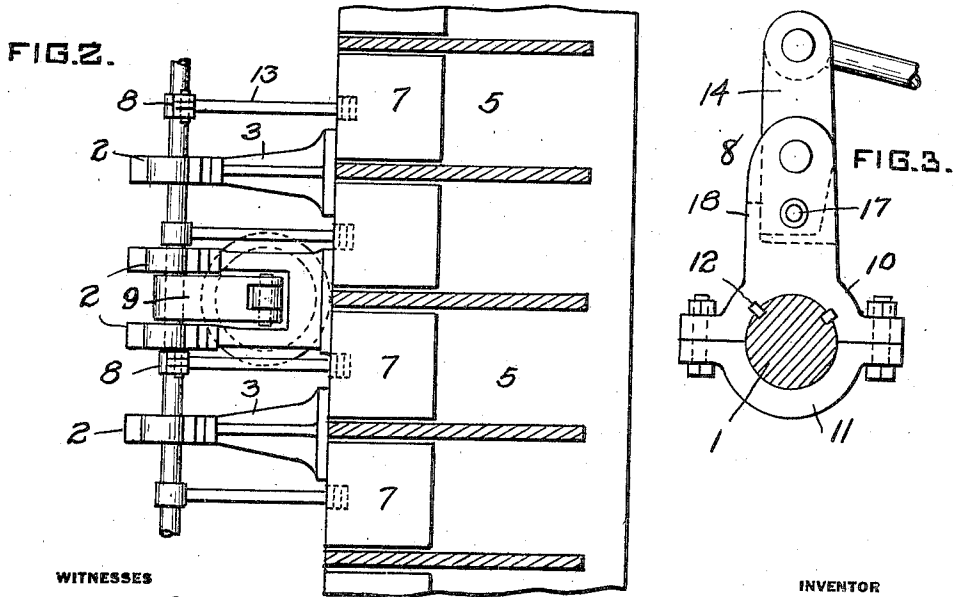
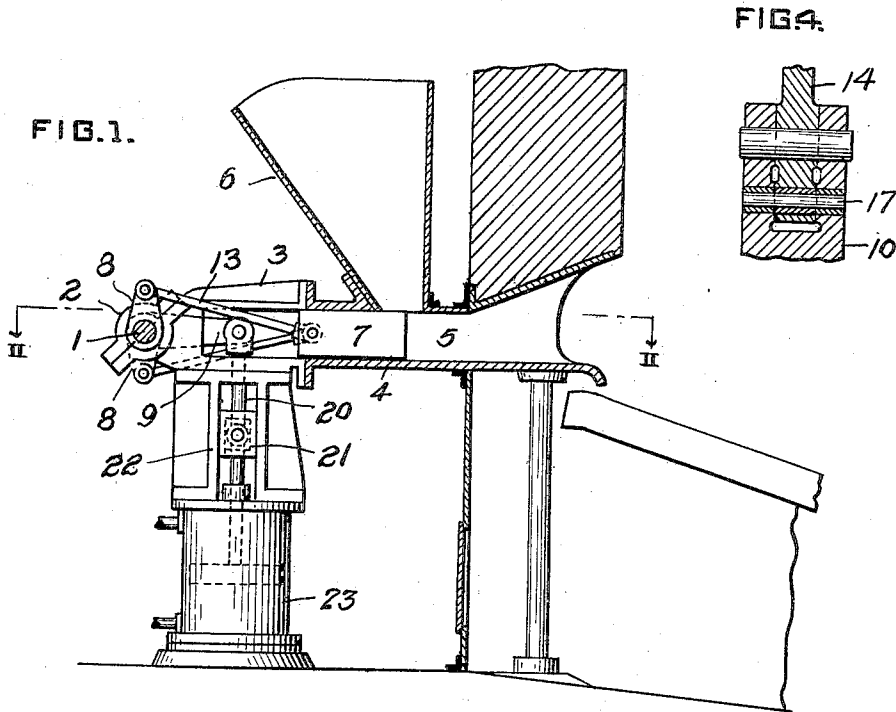


J. A. PEEBLES.
STOKING MECHANISM.
APPLICATION FILED MAR. 18, 1920.

1,400,766.

Patented Dec. 20, 1921.



WITNESSES

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UNITED STATES PATENT OFFICE.

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STOKING MECHANISM.

1,400,766.

Specification of Letters Patent. Patented Dec. 20, 1921.

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To all whom it may concern:

Be it known that I, THOMAS A. PEEBLES, residing at Pittsburgh, in the county of Allegheny and State of Pennsylvania, a citizen of the United States, have invented or discovered certain new and useful Improvements in Stoking Mechanism, of which improvements the following is specification.

The invention described herein relates to an improvement in mechanism for feeding coal to furnaces and has for its object a construction wherein the reciprocation of the several feed plungers is effected by the reciprocation of a shaft provided with radially arranged arms adapted to be connected respectively to the feeding plungers and to a motor, the respective arms being so angularly disposed that power around the shaft can be most effectively transmitted from the motor driven arm to the plunger arms and the plungers operated in succession. The invention is hereinafter more fully described and claimed.

In the accompanying drawings forming a part of this specification, Figure 1 is a sectional view of a portion of a furnace having the improved fuel feeding mechanism applied thereto; Fig. 2 is a sectional plan view, the plane of section being indicated by the line II—II, Fig. 1; Fig. 3 is a section transverse of the shaft showing the arrangement of the motor and plunger arms on the shaft, and Fig. 4 is a detail view showing the frangible connection between the arms and the plungers.

In the practice of the invention a shaft 1 is supported in bearings 2 formed on the outer ends of brackets 3 which are securely bolted to the casting or bed plate 4 of the stoking mechanism, said bed plate being divided by partitions 5 into channels, into which the coal drops from the hopper 6 into position in front of the plungers 7, whereby the coal is forced along the channels into the furnace.

The shaft 1 is provided with a plurality of arms 8 dependent on the number of plungers employed for feeding the coal and with an arm 9 preferably arranged midway of the length of the shaft and adapted to be connected as hereinafter described to a suitable motor preferably a motor of the fluid pressure type.

As shown in Fig. 1 and Fig. 3 it is pre-

ferred that the arms 8 and also the arm 9 should be formed on one half of a sleeve or socket 10 adapted to be fitted around the shaft and clamped in position on the shaft by means of bolts passing through lugs on the half 10 of the sleeve and similar lugs on the half of the socket or sleeve 11. It is also preferred that one or more keys 12 employed for locking the sleeves or sockets as against movement around the shaft should be so located that the half of each socket carrying the arm will be driven directly by the shaft. By thus forming the arms on sectional sockets or sleeves, it will be possible to remove such arm in case of breakage without interference with any other portions of the mechanism. In order to prevent injury to any part of the mechanism in case the inward movement of the plungers should be blocked, the pitmen 13 are not connected directly to the arms 8, but through fingers 14 pivotally mounted upon the arms. As shown in Fig. 4 the pitmen are connected to the outer ends of these pivotally mounted fingers which are prevented under normal conditions from turning on their pivot pins by a frangible member or pin 17 passing through holes in the arms and fingers. These several parts are so connected that when the arms are moved in a direction to move the plungers forward to effect a feed of coal into the furnace, the fingers will be held from turning by these frangible pins which are constructed to present a resistance sufficient to overcome the resistance normally encountered by the plungers in feeding in fuel but will be sheared in case of an abnormal resistance being presented to the movements of the plungers. In order to insure the return of the plungers to their outer positions after the pins have been sheared or broken, an abutment 18 is arranged on the arms 8 in such a position as to engage and prevent the turning of the fingers on their pivot pins as the arms are moved in a direction to withdraw the plungers.

The shaft operating arm 9 is connected in any suitable or desired manner to the piston of a fluid pressure motor. In the construction shown this arm 9 is connected by pitmen 20 to a sliding head 21, mounted in guides 22 interposed between the upper end of the cylinder 23 and the underside of the supporting brackets 3 adjacent to the operating

arm 9, thereby providing a firm support for the brackets and through them for the shaft as against the downward pull of the motor on the slide. These guides are also bolted 5 to the head of the cylinder and to the brackets so that any upward thrust on the arm 9 will be taken up by these guides and the cylinder. When fluid pressure is admitted in the upper end of the cylinder to 10 force the piston downward, its expansive force will be exerted against the piston and the upper end of the cylinder, the latter pressure counterbalancing the downward pull of the piston on the arm, and when the 15 fluid pressure is admitted below the piston there is a similar counterbalancing effect. By reason of this counterbalancing arrangement, the brackets 3 supporting the shaft will be subjected to little or no vertical 20 strain.

I claim as my invention:—

1. In a stoking mechanism for furnaces the combination of a shaft arranged in front of the furnace, bearings for said shaft, arms 25 secured to the shaft, a vertically arranged pressure cylinder having its piston connected to one of the arms on the shaft, means interposed between the cylinder and the shaft bearings on opposite sides of the arm connected to the piston, whereby the thrust of 30 the piston on the shaft may be transmitted to the cylinder, plungers for forcing fuel into the furnace and pitmen connecting the plungers to arms on the shaft.

35 2. In a stoking mechanism for furnaces, the combination of a shaft arranged in front

of the furnace, bearings for said shaft, arms secured to the shaft, a vertically arranged fluid pressure cylinder having its piston connected to a cross-head, connections from said 40 cross-head to one of said arms, guides for said cross-heads interposed between the cylinder and the bearings on opposite sides of the arm connected to the cross-head, plungers for forcing fuel into the furnace and 45 pitmen for connecting the plungers to arms on the shaft.

3. In a stoking mechanism for furnaces, the combination of a shaft arranged in front of the furnace, a plurality of arms, each pro- 50 vided with a half sleeve keyed to the shaft, supplemental half sleeves and bolts for clamping the half sleeves carrying the arms to the shaft, a plurality of plungers for forcing fuel into the furnace, pitmen connecting 55 the plungers to the arms and means for reciprocating the shaft.

4. In a stoking mechanism for furnaces the combination of a shaft arranged in front of the furnace, means for reciprocating said 60 shaft, an arm connected to said shaft, a finger pivotally mounted on said arm, a plunger connected to said finger, a frangible connection between the finger and arm for preventing a movement of the finger relative 65 to the arm during the feed movement of the plunger, and means for preventing a movement of the finger relative to the arm while the plunger is being moved outwardly.

In testimony whereof, I have hereunto set 70 my hand.

THOMAS A. PEEBLES.