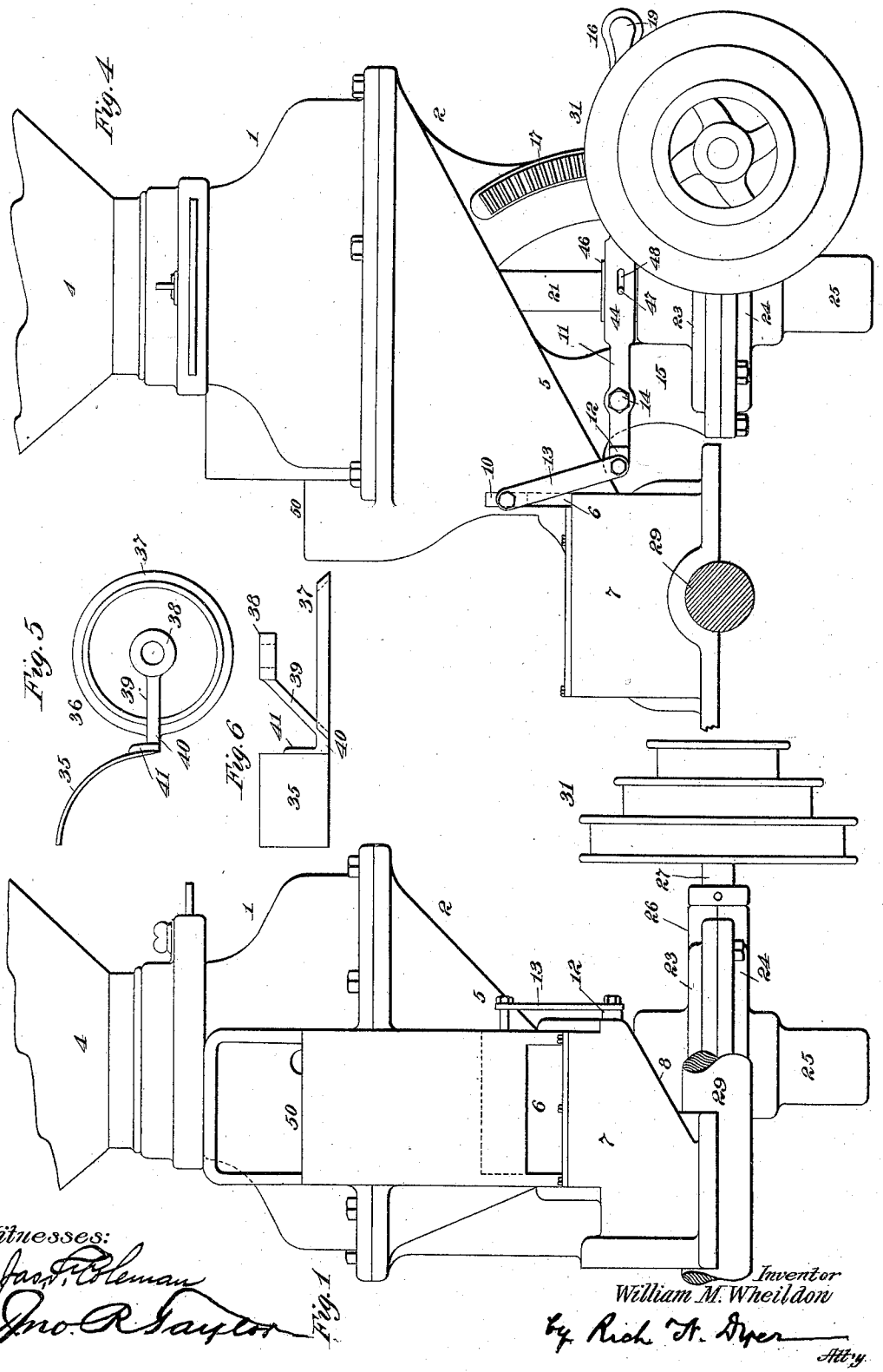
No. 635,112. Patented Oct. 17, 1899.

W. M. WHEILDON.

FEEDING DEVICE FOR PULVERIZERS.

(Application filed Dec. 9, 1898.)

(No Model.) 3 Sheets—Sheet 1.



Witnesses:
Jas. F. Coleman
Jno. R. Taylor

Inventor
William M. Wheildon
by Richd. H. Dyer
Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 635,112. Patented Oct. 17, 1899.

W. M. WHEILDON.

FEEDING DEVICE FOR PULVERIZERS.

(Application filed Dec. 9, 1898.)

(No Model.) 3 Sheets—Sheet 2.

Fig. 2

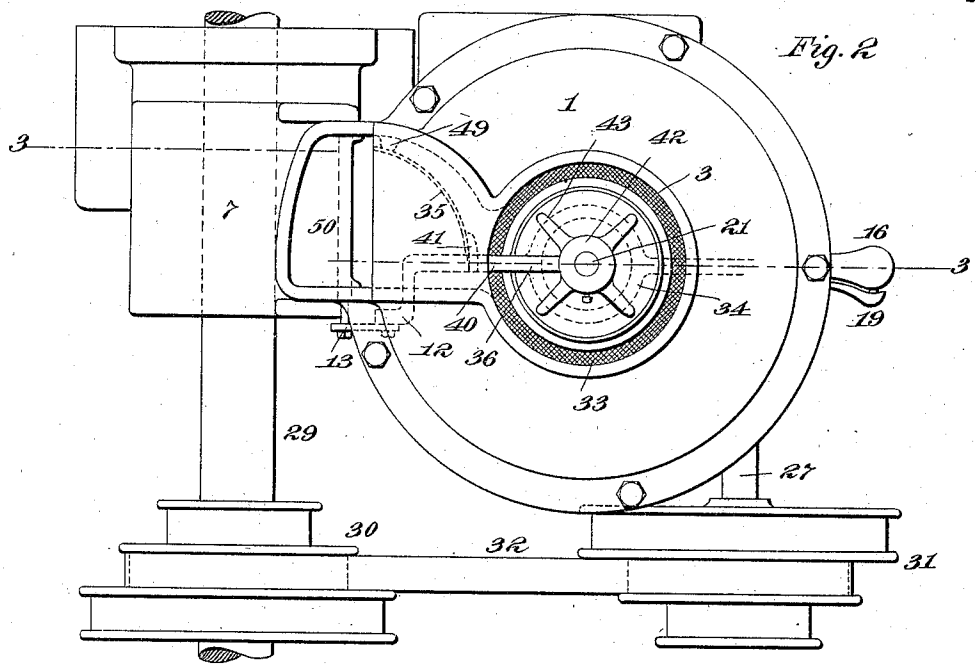
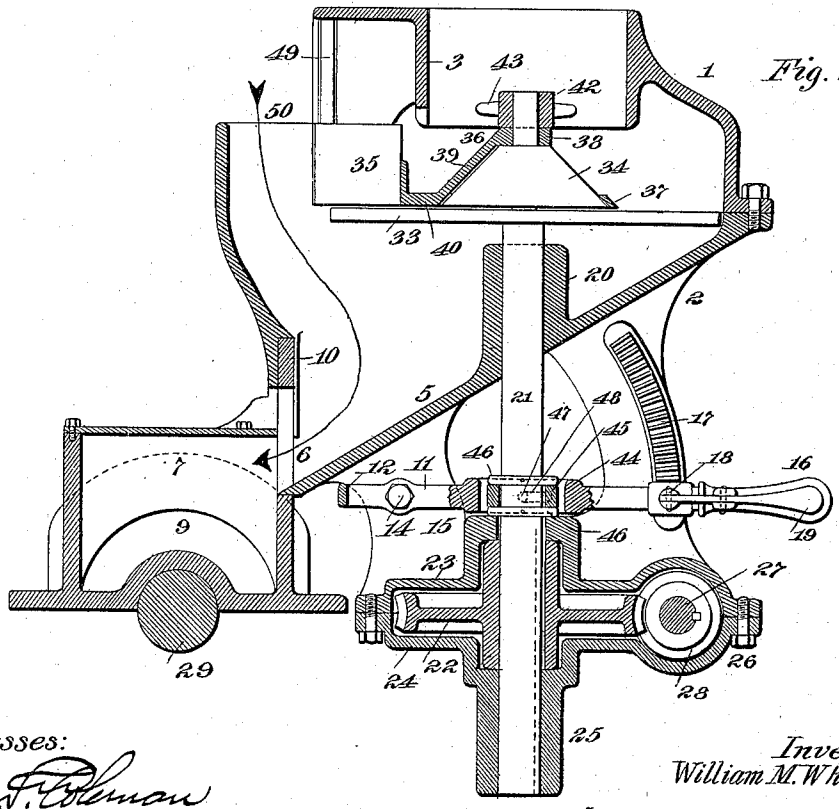


Fig. 3



Witnesses:
Jas. F. Coleman
Jno. R. Taylor

Inventor
William M. Wheildon
by Richd. N. Dyer
Atty.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No. 635,112. Patented Oct. 17, 1899.

W. M. WHEILDON.

FEEDING DEVICE FOR PULVERIZERS.

(Application filed Dec. 9, 1898.)

(No Model.) 3 Sheets—Sheet 3.

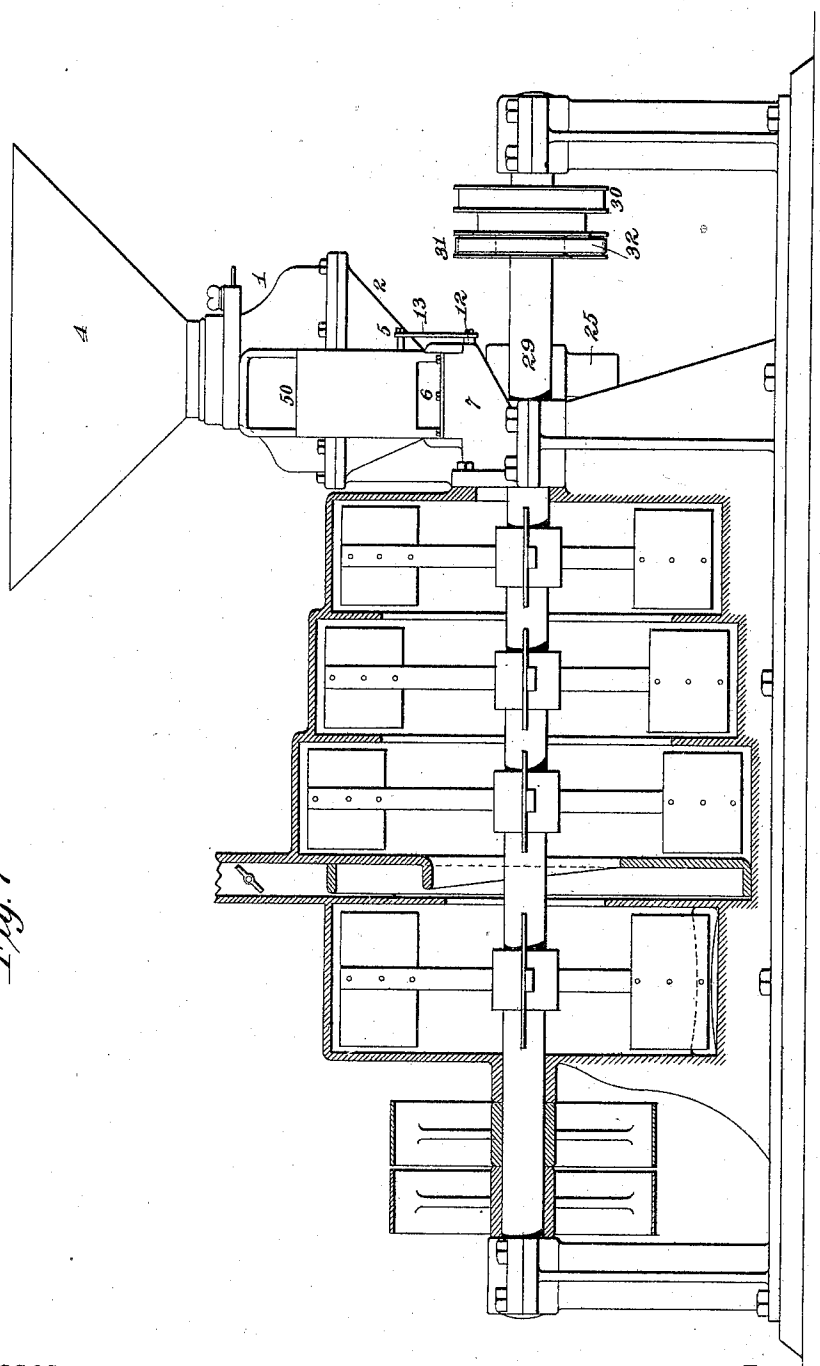


Fig. 1.

Witnesses:
Jas. F. Coleman
Archibald G. Rice

Inventor
William Maxwell Wheildon
by Richd. N. Dyer
Att'ys.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

UNITED STATES PATENT OFFICE.

WILLIAM MAXWELL WHEILDON, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO THE AERO-PULVERIZER COMPANY, OF JERSEY CITY, NEW JERSEY.

FEEDING DEVICE FOR PULVERIZERS.

SPECIFICATION forming part of Letters Patent No. 635,112, dated October 17, 1899.

Application filed December 9, 1898. Serial No. 698,716. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM MAXWELL WHEILDON, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented a certain new and useful Improvement in Feeding Devices for Pulverizers or Similar Apparatus, (Case B,) of which the following is a specification.

My invention relates to various new and useful improvements in feeding devices for pulverizers and similar apparatus. My improved feeding device is especially adapted for use in pulverizing apparatus by which coal or coke may be pulverized or reduced to an impalpable powder and then forced with the proper amount of air as to result in combustion to the place of use—as, for example, the fire-box of a boiler. With such pulverizing apparatus it is highly essential that the supply of pulverized material and air should be maintained approximately constant in order that the heating effect of the flame produced may remain uniform, and obviously it is also essential that means should be provided for the regulation of the supply of pulverized material and air in order that the heating effect may be varied.

The object of my present feeding device is to provide mechanism simple in construction and effective in operation and wherein these desirable advantages are secured.

My improved feeding device is not limited for use with pulverizing apparatus intended for the reduction to an impalpable powder of a combustible material, since it may be effectively applied for use in connection with other forms of pulverizing apparatus intended for the reduction of non-combustible material.

In order that my invention may be better understood, attention is directed to the accompanying drawings, forming a part of this specification, and in which—

Figure 1 is a front elevation of the improved feeding device, illustrating also the main driving-shaft of the pulverizer; Fig. 2, a plan view; Fig. 3, a vertical sectional view on the line 3 3 of Fig. 2; Fig. 4, a side elevation; Fig. 5, a top view of the shear; Fig. 6, a side view thereof; and Fig. 7, a longitudinal section of my improved feeding device, showing the same in use in connection with a pulverizer of a well-known type.

In all of the above views corresponding parts are represented by the same numerals of reference.

The body of the device is formed, essentially, of two castings 1 and 2, bolted together, as shown. The upper section 1 is formed with an integral interior cylindrical neck 3. 4 is a hopper mounted above said neck, in which the material is placed and to which the material is constantly supplied. The lower section 2 of the body is formed at its lower end with an inclined chute 5, having an opening 6 at the bottom, through which the material may pass and through which also air may be drawn by suction. Located beneath the opening 6 and in front thereof is a casing 7, having an inclined bottom 8 and an opening 9 therein, which opening 9 is arranged in alinement with the entrance-opening to the pulverizer. The opening 6, it will be noted, extends above the upper horizontal wall of the casing 7, whereby air may be drawn into the opening 6 above said upper wall and thence pass into the interior thereof. 10 is a slide adapted to close more or less the opening 6 above the casing 7 to regulate the supply of air. This slide is mounted in suitable guides and is operated in any suitable way, preferably by means of a lever 11, mounted centrally in the device and having an outturned arm 12 at its end. Connecting the end of the arm 12 and the slide 10 is a link 13. The lever 11 is pivoted at 14 to the web 15, cast below section 2 of the body, and is provided at its outer end with a handle 16, by which said lever may be moved. The lever 11 works adjacent to a rack 17, with which a latch 18 may engage to lock the lever at any desired position. The latch 18 is operated by a handle 19, extending parallel with the handle 16 in the usual way.

The section 2 of the body is formed on its interior with a bearing 20, in which is mounted a vertical shaft 21. The shaft 21 is splined to a worm-gear 22, so as to be movable vertically with respect to said worm-gear. The worm-gear 22 is carried in a casing the upper portion 23 of which is cast integrally with the section 2 of the body, the lower section 24 of

said casing being bolted in place and carrying an elongated bearing 25 at its lower end for the reception of the shaft 21. The casing of the worm-gear 22 is formed with a bearing 26 at one side, in which is mounted a shaft 27, carrying a worm 28, in mesh with the worm-gear 22. The shaft 27 is operated from the main shaft 29 of the pulverizer or from any other moving element of the pulverizer.

In Fig. 7 I illustrate my improved feeding device in use in connection with a pulverizer of a well-known type wherein the shaft 29 is provided with rotating pulverizing-arms mounted within an inclosing casing. Suction through the pulverizer is effected by means of a fan, as shown, secured to the shaft 29 at the extreme end of the casing.

For the operation of the shaft 27 I illustrate the grooved pulleys 30, of different diameters, keyed to the shaft 29, and corresponding grooved pulleys 31, keyed to the shaft 27. A belt 32 connects said grooved pulleys, so as to transmit motion from the shaft 29 to the shaft 27. By changing the said belt on the different pulleys the speed of the shaft 27 relatively to that of the shaft 29 will be varied, as will be understood.

Keyed to the shaft 21 within the body of the device and below the neck 3 is a flat circular table 33, preferably having its upper surface suitably roughened, as by cross-cuts or in any other suitable way. This table fits closely within the interior of the feed-chamber formed within the body of the device and is vertically movable within said feed-chamber for the purpose to be explained. The table 33 is formed at its center with a deflecting-cone 34, the purpose of which is to cause the material to be forced by its weight upon the portions of the table adjacent to the periphery thereof instead of allowing the material to accumulate at the center, as would otherwise be the case. Carried upon this deflecting-cone 34 is a shear 35, sustained always in close engagement with the upper surface of the table, but so mounted as to allow the table to move therewith. I therefore carry the shear 35 on a bracket 36. (Illustrated particularly in Figs. 5 and 6.) This bracket is formed with two rings 37 and 38, the former bearing upon the lower portion of the deflecting-cone 34 and the latter being mounted above said cone on the shaft 21, as shown in Fig. 3. These rings 37 and 38 are connected together by a rib 39, extending parallel with the exterior of the deflecting-cone 34. Cast integrally with the rings 37 and 38 is a short arm 40, having cast therewith a vertical arm 41, to which the end of the shear 35 is riveted or otherwise secured. The shear 35, carried by the arm 41, is located entirely outside of the neck 3 and always projects to the same extent over a portion of the table 33 to sweep off from said table a quantity of material of a constant horizontal width, but of a varying vertical thickness, as will be explained, according to the amount of feed desired.

Keyed to the shaft 21 immediately above the ring 38 is an agitating device 42, comprising a collar having cast radial arms 43 working within the neck 3 and serving to agitate the material in said neck to prevent the accumulation of material in the form of aggregates or clots, as may occur, particularly if the material is in a wet condition.

In order to adjust the table vertically in the feed-chamber, so as to approach or recede from the lower end of the neck 3, I preferably effect the vertical adjustment of the shaft 21 by means of the lever 11. For this purpose the said lever is provided with a cast ring portion 44, surrounding the shaft, as shown. Mounted on the shaft 21 is a collar 45, carried between fixed collars 46 46. The collar 45 is provided with trunnions 47, mounted in slots 48 in the ring 44, whereby by elevating the handle 16 of the lever 11 the shaft 21 will be moved upward, causing the table 33 to approach the lower end of the neck 3. The shear 35, as shown in dotted lines in Fig. 2, is preferably curved and at its free end works against a cast rib 49. Leading into the feed-chamber, preferably adjacent to the shear 35, is a passage 50, through which the arm of the operator may be extended for the purpose of cleaning out the feed-chamber in case its becomes clogged.

The operation of my improved feeding device will be as follows: Material is supplied to the hopper 4 in any suitable way. The pulverizer is started, rotating the shaft 29, from which motion is communicated to the shaft 27 and to the worm 28, worm-wheel 22, and shaft 21, rotating the table 33 below the neck 3 and with respect to the shear 35, which is maintained stationary. The material which descends through the neck 3 into the feed-chamber is agitated by the arms 43, whereby it is prevented from accumulating in said neck and falls upon the rotating table 33. By means of this table the material is carried around thereon until it meets the shear 35, by which it will be swept off and will fall through the opening 6 into the casing 7, thence entering the pulverizer through the entrance-opening therein. At the same time air, by the operation of the pulverizer, will be drawn by suction beneath the slide 10 and will pass with the material through the opening 6 into the pulverizer, as shown by the arrow in Fig. 3. When it is desired to diminish the supply of material fed to the pulverizer, the handle 16 will be elevated to the desired extent. This moves the shaft 21 upward, carrying the table 33 and the shear 35 with it. The approach of the table toward the lower end of the neck 3 results in the accumulation upon the table of a layer of material of diminished thickness, and in consequence the quantity of material removed from the table 33 by the action of the shear 35 will be relatively decreased. By the operation of the lever 11 to thus diminish the supply of material the link 13 will depress

the slide 10 to correspondingly reduce the supply of air, whereby the relative proportions of air and material entering the pulverizer will remain constant.

Having now described my invention, what I claim as new, and desire to secure by Letters Patent, is as follows:

1. In a feeding device for pulverizers, the combination of a feed-chamber having an opening therein at the upper end thereof through which material is introduced, a rotatable feed-table mounted in said chamber and adjustable toward and away from the feed-opening therein, means for adjusting said table, and a shear adjustable vertically with said table but held from rotation, whereby the shear will remove material from said table, substantially as set forth.

2. In a feeding device for pulverizers, the combination of a feed-chamber, a cylindrical neck at the upper end of said feed-chamber and through which material is introduced, a rotatable table mounted in said feed-chamber and adjustable toward and away from said neck, means for adjusting said table, and a shear adjustable vertically with the table but held from rotation, whereby material will be removed from the table, substantially as set forth.

3. In a feeding device for pulverizers, the combination of a feed-chamber, a cylindrical neck in the upper end of said feed-chamber through which material is introduced, a rotatable table mounted in said feed-chamber and adjustable toward and away from said neck, means for adjusting said table, a deflecting-cone carried by the table and arranged to enter the neck, and means adjustable with said table for removing material from the table, substantially as set forth.

4. In a feeding device for pulverizers, the combination of a feed-chamber, a cylindrical neck in the upper end of said feed-chamber through which material is introduced, a rotatable table mounted in said feed-chamber and adjustable toward and away from said neck, means for adjusting said table, a deflecting-cone carried by the table and arranged to enter the neck, and a shear for removing material from the table and adjustable therewith, substantially as set forth.

5. In a feeding device for pulverizers, the combination of a feed-chamber, a cylindrical neck in the upper end of said feed-chamber through which material is introduced, a rotatable table mounted in said feed-chamber and adjustable toward and away from said neck, a deflecting-cone carried by said rotatable table and adapted to enter the neck, and a shear mounted on said deflecting-cone so as to be adjustable vertically with the table but held from rotation, substantially as set forth.

6. In a feeding device for pulverizers, the combination of a feed-chamber, an opening in said feed-chamber through which material is introduced, a rotatable table adjustable vertically with respect to said opening, means for adjusting said table, an agitator carried by the table for agitating material entering said opening, and means for removing material from said table and adjustable therewith, substantially as set forth.

7. In a feeding device for pulverizers, the combination of a feed-chamber, an opening in said feed-chamber through which material is introduced, a rotatable table adjustable vertically with respect to said opening, means for adjusting said table, an agitator carried by the table for agitating the material entering said opening, and a shear for removing material from said table and adjustable therewith, substantially as set forth.

8. In a feeding device for pulverizers, the combination of a feed-chamber, an opening therein through which material is introduced, a rotatable table in said chamber adjustable vertically with respect to said opening, means for adjusting said table, a plurality of agitating-arms rotatable with the table for agitating material entering said opening, and a shear, adjustable vertically with the table but held from rotation, for removing material from the table, substantially as set forth.

9. In a feeding device for pulverizers, the combination of a feed-chamber, a cylindrical neck in the upper end of said feed-chamber through which material is introduced, a rotatable table mounted in said feed-chamber and adjustable toward and away from said neck, means for adjusting said table, means for removing material from the table and adjustable therewith, and a plurality of agitating-arms rotatable with the table and within said neck for agitating material therein, substantially as set forth.

10. In a feeding device for pulverizers, the combination of a feed-chamber, an opening in said feed-chamber through which material is introduced, a rotatable table adjustable toward and away from said opening, means for adjusting said table, means for removing material accumulating on said table and adjustable therewith, and an air-opening for admitting air into said chamber with the material, substantially as set forth.

11. In a feeding device for pulverizers, the combination of a feed-chamber, an opening in said feed-chamber through which material is introduced, a rotatable table adjustable toward and away from said opening, means for adjusting said table, means for removing material accumulating on said table, and an adjustable air-opening for admitting air into said chamber with the material, substantially as set forth.

12. In a feeding device for pulverizers, the combination of a feed-chamber, an opening in said feed-chamber through which material is introduced, a rotatable table in said feed-chamber adjustable toward and away from said opening, means for adjusting said table, means for removing material from said table, an air-opening, a slide for regulating the area of said opening, and connections between

said slide and table whereby the supply of material and air will be regulated simultaneously, substantially as set forth.

13. In a feeding device for pulverizers, the combination of a feed-chamber having an opening at its upper end through which material is introduced, a rotatable table within said feed-chamber adjustable toward and away from said opening, a lever for adjusting said table vertically, an air-opening, a slide for said opening, and connections between said slide and said lever, substantially as set forth.

14. In a feeding device for pulverizers, the combination of a feed-chamber, a cylindrical neck in the upper end of said feed-chamber through which material is introduced, a vertical shaft mounted in said feed-chamber, a rotatable table carried by said shaft within the chamber, a lever for adjusting the shaft vertically whereby the table may be moved toward and away from said neck, an air-opening, a slide for said opening, and connections between said slide and said lever, substantially as set forth.

This specification signed and witnessed this 3d day of December, 1898.

WILLIAM MAXWELL WHEILDON.

Witnesses:
HELEN P. NELSON,
ALBERT E. LITTLE.