

(No Model.)

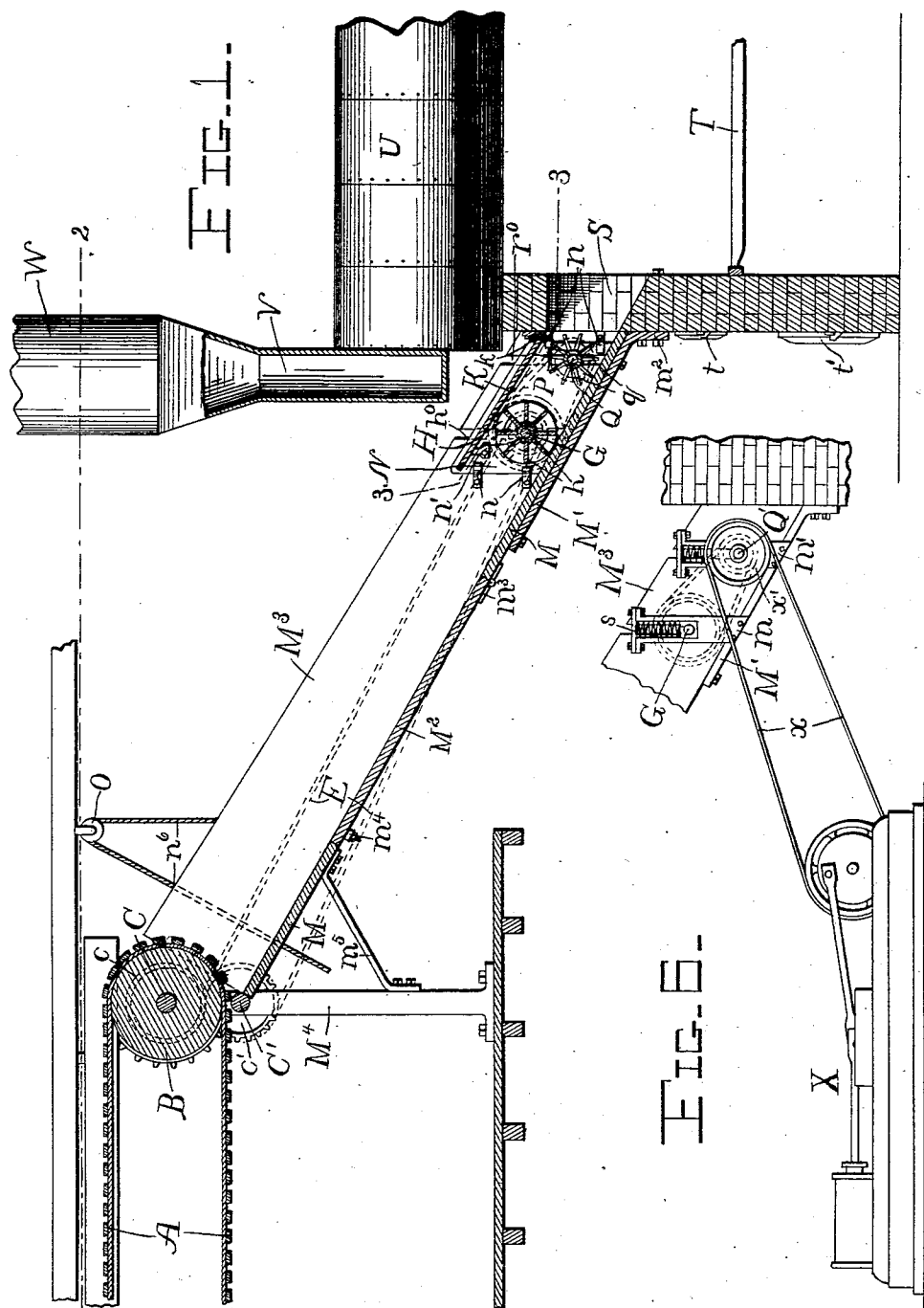
3 Sheets—Sheet 1.

J. FISHER.

APPARATUS FOR FEEDING BAGASSE FURNACES.

No. 564,918.

Patented July 28, 1896.



Witnesses

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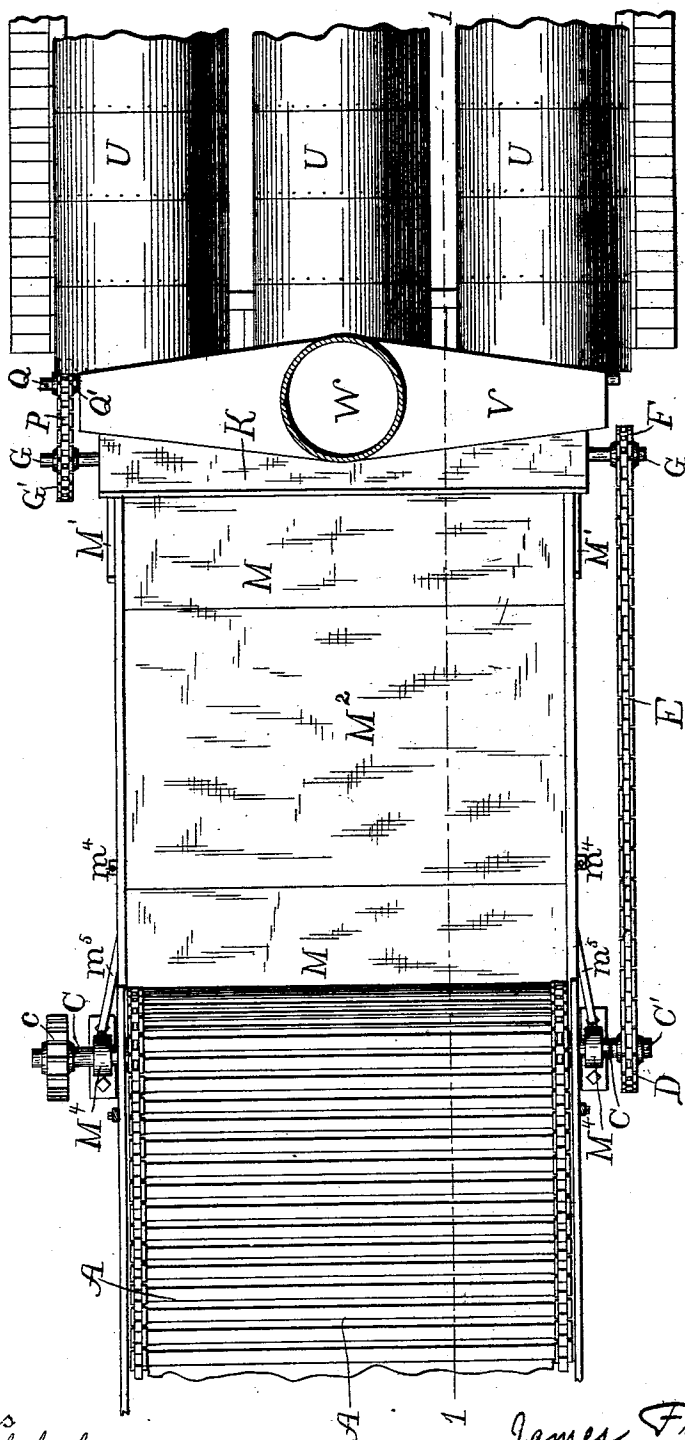
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FIG. 2.



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FIG. 3.

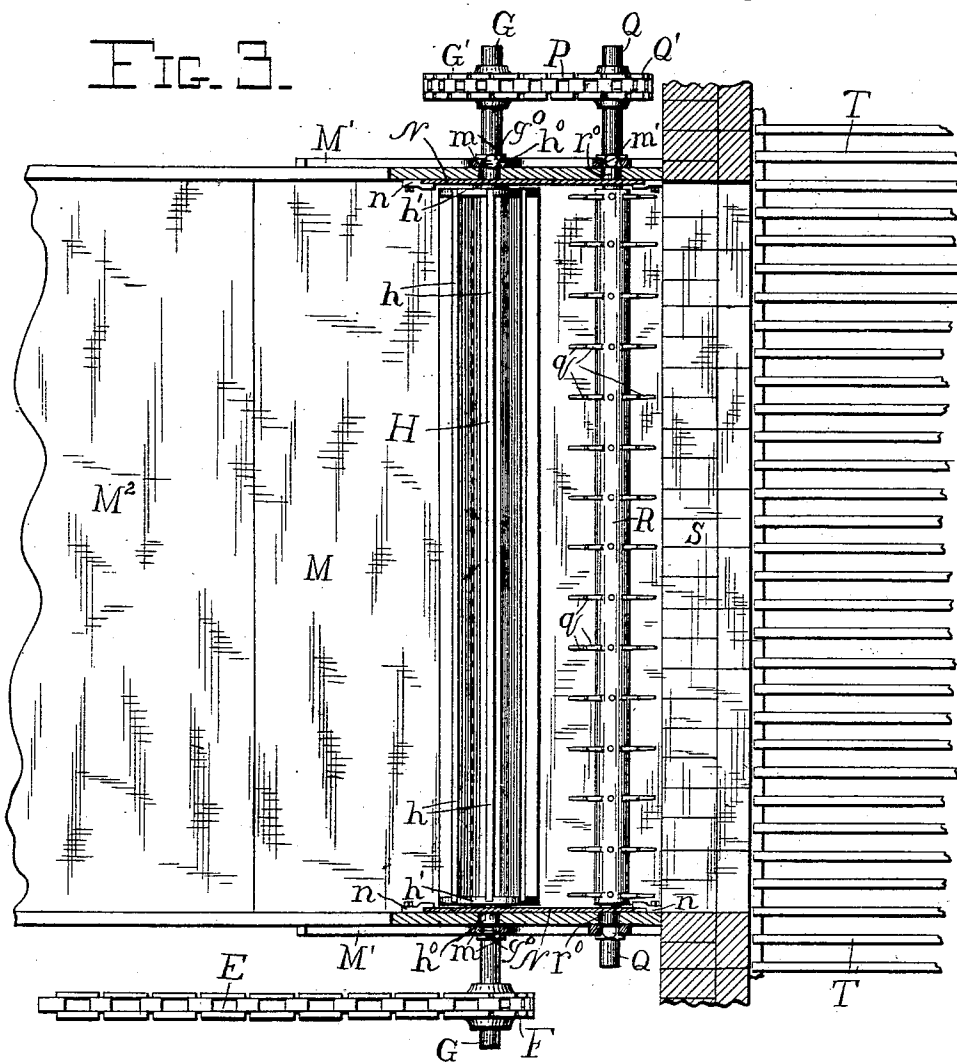


FIG. 5.

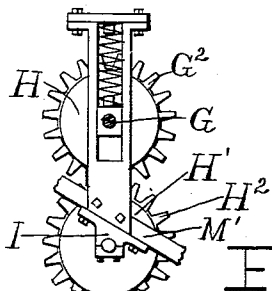
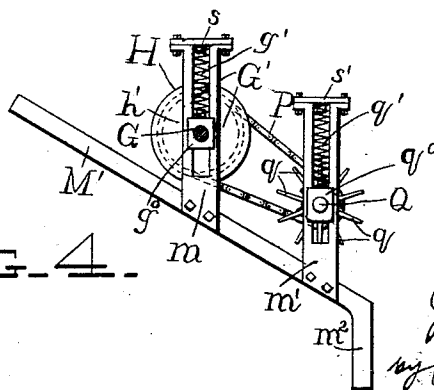


FIG. 4.



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UNITED STATES PATENT OFFICE.

JAMES FISHER, OF NEW ORLEANS, LOUISIANA.

APPARATUS FOR FEEDING BAGASSE-FURNACES.

SPECIFICATION forming part of Letters Patent No. 564,918, dated July 28, 1896.

Application filed May 22, 1896. Serial No. 592,624. (No model.)

To all whom it may concern:

Be it known that I, JAMES FISHER, a citizen of the United States, residing at New Orleans, in the parish of Orleans and State of Louisiana, have invented certain new and useful Improvements in Apparatus for Feeding Bagasse-Furnaces; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to improvements in apparatus for feeding bagasse to furnaces, and has for its object to provide an improved means for feeding the bagasse to a furnace whereby sparks are prevented from escaping from the mouth of the furnace, and the bagasse is more equally distributed over the grate-bars of the furnace than is possible with the devices now most commonly in use.

My invention consists in certain novel features and arrangement of parts hereinafter described and claimed.

Reference is had to the accompanying drawings, in which the same parts are indicated by the same letters throughout the several views.

Figure 1 represents a vertical sectional view through my feeding apparatus, taken on the line 1 1 of Fig. 2. Fig. 2 is a horizontal sectional view taken on the line 2 2 of Fig. 1 and shows the feeding apparatus in plan view. Fig. 3 is an enlarged detail sectional view taken on the line 3 3 of Fig. 1, parts being broken away. Fig. 4 is a side view of one of the brackets for supporting the discharging-rollers and looking toward the top of the sheet in Fig. 3. Fig. 5 is a similar view to Fig. 4, showing a modification in which a lower roller is used in connection with the bladed roller; and Fig. 6 is a partial side elevation showing the feeding-rollers as driven from a blast-engine instead of from the carrier.

A represents an endless carrier connected either directly or indirectly with the mill and driven by any suitable source of power. This carrier runs over the drum B, mounted rigidly upon a shaft C, journaled in suitable supports M⁴. A gear-wheel c on this shaft C meshes with a gear-wheel c' on the shaft C', also journaled in the supports M⁴, and drives

the said shaft C', which latter carries a sprocket-wheel D for driving a chain E for rotating the feeding-rollers, as hereinafter more fully described.

M represents an inclined chute, upon which the bagasse is discharged from the endless belt A. This chute is supported at its upper end by means of brackets m⁵, secured to supports M⁴, or in any suitable way, and at its lower end by means of brackets M', which are secured, as at m², to the front wall of the furnace, as shown in Fig. 1. This chute has side pieces M³ and a hinged portion M² in its bottom. This hinged portion M² may be raised or lowered upon its hinges m³ by means of ropes m⁶, secured at one end, as at m⁴, to the hinged portion M² of the bottom of the chute and reeving over elevated pulleys O. The reason for having this middle portion of the chute hinged, as shown, is to allow it to be lowered in order to permit access to the front of the boiler for cleaning out the flues when desired, or for dumping the bagasse into carts if the furnace is stopped for any reason.

S represents the furnace-opening through which the bagasse is fed. There may be one opening for each furnace, if preferred, or there may be one continuous opening for all, as shown.

T represents the grate-bars of the furnace, and t represents one or more doors through which the mass of fuel upon the grate T may be stirred.

t' represents one or more ash-doors which allow access beneath the furnace-grate.

U represent boilers which communicate with the common smoke-box V, surmounted with smoke-stack W. These boilers may be of any well-known or desired form, and that shown is simply for the sake of illustration.

The brackets M', one being upon each side of the lower end of the chute M, have each a pair of vertical bifurcated standards m and m' bolted thereto, and journal-blocks g⁰ and q⁰ are adapted to fit into these bifurcated standards m and m', respectively, at either side of the chute, as shown most clearly in Figs. 3 and 4. A shaft G is journaled in the blocks g⁰ in the upper one m of the bifurcated standards, and works in slots h⁰ in the sides M³, and a roller H, having radial ribs or blades h and circular end disks h', is mounted

upon this shaft G. A sprocket-wheel F is mounted upon one end of the shaft G, and the sprocket-chain E, driven by the sprocket-wheel D on the shaft C', passes over said sprocket-wheel F and drives the roller H. A shaft Q is journaled in the blocks q^0 in the lower one m' of the said bifurcated standards, and a roller R, having radially-extending teeth q thereon, is mounted upon said shaft and rotates therewith. The shaft Q works in slots r^0 in the side pieces M^3 in like manner as the shaft G in the slots h^0 . A sprocket-wheel Q' is provided upon one end of said shaft Q, and a sprocket-chain P, passing over this sprocket-wheel, is driven by the sprocket-wheel G' on the shaft G, and rotates the roller R in the same direction with the roller H. Coil-springs g' and q' are held between the bifurcations of the standards m and m' in position to bear upon the journal-blocks g^0 and q^0 by means of plates s and s' . These springs are for the purpose of holding the rollers down against the tendency they would have to rise when a large bulk of bagasse passes beneath them.

The bagasse after being discharged upon the chute M slides down to the bladed roller H, which is constantly revolving, and which feeds the bagasse along to the toothed roller R. This toothed roller should be geared so as to be driven somewhat faster than the bladed roller, and tears the mass of bagasse passing beneath it to pieces, and throws it off into the furnace, distributing the same evenly over the furnace-grate.

Where the furnace is to be fed through more than one opening, or where several furnaces are used with a separate opening for each furnace, partitions may be formed on the chute and the rollers may be divided into sections, and intermediate brackets and bearings be provided. The sides M^3 of the chute extend up above these rollers, so that the bagasse cannot fall over therefrom, and plates N, held in position by means of guides n , secured to the sides M^3 and slotted to fit over the shaft of the rollers H and R, are arranged to rest upon the shafts G and Q and rise and fall therewith in order to close the slots in the sides M^3 above the said shafts.

A door K, preferably of metal, is hinged, as at k , above the opening to the furnace and projects forward and upward therefrom and rests upon lugs n' , projecting inwardly from the sliding plates N. This door just fits in between the sides of the chute, and thus, being practically air-tight, prevents the escape of any sparks which might otherwise fly out from the mouth of the furnace. As the roller H rises and falls, the door K will swing up or down upon its hinges, its forward end at all times resting upon the lugs n' on the plates N immediately above the blades of the said roller.

If desired, I may use another roller H', journaled in suitable bearings I, secured to the brackets M' , immediately beneath the roller

H, and driven from said roller H by means of gears G^2 and H^2 on the shafts of the said rollers H and H', respectively, as shown in Fig. 5. In this case the upper surface of the roller H' would rotate through a transverse slot in the floor of the chute M. I also may drive the feeding-rollers from a blast-engine, as shown in Fig. 6, wherein a belt x from the engine X drives a pulley x' on the shaft Q of the toothed roller, which in turn drives the bladed roller H.

It will be seen that many modifications of my apparatus might be made which could be used without departing from the spirit of my invention.

Having thus described my invention, what I claim, and desire to secure by Letters Patent of the United States, is—

1. In an apparatus of the character described, the combination with a furnace having an opening in the front thereof for the admission of fuel above the grate, of an inclined chute adapted to receive the bagasse at its upper end from an elevated carrier and supported at said end in an elevated position by means of brackets, brackets secured to the front of the furnace and supporting the lower end of said chute, a roller having radial blades mounted across the said chute near its lower end in bearings in said brackets, and means for driving said bladed roller, and a roller having radial teeth also mounted across said chute at its lower end in bearings in said brackets, and gearing between said rollers for driving them in the same direction, substantially as described.

2. In an apparatus of the character described, the combination with a furnace having an opening in the front thereof for the admission of fuel, of an inclined chute adapted to receive the bagasse at its upper end from an elevated carrier and supported at said end in an elevated position, brackets secured to the front of the furnace and supporting the lower end of said chute, a roller having radial blades mounted across said chute near its lower end in bearings in said brackets, and means for driving said bladed roller, a second roller having radial teeth also mounted across said chute at its lower end in bearings in said brackets, gearing between said rollers for driving them in the same direction, and a door pivoted to the front of the furnace and adapted to extend over said rollers, substantially as described.

3. In an apparatus of the character described, the combination with a furnace having an opening in the front thereof for the admission of fuel, of an elevated chute adapted to receive the bagasse at its upper end from an elevated carrier and supported at said end in an elevated position, brackets secured to the front of the furnace and supporting the lower end of said chute; a roller having radial blades thereon mounted across the said chute near its lower end in bearings mounted in said brackets and capable of vertical move-

ment therein; means for driving said bladed roller; a second roller having radial teeth also mounted across said chute, at its lower end in vertically-movable bearings in said brackets; gearing between said rollers for driving them in the same direction; and a pivoted door secured to the front of the furnace above the fire-opening and extending over said rollers, substantially as described.

4. In an apparatus of the character described, the combination with a furnace having an opening in the front thereof for the admission of fuel above the grate, of an inclined chute adapted to receive the bagasse at its upper end from an elevated carrier and supported at said end in an elevated position; brackets secured to the front wall of the furnace and supporting the lower end of said chute; a portion of the floor of said chute being hinged and adapted to swing downward; ropes reeving over elevated pulleys and attached to said hinged portion for raising and lowering the same; a bladed roller mounted across the said chute near its lower end in bearings vertically movable in said brackets, and means for driving said bladed roller; a roller having radial teeth also mounted across said chute at its lower end in bearings vertically movable in said brackets; and gearing between said rollers for driving them in the same direction, substantially as described.

5. In an apparatus of the character described, the combination with a furnace having an opening in the front wall thereof for the admission of fuel; of an inclined chute adapted to receive the bagasse at its upper end from an elevated carrier, and supported at said end in an elevated position; brackets secured to the front of the furnace and supporting the lower end of said chute; the middle portion of the floor of said chute being hinged and adapted to swing downward; ropes reeving over elevated pulleys and attached to said hinged portion for raising and lowering the same; a bladed roller mounted across the said chute near its lower end in bearings vertically movable in said brackets, and means for driving said bladed roller; a toothed roller also mounted across said chute at its lower end in bearings vertically movable in said brackets; gearing between said rollers for driving them in the same direction; and a door pivoted to the front of the furnace above the fuel-opening and extending over said rollers and adapted to rise and fall with said bladed roller, substantially as described.

6. In an apparatus of the character described, the combination with a furnace having an opening in the front thereof for the admission of fuel, of an elevated chute adapted to receive the bagasse at its upper end from an elevated carrier and supported at said end in an elevated position; brackets secured to the front of the furnace and supporting the lower end of said chute; the middle portion of the floor of said chute being hinged and adapted to swing downward; ropes reeving

over elevated pulleys and attached to said hinged portion for raising and lowering the same; a bladed roller mounted across the said chute near its lower end in bearings vertically movable in said brackets; means for driving said bladed roller; a toothed roller also mounted across said chute at its lower end in bearings vertically movable in said brackets; gearing between said rollers for driving them in the same direction; and a door pivoted to the front of the furnace above the fuel-opening and extending over said rollers and adapted to rise and fall with said bladed roller, substantially as described.

7. In an apparatus of the character described, the combination with a furnace having an opening in its front wall above the fire-grate, and an elevated carrier driven from any suitable source of power and running over an elevated drum, and a sprocket-gear mounted upon the shaft of said drum; of an inclined chute having its upper end supported beneath said drum; brackets secured to the front wall of the furnace and supporting the lower end of said chute in front of the fuel-opening therein; a bladed roller mounted across said chute near its lower end in vertically-movable bearings in said brackets, and having a sprocket-gear on the shaft thereof; a sprocket-chain passing over said sprocket-wheel and over the sprocket-wheel on the shaft of said drum and driven by the latter sprocket-wheel; a toothed roller also mounted across said chute, immediately in front of the furnace-opening in bearings vertically movable in said brackets; gearing between said rollers whereby the two are driven in the same direction; and a door pivoted to the front of the furnace above the fuel-opening and adapted to extend over said rollers and rise and fall with said bladed roller, substantially as described.

8. In an apparatus of the character described, the combination with a furnace having an opening in its front wall above the fire-grate, and an elevated carrier driven from any suitable source of power and running over an elevated drum, and a sprocket-gear mounted upon the shaft of said drum; of an inclined chute having its upper end supported beneath said drum; brackets secured to the front wall of the furnace and supporting the lower end of said chute in front of the fuel-opening therein; the middle portion of the floor of said chute being hinged and adapted to swing downward; ropes reeving over elevated pulleys and attached to said hinged portion for raising and lowering the same; a bladed roller mounted across said chute near its lower end in vertically-movable bearings in said brackets, and having a sprocket-gear on the shaft thereof; a sprocket-chain passing over said sprocket-gear and over the sprocket-gear on the shaft of said drum, and driven by the latter; a toothed roller also mounted across said chute, immediately in front of the furnace-opening in bearings ver-

tically movable in said brackets; gearing between said rollers whereby the two are driven in the same direction; and a door pivoted to the front of the furnace above the fuel-opening and adapted to extend over said rollers and normally rest upon said bladed roller, substantially as described.

9. In an apparatus of the character described, the combination with a furnace, having an opening in its front wall above the fire-grate, and a carrier driven by any suitable source of power and running over an elevated drum, and a sprocket-gear mounted upon the shaft of said drum; of an inclined chute having its upper end supported beneath said drum; brackets secured to the front wall of the furnace and supporting the lower end of said chute in front of the fuel-opening therein; vertical bifurcated standards on said brackets; vertically-movable journal-blocks mounted in said bifurcated standards; a bladed roller mounted across said chute near its lower end in one pair of said journal-blocks, and having a sprocket-gear on the shaft thereof; a sprocket-chain meshing with said sprocket-gear and the sprocket-gear on the shaft of said drum and driven by the latter; a toothed roller also mounted across said chute immediately in front of the furnace-opening in another pair of said journal-blocks; gearing between said rollers whereby the two are driven in the same direction; and a metallic door pivoted to the front of the furnace above the fuel-opening, and extending over both of said rollers and adapted to rise and fall with said bladed roller, substantially as described.

10. In an apparatus of the character described, the combination with a furnace, having an opening in its front wall above the fire-grate, and an elevated carrier driven from any suitable source of power running over an elevated drum, and a sprocket-gear mounted upon the shaft of said drum; of an inclined chute having its upper end supported beneath said drum; brackets secured to the front wall of the furnace and supporting the lower end of said chute in front of the fuel-opening therein; the middle portion of the said chute being hinged and adapted to swing downward; means for raising and lowering said hinged portion; brackets secured to the front wall of the furnace and supporting the lower end of said chute in front of the fuel-opening therein; vertical bifurcated standards on said brackets; vertically-movable journal-blocks mounted in said bifurcated standards; a bladed roller mounted across said chute near its lower end in one pair of said journal-blocks, and having a sprocket-gear on the

shaft thereof; a sprocket-chain meshing with said sprocket-gear and the sprocket-gear on the shaft of said drum and driven by the latter; a toothed roller also mounted across said chute immediately in front of the furnace-opening in another pair of said journal-blocks; gearing between said rollers whereby the two are driven in the same direction; and a metallic door pivoted to the front of the furnace above the fuel-opening, extending entirely across said chute between the sides thereof above said rollers, and adapted to rise and fall with said bladed roller, substantially as described.

11. In an apparatus for feeding bagasse to furnaces, the combination with an inclined chute provided with raised sides and supported at its lower end by brackets secured to the wall of the furnace; a toothed roller mounted in vertically-movable bearings across the lower end of said chute; a bladed roller for feeding the bagasse to the said toothed roller also mounted in vertically-movable bearings across the lower end of said chute; means for driving said rollers; a metallic door hinged to the front of the furnace above the fire-door and between the sides of said chute and extending over said rollers, and supports for the outer end of said hinged door, adapted to rise and fall with said bladed roller, substantially as described.

12. In an apparatus for feeding bagasse to furnaces, the combination with an inclined chute provided with raised sides and supported at its lower end by brackets secured to the wall of the furnace; a toothed roller mounted in vertically-movable bearings across the lower end of said chute, and adapted to throw the bagasse off therefrom over the grate-bars of the furnace; a bladed roller also mounted in vertical movable bearings across the lower end of said chute; means for driving said rollers; slotted plates mounted in guides upon the sides of said chute and belting over the shafts of said rollers, and adapted to rise and fall therewith; lugs extending inwardly from said plates; and a metallic door hinged to the front wall of the furnace above the fire-door thereof, fitting between the sides of said chute and extending over said rollers and resting at its outer end upon said lugs, substantially as described.

In testimony whereof I affix my signature in presence of two witnesses.

JAMES FISHER.

Witnesses:

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JOHN J. SAUCIER.