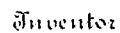


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UNITED STATES PATENT OFFICE.

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BURNER.

1,019,592.

Specification of Letters Patent. - Patented Mar. 5, 1912.

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To all whom it may concern:

Be it known that I, WILLIAM BOOTH, a citizen of the United States, residing at Scranton, in the county of Lackawanna and State of Pennsylvania, have invented certain new and useful Improvements in Burners; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

This invention relates to burners and especially to burners adapted for burning coal in powdered or finely divided form and oil in combination with the coal to be operated by a jet of air or steam as the case may make expedient.

A further object of the invention is to provide improved means for spreading the fuel passing through the burner as it leaves the burner into the combustion chamber.

With these and other objects in view, the invention comprises certain novel constructions, combinations and arrangements of parts as will be hereinafter fully described and claimed.

In the drawings:—Figure 1 is a view in vertical, longitudinal section of the improved burner. Fig. 2 is a longitudinal horizontal section taken on line 2—2 of Fig. 1.

Like characters of reference designate corresponding parts throughout the several views.

In general form the burner which forms the subject-matter of this application comprises a housing having its sides as 10 at the feed end substantially or approximately parallel but preferably diverging as the walls 11 between the coal feed and the discharge end. The bottom 12 of the housing and the top 13 of the burner are preferably substantially parallel with a pipe or chute 14 opening into the top for the introduction of coal. The feeding of coal through the chute 14 is controlled by a slide valve 15 having an opening 16 to permit the coal to pass through and be controlled in any approved manner as by the lever 17 pivoted as at 18. Instead of entering the housing at right angles the chute 14 is provided with a rounded corner or side 19 to prevent to a great extent the clogging of the coal introduced. To move the coal discharged through the chute 14 longitudinally through the housing a steam jet is provided as at 20

having a slit or discharge orifice 21 extending substantially the entire width of the housing, such steam jet being preferably fan-shaped in top plan and converging toward the front end in vertical section as shown at Fig. 1. Steam is admitted to the nozzle 20 through a pipe 22 and as the coal is dropped through the chute 14 it encounters the jet of steam from the orifice 21 and is carried with the steam longitudinally of the burner in the direction indicated by the arrow and discharged through the discharge end of the housing.

Erected vertically at the discharge end of the housing is a pipe 23 having a plurality of openings or orifices 24 diametrically upon opposite sides, such pipe being intended to be connected with a source of steam or compressed air so that as the coal passes from the discharge end of the housing it encounters a blast of steam or air from the orifices 24 which spreads the coal laterally upon the fuel surface in the combustion chamber.

To fit the burner for burning oil with the coal as above described an opening 25 is provided adapted to be connected with the source of oil supply which will drip or run down upon the top of the steam nozzle 20 and by reason of the inclined position of its top surface will run over the lower edge and drip down in front of the steam jet issuing from the orifice 21 and be atomized to burn alone or to mix with the coal being introduced through the chute 14. An opening 26 is also provided for connecting with the source of compressed air which may be added to the jet of steam issuing from the orifice 21 to force the coal through the housing or may be employed only in case of clogging of the burner or may be employed wholly in lieu of steam issuing from the nozzle 20.

It will thus be seen that the burner constructed as shown is adapted for use with both coal and oil such fuel to be fed into the combustion chamber either by steam or air or both steam and air.

While the nozzle 20 has been described as a steam nozzle it will be apparent that it may be employed equally as well with compressed air in places where steam supply would not be readily available.

By the construction of the inlet chute 14 with the rounded corner 19 the burner is capable of taking care of coal in various conditions ranging from a powder to coal

of considerably larger grain or with such powder and grains mixed.

The spreader operated as it is serves to distribute the coal and oil very evenly upon the surface without offering any considerable degree of resistance to the passage of such fuel, in fact the spreader helps rather than hinders the discharge of the fuel. Furthermore when the spreader is used with steam as the spreading agent the advantages of mixing steam with a fuel is attained.

What I claims is:—

In a burner, a housing, means to introduce solid fuel upon the floor of the housing, a nozzle extending transversely across the

housing and having an inclined upper surface, such nozzle being adapted to direct a current of fluid under pressure against the fuel upon the flooring of the housing, means to introduce liquid fuel upon the inclined upper surface of the nozzle, and means at the discharge end of the housing adapted to spread the fuel as discharged.

In testimony whereof I affix my signature in presence of two witnesses.

WILLIAM BOOTH.

Witnesses:

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Geo M Bond.