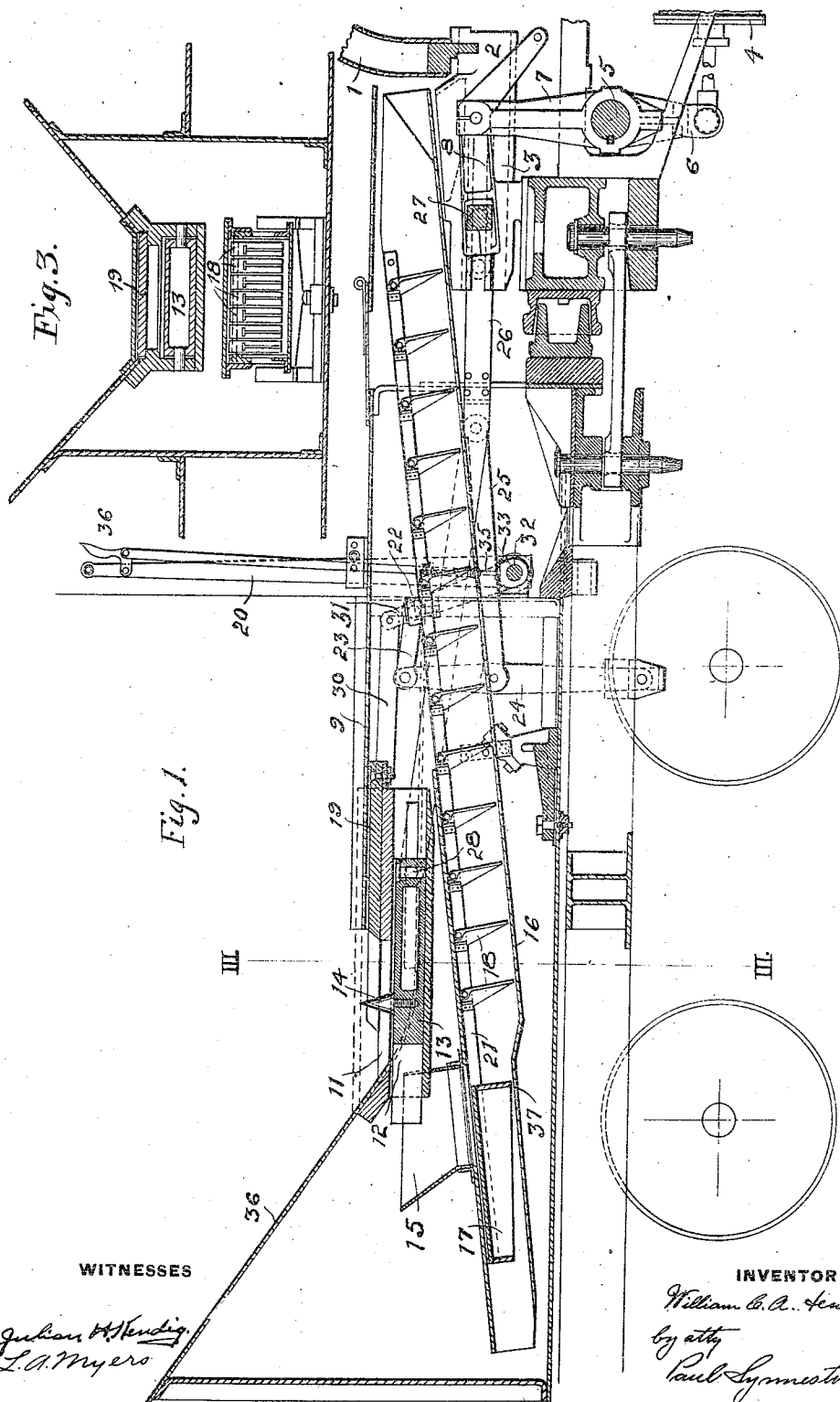


1,000,733.

W. C. A. HENRY,
STOKER FEED MECHANISM.
APPLICATION FILED NOV. 7, 1910.

Patented Aug. 15, 1911.

2 SHEETS—SHEET 1.



WITNESSES

Jackson H. Hendig
L. A. Myers

INVENTOR

William C. A. Henry
by atty
Paul Lynmestredt

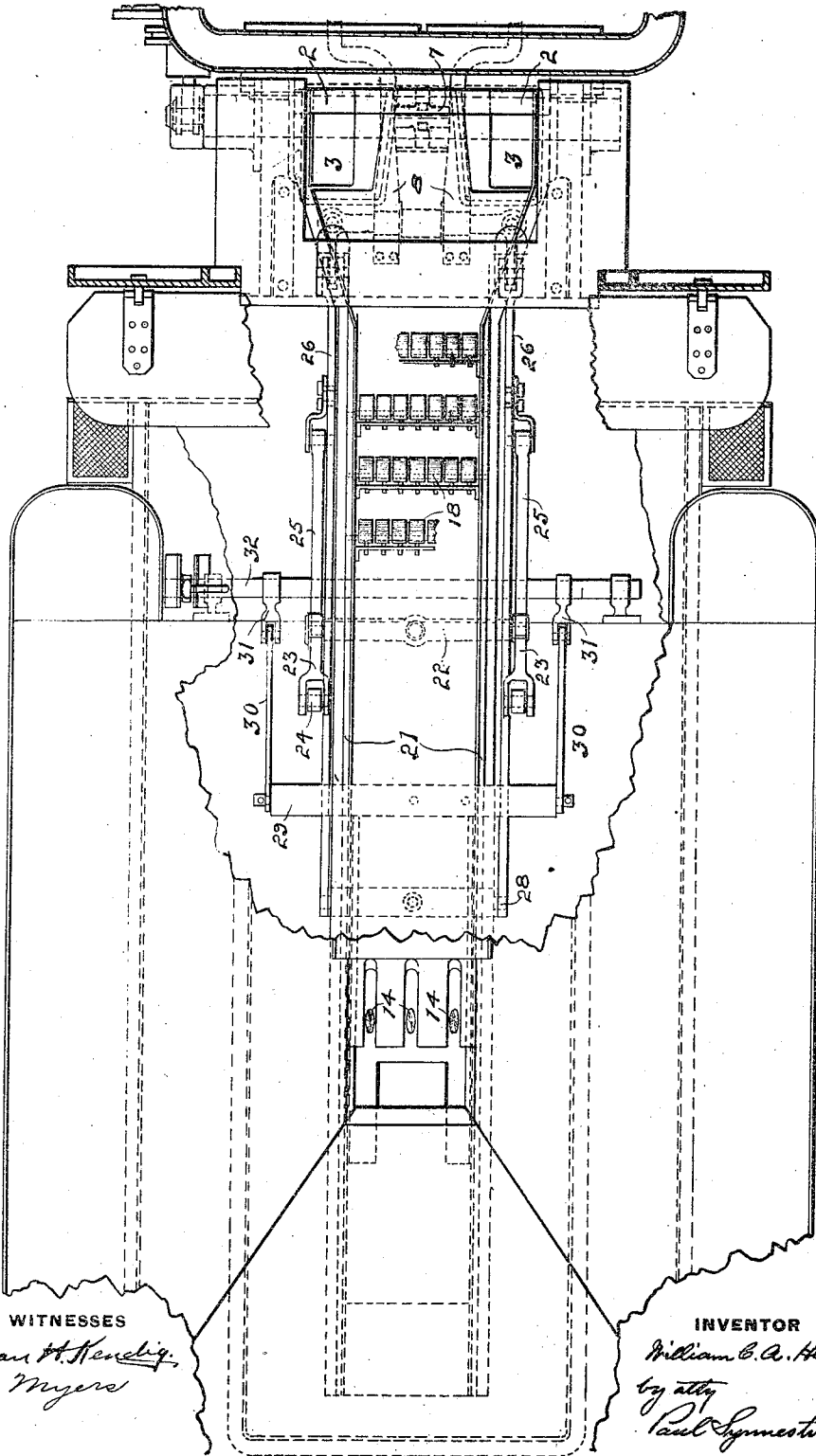
W. C. A. HENRY.
STOKER FEED MECHANISM.
APPLICATION FILED NOV. 7, 1910.

1,000,733.

Patented Aug. 15, 1911.

9 SHEETS—SHEET 2.

Fig. 2.



WITNESSES

Julian H. Hendig
L. A. Myers

INVENTOR

William C. A. Henry
by atty
Paul Symmesworth

UNITED STATES PATENT OFFICE.

WILLIAM C. A. HENRY, OF COLUMBUS, OHIO.

STOKER-FEED MECHANISM.

1,000,733.

Specification of Letters Patent. Patented Aug. 15, 1911.

Application filed November 7, 1910. Serial No. 591,149.

To all whom it may concern:

Be it known that I, WILLIAM C. A. HENRY, a citizen of the United States, residing at Columbus, in the county of Franklin, in the State of Ohio, have invented certain new and useful Improvements in Stoker-Feed Mechanism, of which the following is a specification.

The invention relates to feed mechanism for use with an automatic stoker, and primarily to the means for carrying coal from the tender of a locomotive to the locomotive itself. The invention has for its principal objects; the provision of a feeding mechanism wherein the outlet from the tender may be placed farther to the rear than has been feasible with previous feed mechanism of this general character; the provision of means upon the crushing piston for preventing the clogging or bridging of the coal; the provision of an improved door construction adapted to permit the agitators on the crushing piston to operate when the door is partially closed; the provision of an improved form of chute adapted to reduce the danger of the packing and clogging of the coal in the chute; and the provision of an improved mechanism for operating the door controlling the outlet from the tender. One embodiment of the invention is illustrated in the accompanying drawings, wherein:—

Figure 1 is a longitudinal section through a locomotive tender equipped with my improved construction.

Figure 2 is a plan view of the tender with a portion of the floor broken away and the chute partially in section in order to disclose the construction of the parts, and

Figure 3 is a section on the line III—III of Figure 1.

Referring to the drawings, the principal parts may be briefly enumerated as follows.

1 is the fire-box of the locomotive, which may be of any approved type; 2—2 are receiving or feed chambers which open into the fire-box, and from which the coal is forced by means of the pistons 3—3; 4 is a steam cylinder located at the side of the fire-box and furnishing the power for operating the feed pistons 3—3; 5 is a transverse shaft carrying the crank arm 6 connected to the piston of the steam cylinder and the crank arm 7 secured to the connecting rods 8—8 from which the two feed pistons 3—3 are re-

ciprocated; 9 is the floor of the locomotive which is provided with a passage having the vertical outlet portion 11 and the transverse outlet portion 12; 13 is a piston working in the transverse passage 12 and adapted to feed the coal rearwardly and crush up the larger lumps; 14—14—14 (Fig. 2) are agitators for preventing the coal from bridging above the outlet passage 11; 15 is the hopper into which the coal from the passage 12 is discharged; 16 is a chute having its top open to receive the discharge from the hopper 15, and extending forwardly to a position above the feed chambers 2—2 of the locomotive, the bottom of the chute being open to permit of such discharge; 17 is a feed piston working in the rear end of the chute 16 and adapted to give the coal discharged into the chute from the hopper 15 its preliminary forward movement; 18 are a series of feed flaps or plates for advancing the fuel through the chute 16; 19 is a sliding door for controlling the flow of fuel through the passage 11, such door being provided with a plurality of slots to receive the ends of the agitators 14; and 20 is an operating lever from which the movement of the door 19 is controlled.

The chute 16 is preferably made of sheet metal and carries at its upper portion a pair of reciprocatory rods 21 to which is secured the piston as are also the flaps 18, such flaps being divided into fingers as indicated in Fig. 3, and being free to swing forwardly, but held by stops against movement to the rear of the position shown in Fig. 2, the method of operation of such flaps being well known in the art. The bars 21 have secured transversely to their upper sides the bar 22, which bar has pivoted to its ends the connecting rods 23—23 (Fig. 2), such connecting rods being secured pivotally at their other ends to the upright swinging members 24—24. The members 24—24 are oscillated to secure the reciprocation of the bars 21 and the flaps 18 carried thereby by means of the connecting rods 25—25 pivoted at their rear ends to the members 24—24, and at their front ends to the connecting rods 26—26. The connecting rods 26—26 are secured to the opposite ends of the bar 27 upon which the pistons 3—3 are mounted, and the rear end of the connecting rod 26 is pivoted at 28 to the piston 13, so that the

pistons 3—3, the piston 13, the piston 17 and the flaps 18 all reciprocate in unison.

The controlling door 19 is provided at its rear end with a transverse bar 29 (Fig. 2), which bar carries at its ends the connecting rods 30—30. These connecting rods are secured at their front ends to the ends of the crank arms 31—31 carried by the rock shaft 32, and the rock shaft has pivoted thereon the controlling handle 20. In order to move the door to any desired position without swinging the handle through a large arc the rack 33 is provided keyed upon the shaft 32, the teeth of the rack being engaged by the reciprocatory latch 35 operated from the handle 36, thus providing a ratchet movement whereby the door 19 may be opened by several relatively limited oscillations of the handle 20 instead of by one long swing thereof, for which the space available is insufficient. The provision of the slots in the door 19 permits of the operation of the agitators 14 when the door is partially closed, so that these members operate as effectively when the door is partially closed as when entirely open.

It has been found desirable to operate the crushing piston 13 rearwardly instead of forwardly as this permits the outlet passage to be placed farther to the rear than would be the case if the piston 13 were operated in the reverse direction. This is advantageous inasmuch as it brings the outlet passage 11 more nearly under the peak of the coal pile and closer to the inclined portion 36 of the flooring, so that the amount of coal which will be discharged from the tender by gravity and without manual labor is increased to a maximum.

It will also be noted that the rear end 37 of the chute 16 is reduced in diameter. This is advantageous in that the feeding capacity of the piston 17 as compared with the flaps 18 is reduced, and the danger of the chute becoming packed full of coal due to a too vigorous feed at the rear portion is eliminated.

The operation of the mechanism will be understood from the foregoing description. The coal in the tender feeds by gravity into the lateral passage 12 and the piston 13 not only serves to feed this coal rearwardly into the hopper 15, but also serves to break up the larger lumps so that all danger of clogging is avoided during the passage of the fuel through the chute 16, and no hand labor is necessary to break up the coal to proper size for use in the fire-box. As the piston 13 moves rearwardly to permit a fresh charge of fuel to fall in front thereof, the piston 17 moves forwardly forcing the coal into the chute to a position where it can be engaged by the rear flaps. These flaps forward the fuel to the feed chambers

2—2 step-by-step, and is then forced into the fire-box by means of the pistons 3—3.

Having thus described my invention and illustrated its use, what I claim as new and desire to secure by Letters Patent is the following:—

1. In combination in apparatus for supplying coal to a locomotive fire-box, a tender provided with a gravity discharge passage having a transverse portion, a piston working in the transverse portion and arranged to carry the coal rearwardly, a chute having its rear portion in position to receive the discharge from the passage and extending forwardly to a point adjacent the fire-box, and reciprocatory means in the chute for feeding the coal therethrough.

2. In combination in apparatus for supplying coal to a locomotive fire-box, a tender provided with a gravity discharge passage having a transverse portion, a piston working in the transverse portion and arranged to carry the coal rearwardly, a chute having its rear portion in position to receive the discharge from the passage and extending forwardly to a point adjacent the locomotive fire-box, a piston in the chute adjacent the point of discharge into the chute for giving the coal its preliminary forward movement, and reciprocatory means in the chute for forwarding the coal therethrough.

3. In combination in apparatus for supplying coal to a locomotive fire-box a tender provided with a gravity discharge passage having a transverse portion, a piston working in the transverse portion and arranged to carry the coal rearwardly, a chute having its rear portion in position to receive the discharge from the passage and extending forwardly to a point adjacent the locomotive fire-box, a piston in the chute adjacent the point of discharge into the chute for giving the coal its preliminary forward movement, reciprocatory means in the chute for forwarding the coal therethrough, and means for reciprocating such last means and the two pistons in unison.

4. In combination in apparatus for supplying coal to a locomotive fire-box, a tender provided with a gravity discharge passage having a transverse portion, a piston working in the transverse portion and arranged to carry the coal rearwardly, a chute having its rear portion in position to receive the discharge from the passage and extending forwardly to a point adjacent the locomotive fire-box, a piston in the chute adjacent the point of discharge into the chute for giving the coal its preliminary forward movement, reciprocatory means in the chute for forwarding the coal therethrough, a chamber in position to receive the discharge from the chute, means therein for forcing

the coal into the fire-box, and means for reciprocating such last means, the piston and the forwarding means in unison.

5 5. In combination in apparatus for supplying coal to a locomotive fire-box, a tender provided with a gravity discharge passage having a transverse portion, a piston working in the transverse portion and arranged to carry the coal rearwardly, a chute having
10 its rear portion in position to receive the discharge from the passage and extending forwardly to a point adjacent the locomotive fire-box, a piston in the chute adjacent the point of discharge into the chute for giving
15 the coal its preliminary forward movement, reciprocatory means in the chute for forwarding the coal therethrough, a chamber in position to receive the discharge from the chute, means therein for forcing the coal into
20 the fire-box, means for reciprocating such last means, and connecting rods whereby the piston and forwarding means are operated from such last means in step therewith.

25 6. In combination in apparatus for supplying coal to a locomotive fire-box, a tender provided with a gravity discharge passage, a piston working transversely thereof and provided with upwardly projecting agitating means, and a forwarding chute to which
30 the piston discharges.

7. In combination in apparatus for supplying coal to a locomotive fire-box, a tender provided with a gravity discharge passage, a sliding door for controlling the discharge
35 through the passage provided with a longitudinal slot, a piston working transversely of the passage, an agitator projecting upwardly from the piston and adapted to re-

ciprocate in the said slot when the door is closed or partially closed, and a forwarding
40 ing chute into which the piston discharges.

8. In combination in apparatus for discharging coal to a locomotive fire-box, a tender provided with a gravity discharge passage, a crushing piston working trans-
45 versely of the said passage, a chute in position to receive the discharge from said piston and extending forwardly to the locomotive, reciprocatory flaps in the chute for forwarding the fuel through the chute, and
50 a piston movable therewith in the rear end of the chute for giving the fuel its preliminary forward movement, the portion of the chute in which the piston is mounted being
55 less in depth than that of the portion of the chute carrying the flaps, and having its bottom above the bottom of the main portion of the chute.

9. In combination in apparatus for supplying coal to a locomotive fire-box, a tender provided with a gravity discharge pas-
60 sage, a chute and forwarding means beneath the tender whereby the fuel is forwarded to the fire-box, a sliding door positioned to work across the said passage, a rock shaft with a handle pivoted thereon, an operat-
65 ing crank secured to the shaft, a connection from the crank to the door, and a ratchet connection between the shaft and the handle.

In testimony whereof I have hereunto
70 signed my name in the presence of the two subscribed witnesses.

W. C. A. HENRY.

Witnesses:

THOMAS WATSON,
DOERING BELLINGER.