July 29, 1930. K. A. MAYR 1,771,497

PULVERIZED FUEL FEEDING AND MEASURING DEVICE

Filed Dec. 14, 1927

Fig. 1.

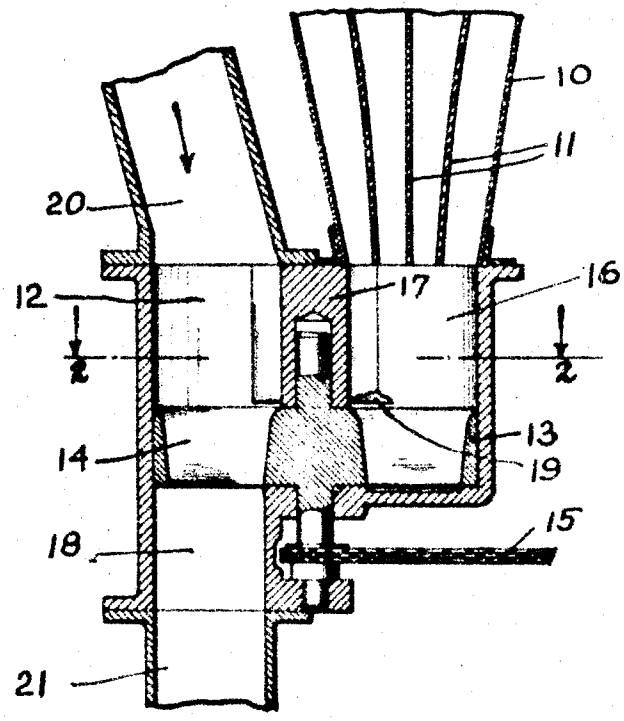
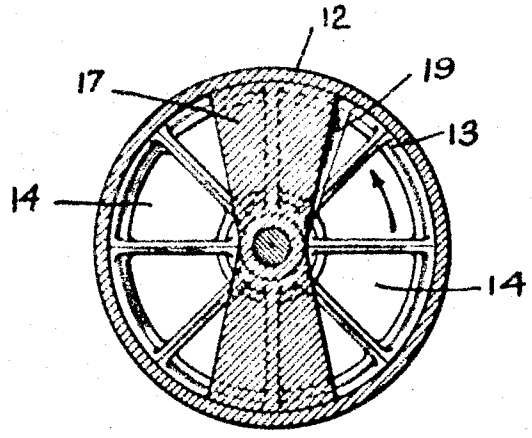


Fig. 2.



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UNITED STATES PATENT OFFICE

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PULVERIZED-FUEL FEEDING AND MEASURING DEVICE

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The invention relates to a device for supplying pulverized fuel to a combustion furnace.

The invention has for its object the provision of means for supplying fuel at a rate which is directly and invariably proportioned to the speed of the actuating means, or of its extent of movement.

Previous devices have not definitely maintained the relation between the extent of movement and the amount of fuel supplied under varying operating conditions inasmuch as some have a tendency to let pulverized fuel leak through the apparatus even if the device is stationary. Other devices, while overcoming leakage difficulties do not properly and completely discharge the pulverized fuel when in operation.

The present invention is directed to the provision of a construction which will overcome the foregoing defects in previous devices and which will provide for the determined delivery of fuel at a rate proportional to the speed of the operating device or to its extent of movement. Furthermore, fuel leakage is obviated and all fuel transported from the receiving point to the delivery point is discharged in the delivery conduit.

Provision is made for sweeping out by an air blast the fuel which is carried over to the delivery point from the charging point by the measuring and carrying device.

A further object of the present invention is to provide a device of such character that it will act not only to feed the fuel, but also to accurately and correctly measure the fuel which is being fed thereby.

A further object of the present invention resides in the provision of a fuel feeding construction in which the delivery and charging points are definitely separated and in which no fuel can be discharged except by the movement of the fuel feeding means.

Other objects and advantages will be hereinafter set forth in the accompanying specification and claims and shown in the drawings which by way of illustration show a preferred embodiment of my invention.

In the drawings

Fig. 1 shows a vertical sectional view of an apparatus for delivering the fuel.

Fig. 2 is a detail cross-section taken on line 2—2 of Fig. 1.

In the drawing 10 is a flaring connection to a hopper. It may be the lower part of the hopper itself in which there is a supply of pulverized fuel. To facilitate the delivery of the fuel and to prevent "bridging" I preferably provide guiding vanes 11 disposed upon the stream lines of flow of the fuel. These vanes and the connection 10 direct the fuel into a charging conduit 16 which is preferably vertically disposed in a main body member 12. This body member is provided with an opening for receiving a wheel 13, which wheel has its shafts rotatably mounted in the body portion. The wheel is driven in any desired manner as by a chain 15. The wheel is also provided with a series of pocket forming apertures 14 which apertures extend entirely through the wheel. The body portion also has an intermediate wall part 17 which at one side defines one wall of duct or conduit 16 and which at the other side defines a wall of another conduit or delivery passage 18. During rotation or oscillation of the wheel the pulverized fuel fills the pockets at the charging point. Excess fuel is scraped off by a wedge-like extension 19 which acts to shovel off excess of fuel as the wheel rotates. The thickness of the intermediate wall portion 17 is such with respect to the size of the pockets that at no time can a pocket be in communication to both the charging and delivery points.

It will be understood that the fuel is to be discharged from the wheel when the pocket is in communication with duct 18. This is the delivery point of the apparatus. To wholly remove the fuel from the wheel, air is forced in under pressure in either direction through the delivery passage and enroute flows directly and entirely through the pocket-like apertures in the wheel so as to pick up and sweep out of the wheel all of the fuel carried by the particular pocket or pockets which are at the delivery point.

In the illustrated embodiment, air is delivered at the top through conduit 20 and

the fuel and air passes to the combustion furnace through conduit or duct 21. It is of course, obvious that the direction of flow could be reversed if desired.

It will be understood that the foregoing construction not only measures or meters the quantity of fuel, but the amounts may be varied by directly varying the rate of action of the wheel. Furthermore, all fuel carried over from the reservoir side to the delivery duct side will be completely swept out of the wheel by the air current traversing entirely through the wheel pockets.

What I claim is:

1. A pulverized fuel delivering means including a continuously movable wheel member with a plurality of fuel carrying pockets disposed therein and extending in an axial direction through the wheel, a hopper connection for charging fuel into the pockets in a direction substantially parallel to the axis of the wheel, a blast duct and a delivery duct for directing an air blast in a direction parallel to the axis of the wheel and into the filled pockets and for providing a fuel outlet therefrom, said blast and delivery ducts cooperating concurrently with a plurality of pockets to provide for a substantially continuous delivery of fuel from the wheel.

2. A pulverized fuel feeding device comprising a driven wheel with pockets extending entirely therethrough in an axial direction, means comprising a hopper connection for charging fuel in a direction parallel with the axis of the wheel and axially into said pockets, means comprising a blast duct and a delivery duct for removing fuel from said pockets when a pocket is adjacent the delivery duct, and means comprising a partition member for definitely separating the point of charging from the point of delivery, said partition member being provided with a knife edge for levelling the contents of the pockets and for facilitating the cutting off of the fuel contained in the pockets from other fuel which remains in the hopper connection.

3. A feeding and delivery device for measuring and delivering pulverized material, comprising a rotatable measuring and delivering means provided with pockets for receiving the material, and a hopper connection disposed above the rotatable means and provided with guiding vanes therein disposed to permit material to descend in the hopper connection upon both sides of the vanes to prevent bridging of the material in said connection.

4. A feeding and measuring device for pulverized material, comprising an enclosing casing, a measuring and delivery wheel rotatable in said casing and provided with a plurality of pockets and with a rim portion closing the outer part of the pockets and fitting said casing and said rim portion preventing access of the material from the pockets peripherally to the casing as the wheel rotates.

In testimony whereof I hereto affix my signature.

KARL A. MAYR.