

B. G. GRIGGS AND W. E. O'BRIEN.
FINE FUEL FEEDING MEANS FOR FURNACES.
APPLICATION FILED MAR. 20, 1920.

1,437,342.

Patented Nov. 28, 1922.

2 SHEETS—SHEET 1.

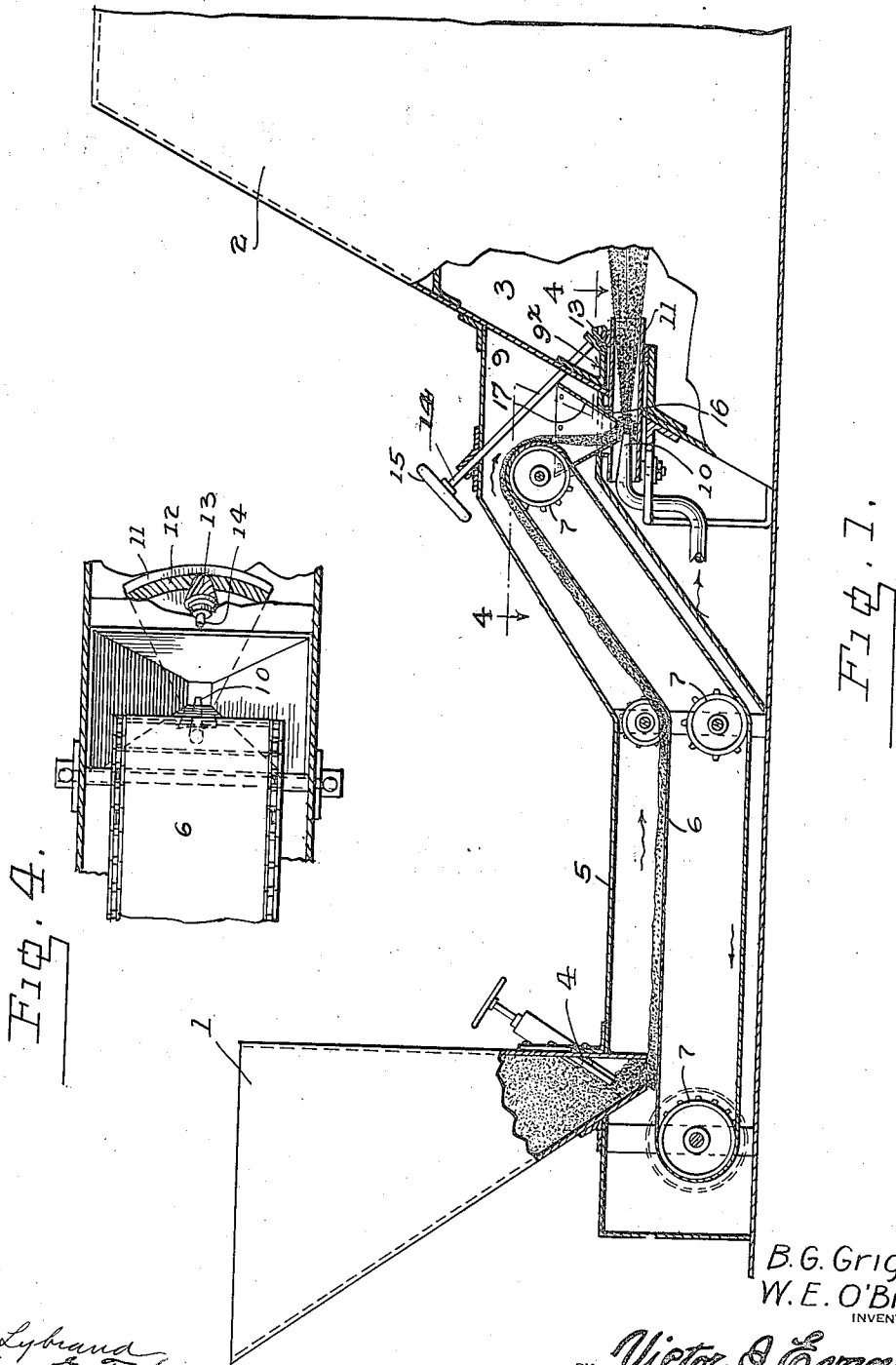


Fig. 4.

Fig. 1.

H. Lybrand
Thomas E. Swift
WITNESSES

B. G. Griggs
W. E. O'Brien
INVENTORS
BY *Victor J. Evans*
ATTORNEY

B. G. GRIGGS AND W. E. O'BRIEN,
 FINE FUEL FEEDING MEANS FOR FURNACES,
 APPLICATION FILED MAR. 20, 1920.

1,437,342.

Patented Nov. 28, 1922.

2 SHEETS—SHEET 2.

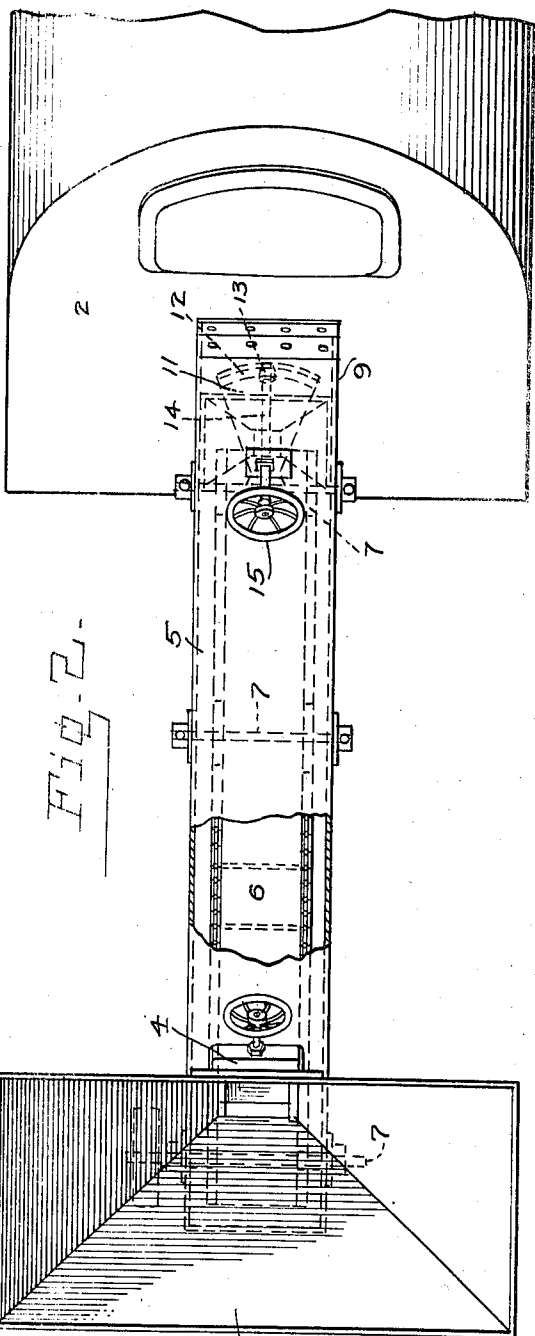


Fig. 2.

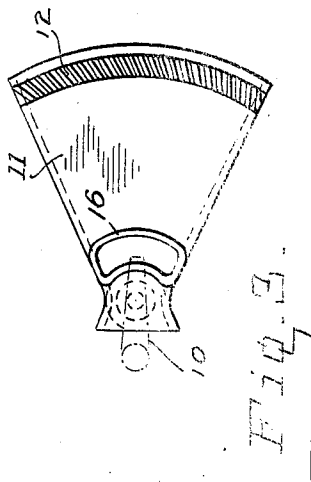


Fig. 3.

H. Lybrand
Thomas E. Turpin

WITNESSES

B. G. Griggs
W. E. O'Brien

INVENTORS

BY *Victor J. Evans*

ATTORNEY

UNITED STATES PATENT OFFICE.

BENJAMIN G. GRIGGS AND WILLIAM EDWARD O'BRIEN, OF KEMMERER, WYOMING.

FINE-FUEL-FEEDING MEANS FOR FURNACES.

Application filed March 20, 1920. Serial No. 367,390.

To all whom it may concern:

Be it known that we, BENJAMIN G. GRIGGS, and WILLIAM EDWARD O'BRIEN, citizens of the United States, residing at Kemmerer, in the county of Lincoln and State of Wyoming, have invented new and useful Improvements in Fine-Fuel-Feeding Means for Furnaces, of which the following is a specification.

The object of our present invention is the provision of simple, efficient and readily regulated means for feeding fine fuel, preferably powdered shale, to furnaces.

To the attainment of the foregoing, the invention consists in the improvement as hereinafter described and definitely claimed.

In the accompanying drawings, hereby made a part hereof:

Figure 1 is a vertical, longitudinal section showing our improved means in association with a furnace such for instance as the fire-box of a boiler.

Figure 2 is a plan view, partly broken away, of the same.

Figure 3 is a detail plan view of the deflector.

Figure 4 is a detail section on the line 4-4 of Figure 1, looking downwardly.

Similar numerals of reference designate corresponding parts in all of the views of the drawings.

Among other elements our novel means comprises a hopper 1, designed to be supplied in any appropriate manner, with powdered shale. The said hopper 1 is arranged as shown, relatively to a boiler 2 and the fire-box 3 of the latter.

At the lower end of the hopper 1 is a valve 4, provided in order to enable the operator to regulate the discharge of the fuel from the lower end of the hopper.

At its lower end the hopper 1 communicates with the interior of a housing 5, and in the said housing is arranged one or a plurality of endless conveyors 6, mounted on revoluble supports 7, one of which is designed to be connected to and driven by a motor (not shown), so as to move the conveyor or conveyors in the direction indicated by arrows in Figure 1.

The forward end portion 9 of the housing 5 is opposed and fixed to the rear wall of the fire-box 2, and disposed in a spout 9* under said portion 9 and in advance of the foremost revoluble member 7 is a nozzle

10, designed to discharge into the fire-box a blast of steam, air or other appropriate fluid under pressure. The said nozzle 10 will of course be connected with a suitable fluid pressure source of supply, but this we have deemed it unnecessary to illustrate.

In the spout 9* which extends into the firebox 3, is disposed a hollow triangular deflector 11, and fixed with respect to the said deflector 11, which is mounted as shown for horizontal swinging movement, is a gear 12, with which is intermeshed a beveled gear 13 on an inclined shaft 14. The said shaft is carried rearwardly and upwardly through the upper forward portion of the housing 5, and is equipped at its rear end with a hand wheel 15, so that the deflector 12 may be swung horizontally. The apex portion of the triangular deflector 12 receives the nozzle 10, Figure 1, and from this it follows that when the apparatus is in operation, the operator is enabled to bring about the discharge of the powdered fuel to either side of the fire-box or to both sides thereof, as the state of fire requires. In the upper wall of the hollow triangular deflector 11 is formed an arcuate slot 16, Figures 1 and 3, and disposed in the said slot 16 is a lower portion of a stationary hopper 17 which extends through an opening in the upper wall of the spout 9* and is arranged to receive powdered shale or other powdered fuel from the forward portion of the endless conveyor 6.

In the general operation of our novel means, the valve 4 is opened, and the conveyor 6 is put into motion and the jet or nozzle 10 is connected by the opening of a valve or by other means with a source of fluid under pressure. From this it follows that the powdered shale or other fuel deposited on the conveyor 6, will be carried to a point above the hopper 17; whereupon the powdered fuel will pass downwardly through the hopper 17 and the upper wall of the spout 9* and into the hollow triangular deflector 11 and will be blown by the fluid under pressure through the deflector 11, and will, by the said deflector, be guided to the desired point or points on the fire in the fire-box or furnace 3.

It will be understood from the foregoing that it is within the purview of our invention to employ two or more nozzles 10 and deflectors 11 complementary thereto; also,

that it is within the purview of our invention to altogether omit the endless conveying means since in some embodiments the powdered shale or other fuel may be gravitationally fed to the deflector 11 through the opening 16 in the upper wall thereof.

Having described our invention, what we claim and desire to secure by Letters-Patent, is:

10 Fine-fuel feeding means for furnaces comprising a spout extending through a furnace wall and having an opening in its outer portion at the upper side thereof, a hopper extending through said opening and adapted
 12 to receive fine-fuel, a hollow triangular deflector pivotally mounted adjacent to its rear end in the said spout and open at its ends and having its forward and comparatively

wide end adapted to communicate with the interior of the furnace, said deflector having
 14 an arcuate opening in its upper wall receiving the lower portion of the hopper, and a nozzle extending forwardly in the deflector to a point below said arcuate opening and adapted to be connected with a source of
 16 fluid pressure supply, said deflector also having an arcuate rack on the top of its forward portion and being combined with a gear meshed with said rack, and a shaft connected with said gear and extending to the
 18 exterior of the furnace, whereby the deflector may be adjusted and adjustably fixed.

In testimony whereof we affix our signatures.

BENJAMIN G. GRIGGS.
 WILLIAM EDWARD O'BRIEN.