

(No Model.)

C. H. PALMER.
PULVERIZED FUEL FEEDER.

No. 251,131.

Patented Dec. 20, 1881.

Fig. 1.

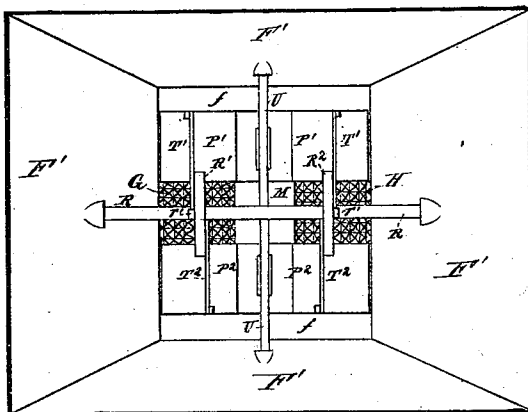


Fig. 2.

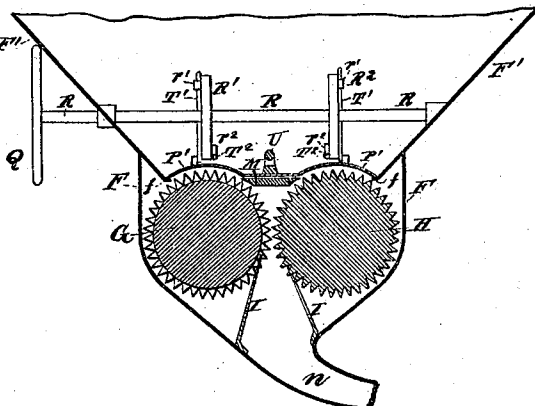
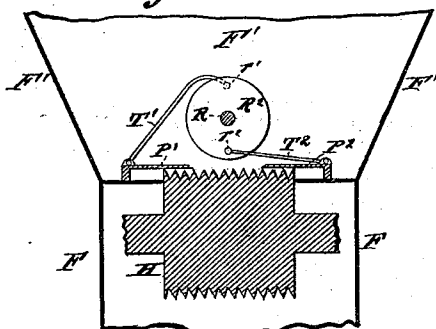


Fig. 3.



WITNESSES

Charles F. Searle.
Hattie K. Ackel.

INVENTOR

Charles H. Palmer
by his attorney
Thomas S. Stetson

UNITED STATES PATENT OFFICE.

CHARLES H. PALMER, OF NEW YORK, N. Y., ASSIGNOR TO ABRAM M. LORYEA, OF SAN FRANCISCO, CALIFORNIA; SAID LORYEA ASSIGNOR OF ONE-FOURTH TO BERNARD LANDE, OF NEW YORK, N. Y.

PULVERIZED-FUEL FEEDER.

SPECIFICATION forming part of Letters Patent No. 251,131, dated December 20, 1881.

Application filed April 19, 1881. (No model.)

To all whom it may concern:

Be it known, that I, CHARLES H. PALMER, a citizen of the United States, residing in New York city, in the county and State of New York, have invented certain new and useful Improvements Relating to Fuel Feeders and Furnaces, of which the following is a specification.

The invention pertains to that class of feeders adapted for working finely broken or pulverized fuel by means of rollers, as set forth in a patent to me dated April 19, 1881, No. 240,265. I have devised further improvements, by which much of the strain on the parts is avoided, the action is made uniform and regular, and means are provided for efficient regulation of the quantity of fuel supplied, allowing a great range of variation.

The accompanying drawings form a part of this specification, and represent what I consider the best means of carrying out the invention.

Figure 1 represents a view looking from the top of the hopper; Fig. 2, a sectional elevation, and Fig. 3 a longitudinal view, of the toothed rollers in section, showing the scrapers.

Similar letters of reference indicate like parts in all the figures.

F is a fixed casing or frame-work; F', the sides of the hopper, and f an offset on the interior.

G and H are rollers, which may be connected by gear-wheels (not shown) and turned slowly by any suitable mechanism in the direction to draw down between them the fuel supplied by the hopper.

I I are scrapers, which scrape out any of the fine fuel which may have stuck in the circumferential grooves of the rollers.

M is a fixed bridge or stout cross-bar, extending longitudinally of the rollers over the space between them. Its edges are nicely shaped to fit closely to the rollers. The effect is to prevent the fine fuel which is in the hopper from descending bodily and becoming jammed in the space between the rollers, and to allow the rollers to bring down past it only so much fine fuel as will be contained in the grooves or other irregularities provided in the

rollers. The edges of the bridge M keep back any surplus of fine material in the same manner as "striking" removes the surplus grain from the top of a vessel in the act of measuring.

The device, so far as yet described, has no means of varying the quantity of fuel supplied, but supplies uniformly what is required to fill the irregularities in each roller. As the rollers turn, the grooves or irregularities convey the fine material down past the bridge, and the further motion of the rollers discharges the material down into the passage n, from whence it is blown or otherwise properly conveyed to the furnace. (Not represented.) I regulate the quantity by means of slides applied above, and which are moved longitudinally of the rollers.

P' P² are the slides, shown as formed of cast-iron or other suitable material adapted to fit closely to the rollers. These slides rest on the bridge M and on the ledge or offset f. Their motion is apart and together. When moved inward to their fullest extent they are in actual contact and forbid the descent of any fuel. They may be moved apart until they expose nearly or quite the whole length of the rollers to receive fuel and deliver it below.

Two wheels, R' R², are mounted on a single shaft, R, extending across the hopper and supported in fixed bearings. Each wheel has two pins, r' r². From each upper pin, r', a link, T', extends to the slide P', to which it is connected by a loose rivet or other flexible connection. From each lower pin, r², a link, T², is correspondingly connected to the slide P². A hand-wheel, Q, on the shaft R allows it to be adjusted at any time from the outside. U is a bar parallel to the axis of the rollers. It stands over the slides P' P² and prevents their being lifted by any strain applied through the links T' T².

The action will be readily understood. The slides P' P², being set a proper distance apart, allow the fuel to descend between them and fill the recesses in the rollers which are presented to that space. The other rollers, which are covered by the slides P' P², remain unfilled and idle. The bridge M strikes off the surplus and allows the properly-filled recesses in the

rollers to measure off their proper quantities and deliver them into the passage *n* below. When the attendant watching the working of the fire wants to give more fuel or less he turns the hand-wheel Q in one direction or the other, so as to move the slides P' P² apart to give more fuel and together to give less.

It will be observed that the arrangement is such that the rollers receive the fuel during the same portion of a revolution under all conditions, so that there is ample opportunity for the cavities which are presented to become uniformly and completely filled. A change in the position of the slides simply exposes a greater or less length of the rollers to receive the fuel.

Modifications may be made in the forms and proportions of the details. Instead of extending the shaft R across the hopper it may extend in the same direction over the ends of the rollers. In such case the links T' T² both extend away in the same direction, the lower links, T², being short and connecting to the immediately adjacent slide P', while the other links, T', extend farther and connect to the farthest slide P². The bridge M and the offsets *f* may be arranged higher, and the slides P' P² may be flat or plane. The edges of the bridge M may be chamfered or beveled from the top. It is important to find and maintain such form as shall properly remove the surplus

coal-dust or other fine fuel without dragging out the same from the proper cavities in the rollers or too greatly compacting the material in those cavities.

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I claim as my invention—

1. In a fuel-feeding apparatus, the hopper F' and pair of recessed rollers G H, in combination therewith and with the longitudinal bridge M, arranged over the space between them to strike off the surplus and allow only the proper quantity to pass and be delivered to the furnace, as herein specified.

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2. The slides P' P², capable of movement longitudinally of the rolls G H, in combination with said rolls and with the bridge M and hopper F', all arranged for joint operation, as herein specified.

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3. The hand-wheel Q, shaft R, wheels R' R², slides P' P², and proper connections T' T², in combination with each other and with the recessed rollers G H, bridge M, and hopper F', having a shelf or offset, *f*, as herein specified.

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In testimony whereof I have hereunto set my hand at New York city, New York, this 9th day of April, 1881, in the presence of two subscribing witnesses.

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CHARLES H. PALMER.

Witnesses:

THOMAS D. STETSON,
CHARLES C. STETSON.