No. 691,981. Patented Jan. 28, 1902.

W. G. STONES.

FUEL FEEDING ATTACHMENT FOR FURNACES.

(Application filed Feb. 19, 1901.)

(No Model.)

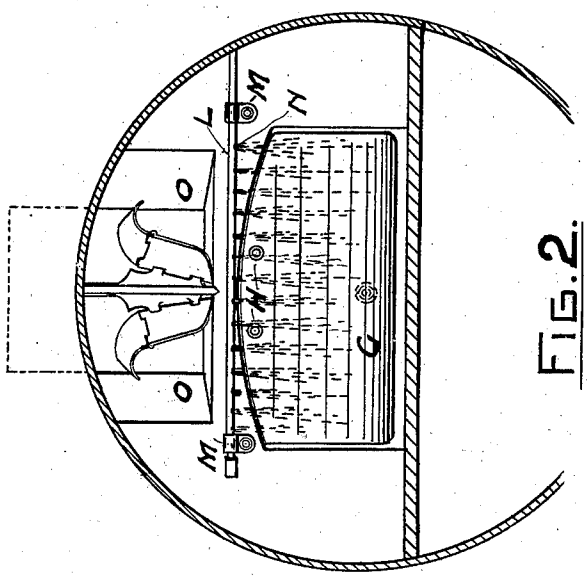

FIG. 2.

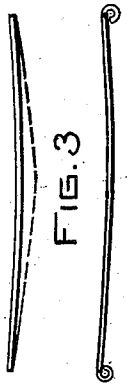

FIG. 3.

FIG. 4.

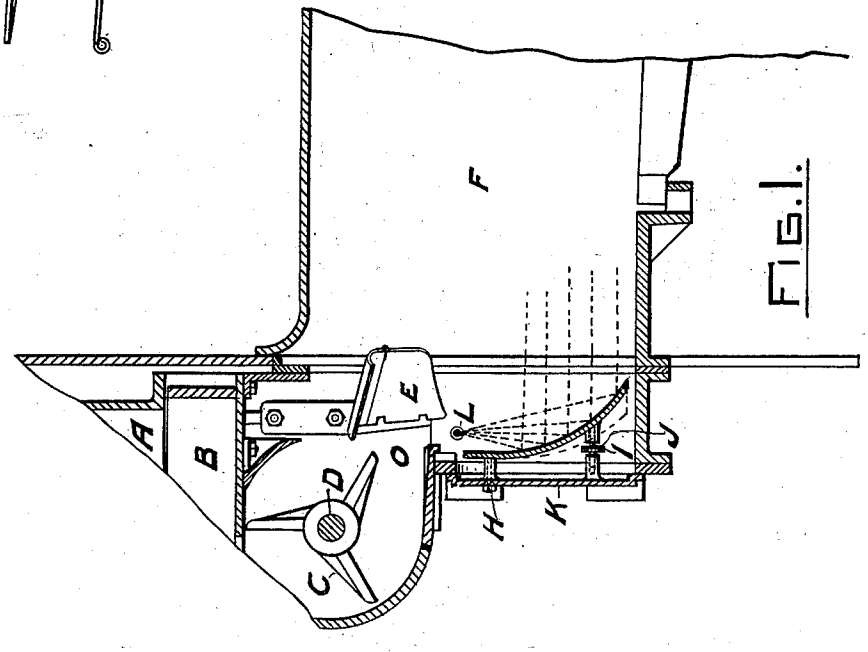

FIG. 1.

Witnesses:
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UNITED STATES PATENT OFFICE.

WILLIAM GRIMSHAW STONES, OF BLACKBURN, ENGLAND.

FUEL-FEEDING ATTACHMENT FOR FURNACES.

SPECIFICATION forming part of Letters Patent No. 691,981, dated January 28, 1902.

Application filed February 19, 1901. Serial No. 47,960½. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM GRIMSHAW STONES, a subject of the King of Great Britain and Ireland, and a resident of Blackburn, near Manchester, England, have invented certain new and useful Improvements in Fuel-Feeding Attachments for Furnaces, of which the following is a specification.

This invention relates to the mechanical feeding of fuel to steam-boiler and like furnaces, and refers more particularly to the type of stoking or fuel-feeding apparatus described in my former patent, No. 680,818, dated August 20, 1901.

Its object is to provide means supplementary to the said stoking apparatus for insuring of the complete distribution and combustion of the finer portions of the fuel fed into the furnace by the stoker. To this end I employ at the front part of the furnace an arrangement of steam, air, or like blowing-jets supplied with air, steam, or both, from any suitable source and a deflector or guide-vane so disposed relatively to the jets and the area or zone in which the fine fuel falls within the furnace that when in operation the blowing-jets play against the guide-vane, and the guide-vane in turn deflects or guides the currents against the falling fuel, which they carry forward and distribute over the furnace-grate, the range of distribution being variable by varying the force of the jets or by varying the angle or form of the guide-vane. The jet apparatus is preferably in the form of a perforated pipe or pipes situated immediately over the furnace-door, with the perforations pointing downward, and the guide-vane is preferably in the form of a metal or other suitable plate adjustably mounted at an angle upon the back of the furnace-door.

On the accompanying drawings I illustrate the preferred application of my invention, and with the aid of the reference characters marked thereon I will further describe my invention in relation thereto.

Figure 1 is a vertical section of a part of the mechanical stoking apparatus described in my said former application, the front end of one of the boiler-furnaces, and my present invention as applied hereto. Fig. 2 is an elevation of the said apparatus from a point within the furnace. Figs. 3 and 4 are plans in full and dotted lines of modifications.

According to my said former invention A is the fuel-hopper, B one of the sliding fuel-feed boxes, and C one of the rotary feed-fans mounted on a rotating shaft D.

E E are the adjustable feed-distributing plates, and F the furnace.

According to my present invention G is the deflector or guide-vane, adjustably mounted, by studs H, regulating-nut I, and screw J, upon the rear of the furnace-door K.

L is the perforated air or steam pipe extending across the front of the furnace above the plate G, closed at one end, supported by brackets M, and passing out at the opposite end to the outside, where it is supplied with steam or air under pressure. The holes N in the pipe L point downward toward the face of the plate, and the plate is of such a shape and lies at such an angle to the plane of the furnace-grate that with steam turned on and the jets playing against or upon the face of plate G they are deflected, as indicated by dotted lines in Fig. 1, toward and over the furnace-grate. Therefore with the said pipe and plate situated immediately below the outlet-openings of the fan-boxes O and fuel being fed into the furnace the presence of the jets of steam and their force serve to carry or impel forward the finer particles of fuel and distribute the same over the furnace-grate in lieu of such fuel falling directly upon the dead-plate and accumulating thereon, as is likely to be the case without the jets. The plate G may be slightly arched or curved, as shown in Fig. 3, so as to deflect the jets radially and the fuel radially or (and) the said plate may be provided with a central projecting part near its lower edge, after the style of a cow-catcher and as shown by dotted lines in Figs. 1 and 3. By the adjustment of nut I the angle of the plate G is readily altered to suit requirements.

While preferring the plate G to be attached to the furnace-door, so as to be moved out of the way when the door is opened, I may hinge it to one edge of the furnace-doorway and cause it to retire inwardly out of the way, either with the opening of the door or by hand. In such connection the plate may be in halves

and the respective halves be hinged to the opposite edges of the doorway, as shown in Fig. 4; but I prefer the arrangement aforesaid.

While my invention is advantageous in effecting the distribution of the finer particles of fuel, it will be seen that it is also useful by injecting steam or air into the furnace in promoting the combustion of the fuel and in preventing smoke, and although I have described my invention as applied to the construction of stoker covered by my said previous application I wish it to be understood that I may apply it to other and like constructions of stokers.

What I claim is—

In a steam-boiler or like furnace, a mechanical stoker adapted to throw fuel into the furnace, a deflector adjustably mounted at an angle at the front of the furnace below the fuel-inlet, and a steam or air pipe, having perforations, located below the fuel-inlet and above the deflector and the said pipe adapted to direct air or steam under pressure toward the face of the said deflector, as and for the purposes set forth.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

WILLIAM GRIMSHAW STONES.

Witnesses:

WALTER GUNN,

GEO. H. POTTS.