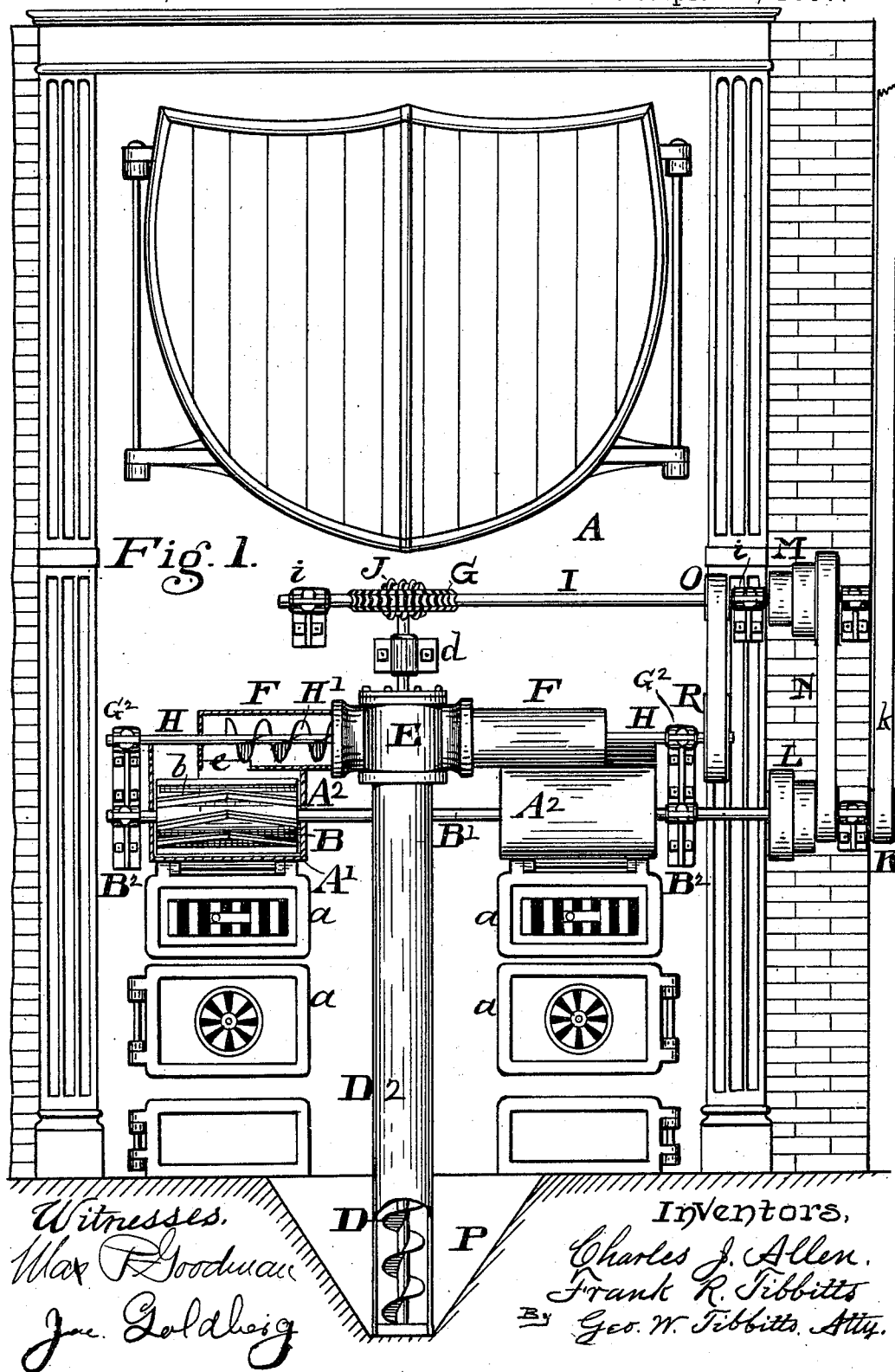


C. J. ALLEN & F. R. TIBBITTS.

APPARATUS FOR FEEDING COMMINUTED FUEL TO FURNACES.

No. 581,244.

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(No Model.)

3 Sheets—Sheet 2.

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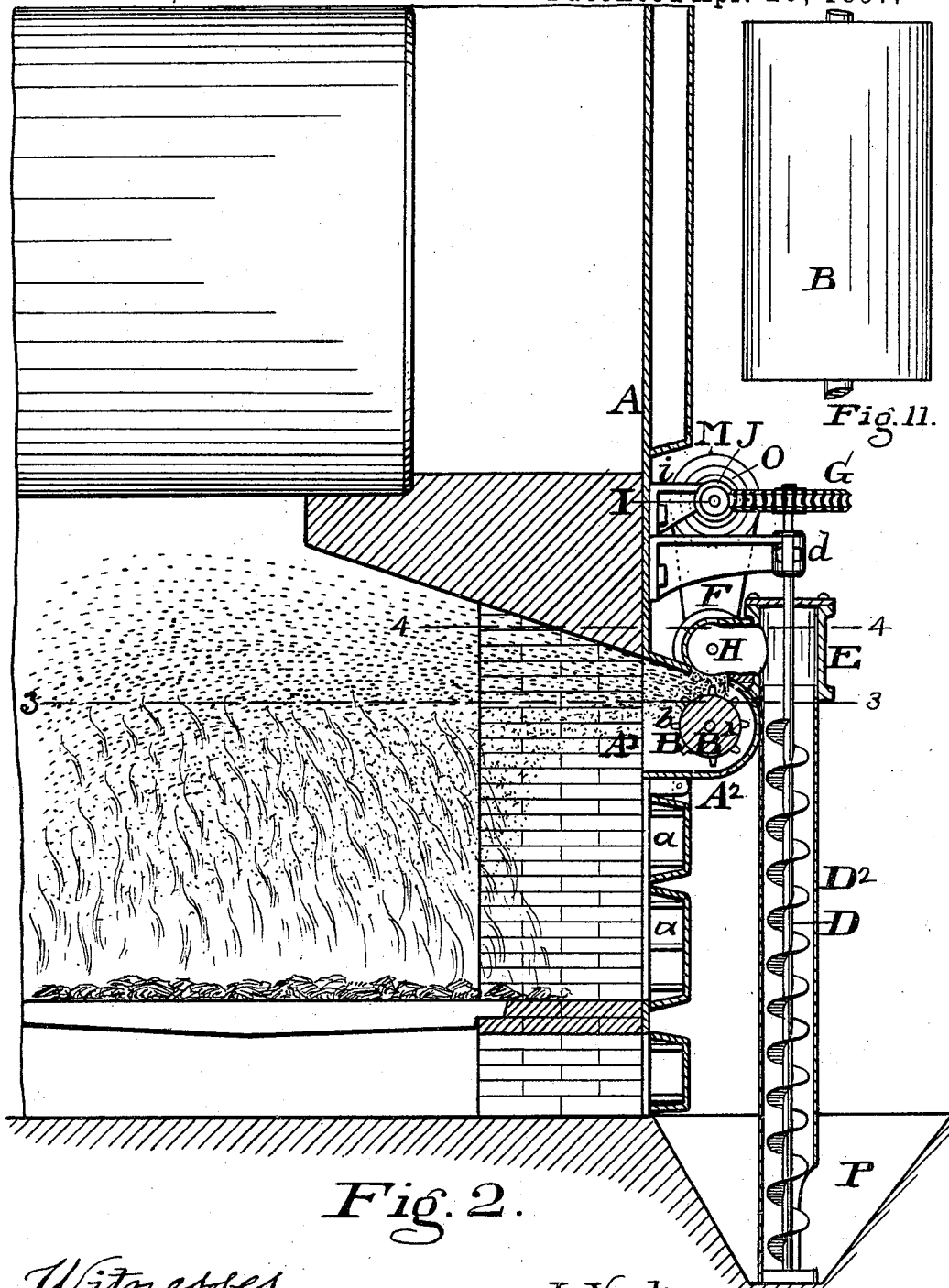


Fig. 2.

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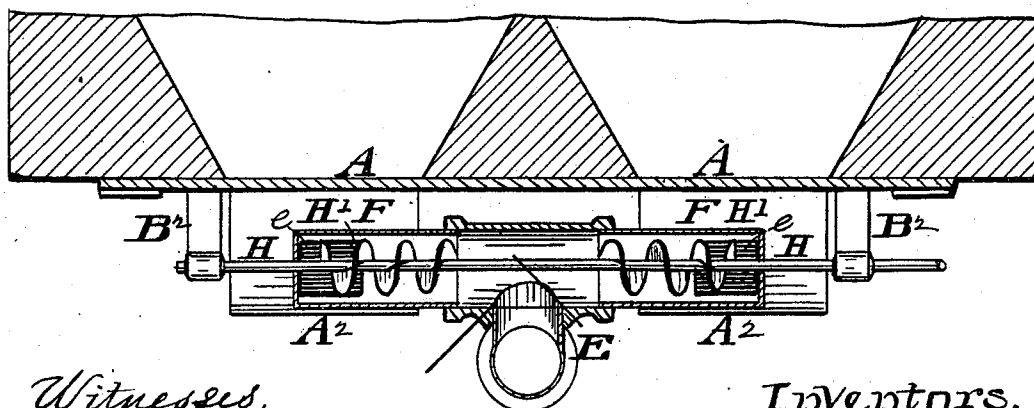
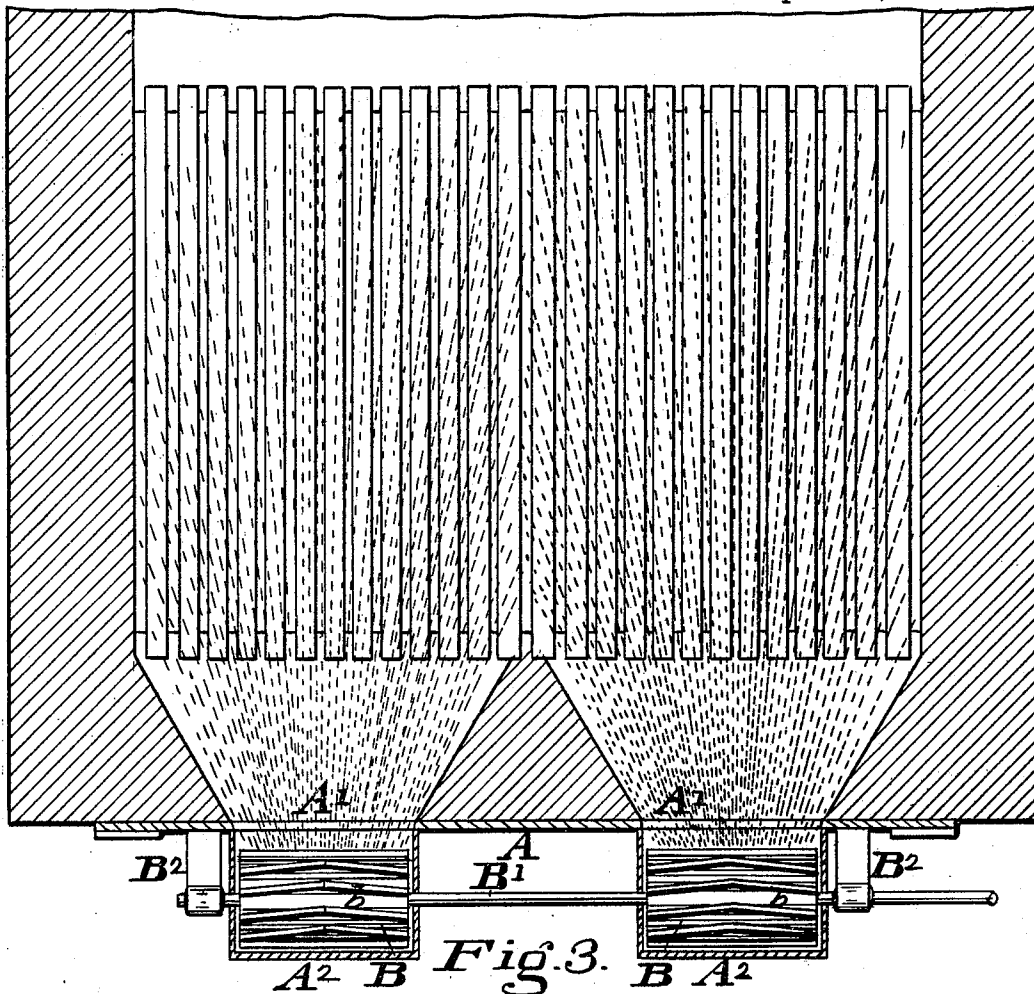
Inventors,
Charles J. Allen.
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By Geo. W. Tibbitts Atty

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UNITED STATES PATENT OFFICE.

CHARLES J. ALLEN AND FRANK R. TIBBITTS, OF CLEVELAND, OHIO, ASSIGNORS TO THE PLAYFORD STOKER COMPANY, OF SAME PLACE.

APPARATUS FOR FEEDING COMMINUTED FUEL TO FURNACES.

SPECIFICATION forming part of Letters Patent No. 581,244, dated April 20, 1897.

Application filed July 10, 1896. Serial No. 598,695. (No model.)

To all whom it may concern:

Be it known that we, CHARLES J. ALLEN and FRANK R. TIBBITTS, citizens of the United States, and residents of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Apparatus for Feeding Comminuted Fuel to Furnaces, of which the following is a specification.

This invention relates to burning comminuted fuel and means for feeding such fuel to furnaces; and it consists in spraying the fine particles of fuel into the furnace by means of rapidly-revolving distributing rolls or rollers by centrifugal force, substantially as hereinafter described, and pointed out in the claims.

In the accompanying drawings, Figure 1 is a front elevation of a furnace having our improved apparatus attached. Fig. 2 is a vertical section of the furnace, showing the apparatus in operation. Fig. 3 is a horizontal section on line 3 3, Fig. 2, showing the operation of the apparatus. Fig. 4 is a horizontal section on line 4 4, Fig. 2, showing the means for conveying the fuel to the distributing-rollers.

A represents a boiler-front, which may be of any of the well-known patterns.

a a are fuel-doors, but they are not used as such when our apparatus is in use. *A'* are openings in the front above the said doors *a a*. *A²* are round front boxes or casings attached to the front and over the said openings.

B B are rollers contained in boxes or casings supported on a shaft *B'*, having its bearings *B²* attached to the front outside of the boxes. On the circumference of the rollers are provided ribs *b b*, which are fixed in diagonal lines from the middle to the ends of the rollers. These rollers are given rapid revolving motion and are designed for throwing the fine fuel into the furnace by their centrifugal force, as seen in Figs. 2 and 3. The fuel is delivered to said rollers by means substantially as follows:

D is a rotary vertical spiral conveyer stepped in the bottom of a pit *P* in the floor in front of the furnace and is inclosed in a pipe *D²*. *E* is a head on the top of said pipe *D²*, and *F F* are branch pipes leading from

said head and extending over the aforesaid boxes *A²* and are provided with openings *ee*, communicating with the interior of the boxes. The shaft of the vertical conveyer *D* is supported in a bracket-bearing *d*, attached to the front *A* above the head *E*. *G* is a worm gear-wheel attached to the top end of the shaft of conveyer *D*.

H is a horizontal shaft extending through the branch pipes *F F* and having its bearings in the brackets *G²* above the brackets *B²*. *H' H'* are right and left hand spiral conveyers on said shaft *H*, designed for conveying the fuel from the head *E* and delivering it onto the rollers *B B*. *I* is also a horizontal shaft having its bearings in brackets *i i* on the front *A*. *J* is a worm-screw on the said shaft and meshing with the gear *G*, by means of which motion is imparted to the vertical conveyer *D*.

The shaft *B'* extends beyond the side of the front *A* and is provided with a small pulley *K*, to which a driving-belt *k* is applied for driving the apparatus and for giving rapid revolutions to the rollers *B B*.

Cone-pulleys *L* are placed on the shaft *B'*, and cone-pulleys *M* are placed on the shaft *I*, connected by belt *N* for transmitting motion to the shaft *I* at a reduced rate of speed.

O is a pulley on shaft *I*, connected by belt with a pulley *R* on shaft *H*.

y y are slide-gates fixed in the sides of the head *E*, designed for closing the communication between the head and the branch pipes, whereby one of said branches may be closed for diverting the delivery of all the fuel into the other. This provision is made where two rollers are employed for feeding fuel through two openings into the furnace. This would allow one side to be raked or cleaned out while the other was still going.

The object of this improved apparatus is for feeding the fine dust of pulverized slack coal by injecting it into the furnace in a shower or spray in the upper part of the combustion-chamber, so that the particles will catch fire in transit and be consumed or partly consumed before falling upon the fire-floor, the draft being through the grated doors, thus avoiding the opening of the doors for feeding purposes. In instances when the fine dust is

used no grate-bars need be employed in the floor, but as a general rule when the coarser grades of fuel are used grate-bars should be used for providing a draft upward into the fire.

The fuel for this apparatus is first deposited in the pit P at the base of the vertical conveyer, from whence it is conveyed and discharged through the branch pipes or spouts.

Having described our invention, we claim—

1. The combination of the conveyer D D', branch conveyers F F, mounted on the shaft G, the delivery-rollers B B, mounted on the parallel shaft B' below shaft G, the pulley K on shaft B', the parallel shaft I above said shaft G, cone-pulley L on shaft B', and the cone-pulley M on shaft I connected by belt N, small pulley O on the shaft G connected by belt large pulley on shaft G, worm gear-wheel

on shaft I, worm J on the vertical shaft of vertical conveyer D, the construction and arrangement being such that the conveyers have slow revolutions and the delivery-rollers have rapid revolutions substantially as and for the purpose specified.

2. The combination with the conveyer DD' and the branch conveyers F F, H' H', of the slide-gates *y y*, diagonally fixed in the head E, and adapted for diverting the passage of the fuel into either the right or left hand conveyer F F, substantially as and for the purpose specified.

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