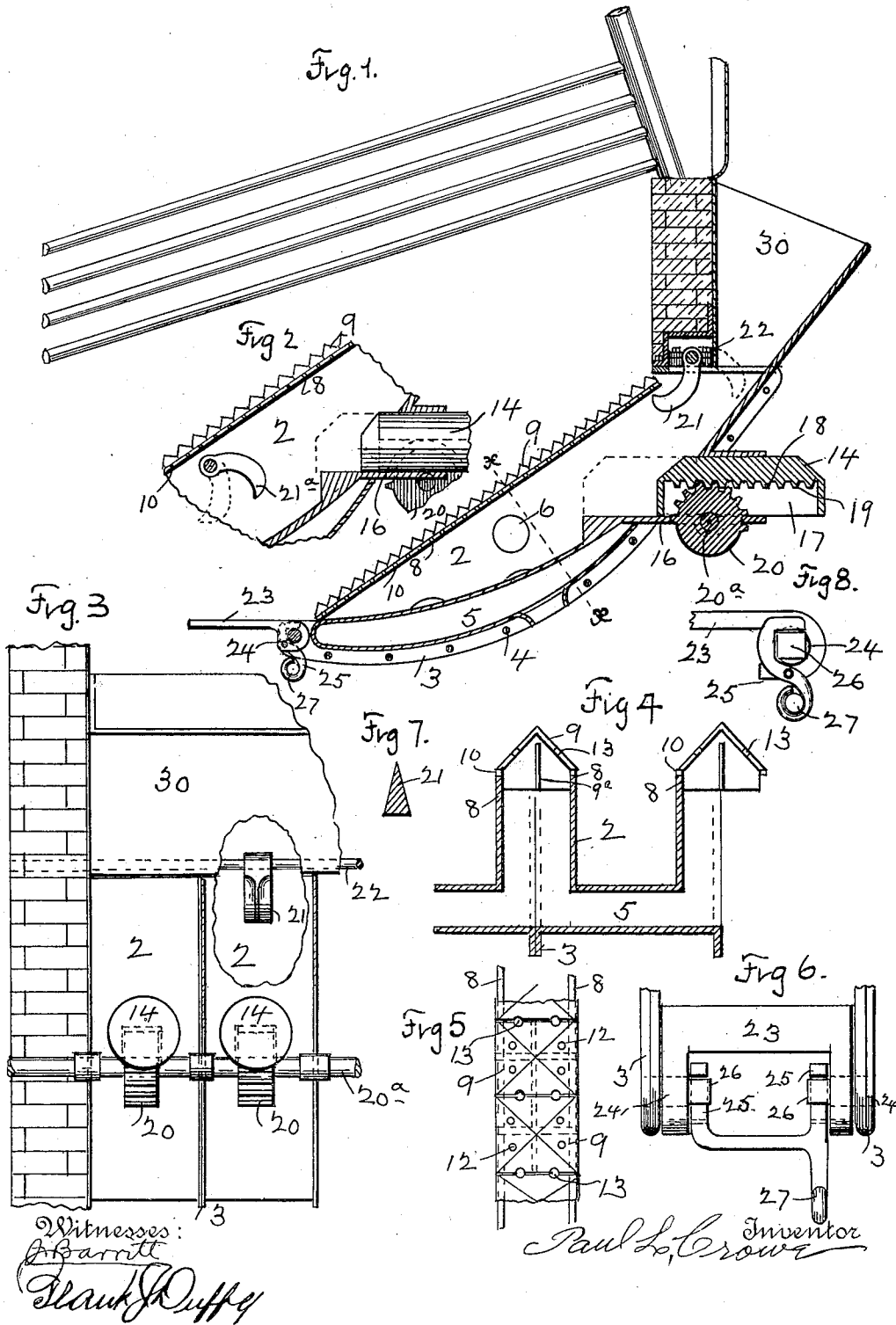


P. L. CROWE.
 UNDERFEED STOKER.
 APPLICATION FILED NOV. 4, 1907.

976,049.

Patented Nov. 15, 1910.



UNITED STATES PATENT OFFICE.

PAUL L. CROWE, OF JERSEY CITY, NEW JERSEY.

UNDERFEED STOKER.

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Specification of Letters Patent.

Patented Nov. 15, 1910.

Application filed November 4, 1907. Serial No. 400,718.

To all whom it may concern:

Be it known that I, PAUL L. CROWE, citizen of the United States, and resident of Jersey City, in the county of Hudson and State of New Jersey, have invented certain new and useful Improvements in Underfeed Stokers, of which the following is a specification.

My invention relates to automatic under-feed stokers and the object is to provide this class of stokers with new and improved means for conveying fuel to the burning mass.

This application disclaims the fuel chute and dump plate, wherein they conflict with the chute and dump plate shown, described and claimed in my application No. 396,091, filed Oct. 5, 1907.

Referring to the drawings: Figure 1 is a sectional elevation of a fuel chute showing the twyer blocks, plunger and swinging pusher. Fig. 2 is a fragmentary view of the fuel chute and plunger, showing how the swinging pusher can be placed in chute below the plunger as a modification. Fig. 3 is a front view of two chutes showing plungers, one of said chutes broken away to show the swinging pusher. Fig. 4 is a cross sectional view of one of the chutes on line *x x*, Fig. 1, enlarged. Fig. 5 is a plan view of the twyer blocks. Fig. 6 is a front view of the ash dump grate mechanism. Fig. 7 is a cross sectional view of the swinging pusher detached. Fig. 8 is an enlarged side view of the dump grate mechanism.

2 are the fuel chutes of the shape shown in Figs. 1 and 4. These chutes are placed in the furnace in an inclined position. The chutes are independent of each other, and are held together by bolts 4 passing through suitable flanges 3 on each chute. Each chute has an air passage 5, formed on its under side, which is connected to an air blast placed outside the furnace (not shown). Air is also admitted into the chute by a side opening 6. The upper longitudinal edges 8 of the fuel chutes support the twyer blocks 9. These blocks are square in shape (see Fig. 5) two sides only resting upon the longitudinal edges 8 of the chutes. The blocks on all sides converge or rise toward a common center (see Figs. 4-5). The blocks are provided with interior vertical webs, located in the center of the same and extending across the block. (See dot-

ted lines, Fig. 5.) Suitable holes 10 are formed in the said twyer blocks along the sides resting on the chutes. The abutting edges of the twyer blocks are each provided with semi-circular notches 13, which form circular openings when the twyers abut each other on the chute. The angle or roof surfaces of the blocks are each provided with openings 12, see Fig. 5.

14 is a plunger, circular in shape, and supported and sliding in a circular guideway or cylinder 16 formed on the inclined chute. This plunger is recessed on its under side (see Fig. 1) to about half its thickness. This recess is closed at both ends (see Fig. 1). The upper wall 18 of this recess is provided with teeth 19. The ends of the plunger have their upper solid portions slightly beveled off (see Fig. 1).

20 is a toothed pinion mounted on axle 20^a supported by the guideway 16. This pinion is adapted to enter the recess 17 in the plunger and mesh with the teeth 19 therein (see Fig. 1). This pinion is intended to move the plunger to and fro for shoving the fuel upon the burning mass. The beveled end of the plunger is intended to assist the same in this operation. The pinion shaft can be oscillated to operate the plunger by any suitable means. The plungers can be positioned at any angle preferable to perform the work intended.

Above the plunger 14 is placed the swinging pusher 21, this pusher is placed within the chute and is supported on a rocking shaft 22 mounted in the wall of the furnace. Suitable means can be used to rock said shaft. This swinging pusher is curved in shape (see Fig. 1). In cross section the pusher is made wedge shaped (see Fig. 7) the broad side being toward the burning fuel and the narrow side toward the hopper 30. This condition enables the pusher to shove the fuel into the chute and also to easily return to place again without disturbing the fuel unnecessarily. The object of this swinging pusher is to push the upper portion of the fuel outward and over the upper end of the twyer blocks in conjunction with the plunger 14, or independently. This swinging pusher can be placed in the chute below the plunger 14 (see Fig. 2). There can be one or more swinging pushers to a chute.

At the lower end of each chute there is

situated an ash dump grate journaled on the stud or pin 24 mounted on the flanges 3 of the chutes.

25, are dogs mounted on the grate frame adapted to engage the square ends of the studs for holding said grate frame in position. The dogs are connected to an arm having eye 27. By moving said arm the dogs are released. The dogs will automatically engage studs when grate is swung back in position. I lay no claim to the above as it is claimed in my application No. 396,091, filed Oct. 5, 1907.

What I claim is—

15 1. The combination of a furnace, fuel chutes mounted at an inclination within said furnace the lateral sides of adjacent chutes being spaced from each other to form air passages, twyer blocks mounted on the top edges of said sides, the fuel supporting sides of each twyer block converging upwardly to a point, said sides provided with air delivery openings, the lower edges of said converging sides provided with notches
20 which form air delivery openings when the twyer blocks are assembled on the chutes said twyer blocks also provided with cross webs adapted to space said blocks from the upper edges of the chutes to form air delivery passages.

2. The combination of a furnace, a fuel

chute mounted at an inclination within said furnace said chute formed with a horizontal guide way in its bottom a plunger adapted to reciprocate in said guide way to feed fuel along said trough, said plunger having a recess in its under side, the upper wall of which is provided with a rack, bearings on said guide way, a pinion meshing with said rack mounted in said bearings and means for rotating said pinion.

3. The combination of a furnace having a front wall, a fuel chute mounted at an inclination within said furnace a guide way formed in the bottom of said chute, a reciprocating plunger adapted to operate within said guide way, a swinging pusher pivotally mounted on the front wall of said furnace, said pusher being wedge-shaped in cross section to form a broad surface adapted to push the fuel forward along said trough and a thin knife-edge permitting the plunger to freely move rearwardly through the fuel, and means for operating said plunger and said pusher.

Signed at Jersey City in the county of Hudson and State of New Jersey this 10th day of October A. D. 1907.

PAUL L. CROWE.

Witnesses:

EDWARD MARKLEY,
F. BARRITT.