Nov. 12, 1935. R. L. BEERS 2,020,871

STOKER CONSTRUCTION

Original Filed Oct. 10, 1932

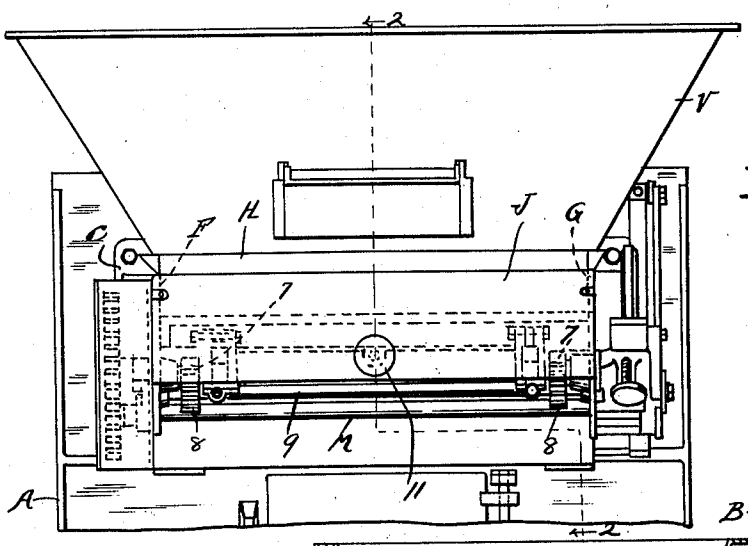


FIG. 1.

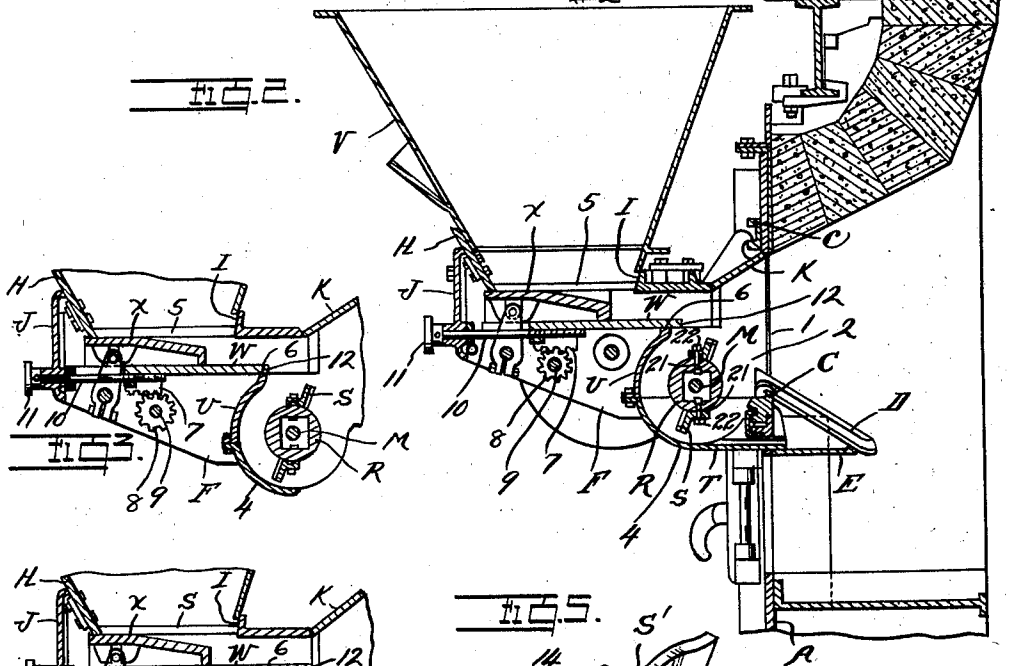


FIG. 2.

FIG. 3.

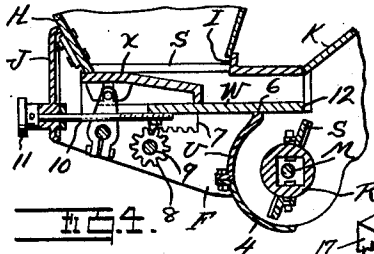


FIG. 4.

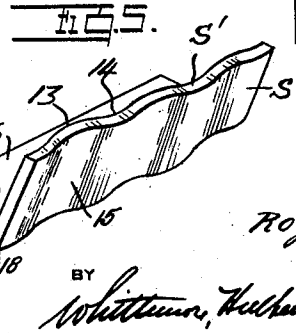


FIG. 5.

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STOKER CONSTRUCTION

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Original application October 10, 1932, Serial No. 637,187. Divided and this application April 3, 1934, Serial No. 718,835

18 Claims. (Cl. 198—128)

This invention relates generally to stokers of the sprinkler type and constitutes a division of my application, Serial No. 637,187, filed October 10, 1932.

One of the essential objects of the invention is to provide a stoker of this type wherein the means for feeding fuel from the hopper into a furnace includes means for throwing the fuel laterally and to different points longitudinally of the furnace so that an efficient distribution of the fuel will be effected.

Another object is to provide a stoker wherein means is provided for regulating the distribution upon the fuel throwing means of the fuel from the hopper.

Other objects, advantages and novel details of construction of this invention will be made more apparent as this description proceeds, especially when considered in connection with the accompanying drawing, wherein:

Figure 1 is a fragmentary front elevation of a stoker embodying my invention;

Figure 2 is a vertical sectional view taken substantially on the line 2—2 of Figure 1;

Figures 3 and 4 are diagrammatic views showing the extreme positions of the distributor plate;

Figure 5 is a perspective view of one of the blades used on the rotor drum for throwing the fuel.

Referring now to the drawing wherein I have illustrated one embodiment of my invention, A is a front plate adapted to be secured upon the front wall B of a furnace and having a substantially rectangular opening 1 through which the green fuel may be fed into the furnace; and C is a substantially rectangular base plate upon the outer side of the front plate and having a substantially rectangular opening 2 registering with the opening 1. D are the apron tuyères extending downwardly and rearwardly from the lower edge of the opening 2 in the base plate, and E is the apron-supporting plate. F and G respectively are the side plates secured to and projecting forwardly from the base plate C; H and I respectively, are front and rear cross plates rigid with said side plates; J is a cover plate extending between the side plates F and G below the front cross plate H; and K are the deflector plates extending upwardly and inwardly from the rear cross plate I to the upper edge of the opening 1 in the front plate A.

M is a shaft carried by the side plates F and G just in rear of the base plate C. R is a rotor drum on the shaft M, and S are blades fixed to said drum. T is a pan projecting forwardly from the base plate C at the lower edge of the opening and having a curved bottom 4 substantially coaxial with the drum R, and U is a curved plate secured upon and cooperating with the pan T to form a housing for the rotor.

V is a hopper for green fuel mounted upon the plates F, G, H and I; W is a distributor plate extending beneath the lower open end 5 of the hopper and over the upper edge 6 of the housing plate U, and X is a reciprocating feed plate or ram above and adapted to move the green fuel from the hopper rearwardly onto the distributor plate W. Preferably the distributor plate W slides upon the upper edge 6 of the housing plate U and has laterally spaced depending racks 7 that engage and are supported upon pinions 8 on a shaft 9 carried by the side plates F and G. A screw 10 journaled in the cover plate J and operable by a knob 11 is preferably used to adjust the distributor plate W forwardly and rearwardly on the pinions 8 and on the edge 6 of the rotor housing plate U relative to the rotor drum R. Thus, the distribution upon the rotor drum R of the green fuel fed by the ram X may be readily regulated as desired. As a result the fuel falling from the forward end of the plate W may be thrown by the blades S on the drum to any part of the furnace from front to rear thereof as desired. For example, if the plate W is moved forwardly so that its rear edge 12 is close to the edge 6 of the housing plate U, then the fuel falling from the plate W will be struck an upward blow by the blades S and will be projected or thrown to the rear of the furnace. If, however, the plate W is moved rearwardly so that its rear edge 12 is above the shaft M then the fuel falling from the plate will be struck a downward blow and will be thrown to the front of the furnace. Intermediate adjustments of the plate will cause the trajectory of the fuel to be varied accordingly. In this connection it will be noted that each blade S is corrugated and is provided with a wavy edge S'. As a result the fuel from the plate W will be thrown by each blade S to an extreme point and to an intermediate point and will be scattered laterally or sideways within the furnace. In practice it has been found that the rounded portions 13 of the blades will hit the fuel falling from the plate W at points above the intermediate portions 14 and will cause such fuel to be thrown farther than the fuel hit lower by the intermediate portions 14. The corrugations 15 extend at substantially right angles to the substantially flat attaching portion 16 of each blade and deflect the fuel laterally or sideways so that it will be scattered fan-like within the furnace. Thus, an extremely efficient distribution of the fuel will be obtained. Preferably the flat attaching portion 16 of each blade is provided at opposite longitudinal edges thereof with longitudinally extending relatively narrow flanges 17 and 18 respectively which have transversely curved faces 19 and 20 conforming in curvature to and held by bolts 21 and nuts 22 against the periphery of the drum R.

What I claim as my invention is:

1. In a stoker, a fuel feeding means including a rotary drum, and a blade having an elongated attaching portion extending longitudinally of and secured to said drum, and an elongated fuel projecting portion extending longitudinally of said attaching portion, said projecting portion being corrugated with the corrugations thereof extending substantially at right angles to the attaching portion, whereby fuel may be projected by said corrugations to opposite sides of a furnace.

2. In a stoker, a fuel feeding means including a rotary drum, and a blade having an elongated attaching portion extending longitudinally of and secured to said drum, and an elongated fuel projecting portion extending longitudinally of said attaching portion, said projecting portion being corrugated and having a wavy longitudinal free edge portion.

3. In a stoker, a fuel feeding means including a rotary drum, and a blade having an attaching portion secured to said drum, and an elongated relatively narrow fuel projecting portion carried by the attaching portion and extending longitudinally of the drum, said projecting portion being corrugated with the corrugations thereof extending substantially at right angles to the longitudinal median line of said projecting portion, and the longitudinal free edge of said projecting portion being wavy.

4. In a stoker, a fuel feeding means including a rotary drum, and a blade having a substantially flat attaching portion extending longitudinally of and secured to the periphery of said drum, and an elongated relatively narrow fuel projecting portion extending longitudinally of and disposed at substantially right angles to said attaching portion, said projecting portion being corrugated and having a wavy longitudinal free edge.

5. In a stoker, a fuel feeding means including a rotary drum, and a blade having a substantially flat elongated attaching portion extending longitudinally of and secured to the periphery of said drum, and an elongated relatively narrow fuel projecting portion extending longitudinally of and disposed at substantially right angles to said attaching portion, said projecting portion being corrugated and having a wavy longitudinal free edge.

6. In a stoker, a fuel feeding means including a rotary drum, and a blade having an elongated attaching portion extending longitudinally of the periphery of said drum, the attaching portion being substantially flat and provided at its opposite longitudinal edges with longitudinally extending flanges having curved faces conforming to and engaging the periphery of said drum, and means securing the attaching portion to said drum.

7. In a stoker, a fuel feeding means including a rotatable hollow drum, and a blade having an elongated attaching portion extending longitudinally of the periphery of said drum, said attaching portion being substantially flat and having projections provided with curved faces that conform to and engage the periphery of said drum, and means securing the attaching portion to said drum including elements anchored within the hollow of said drum and extending through said attaching portion.

8. In a stoker, a fuel feeding means including a rotary drum, and a blade having an attaching portion secured to said drum, and an elongated fuel projecting portion, said projecting portion being corrugated with the corrugations thereof extending substantially at right angles to the attaching portion, and having a wavy longitudinal free edge.

9. In a stoker, a fuel feeding means including a rotary drum, and a blade having an elongated attaching portion extending longitudinally of and secured to the periphery of said drum, the attaching portion being substantially flat and having transversely spaced longitudinally extending flanges conforming to and engaging the periphery of said drum.

10. In a stoker, a fuel feeding means including a rotary drum, and a blade having an attaching portion secured to said drum, and an elongated fuel projecting portion disposed at substantially right angles to the attaching portion, said projecting portion being corrugated and having a wavy longitudinal free edge.

11. In a stoker, a fuel feeding means including a rotary drum, and a blade having an attaching portion secured to said drum, and a fuel projecting portion, said projecting portion being corrugated with the corrugations thereof extending substantially at right angles to said attaching portion.

12. In a stoker, a fuel feeding means including a rotary drum, and a blade having an attaching portion secured to said drum, and a fuel projecting portion disposed at substantially right angles to the attaching portion and having a wavy longitudinal free edge.

13. In a stoker, a fuel feeding means including a rotary drum, and a blade having an attaching portion secured to said drum, and a corrugated fuel projecting portion disposed at substantially right angles to the attaching portion.

14. In a stoker, a fuel feeding means including a rotary drum, and a blade having an attaching portion secured to said drum, and a fuel projecting portion disposed at substantially right angles to the attaching portion, said projecting portion being corrugated with the corrugations thereof extending at substantially right angles to the attaching portion.

15. In a stoker, a fuel feeding means including a rotary drum, and a blade having an attaching portion secured to said drum, and a corugated fuel projecting portion, said projecting portion extending at substantially right angles to the attaching portion and having a wavy free edge.

16. In a stoker, a fuel feeding means including a rotary drum, and a blade rigid with the drum, said blade having a corrugated radially extending fuel projecting portion provided with a wavy free edge.

17. In a stoker, a fuel feeding means including a rotary drum, and a blade having a portion rigid with the drum, and having a fuel projecting portion disposed at substantially right angles to the portion aforesaid and provided with a wavy free edge.

18. In a stoker, a fuel feeding means including a rotary drum, and a blade having a portion rigid with the drum and having a fuel projecting portion, said projecting portion being corrugated with the corrugations thereof extending substantially at right angles to the portion aforesaid of said blade.

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