

UNITED STATES PATENT OFFICE.

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AUTOMATIC COAL STOKER OR FEEDER.

SPECIFICATION forming part of Letters Patent No. 728,732, dated May 19, 1903.

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To all whom it may concern:

Be it known that we, PAUL W. LICHTENBERGER and WILLIAM M. ZIMMERMANN, citizens of the United States, residing in the city and county of Philadelphia, State of Pennsylvania, have invented a new and useful Improvement in Automatic Coal Stokers or Feeders, of which the following is a specification.

Our invention consists of improvements in furnace-charging devices whereby the time of charging can be regulated.

It also consists of novel details of construction, all as will be hereinafter described.

Figure 1 represents a vertical sectional view of a furnace-charging device embodying our invention, showing a portion of the furnace in part elevation and part section. Fig. 2 represents a perspective view of a portion of the operating mechanism in detached position on an enlarged scale. Fig. 3 represents a rear end elevation, partly in section, showing the furnace-charging device.

Similar letters of reference indicate corresponding parts in the figures.

Referring to the drawings, A designates a furnace-charging device consisting of a hopper B, suitably supported and having at its lower or discharge end a gate C, which is pivoted in suitable bearings in said hopper and has an arm D connected therewith, which is in engagement with the arm E, the latter being secured to or forming part of the scuttle or movable pan F, which is pivotally supported adjacent the discharge end of the hopper and has connected therewith the rod G, upon which is movably mounted the counterweight H. Pivotally secured to said scuttle is a lever J, which has the two notches K and L therein, which are adapted to receive the locking-pin M, stationarily supported, said pin being adapted to enter either of the notches K or L and lock the parts in the proper position, as will be hereinafter described.

N designates a shaft mounted in suitable bearings and upon which is carried a hammer P, which is situated beneath the lever J and is adapted to strike the same at the proper time to release the lever from the pin M. Secured to the shaft N is a link Q, which has pivotally connected therewith the bar R, which is

in engagement with the arm S, one end of which is in contact with the cam or serrated wheel T, which is suitably connected by any mechanism for revolving the same—as, for example, clock mechanism within the box U.

V designates a chute, which is situated so as to receive the contents from the scuttle F when in its lowermost or discharging position, said chute being adapted to discharge into the furnace, the discharge-opening of which is provided with a suitable valve or gate W, which is normally closed, but which is opened by the weight of the coal or other fuel thereagainst. Any supporting means for the parts described may be employed and the position of the same with respect to the furnace can be made according to requirements.

The operation is as follows: The parts being in the position seen in full lines, Fig. 1, the hopper B is filled with coal. The gate C is closed and is held in closed position by the contact of the arm E on the scuttle with the arm D on the said gate C. The clock mechanism operating to turn the tooth-wheel T, it will be seen that the cams thereof will depress the end of the lever S in contact therewith in the direction indicated by the arrow in Fig. 2. This will raise the rod T and turn the shaft N in order that one end of the hammer P strikes the lever J and releases the same from the pin M. As soon as this occurs the counterweight H raises the scuttle F into the position seen in dotted lines, Fig. 1, the gate C meanwhile being open, and the arm E and arm D will be seen as in dotted lines. The coal will be discharged into the scuttle F, whereupon the weight thereof will cause the same to fall, it being understood, however, that when the scuttle F is in elevated position the pin M has entered the recess L in the lever J, and the cams on the wheel T are so arranged that as the scuttle F is filled the shaft N is turned in the opposite direction from that in which it previously turned, so that the opposite end of the hammer P strikes the lever J, and this releases the same with respect to the pin M, and the scuttle falls to the position seen in full lines, Fig. 1, the coal being discharged through the chute V into the furnace-opening door W, and the parts are ready for the next operation.

It will be evident that various changes may be made by those skilled in the art which will come within the scope of our invention, and we do not, therefore, desire to be limited to the exact construction herein shown and described.

Having thus described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. In a furnace-charging device, a hopper adapted to receive the fuel, a gate closing the discharge end of said hopper, a normally stationary, gravity dumping-pan, means for raising said pan to the discharge end of said hopper to receive the coal, and means for operating said gate to admit the coal to pass into said pan.

2. In a furnace-charging device, a hopper, a gate at the discharge end thereof, a pan pivotally supported adjacent said discharge end of said hopper, means on said pan for controlling the operation of said gate, means for locking said pan in a raised or lowered position, and means for operating said lock to release said pan.

3. In a furnace-charging device, a hopper, a gate controlling the discharge end of said hopper, a pan, means in said pan controlling the operation of said gate, a lock for said pan for holding the same in raised or lowered position, and a cam-actuated mechanism adapted to release said lock to permit movement of said pan.

4. In a furnace-charging device, a hopper, a gate, controlling the discharge end of said hopper, an arm on said gate, a pan pivotally supported, an arm on said pan engaging said first-mentioned arm, a counterweight on said pan, a lever pivoted to said pan, a pin adapted to engage with said lever to lock the same, a

hammer adjacent said lever, a cam suitably actuated and mechanism intermediate said cam and hammer for operating the latter.

5. In a furnace-charging device, a hopper, a gate at the discharge end thereof, a normally stationary pan with means for holding said gate closed, means for locking said pan in both its upper and lower positions, and intermittingly-acting means for controlling said locking device.

6. In a furnace-charging device, a hopper, a movable gate at the discharge end thereof, a pivotally-mounted pan, means thereon for holding said gate in its closed position, means for locking said pan in its upper and lower positions, an intermittingly-acting device and an interposed rocking member for actuating the locking means.

7. In a furnace-charging device, a hopper, means controlling the discharge therefrom, a normally stationary pan controlling said closing means, a counterbalance therefor, a lock mechanism for locking the pan in its upper and lower positions, an intermittingly-acting device, and means controlled thereby for striking one member of the locking device to unlock the pan.

8. In a furnace-charging device, a movably-mounted pan, means for locking it in its upper and lower positions, lock-disengaging devices, and an intermittingly-acting cam for engaging with said lock-releasing mechanism to dump the contents of the pan automatically at a predetermined time.

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Witnesses:

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