G. W. WOOD.

AUTOMATIC STOKER.

APPLICATION FILED FEB. 15, 1916.

1,206,071.

Patented Nov. 28, 1916.

2 SHEETS—SHEET 1.

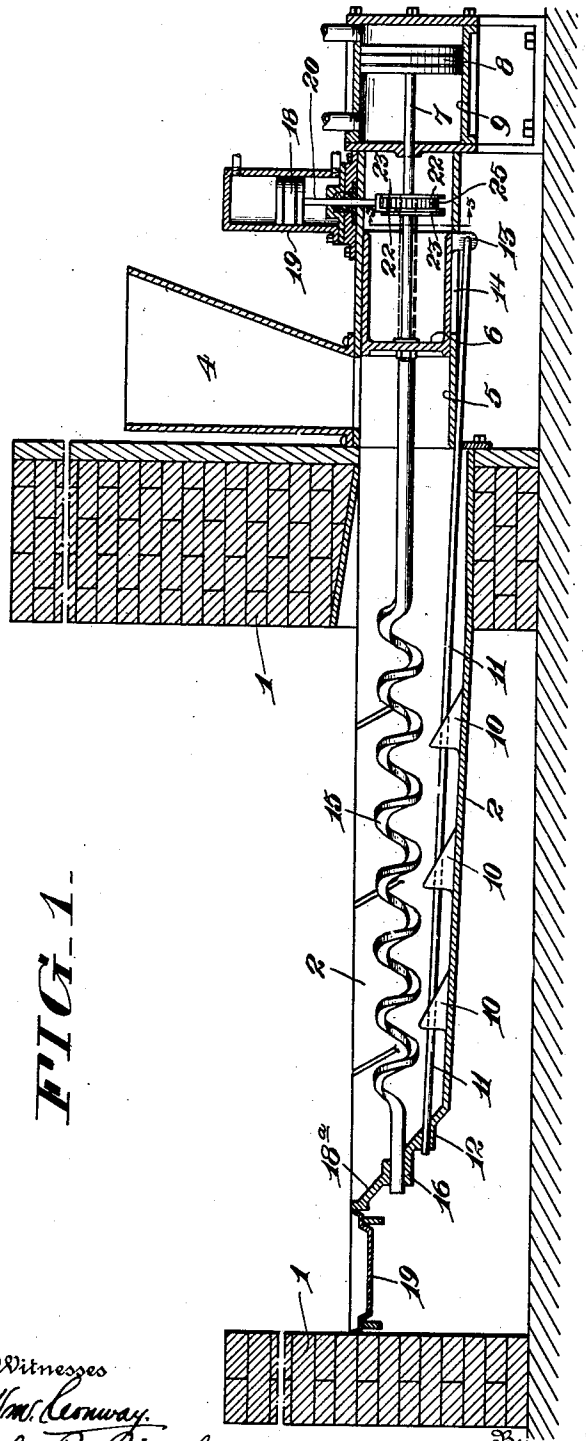


FIG. 1.

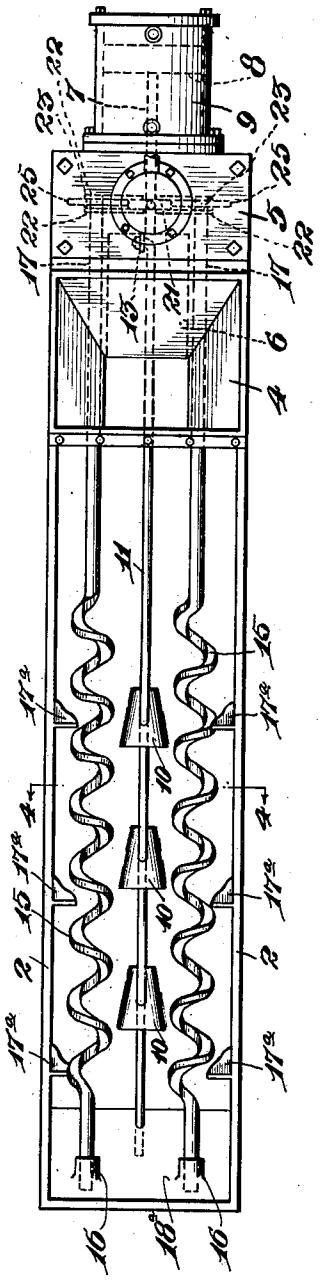


FIG. 2.

Witnesses

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2 SHEETS—SHEET 2.

FIG. 3.

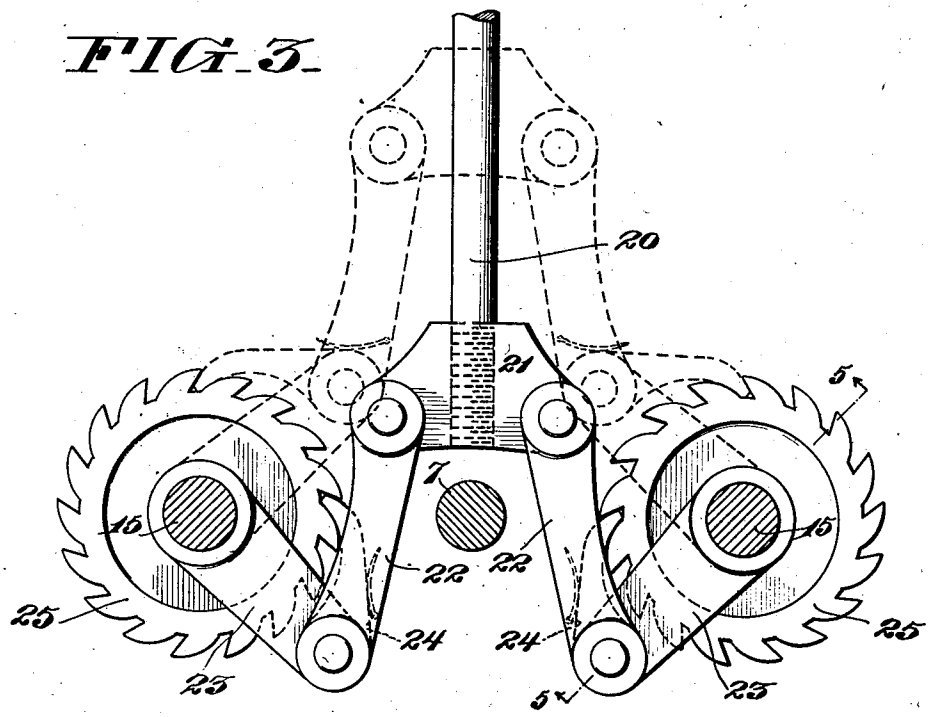


FIG. 4.

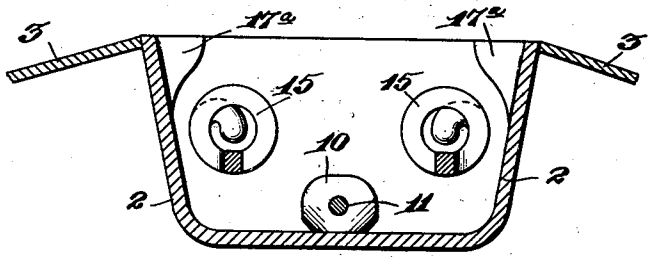
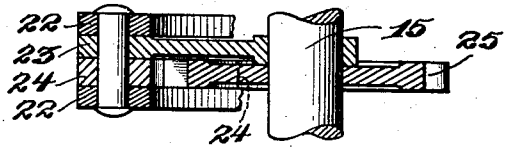


FIG. 5.



Witnesses

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UNITED STATES PATENT OFFICE.

GEORGE W. WOOD, OF CAMDEN, NEW JERSEY.

AUTOMATIC STOKER.

1,206,071. Specification of Letters Patent. Patented Nov. 28, 1916.

Application filed February 15, 1916. Serial No. 78,342.

To all whom it may concern:

Be it known that I, GEORGE W. WOOD, a citizen of the United States, residing at Camden, in the county of Camden and State of New Jersey, have invented certain new and useful Improvements in Automatic Stokers, of which the following is a specification.

My invention relates to improvements in automatic stokers, the object of the invention being to provide a stoker with improved means for moving the fuel through the retort which will insure a uniform feeding of the fuel over the furnace grate, so that the fuel will lie smoothly and evenly and not in ridges or piles as is common with stokers in general use.

A further object is to provide an automatic stoker with a pair of feed worms which cooperate with stationary deflectors secured in the retort, and also coöperating with reciprocating boosters secured to a rod which is located between the feed worms, and together with the same compels the fuel to move evenly and uniformly through the retort and onto the surface of the grate.

With these and other objects in view, the invention consists in certain novel features of construction and combinations and arrangements of parts as will be more fully hereinafter described and pointed out in the claims.

In the accompanying drawings: Figure 1 is a view in longitudinal vertical section illustrating my improved stoker. Fig. 2 is a plan view of the stoker. Fig. 3 is an enlarged view in section on the line 3—3 of Fig. 1. Fig. 4 is a view in transverse section on the line 4—4 of Fig. 2, and Fig. 5 is a view in section on the line 5—5 of Fig. 3.

1, 1, represent furnace walls, and 2 is a retort which is located centrally of the furnace, and is adapted to feed fuel to grates 3, located at opposite sides of the retort.

As my invention has nothing to do with the particular construction of grate, nor to other features of the furnace, I have only illustrated such elements as are necessary to point out my invention.

A fuel hopper 4 is provided outside of the furnace, and communicates at its lower end with a chute 5, the latter directing the fuel into one end of the retort 2, and the movement of the fuel below the hopper controlled by a pusher 6. This pusher 6 is secured to a rod 7, fixed to a piston 8 operating in a cylinder 9, and preferably reciprocated by steam or other fluid to reciprocate the pusher 6.

A series of boosters 10 are provided in longitudinal series in the center of the retort 2, and are fixed to a rod 11. This rod 11 has a bearing 12 in one end of the retort, and at its other end is connected to a lug 13 which projects through a slot 14 in the bottom of the chute 5 in which the plunger is movable.

In the retort 2, I locate two parallel feed worms 15 having rotary mounting in one end in bearings 16 in the inner end of retort 2. The other ends of the worms 15 have bearings 17 in the metal work forming the chute 5, and are caused to turn by the reciprocation of a piston 18 which is mounted in a vertically positioned cylinder 19, and controlled by steam or other fluid power.

A vertical rod 20 is fixed to the piston 18, and at its lower end is provided with a cross head 21, which is connected by links 22 with arms 23, the latter mounted to turn freely on the feed worms.

The arms 23 support spring-pressed pawls 24 which engage the teeth of ratchet wheels 25, the latter secured to the worms 15, so that the movement of the rod 20 in its vertical reciprocation compels a step by step rotary movement of the worms to feed the fuel longitudinally of the retort.

To the side walls of the retort, I locate inclined deflectors 17ª which compel the fuel to pass upwardly and out of the retort as it is fed by the worms. These deflectors prevent piling of fuel in the retort, and compel a certain amount to pass out at each deflector, thereby distributing the fuel onto the grates 3.

I have illustrated inclined grates which are customary, but have not attempted to go into detail as to the particular construction of the furnace. The extreme inner end 18ª of the retort is inclined, so that fuel cannot bank in the retort, but passes over the end onto a section of grate 19.

In operation, the pusher 6 forces the material which falls from hopper 4 into the end of retort 2, where the feed worms 15 assisted by the boosters 10, compels the fuel to move regularly and uniformly throughout the retort, and over the sides of the retort onto the grate. The deflectors 17ª assist the worms in compelling a uniform feed over the sides of the retort, and all of the

parts coöperate in securing the improved function.

Various slight changes might be made in the general form and arrangement of parts described without departing from my invention, and hence I do not limit myself to the precise details set forth, but consider myself at liberty to make such changes and alterations as fairly fall within the spirit and scope of the appended claims.

Having thus described my invention, what I claim as new and desire to secure by Letters Patent is:

1. The combination in a stoker, of a retort, two feed worms located at opposite sides of the retort, means for rotating said worms in opposite directions, and means for supplying fuel to the feed worms, substantially as described.

2. The combination in a stoker, of a retort, two feed worms located at opposite sides of the retort, means for rotating said worms in opposite directions, means for supplying fuel to the feed worms, and reciprocating boosters located between the feed worms, substantially as described.

3. In an automatic stoker, the combination with a retort, of a pair of longitudinally positioned feed worms located in the retort and operative through the body of fuel, a reciprocating member, ratchet wheels secured to turn with the worms and having oppositely pitched teeth, and pawls engaging the teeth on oppositely disposed portions of the ratchet wheels, said pawls being operated by said member, substantially as described.

4. In an automatic stoker, the combination with a retort, of a pair of longitudinally positioned feed worms located in the retort and operative through the body of fuel, a reciprocating member, ratchet wheels secured to turn with the worms and having oppositely pitched teeth, arms loose on the worms, pawls connected to the arms and engaging the teeth on oppositely disposed portions of the ratchet wheels, and links connecting the arms with said member, substantially as described.

5. In an automatic stoker, the combination of a retort, two feed worms rotatably mounted in said retort and spaced apart, a rod movable in a plane extending between said feed worms and said rod having portions thereon forming boosters for raising fuel between and into contact with said feed worms, means for rotating said feed worms, and means for reciprocating said rod, said feed worms and boosters co-acting to both convey and raise the body of fuel upwardly through said retort, substantially as described.

6. In an automatic stoker, the combination with a retort, of a pair of feed worms in the retort, a rod extending longitudinally of the retort, boosters on the rod between the feed worms, a hopper, a pusher below the hopper and adapted to force fuel into one end of the retort, said pusher connected to said rod, a horizontal cylinder, a piston in said cylinder operatively connected to the pusher, a vertical cylinder, a piston in the vertical cylinder, and means operated by the last-mentioned piston for turning the worms, substantially as described.

7. In an automatic stoker, the combination of a retort, two feed worms rotatably mounted in said retort and spaced apart, a rod movable in a plane extending between said feed worms and said rod having portions thereon forming boosters for raising fuel between and into contact with said feed worms, means for rotating said feed worms, means for reciprocating said rod, said feed worms and boosters co-acting to both convey and raise the body of fuel upwardly through said retort, a pusher, and means for reciprocating said pusher to initially convey the fuel to said feed worms and boosters, substantially as described.

8. In an automatic stoker, the combination of a retort, two feed worms rotatably mounted in said retort and spaced apart, a rod movable in a plane extending between said feed worms and said rod having portions thereon forming boosters for raising fuel between and into contact with said feed worms, means for rotating said feed worms, means for reciprocating said rod, said feed worms and boosters co-acting to both convey and raise the body of fuel upwardly through said retort, and deflectors adjacent the outer portions of said feed worms, said deflectors being positioned at different points throughout the length of the retort, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

GEORGE W. WOOD.

Witnesses:
C. E. POTTS,
RHODA E. GILLIES.