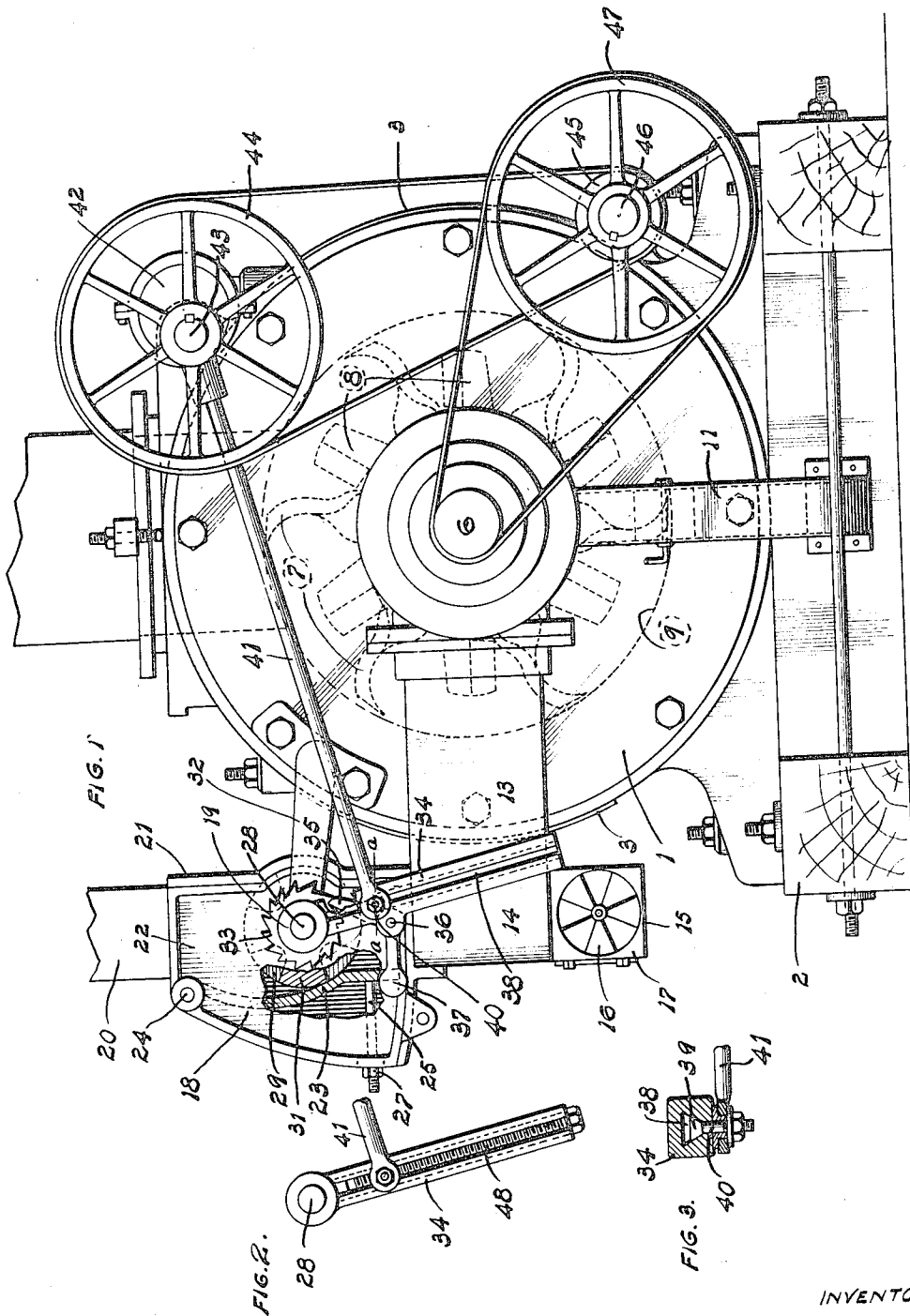


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FEEDING MECHANISM FOR PULVERIZERS.
APPLICATION FILED OCT. 29, 1910.

Patented Jan. 21, 1913.

2 SHEETS-SHEET 1.

1,051,044.



WITNESSES

Mr. Janus.
W. D. Smith.

INVENTOR

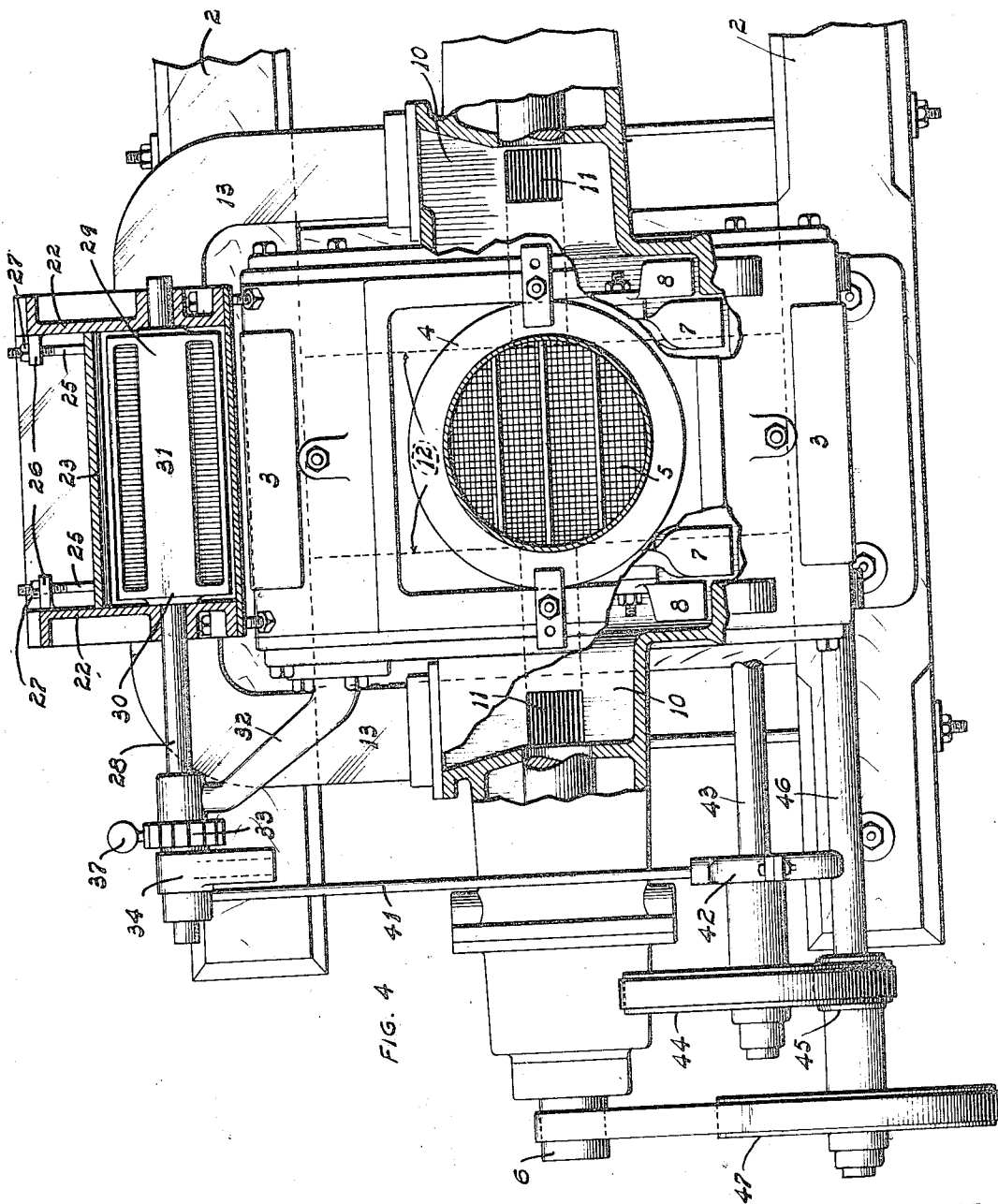
MILTON F. WILLIAMS

BY *F. R. Gurnwal.* ATT'Y.

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UNITED STATES PATENT OFFICE.

MILTON F. WILLIAMS, OF ST. LOUIS, MISSOURI, ASSIGNOR TO WILLIAMS PATENT CRUSHER AND PULVERIZER COMPANY, OF ST. LOUIS, MISSOURI, A CORPORATION OF MISSOURI.

FEEDING MECHANISM FOR PULVERIZERS.

1,051,044.

Specification of Letters Patent.

Patented Jan. 21, 1913.

Original application filed June 9, 1910, Serial No. 564,701. Divided and this application filed October 29, 1910. Serial No. 589,799.

To all whom it may concern:

Be it known that I, MILTON F. WILLIAMS, a citizen of the United States, residing at St. Louis, Missouri, have invented a certain new and useful Improvement in Feeding Mechanism for Pulverizers, of which the following is a full, clear, and exact description, such as will enable others skilled in the art to which it appertains to make and use the same, reference being had to the accompanying drawings, forming part of this specification, in which—

Figure 1 is an outside elevational view of my improved device as applied to a pulverizing machine, certain parts being cut away in order to better illustrate the features of the device. Fig. 2 is a detail view of a modification of one of the elements shown in Fig. 1. Fig. 3 is a cross sectional view of one of the feeding elements in Fig. 1, taken on the line *a-a*. Fig. 4 is a plan view of Fig. 1 showing certain of the parts broken away and in section.

This invention relates to a new and useful improvement in feeding mechanism which is especially adapted for use in connection with a pulverizing machine, although it may be used with many other and analogous machines.

This improved feeding mechanism is described and illustrated in my co-pending application, Serial No. 564,701, filed June 2, 1910, of which this application is a division.

The novel features of the present invention resides in the construction of the rotary feeding device, and its use in connection with the side feed for the pulverizer, as well as the provision of pockets within the feed chutes to catch foreign materials.

The invention consists in the construction, arrangement and combination of the various parts as will hereinafter be described and pointed out in the claims.

In the drawings 1 indicates a casting which is preferably anchored to suitable timbers 2 constituting the foundation or plate. This casting constitutes a casing in the peripheral wall of which is arranged two man hole plates 3 by which access may be gained to the interior. The outer part of the casting is provided with an opening in

which is arranged a removable casting 4 constituting a support for a screen frame 5 containing a wire mesh covering the discharge opening.

Within the casing 1 supported on either side by the casting 4 is a shaft 6 mounted in suitable bearings. Upon this shaft is arranged a series of hammers or shredders 7, and also at suitable points on the shaft a series of fan blades 8. The anterior portion of the hammers cooperate with a grinding surface 9 suitably mounted interiorly of the casing outside of the path of travel of the hammers.

The bearings for the shaft 6 as illustrated in Fig. 4 form extensions for the casting 1 with a chambered portion 10 communicating with the interior of the cage formed by the grinding surface. These chambers 10 communicate by means of chutes 11 on either side of the machine with a chamber 12 formed in the base of the machine between the supporting timbers 2. The chambers 10 are connected with the feed box or chute on either side by means of extension chutes or spouts 13. The feed box 14 is provided with a pocket or receptacle 15 at its lower side in the face of which is mounted a rotating damper 16. The damper is mounted in a hinged door 17 usually locked in closed position.

Mounted upon the feed box 14 is a casting 18 forming a receptacle for the feeding mechanism 19. This casting communicates with the feed box 14 on one side, and with the feed pipe 20 at the other, and is formed with a front wall 21, side walls 22 and a movable back wall 23. This movable back wall is pivoted at 24 so that its lower end may be swung about said pivot and held in any desired position by means of an adjustable bolt 25 passing through lugs 26 on the side wall and embracing a nut 27.

The feeding mechanism 19 is comprised of a shaft 28 rotatably mounted in the sides 22 and having a feed cylinder 29 thereon. This cylinder is comprised of four-armed end pieces 30 connected by cross bars 31. A bracket 32 is provided, attached to the casting 1 as a journal for the shaft 28. A ratchet wheel 33 is fixed to the shaft and a

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swinging arm 34 is also loosely mounted on the shaft. This arm 34 forms a support for a pawl 35 pivoted thereto at 36, and having a weighted end 37, the pawl being adapted to engage the ratchet wheel 33.

5 The arm 34 is provided with a dove-tail slot 38 in which is slidably and adjustably mounted a block 39 which may be clamped in any position in the slot by means of a stud 40. The stud 40 is connected by means of an eccentric rod 41 to an eccentric 42 mounted on a shaft 43 suitably journaled on the opposite side of the pulverizer.

10 A pulley 44 is mounted on the shaft 43 and belt connected to a pulley 45 on shaft 46 suitably mounted at the base of the casting 1. On the shaft 46 is also mounted a pulley 47 connected by belt with the shaft 6. By this means the main shaft 6 acts to drive the feeding mechanism mounted on the shaft 28.

15 As shown in Fig. 2 the construction of the arm 38 may be varied by providing a screw 48 which may engage the block on the stud 39 to adjust the end of the rod 41 along the length of the arm.

20 The operation of the machine in reducing material to powdered form is as follows: The material to be reduced is supplied to the feed pipe 20 and fed in predetermined quantities to the machine. As the machine operates the fan blades 8 serve to draw the material with air into the machine through the feed openings around the shaft 6, said feed openings acting in this particular like the eyes of a fan. The fan blades 8 tend to draw the material toward the center of the zone of the revolving hammers. Centrifugal force tends to draw the material outwardly against the grinding surface. The curved hammers or beaters tend to pick up the material from the grinding surface by scooping action, and return it toward the center of the machine in opposition to the action of centrifugal force, the material is thus reduced not only by contacting with the grinding surface and the hammers, but by attrition, the oppositely moving particles moving against each other so that ultimately they are of sufficient fineness to pass through the screen 5 and into the discharge pipe which is preferably connected to an exhaust fan. The pocket 15 is provided for the reception of any particles of iron or other foreign material too heavy for the air entering through the dampers 16, to carry into the machine. The auxiliary air supply pipes 11 which are controlled by dampers lead into the feed openings at the eye of the machine on either side for the purpose of effecting further control of the amount fed into the machine. These auxiliary air supply pipes lead from the bottom of the machine and tend to keep the same clear from dust or pulverized material escaping through

the cracks in the bars of the grinding surface, and which might tend to accumulate on the grinding surface. The spaces on the grinding surface form a receptacle for catching such material, but this space has communication with the exterior around the flange ring surrounding the screen 5. By this construction air drawn through the pipes 11 passes downwardly around the bars of the grinding surfaces and draws flying particles of dust escaping therefrom back into the machine when they will be discharged through the discharge pipe.

70 By providing an adjustable wall 23 the amount of material fed into the machine may be increased. This amount is normally controlled by the position of the feed cylinder 29, which is operated intermittently through means of concentric connections with the shaft 43 operatively connected with the main shaft 6. By adjusting the rod 41 along the length of the arm 38 this feeding operation may be increased or diminished as desired.

I am aware that minor changes may be made in the construction, arrangement and combination of my invention as herein shown and described without departing from the nature and spirit of my invention, the scope of which is indicated in the accompanying claims.

What I claim is:

1. A feeding mechanism for pulverizers comprising in combination, a receptacle into which material is to be fed, a feed supply pipe, a feed chamber communicating with the receptacle, a feed box, feeding mechanism adapted to deliver material from the feed supply pipe to the feed box, a feed spout affording communication between the feed chamber and the feed box, a fan adapted to force material from the feed box through the feed spout and into the receptacle, and means for regulating the supply of air to the feed box.
2. A feeding mechanism comprising in combination, a receptacle for the reception of material, a feed supply member, oppositely disposed feed chambers communicating with the receptacle, a feed box, feed mechanism for regulating the supply of material to said feed box from the feed supply member, a spout connecting said feed box with each of said feed chambers, and fans operating in proximity to said feed chambers and adapted to force the material from said feed box into said receptacle.
3. In a feeding mechanism in combination, a receptacle, a feed supply, a feed box below the feed supply, mechanism for controlling the supply of feed from the feed supply to the feed box, feed chambers disposed at opposite ends of the receptacle, feed spouts extending from opposite sides of the feed box to the feed chambers re-

spectively, fans disposed intermediate the feed chamber and the receptacle and adapted to draw material from the feed box into the receptacle, and means in communication with the feed box for regulating the supply of air uniformly to the feed spouts.

In testimony whereof I hereunto affix my

signature in the presence of two witnesses, this 25th day of October, 1910.

MILTON F. WILLIAMS.

Witnesses:

M. P. SMITH,
ALMA GEBHART.