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AGITATOR FOR STOKERS

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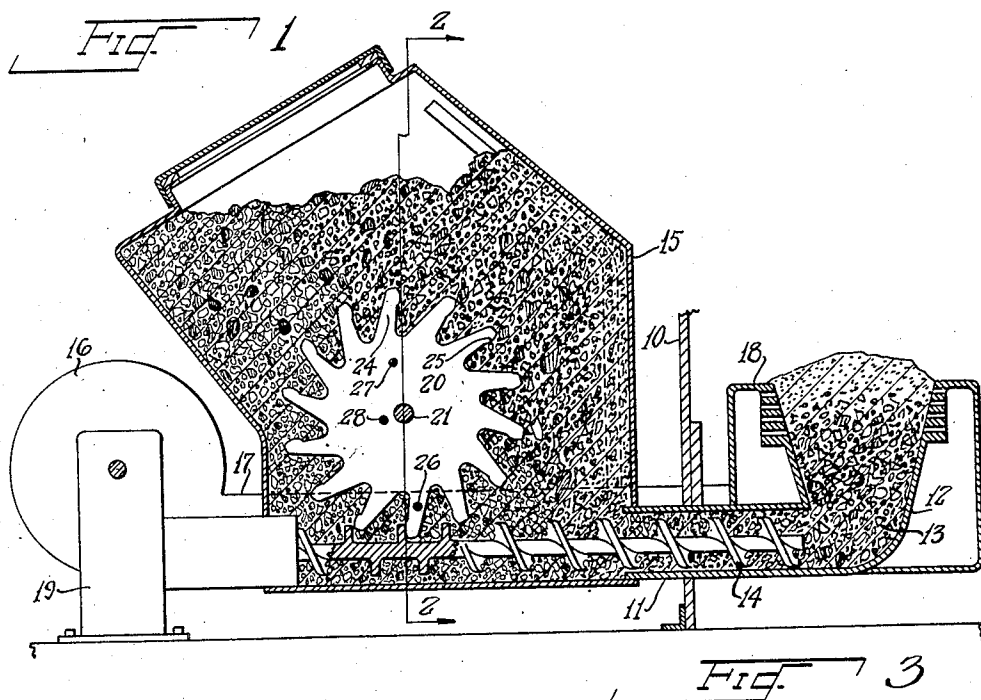
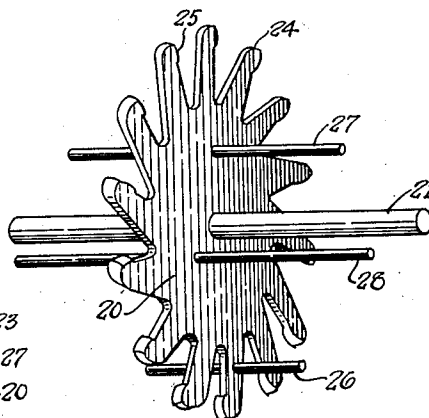
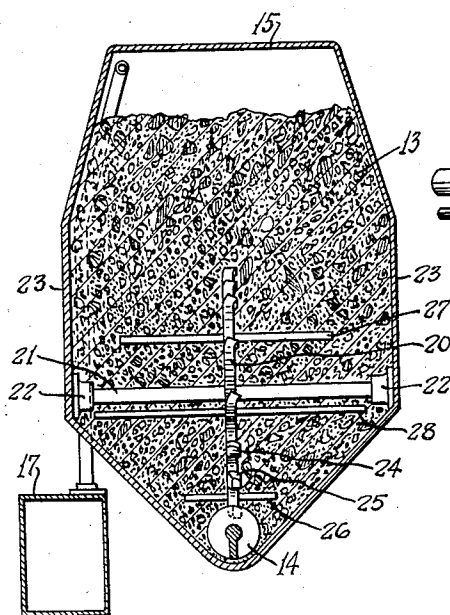


FIG. 2



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## AGITATOR FOR STOKERS

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This invention relates generally to coal burning stokers, and particularly to a means for agitating fuel in the feed hopper thereof.

The main object of this invention is to provide an agitator for coal burning stokers which will prevent the arching of fuel within the feed hopper.

The second object is to insure a constant and uniform supply of fuel from the hopper to the feeding mechanism.

The third object is to secure this result with the employment of only a minimum amount of mechanism.

These objects are accomplished in the manner set forth in the following specification as illustrated in the accompanying drawings, in which:

Figure 1 is a longitudinal section through a stoker showing the device installed therein. Figure 2 is a vertical section taken along the line 2—2 in Figure 1. Figure 3 is a perspective view of the device itself.

Similar numbers of reference refer to similar parts throughout the views.

Referring in detail to the drawings, there is illustrated the front of a furnace 10 through which extends a fuel feed duct 11 which connects on the inside of the furnace with a retort 12 into which coal 13 is fed upwardly by a screw 14 from a magazine or hopper 15, which may be of any desired shape.

In this class of devices air is usually supplied to the combustion chamber by means of a fan 16 which supplies air through a duct 17 to the tuyères 18, which are mounted around the top of the retort 12. The same prime mover which drives the fan 16 usually drives the screw 14 through a transmission contained within the casing 19.

Referring more particularly to this invention it will first be understood that in this class of devices there is a tendency for the fuel, which is usually in crushed form, to pack or arch as it descends toward the screw 14, in which case the screw will soon be empty and fail to feed the fuel to the fire, in spite of the fact that there may be an ample supply in the hopper 15. This is especially true when the fuel is moistened, as it is in many cases for the purpose of improving the com-

bustion and reducing the amount of dust created, although it often occurs with fuel which is perfectly dry. This is very undesirable, especially where the stoker is expected to operate over extended periods without any attention.

In order to overcome this tendency to arch on the part of the fuel there is provided an agitator consisting of a wheel 20 which is mounted on a shaft 21 journaling in the bearings 22, which, in turn, are mounted on the sides 23 of the hopper 15. The wheel 20 is provided with radiating teeth 24 whose faces 25 are so shaped as to correspond with the helix of the screw 14, which the wheel 20 engages at all times for the purpose of being driven thereby whenever the screw 14 is rotated.

Passing through the wheel 20 and normal thereto are a plurality of rods 26, 27 and 28, the rod 26 being farthest from the axis of the wheel 20 and the rod 28 being nearest to the axis. With a hopper of the shape indicated in the drawings it is preferable to make the rod 26 the shortest and the rod 28 the longest, for clearance purposes.

It can readily be seen that whenever the screw 14 is rotated in a manner to carry fuel away from the bottom of the hopper 15 that the fuel above the screw is constantly agitated by the revolution of the wheel 20 and its attached rods 26, 27 and 28.

It can also be seen that only one moving part is added to the existing mechanism to provide a complete agitator therefor, due to the fact that the fuel feed screw 14 is itself employed as a worm for driving the wheel 20.

It will also be observed that, owing to the great reduction between the speed of the prime mover and the screw 14 and the slow resulting movement of the wheel 20, there is no measurable increase in load due to the presence of the agitator.

I claim:

1. In a fuel feeding mechanism the combination of an elongated trough shaped hopper, a feed worm mounted in the bottom thereof, and a toothed wheel whose tooth length approximates the worm diameter, said wheel having its axis mounted trans-

versely across said hopper above said feed worm.

2. In a fuel feeding mechanism the combination of an elongated hopper having a V-shaped bottom, a feed worm mounted in the bottom of said hopper, and a toothed wheel having its axis mounted transversely across said hopper nearer to the intake end of the hopper than to the discharge end thereof.

3. An agitator for fuel hoppers consisting of a worm for feeding fuel from said hopper, and a long toothed wheel mounted over said worm having one side only of the tips of its teeth in engagement therewith whereby the rotation of said worm shall cause the rotation of said toothed wheel, the clearance between said worm and the toothed wheel exceeding the area of one tooth.

4. A fuel feeding mechanism having in combination an elongated hopper the sides of which converge to form a V-shaped trough and whose upper portion is provided with a closure, a feed worm mounted in the bottom of said hopper, and a long toothed wheel driven by said feed worm having its axis mounted transversely above same, the tips of said teeth having a lateral bend formed therein sufficient to make its worm contacting face lie parallel to the side of the helix of said worm.

5. The combination of a fuel feed worm with a fuel agitating wheel having a plurality of teeth formed on the periphery thereof, said teeth sloping away from a radial line and away from the direction of rotation, the tip of each tooth having a working face formed thereon on one side thereof adapted to engage the helix of said fuel feed worm, said wheel having lateral projections on the face thereof for increasing the agitating radius of said wheel.

6. An agitator for stokers having in combination an elongated fuel hopper whose lower portion forms a trough, a fuel feed duct forming an extension of said trough, a fuel feeding worm mounted in said trough and duct, a long toothed wheel mounted over said worm having its axis normal to the axis of said worm, and means extending laterally from said wheel for extending the agitating zone thereof, the axis of said wheel lying farther from the discharge end of said hopper than it does from its intake end.

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