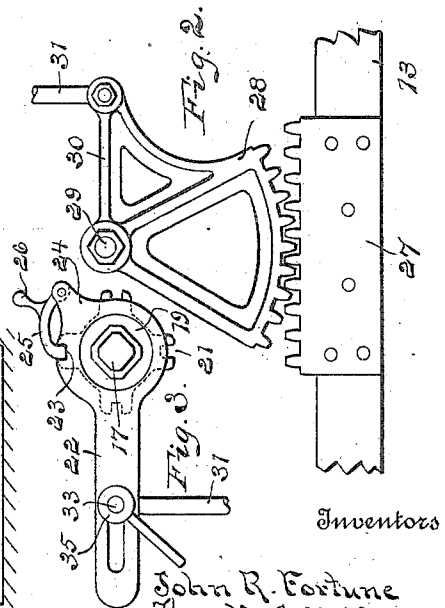
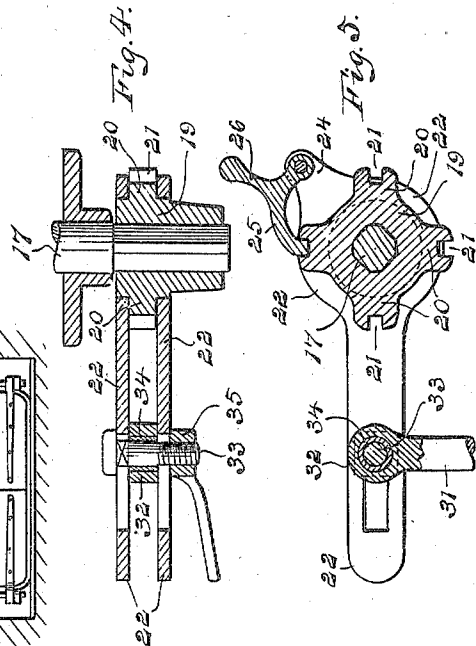


951,474.

Fig. 1.

Witnesses  
A. M. Dorr.  
A. M. Shamon.



Inventors

John R. Fortune  
Harold S. Wells

Attorneys

# UNITED STATES PATENT OFFICE.

JOHN R. FORTUNE AND HAROLD S. WELLS, OF DETROIT, MICHIGAN, ASSIGNORS TO  
MURPHY IRON WORKS, OF DETROIT, MICHIGAN, A CORPORATION OF MICHIGAN.

ACTUATING MECHANISM FOR AUTOMATIC STOKERS.

951,474.

Specification of Letters Patent.

Patented Mar. 8, 1910.

Application filed October 27, 1909. Serial No. 524,982.

*To all whom it may concern:*

Be it known that we, JOHN R. FORTUNE and HAROLD S. WELLS, citizens of the United States of America, residing at Detroit, in the county of Wayne and State of Michigan, have invented certain new and useful improvements in Actuating Mechanism for Automatic Stokers, of which the following is a specification, reference being had therein to the accompanying drawings.

This invention relates to actuating mechanism for automatic stokers and more particularly to means for transmitting motion to the feeding mechanism of the stoker from the actuating bar commonly employed as the main driver.

The objects of the invention are to provide a ready adjustment to vary the feed, to provide means for preventing breakage of the internal parts of the stoker, and to provide a simple and cheap construction having certain other new and useful features all as hereinafter more fully described reference being had to the accompanying drawing in which,

Figure 1 is an elevation of a furnace front with parts broken away to show the internal mechanism of the stoker; Fig. 2 is a detail showing one of the racks and sectors in elevation; Fig. 3 is a similar view of the lever mechanism carried by the stoker box rock shaft; Fig. 4 is an enlarged longitudinal section through the parts shown in Fig. 3; and Fig. 5 is a longitudinal vertical section through Fig. 4.

As shown in the drawing 1 is a furnace front or plate provided with the usual doors opening into an ash pit 2, fire chamber 3 and magazine 4 at each side of the fire chamber. From the adjacent sides of the magazine an arch 5 springs over the fire chamber of each furnace, and sliding upon a coking plate 6 beneath each magazine, is a series of stoker boxes 7 to feed the coal from the magazine on to the upper ends of inclined grate bars 8 which rest at their lower ends upon a grate bearer 9 in the upper part of the ash pit. These grates are made up of fixed and movable bars and the movable bars are actuated by means of rock shafts 10 engaging their lower ends, said shafts being extended through the front 1 and provided with crank arms 11 which are connected by links 12 to an actuating bar 13 extending along the fur-

nace front and reciprocable in bearings thereon. When there are two or more furnaces placed side by side, this bar may extend as shown, across all of the fronts and may be actuated by a single driver indicated at 14. This actuated bar thus forms the main driver from which motion is taken to actuate the several parts of the stoker including a clinker grinder 15 mounted in each grate bearer 9 and provided with a crank arm 16 on its outer end connected to said bar 13, and also including a rock shaft 17 beneath each magazine which shaft is provided with the usual sectors 18 engaging teeth on the stoker boxes 7 to move said boxes back and forth and feed the coal.

The above described construction and arrangement of parts is all old and well known in the art and forms no part of this invention, said invention consisting of means for transmitting motion from the actuating bar to the several rock shafts 17 for actuating the stoker boxes.

Upon the outwardly projecting end of each rock shaft 17, which end is formed square in cross section, is secured a member or hub 19 having a projecting outer end adapted to be engaged by a crank or other tool for turning the shaft by hand, and formed with a series of radial projections each having a notch 21 in its outer end. This hub is also formed at each side of said projections with portions forming seats for two parallel levers 22 adapted to turn freely thereon and each having a notch 23 similar to the notches 21 in the projections 20. Pivoted between lugs 24 on the levers 22, is a pawl 25 adapted to simultaneously engage the notches in said levers and the notch in one of said projections, to detachably connect the levers to the rock shaft, and the pawl is provided with a handle 26 by means of which it may be turned to disconnect it from the notches and permit the levers to turn about the shaft without actuating the same.

A toothed plate or rack 27 is secured to the actuating bar 13 near each rock shaft 17, and engaging each rack is a toothed gear segment 28 pivotally attached to the front plate 1 of the furnace by a pivot bolt 29 and each of these segments is formed with a laterally extending arm 30 to the end of which is pivotally attached a connecting rod 31,

the opposite end of which rod is provided with an eye 32 pivoted between the two levers 22. Each lever 22 is formed with a longitudinal slot near its outer end to receive a pivot bolt 33 extending therethrough and through the sleeve 34 between the levers 22 upon which the eye 32 of the rod turns. The pivot bolt 33 is provided with a squared shank to fit the slot in one lever and its opposite end is screwthreaded and extending through the slot in the opposite arm is provided with a nut 35 having a handle by means of which it may be turned to draw the two levers 22 toward each other and clamp the same firmly against the ends of the sleeve 34. Said sleeve is slightly longer than the eye 32 of the rod so that said eye will turn freely between the levers. By adjusting the bolt 33 in the slots, the distance which the rock shaft 17 will be turned, is adjusted.

If by becoming clogged or from other reasons the stoker boxes should be prevented from moving, and thus the rock shaft held from turning, the projections 20 upon the hub member 19 which is engaged by the pawl 25, will break before the internal parts of the furnace will give way, and thus permit the rocker bar to turn, preventing the breakage of parts inside of the furnace where they are not easily accessible and are hard to replace. When one of the projections 20 breaks, the hub member may be slipped from the end of its shaft and given a quarter turn to bring the next projection into position to be engaged by the pawl, and thus much time and trouble is saved by this construction.

Having thus fully described our invention what we claim is:—

1. In an automatic stoker, the combination with feeding mechanism and a rock shaft for actuating the same, of a reciprocable actuating bar, and means for transmitting motion from said bar to said shaft comprising a rack on the bar, a gear segment engaging the rack, a lever mounted upon the end of the shaft to turn thereon, a connecting rod connecting the lever and

the segment, and means for detachably attaching the lever to said shaft.

2. In an automatic stoker, the combination with feeding mechanism and a rock shaft for actuating the same, of a reciprocable actuating bar, and means for transmitting motion from said bar to said shaft comprising a rack on the bar, a gear segment engaging the rack and having a laterally extending arm, a lever mounted upon the end of the shaft to turn thereon and provided with a longitudinal slot, a connecting rod pivotally attached at one end to the arm of the segment and provided with an eye at its opposite end, a bolt engaging said eye and the slot in the lever, a pawl pivotally attached to the lever, and means on the shaft engaged by the pawl to cause the shaft to be turned by the turning of the lever.

3. In an automatic stoker the combination with feeding mechanism and a rock shaft for actuating the same, of a reciprocable actuating bar, a rack on said bar, a gear segment engaging said rack, a member detachably secured to the end of said rock shaft and provided with radial projections each having a notch in its outer end, levers having longitudinal slots mounted upon said member to turn thereon at each side of said projections and each lever formed with a notch adapted to register with the notch in one of said projections, a pawl pivoted between said levers and adapted to engage the notches therein and the notch in one of the projections, a connecting rod pivotally attached at one end to said gear segment and having an eye at its opposite end, a bolt engaging the slots in said levers, a sleeve on said bolt between said levers extending through the eye of the rod, and a nut on the end of the bolt.

In testimony whereof we affix our signatures in presence of two witnesses.

JOHN R. FORTUNE.  
HAROLD S. WELLS.

Witnesses:

ANNA M. DORR,  
ANNA M. SHANNON.