March 1, 1938. V. C. NORQUIST 2,110,111

COAL STOKER

Filed Jan. 18, 1934

Fig. 1.

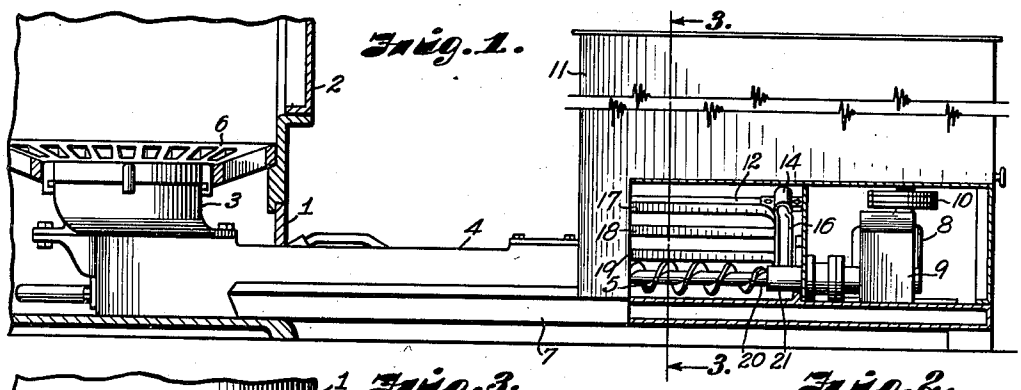


Fig. 3.

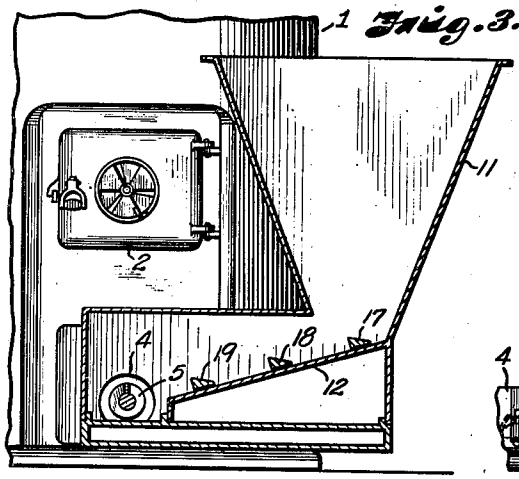


Fig. 2.

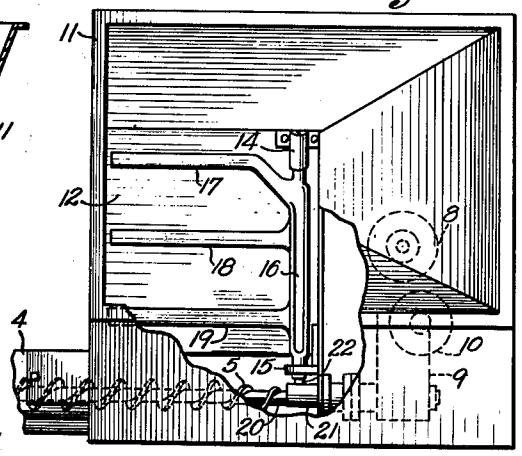
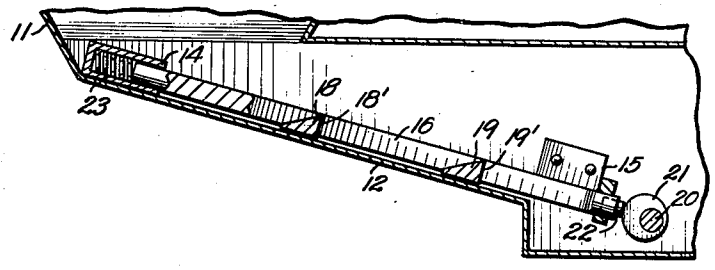


Fig. 4.



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UNITED STATES PATENT OFFICE

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COAL STOKER

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Application January 18, 1934, Serial No. 707,083

1 Claim. (Cl. 110—101)

My invention relates to coal stokers and more particularly to a coal stoker construction in which the coal hopper is laterally offset from the furnace door, permitting access thereto.

In automatic coal stokers for use in the home, hotels, apartments and the like, a coal hopper is usually provided in line with a coal duct in which a conveying screw is positioned. For small stokers the coal duct is usually short and positioned directly in front of the furnace. This makes access to the furnace door difficult for the removal of clinkers, ashes and the like. The hopper must be positioned a sufficient distance away from the door to permit the door to be opened. This necessitates the use of a sufficiently long coal duct and conveyer screw. Furthermore, the hopper cannot be made too large as it will interfere with the removal of clinkers through the furnace door.

One object of my invention is to provide a coal stoker construction in which the coal hopper is laterally offset from the coal duct.

Another object of my invention is to provide a coal stoker in which easy access may be had to the furnace door.

A further object of my invention is to provide a coal stoker in which the coal feeding duct may be made shorter than has hitherto been possible.

A still further object of my invention is to provide a construction in which a coal hopper of large capacity may be employed.

Further and other objects of my invention will appear from the following description.

In the accompanying drawing, which forms part of the instant specification, and which is to be read in conjunction therewith, and in which like reference numerals have been used to indicate like parts in the various views,

Fig. 1 is a sectional elevation of a construction embodying one form of my invention.

Fig. 2 is a plan view of the hopper and the hopper end of the coal duct.

Fig. 3 is a sectional view taken on the line 3—3, Fig. 1.

Fig. 4 is a detailed sectional view showing the means for feeding coal from the hopper to the coal duct.

In general, my invention contemplates a stoker construction in which a combustion pot is positioned within a furnace casing, having a door. The coal duct containing a conveyer screw is in line with the combustion pot and the door. The coal hopper is laterally offset from the coal duct and provided with a communicating means for leading coal to the coal duct. Means are provided for causing the coal to pass from the coal hopper to the coal duct, which means is actuated from the coal feeding screw in the coal duct.

More particularly, referring now to the drawing, a furnace casing 1 is provided with a door 2. A combustion pot is positioned within the casing 1. A coal duct 4 houses a conveyer screw 5 which is adapted to feed coal to the combustion pot 3. Grates 6 are positioned around the combustion pot 3. Air is furnished to the combustion pot through conduit 7. A motor 8 drives the conveyer screw 5 through a transmission gearing which is housed in casing 9. A blower fan 10 driven by motor 8 furnishes air to air duct 7. A coal hopper 11 is positioned laterally offset from the coal duct 4, as can readily be seen by reference to Fig. 3. It will be noted that the hopper 11 is clear of the furnace door 2. The bottom of hopper 11 is formed by inclined wall 12. It will be understood, of course, that the inclined wall may be of any suitable length and provided with adjacent housing walls to form a passageway extending at right angles, or substantially right angles, to the longitudinal axis of the coal feeding screw 5. Adjacent the bottom 12 of the hopper 11, I position means for moving coal from the hopper to the coal feeding screw.

Referring to Figs. 2, 3 and 4, it will be noted that in a suitable cylinder-like bearing 14 and bearing 15, I mount a member 16 provided with arms 17, 18 and 19 extending at right angles to a line drawn between bearings 14 and 15. Secured to shaft 20 of the conveyer screw 5 is an eccentric 21 against which a bearing insert 22 is adapted to be pressed by spring 23 within cylinder 14. The insert 22 may be of any suitable bearing metal and is so arranged that it may be replaced from time to time as wear occurs.

By reference to Fig. 4 it will be observed that the arms 17, 18 and 19 have sections with surfaces 18' and 19' higher in the direction of the coal feeding screw than are the opposite surfaces. It will also be appreciated that rotation of shaft 20 incident to the feeding of the coal to the combustion pot 3 will through the rotation of eccentric 21 reciprocate the member 16 in connection with spring 23. The reciprocation will tend to cause coal to move in the direction of the coal feeding screw, the shape of arms 17, 18 and 19 being such that movement toward the left, looking at Fig. 4, will be easier than movement toward the right. The movement toward the right will cause coal to move in that direction toward the coal feeding screw.

It will be seen that I have accomplished the objects of my invention. I have provided a compact stoker construction which enables me to provide a coal hopper laterally offset from the furnace door. In this manner I may make the coal duct 4 shorter than has hitherto been possible. Likewise I may make the coal hopper larger inasmuch as it will not hinder the removal of clinkers through the door 2. The construction is such that no additional prime mover independent of that which drives the main coal feeding screw 5 is required.

It will be understood that certain features and sub-combinations are of utility and may be employed without reference to other features and sub-combinations. This is contemplated by and is within the scope of my claim. It is further obvious that various changes may be made in details within the scope of my claim without departing from the spirit of my invention. It is, therefore, to be understood that my invention is not to be limited to the specific details shown and described.

Having thus described my invention, what I claim is:

A coal stoker including in combination a furnace casing having a door, a coal duct leading to said casing in line with said door, a conveyor screw in said coal duct, a hopper laterally offset from said coal duct in position clear of said door, means for rotating said screw, a passageway connecting said hopper and said coal duct, reciprocating means in said passageway for moving coal from said hopper to said duct, a spring, an eccentric driving said reciprocating means in one direction against the action of said spring, and said spring moving the reciprocating means in the opposite direction.

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