

No. 827,249.

PATENTED JULY 31, 1906.

A. J. MASKREY.  
STOKER FOR FURNACES.  
APPLICATION FILED JAN. 26, 1903.

3 SHEETS—SHEET 1.

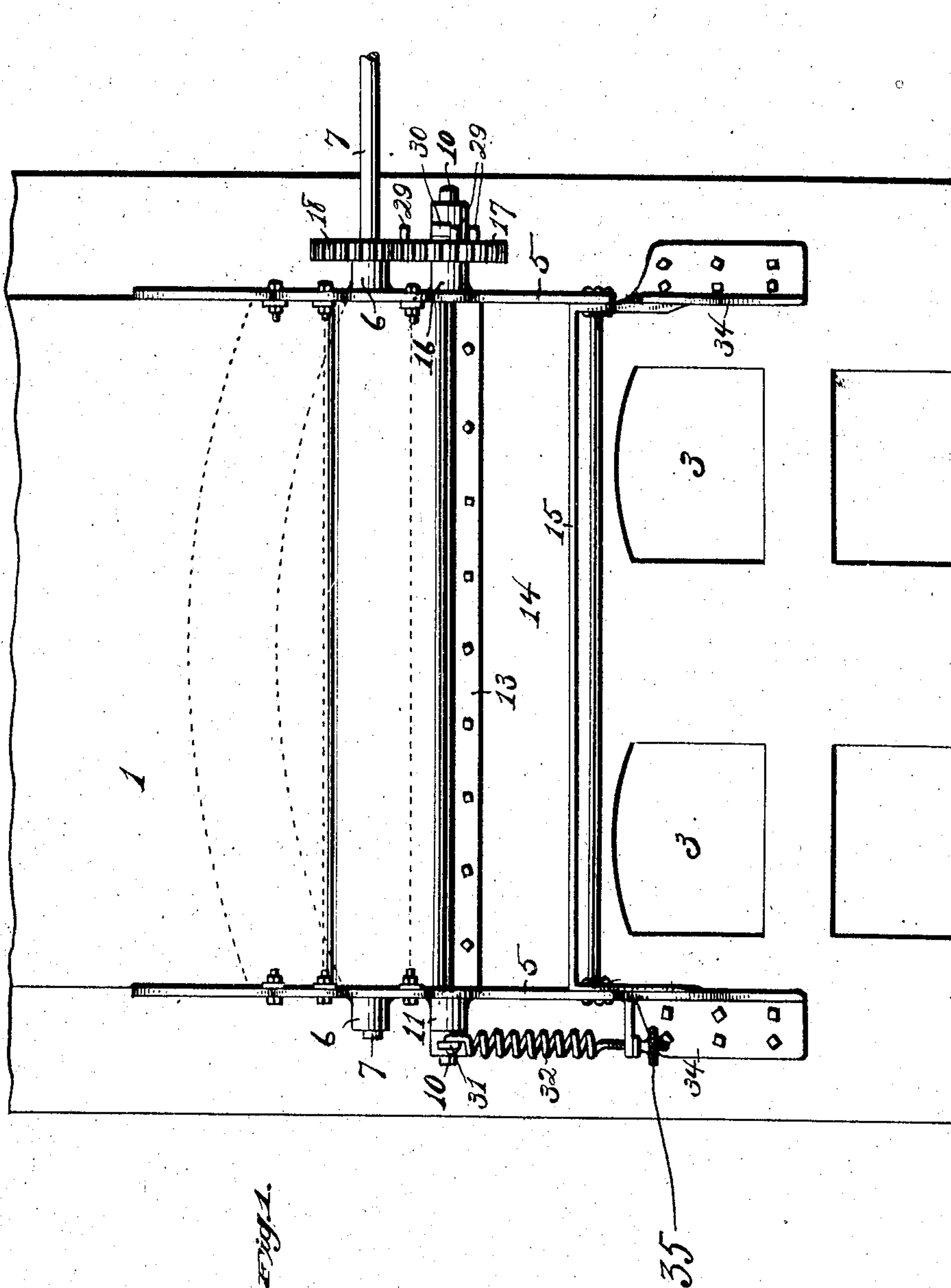


Fig. 1.

Witnesses:  
*J. P. Hoffman,*  
*William H. Bowler*

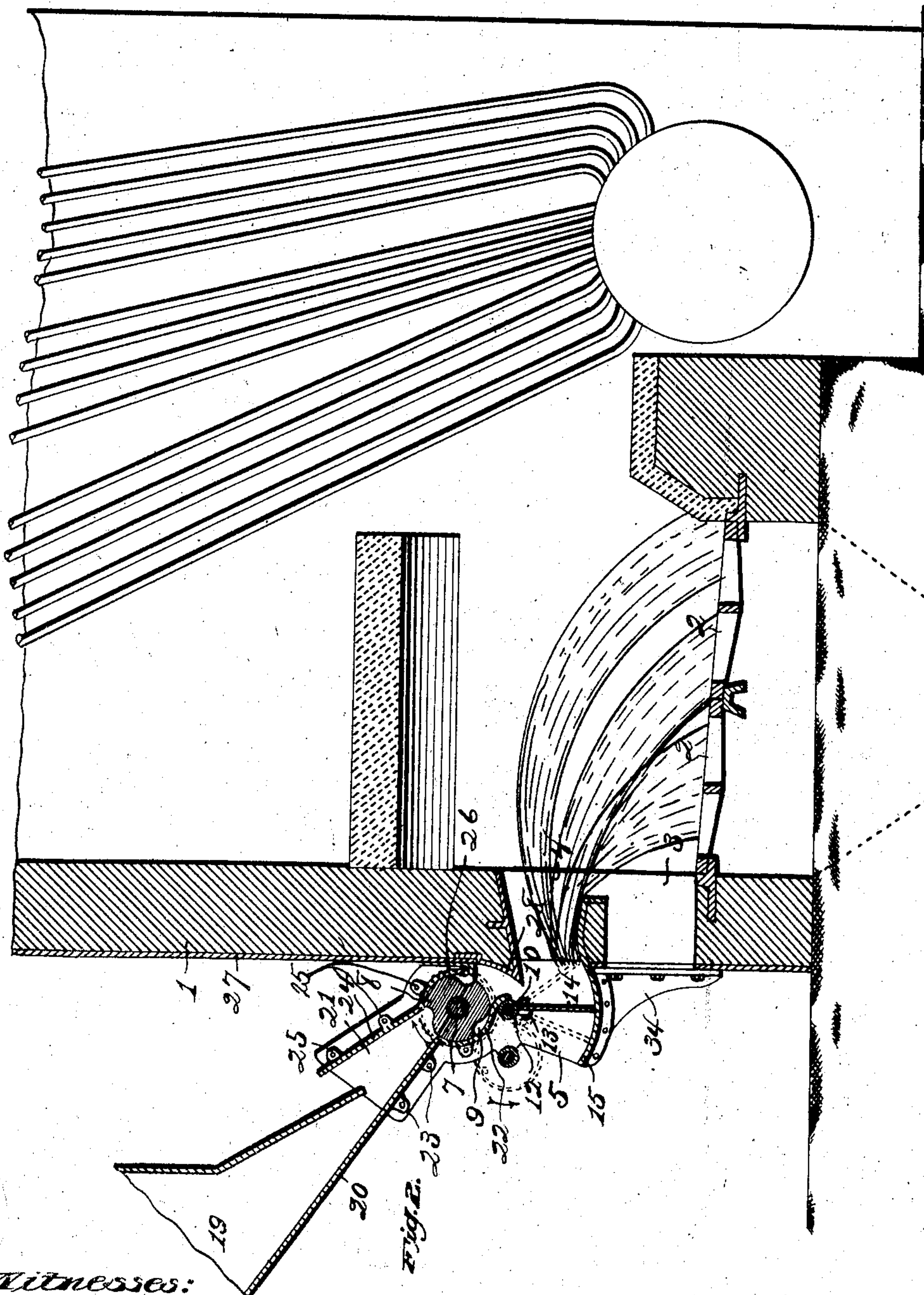
Inventor.  
*A. J. Maskrey.*  
By  
*A. E. Dumble*  
Att'y.

No. 827,249.

PATENTED JULY 31, 1906.

A. J. MASKREY.  
STOKER FOR FURNACES.  
APPLICATION FILED JAN. 26, 1903.

3 SHEETS—SHEET 2.



Witnesses:

*J. H. Hoffman,*  
*William H. Bowler*

Inventor

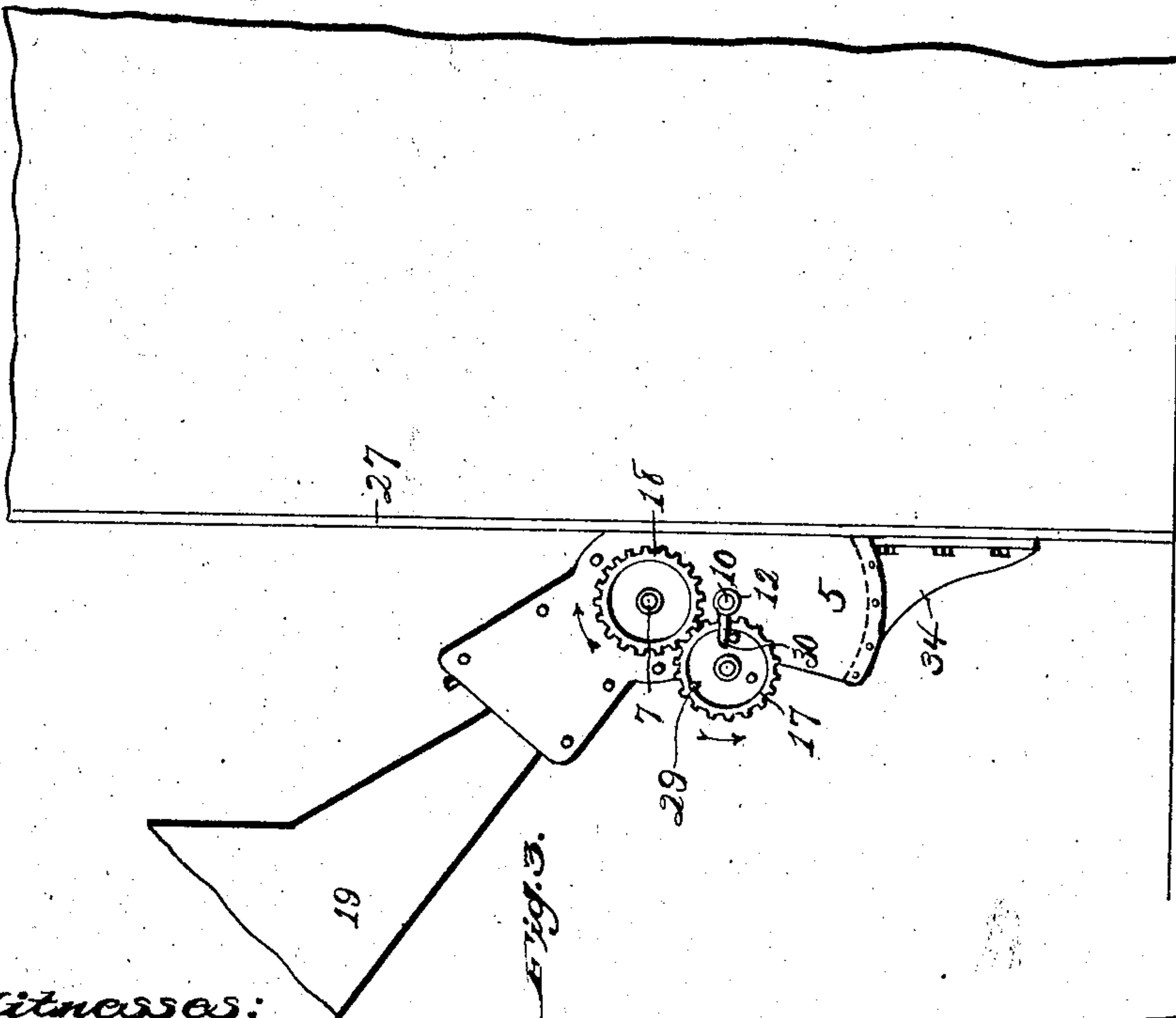
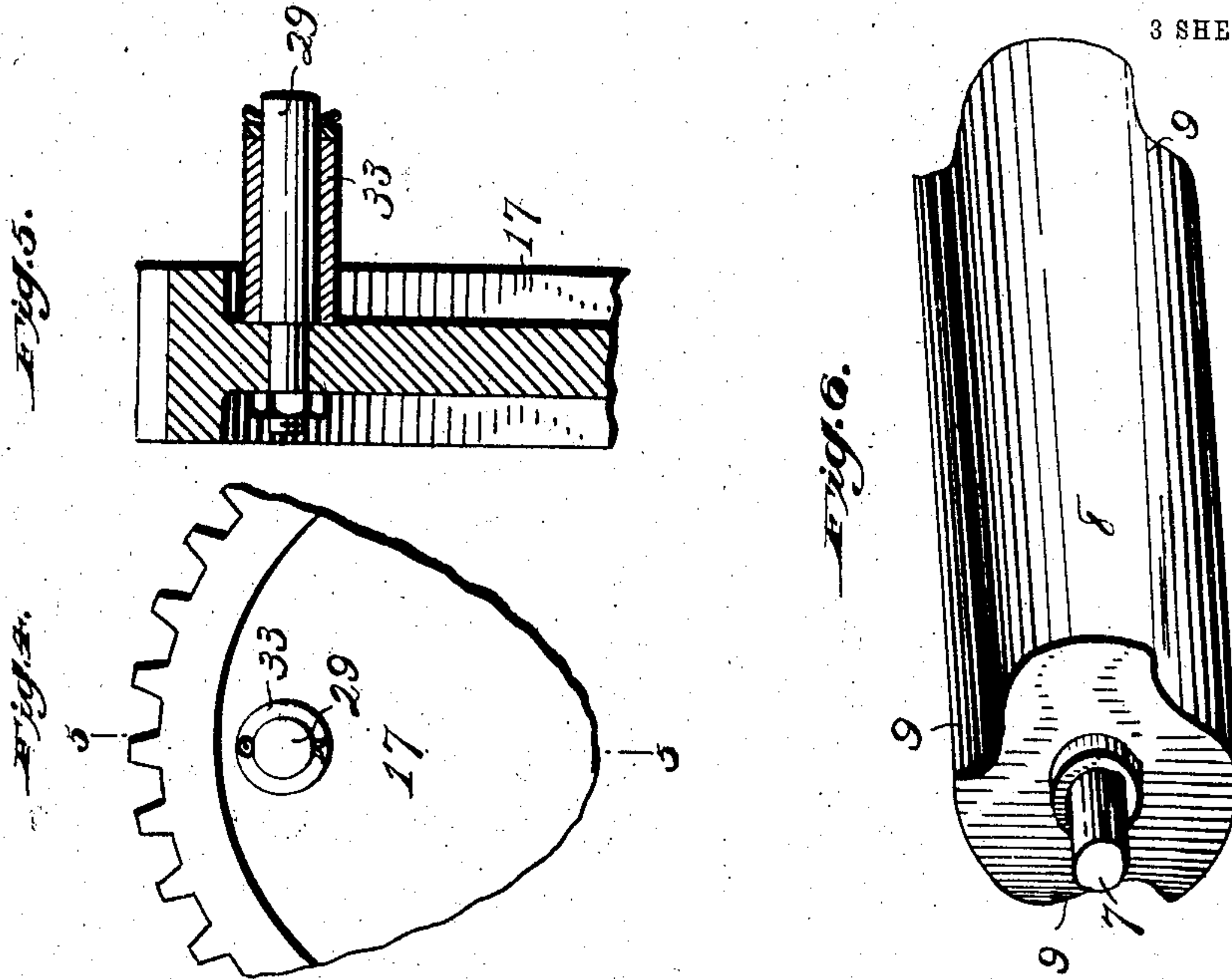
*A. J. Maskrey.*  
By *H. E. Dunlop,*  
*Att'y.*

No. 827,249.

PATENTED JULY 31, 1906.

A. J. MASKREY.  
STOKER FOR FURNACES.  
APPLICATION FILED JAN. 26, 1903.

3 SHEETS—SHEET 3.



Witnesses:

*P. P. Hoffman,*  
*William H. Bowler*

Inventor

*A. J. Maskrey.*

By *A. E. Ainslie,*

*att'y.*



# UNITED STATES PATENT OFFICE.

ARTHUR JAMES MASKREY, OF MARTINS FERRY, OHIO.

## STOKER FOR FURNACES.

No. 827,249.

Specification of Letters Patent.

Patented July 31, 1906.

Application filed January 26, 1903. Serial No. 140,833.

*To all whom it may concern:*

Be it known that I, ARTHUR JAMES MASKREY, a subject of the King of Great Britain; and a resident of Martins Ferry, county of Belmont, and State of Ohio, have invented certain new and useful Improvements in Stokers for Furnaces, of which the following is a specification:

My invention relates to new and useful improvements in stokers, and more particularly to a novel stoker for furnaces; and it consists in the particular construction, arrangement, and combination of parts, which will hereinafter be fully described.

The chief object of my invention is to provide a simple mechanical stoker for evenly distributing fuel over the grate-bars of a furnace.

A further object is to provide a device of the character mentioned which is extremely simple in its construction and which is little liable to get out of order.

A still further object of the invention is to provide a stoker for furnaces which will in no way interfere with the stoking of the furnace by hand in the ordinary manner when it is necessary to stop said stoker for any reason, since it is located in a position which is out of the way.

In describing my invention in detail reference is had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is a front elevation of my invention complete, it being shown in position. Fig. 2 is a cross-section of my invention and a furnace to which it is applied. Fig. 3 is an end elevation of the same. Fig. 4 is a broken portion of the studded wheel, showing in elevation a stud and the antifriction-roller provided thereon. Fig. 5 is a cross-section of the same, showing the antifriction-roller in longitudinal section; and Fig. 6 is a perspective view of a portion of the pocketed cylinder.

In the drawings like reference-numerals designate like parts throughout the several views.

Referring to said drawings, 1 indicates the front wall of a furnace, 2 indicates the grate-bars in said furnace on which the fuel is consumed, and 3 indicates the openings or doors through which the furnace is ordinarily fired, all of said parts being of the ordinary or usual construction. A short distance above the doors 3 I provide a longitudinal opening 4, substantially as shown, through the wall 1.

To the said front wall 1 at each end of said longitudinal opening 4 I secure a bracket 34, and to the upper edge of each of said brackets I bolt an irregularly-shaped plate 5.

Journalled in bosses 6, provided on the outer faces of said plates 5 at a suitable point above the longitudinal opening 4, is a shaft 7, on which is fixedly secured a cylinder 8, provided with one or more longitudinal pockets 9 in the face thereof. A second shaft 10 is journaled in a similar manner in bosses 11, provided on the outer faces of the plates 5, below the first-mentioned shaft 7, and about this shaft 10 is an incasing sleeve 12, having thereon between the plates 5 an integral longitudinal lug 13, to which is bolted or otherwise secured a longitudinal plate or "sweep" 14, the lower edge of which is slightly out of contact with a plate 15.

Provided on a boss 16 on the outer face of one of the plates 5 below and in the rear of the boss 6 is a gear-wheel 17, which intermeshes with a similar gear-wheel 18 on the shaft 7. The said plate 15 is secured over the base of the opening 4 and extends backward a distance from said opening and is supported at each end by the brackets 34, the rearwardly-extended portion of said plate being bent to form a cylindrical surface having the center of the shaft 10 as its axis.

19 indicates the coal-chute, the under side 20 of which is extended to the face of the cylinder 8, as shown, to form the under side of the hopper 21. Said under side 20 is thence extended, forming an extension 22, which passes about the rear face of said cylinder 8 and ends in front of the sleeve 12, the object of said extension 22 being to form a guard against the cold draft of air to the opening 4, which would be consequent were the space between said cylinder and said sleeve left open. Said under side 20 of the chute 19 and the extension 22 are supported by bolting the lugs 23 thereon to the plates 5.

24 indicates a plate supported by bolting the lugs 25 thereof to the plates 5, which forms the upper part of the hopper 21, said plate extending to the face of the cylinder, thence with an extension 26 about the top and front face of said cylinder to the wall 1 of the furnace, thus forming a guard for preventing any draft of cold air from entering between said cylinder and the said furnace-wall.

The iron plate 27 on the front of the furnace-wall 1 is curved outward at the top of the opening 4, forming a guide or chute 28,



adapted to throw the coal which is delivered between the points of the extensions 22 and 26 backward, so that it will fall upon the plate 15 close up against the sweep 14.

- 5 On one of the faces of the gear-wheel 17 is one or more studs 29, adapted to engage a normally horizontal arm 30, provided on the end of the sleeve 12. Fixed to the opposite end of said sleeve 12 is an arm 31, similar to  
10 the arm 30, to the end of which is attached one end of a spring 32, the other end of said spring being suitably secured and provided with an adjusting-nut 35. Said spring is so adjusted as to normally hold said arms in  
15 a horizontal position, and consequently the sweep 14 in a vertical position.

The studs 29 are preferably provided with antifriction-rollers 33, substantially as shown in Figs. 4 and 5.

- 20 As is obvious, the device may be divided across its center and suitable gear-wheels and a spring 32 provided on each end thereof, thus making two machines, one of which may be stopped, if desired, and the other permitted to continue. In this way one side of the  
25 furnace is always provided with an operating stoker.

- My invention operates substantially as follows: Assuming all the parts composing the  
30 invention to be properly assembled and secured in position, the shaft 7, which may be, if desired, extended across at the front of a series of furnaces, is coupled in any suitable manner with the motive power and is driven  
35 forward—that is, in the direction indicated by arrow in Figs. 2 and 3—carrying therewith the pocketed cylinder 8. The coal delivered to the chute 19 passes downward into the hopper 21 and falls upon said cylinder 8.  
40 As said cylinder turns forward, a quantity of coal is gathered in the pockets 9 and is carried forward until the point of the extension 26 is passed, when it will drop to the guide or chute 28, whereby it is caused to fall upon the  
45 plate 15 close up against the sweep 14. As said shaft 7 revolves, the gear-wheel 17, which intermeshes with the gear-wheel 18 on said shaft 7, is caused to turn in a rearwardly direction, as indicated by arrow in Figs. 2 and  
50 3, and as said wheel 17 revolves one of the studs 29 engages the arm 30, which is fixed on the sleeve 12, and raises said arm therewith, thus drawing the sweep back in substantially the position shown by the rear dotted lines in Fig. 2. Immediately upon the release of said arm 30, actuated by the spring  
55 32, attached to the arm 31, said sweep 14 is thrust forward to substantially the position indicated by the front dotted lines in said Fig. 2, sweeping the coal which lies on the plate 15 through the opening 4 upon the grate of the furnace. The sweep then drops back to its normal vertical position, ready for a repetition of the foregoing operation.

- 60 65 As will be seen by reference to Fig. 3 of the

drawings, the studs 29 are located at unequal distances from the center of the wheel. The object of this arrangement or construction is to vary the tension upon the spring 32 by raising the arm 30 to different heights, 70 and thus to actuate the sweep 14 to make thrusts or sweeps of varying force. In this way I am able to regulate the distribution of the coal over the grate, as it is quite obvious that the stud farthest from the center 75 of the wheel will raise the arm 30 highest, resulting in the greatest tension upon the spring, and consequently the sweep will be the greatest, throwing the coal to the farthestmost end of the grate. The next stud, being 80 located at a less distance from the center of the wheel, will cause the coal to be swept to the middle of the grate, and the stud located the nearest the center of the wheel will cause the shortest sweep, resulting in the coal being 85 swept only over the edge of the opening 4. Said studs are so positioned or arranged that in one revolution of the cylinder the grate will be evenly covered with coal, or, in other words, an evenly-distributed bed of fuel will 90 lie on the grate-bars.

From the foregoing description it will be seen that I provide an extremely simple device of the character described, said device being adapted to distribute fuel evenly over 95 the grate, and thus secure perfect combustion.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is— 100

1. In a stoker, the combination with a coal-chute and with a furnace having a feed-opening, of a suitably-mounted shaft, a cylinder provided with pockets therein supported in front of said feed-opening upon said 105 shaft, a gear-wheel on one end of said shaft, a second gear-wheel mounted to mesh with the first-mentioned gear-wheel, a second shaft mounted below said cylinder, a sleeve upon said second shaft, a sweep suspended from 110 said sleeve, an arm carried by said sleeve, a spring for normally holding said arm in a horizontal position, a second arm carried by said shaft, studs upon the second gear-wheel for successively engaging said second arm 115 and withdrawing said sweep against the tension of said spring, said studs being arranged to actuate the sweep to make alternate long, medium and short forward propelling thrusts, substantially as described. 120

2. In a stoker, the combination with a coal-chute and with the wall of a furnace, said wall provided with a feed-opening there-through, of supports mounted in front of 125 said opening, a cylinder provided with pockets therein mounted in said supports, a shaft journaled in said supports in front of the feed-opening, a sleeve upon said shaft, a sweep-plate secured to said sleeve, a plate suitably supported for receiving the coal 130



which is dropped from said cylinder in front of said sweep-plate, an arm carried by said sleeve, a gear-wheel mounted on one of said supports, an intermeshing gear-wheel on the cylinder-shaft by means of which the first-mentioned gear-wheel is driven, studs on the first-mentioned wheel, said studs located at unequal distances from the center of said wheel to successively engage said arm as said wheel revolves, a second arm carried by said sleeve, and means connected with said second arm adapted, when the first-mentioned arm is disengaged from said studs, to actuate said sweep-plate to sweep said coal forward through said feed-opening in alternate long, medium and short sweeps, substantially as described.

3. In a stoker for furnaces, the combination with a coal-chute and with the front wall of a furnace, said wall having a feed-opening therethrough, of suitable supports mounted upon said wall, a shaft journaled in said supports, a cylinder on said shaft, said cylinder having longitudinal pockets in the face thereof, a gear-wheel on one end of said shaft, a second similar gear-wheel suitably mounted for meshing with the first-mentioned gear-wheel, studs upon the second gear-wheel, said studs located at unequal distances from the center of said wheel, a second shaft suitably mounted below the cylinder, a sleeve about said second shaft, a sweep secured to said sleeve, two arms carried by said sleeve, one of said arms adapted to be engaged by the studs on the gear-wheel, a spring connected with the other of said arms, and a plate mounted in said feed-opening and upon said supports, all substantially as described and for the purposes set forth and described.

4. In a stoker, the combination with a coal-chute and with the front wall of a furnace, said wall provided with a feed-opening therethrough, of brackets mounted on said wall at each end of said feed-opening, a substantially horizontal plate mounted in said opening and upon said brackets, upright plates supported by said brackets, a shaft

journaled in said upright plates, a cylinder upon said shaft, said cylinder having pockets therein, a gear-wheel on the end of said shaft, a second gear-wheel suitably mounted for meshing with the gear-wheel on the shaft, studs on the second gear-wheel, a second shaft journaled in said upright plates, a sleeve upon said second shaft, a sweep-plate secured to said sleeve between said upright plates, the lower edge of said sweep-plate slightly out of contact with the plate which is mounted in the feed-opening and upon the brackets, an arm carried by said sleeve, an adjustable spring attached to said arm, a second arm carried by said sleeve, said second arm adapted to be engaged by the said studs on the second gear-wheel, extensions or plates adapted to prevent an indraft of cold air to the furnace, the shaft on which the cylinder is mounted adapted for connecting with suitable driving mechanism, all substantially as described.

5. In a stoker for distributing fuel on the grates of furnaces, the combination with a furnace having a fuel-opening, of a pocketed cylinder mounted in front of said opening, a coal-chute above said cylinder, a suitably-mounted gear-wheel, studs on said wheel at unequal distances from its center, means for revolving said wheel, a bed-plate, a shaft supported over said bed-plate, a sleeve on said shaft, a sweep carried by said sleeve, two arms carried by said sleeve, one of said arms being adapted to be contacted successively by said studs, and means connected with the other of said arms adapted, when the first-mentioned arm is disengaged from said studs, to actuate said sweep to brush fuel deposited on said bed-plate forward into the furnace in sweeps of varying force, substantially as described.

Signed by me at Wheeling, West Virginia, this 15th day of January, 1903.

ARTHUR JAMES MASKREY.

Witnesses:

H. E. DUNLAP,  
C. E. DUFF.