

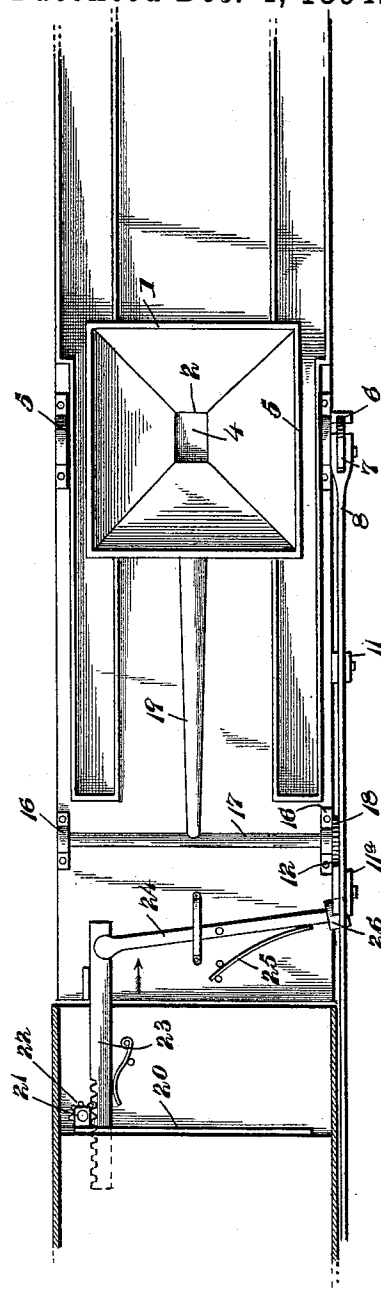
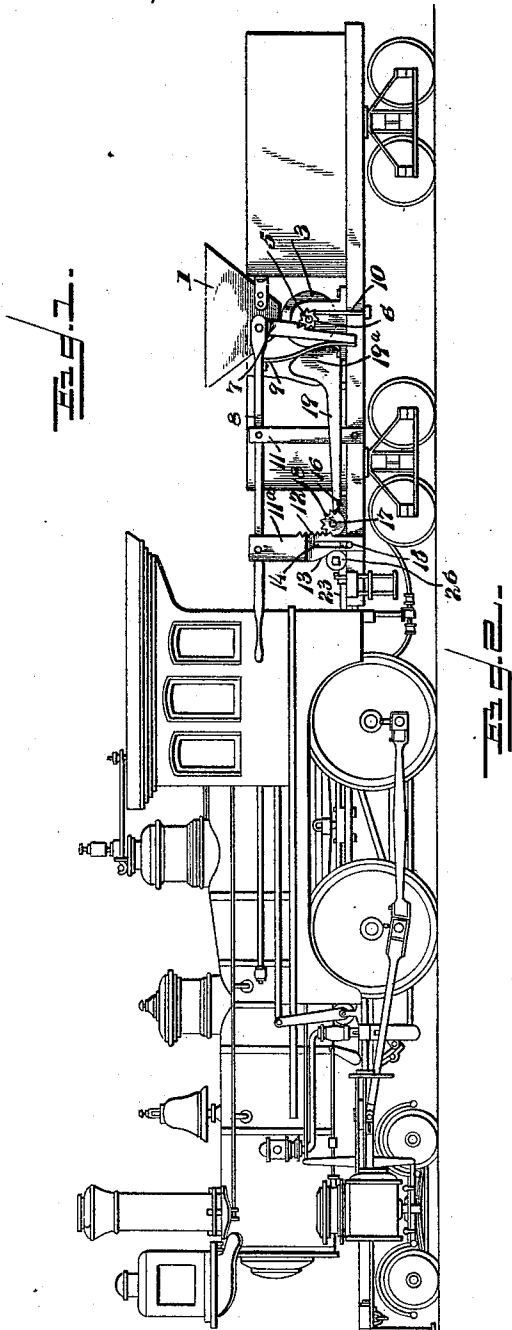
(No Model.)

2 Sheets—Sheet 1.

E. T. McWHORTER.
STOKER FOR ENGINE FURNACES.

No. 530,117.

Patented Dec. 4, 1894.



Inventor

Witnesses

E. H. Stewart
E. H. Stewart

By *his* Attorneys.

E. T. McWhorter

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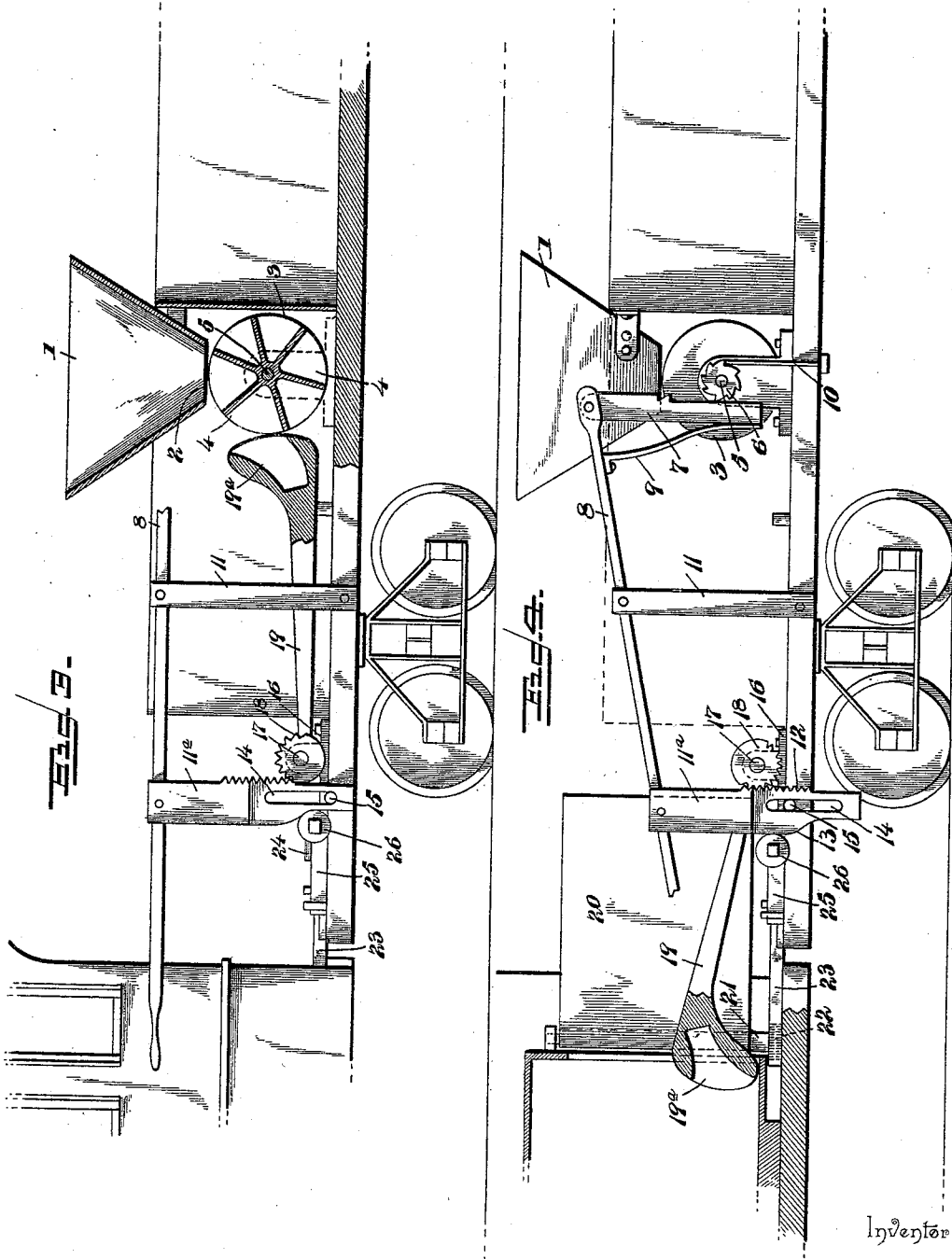
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[Signature]

UNITED STATES PATENT OFFICE.

ELI T. MCWHORTER, OF FOREST, MISSISSIPPI.

STOKER FOR ENGINE-FURNACES.

SPECIFICATION forming part of Letters Patent No. 530,117, dated December 4, 1894.

Application filed August 22, 1894. Serial No. 521,007. (No model.)

To all whom it may concern:

Be it known that I, ELI T. MCWHORTER, a citizen of the United States, residing at Forest, in the county of Scott and State of Mississippi, have invented a new and useful Stoker for Engine-Furnaces, of which the following is a specification.

My invention relates to a stoker adapted especially for use in connection with locomotive furnaces; the objects in view being to provide means whereby the fireman may introduce coal into the furnace without the use of an ordinary hand shovel to avoid the exposure to heat incident to such use of a hand shovel.

Further objects and advantages of the invention will appear in the following description, and the novel features thereof will be particularly pointed out in the appended claims.

In the drawings:—Figure 1 is a side view of the stoking apparatus applied in the operative position to a locomotive. Fig. 2 is a plan view of the same. Fig. 3 is a vertical longitudinal section, showing the parts in the positions which they occupy when the operating lever or handle is elevated. Fig. 4 is a similar view, showing the parts in the positions which they occupy when said operating lever or handle is lowered.

Similar numerals of reference indicate corresponding parts in all the figures of the drawings.

1 designates a coal hopper or receptacle, the walls of which are inclined toward the reduced outlet 2 at the bottom, and below this outlet is arranged a drum 3, provided with a series of spaced pockets 4 adapted to receive coal from the receptacle or hopper. The spindle 5 of this drum is provided at one end with a ratchet-wheel 6, with which engages an operating pawl 7 carried by the short arm of the operating lever or handle 8. This operating pawl is provided with an actuating spring 9, and a retaining pawl 10 is disposed in operative relation with the ratchet wheel 6 to prevent backward rotation of the drum. The operating lever or handle is fulcrumed to the standard 11, and depending from the longer arm of the lever is a pivotal plunger 11^a, provided at one side with a rack-bar 12 and at the opposite side with a cam 13. This plun-

ger is slotted vertically at 14 to receive a stud 15.

Mounted in bearings 16 is a rock-shaft 17 provided at one end with a segment or mutilated gear 18 to engage the teeth of the rack-bar 12, whereby as the operating lever or handle is oscillated, said rack-bar 12 engages the teeth of the segment or mutilated gear 18 and turns the rock-shaft. This rock-shaft carries an arm 19, which terminates at its free or outer end in a hod or carrier 19, and when the parts are in the position shown in Fig. 3, said hod or carrier is disposed in position to receive coal from one of the pockets of the drum. When said operating lever or handle is disposed, as shown in Fig. 2, the free end of the arm 18 is moved to a position adjacent to the furnace door 20.

The furnace door may be of any preferred construction, inasmuch as the details thereof are immaterial to my invention, but attached thereto or to a depending member 21 thereof, is a pinion 22, which meshes with the rack-bar 23. This rack-bar is loosely connected to one end of a rocking-lever 24, the opposite end of which is arranged in the path of the offset portion of the cam 13. A spring 25 is arranged in operative relation with the rocking-lever 24 to hold said lever in such a position as to maintain the door closed or to return the same to such position when the operating handle or lever is released. When said operating handle or lever is depressed, the offset portion of the cam 13 operating against the extremity of the lever 24, swings the same in the direction indicated by the arrow in Fig. 2, and thus opens the door before the free or carrying end of the arm 18 reaches the opening in the furnace. An anti-friction roll 26 is preferably arranged upon the extremity of the lever 24 in position to bear against the cam 13.

This being the construction of the improved apparatus, the operation thereof will be readily understood, and briefly stated, is as follows: It being necessary to "fire" the furnace, the free end of the operating lever or handle is oscillated vertically, thus swinging the hod or carrier from the position shown in Fig. 3 to that shown in Fig. 4. As the hod or carrier approaches the furnace door the latter is opened by the connections above de-

scribed, and as said hod or carrier recedes from the furnace door, the latter is closed, thus preventing the cooling of the fire in the interval. At each elevation of the free end of the operating lever or handle and after the hod or carrier has returned to its normal position, shown in Fig. 3, the pawl 7 turns the spindle of the drum a distance equal to the interval between two of the teeth of the ratchet-wheel 6, thus bringing a full pocket 4 into position to discharge into the hod or carrier, and therefore it will be seen that each time the hod or carrier returns to said normal position it is filled by the discharge of the contents of one of the pockets of the drum, and is then ready to discharge the coal thus received into the furnace.

The advantages of the above construction are, that the fireman may apply coal without exposing himself to the heat of the furnace and without keeping the furnace door open throughout the operation; that the fireman may occupy a position entirely out of the direct line of the heat discharged from the furnace, and may be located, as indicated in the drawings, in such a position as to be aware of the progress of the train, and thus be able to protect himself or avoid danger in case of accidents, such as wrecks; and, finally, that the stoking may be accomplished with greater facility and regularity, and hence a more uniform fire preserved than with the present means of supplying a furnace with fuel.

It will be understood that in practice various changes in the form, proportion, and the minor details of construction may be resorted to without departing from the spirit of the invention or sacrificing any of the advantages thereof.

Having described my invention, what I claim is—

1. The combination of a hod or carrier having a swinging arm, an operating lever or handle, connections between said lever or handle and the arm of the hod or carrier, and means for filling the hod or carrier, substantially as specified.

2. The combination of a rock-shaft, a hod or carrier provided with an arm affixed to said rock-shaft, an operating lever, connections between the operating lever and said rock-shaft, and means for filling the hod or carrier, substantially as specified.

3. The combination with a swinging arm, a hod or carrier connected thereto, an operating lever, and connections between said oper-

ating lever and the swinging arm, of a rotary drum provided with spaced pockets, a receptacle arranged to discharge into the pockets of said drum, and connections between the operating lever and the drum, whereby the latter is rotated to discharge the contents of its pockets into the hod or carrier, substantially as specified.

4. The combination with a hod or carrier having a swing arm, an operating lever, and connections between said operating lever and the swinging arm, of a rotary drum provided with spaced pockets, a receptacle adapted to discharge its contents into said pockets, a ratchet-wheel affixed to the spindle of said drum, and an operating pawl carried by the lever and arranged in operative relation with said ratchet wheel, substantially as specified.

5. The combination with a hod or carrier having a swinging arm, and a rock-shaft carrying said arm, of an operating lever, a gear fixed to one end of the rock-shaft, a plunger connected to the operating lever and provided with a rack to mesh with said gear, and means operated by the lever to fill said hod or carrier, substantially as specified.

6. The combination with a hod or carrier having a swinging arm, an operating lever, connections between said operating lever and the swinging arm, and means connected with the operating lever for filling the hod or carrier, of a furnace door, and connections between the operating lever and the furnace door, whereby the latter is opened when the lever is moved in one direction and is closed when it is moved in the opposite direction, substantially as specified.

7. The combination with a hod or carrier having a swinging arm, an operating lever, connections between the operating lever and the swinging arm, and means operated by the lever for filling said hod or carrier, of a rocking lever, a plunger having a cam arranged in operative relation with one end of said rocking lever, a spring for returning said rocking lever to its normal position, and connections between the rocking lever and a furnace door, substantially as specified.

In testimony that I claim the foregoing as my own I have hereto affixed my signature in the presence of two witnesses.

ELI T. MCWHORTER.

Witnesses:

S. H. KIRKLAND,
V. A. MCWHORTER.