

(No Model.)

W. D. GRAY.

FEEDING DEVICE FOR GRINDING MILLS.

No. 261,337

Patented July 18, 1882.

Fig. 2.

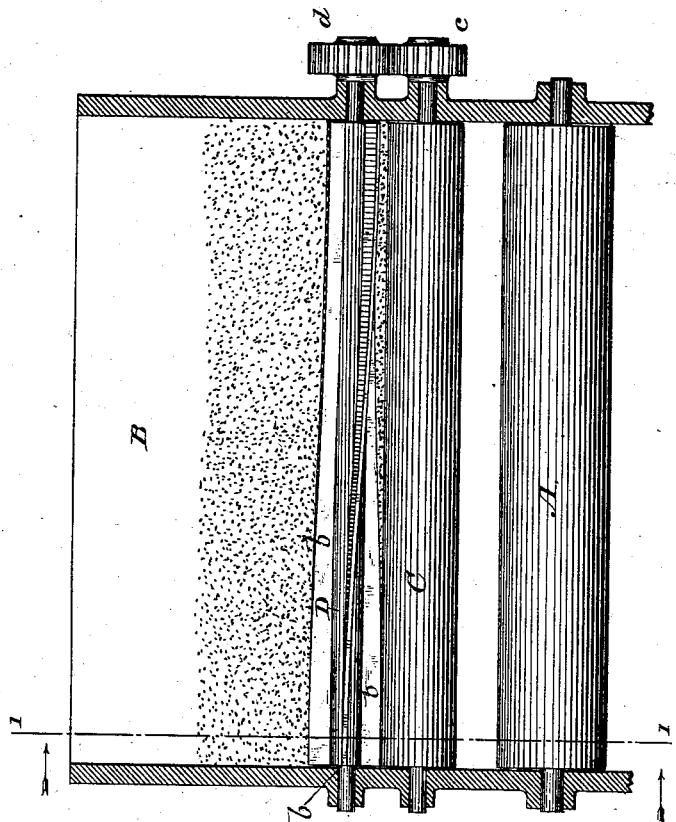
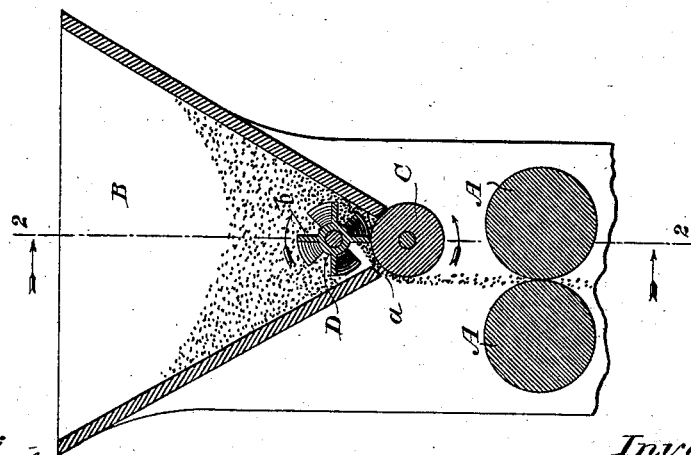


Fig. 1.



Witnesses:

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FEEDING DEVICE FOR GRINDING-MILLS.

SPECIFICATION forming part of Letters Patent No. 261,337, dated July 18, 1882.

Application filed November 1, 1881. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM DICKSON GRAY, of Milwaukee, in the county of Milwaukee and State of Wisconsin, have invented certain Improvements in Feeding Devices for Grinding-Mills, of which the following is a specification.

The object of my invention is to overcome the difficulties which have been hitherto encountered in feeding material, particularly "soft stuff" and bran, to roller grinding-mills.

To this end the invention consists in combining with an ordinary feed-roll in the bottom of a hopper a second roll located immediately over the feed-roll, provided with longitudinal ribs and freely exposed to the mass of superincumbent material in the hopper. The second roll serves to sustain, in a great measure, the weight of the superincumbent mass of material, to agitate and loosen the same, and to deliver it to the feed-roll in such condition that the latter will carry it regularly and evenly to the grinding-rolls. The ribs or teeth of the supplemental roll may be straight or spiral, and may be continuous or broken, as preferred, it being preferred, however, to use continuous ribs and to drive the upper roll in the opposite direction from that in which the lower roll is turned.

Referring to the accompanying drawings, Figure 1 represents a vertical cross-section, showing my feeding apparatus in connection with a pair of grinding or crushing rolls. Fig. 2 is a side elevation of the rollers, with the hopper shown in vertical section on the line 2 2 of Fig. 1, also showing the manner in which the two feed-rolls are driven.

A. A represent two co-operating grinding-rolls, which may be constructed, mounted, and driven in any ordinary manner.

B represents the hopper, arranged above the rolls for the purpose of delivering the material to be ground thereto.

C represents an ordinary feed-roll—such as is now in common use—mounted horizontally in the bottom of the hopper above the grinding-rolls, for the purpose of delivering the material to the latter through the outlet *a* in the bottom of the hopper. This roll will have a smooth or ribbed surface, as circumstances may render desirable.

D represents my supplemental feed-roll, located within the hopper immediately above

the feed-roll C, parallel thereto. The roll D is constructed, as shown, with longitudinal ribs or teeth *b*, and is connected at its outer end by a pinion, *d*, with a driving-pinion, *e*, mounted on the outer end of the roll C, this arrangement causing the two rolls C D to turn in opposite directions.

When the machine is in operation the mass of material within the hopper is largely sustained by the roll D, its weight being in a great measure removed from the roll C.

The rotation of the roll D serves to loosen the mass of material at its base and to feed the same steadily and in a free loosened condition to the roll C, by which it is delivered in a continuous uniform stream through the discharge-opening to the grinding-rolls.

Fair results may be secured when the roll D is turned in the same direction as the lower feed-roll; but it is preferred to turn the two rolls in opposite directions, inasmuch as a better action is thereby secured.

I am aware that a toothed feeding-roll has been arranged in a feed-hopper in such manner as to co-operate with the lower edge of a pendent spring-plate which was vibrated by the action of said teeth thereon, the plate assisting to sustain the material and permitting the same to fall intermittently past the roll as the plate is forced backward by the latter. This I do not claim, my invention being restricted to an arrangement wherein the supplemental feed-roll is exposed directly and without intervening parts to the mass of material above, whereby the material is permitted to feed down upon and past said roll continuously and in a uniform manner.

Having thus described my invention, what I claim is—

1. The combination of the hopper and the main feed-roll at its base with the supplemental feed-roll, provided with longitudinal blades or ribs, and mounted in an exposed or uncovered position within the hopper immediately above the first-named roll, as described and shown, whereby the material is permitted to pass freely downward upon and around the last-named roll without interruption.

2. In combination with a pair of grinding-rolls, a feed apparatus consisting of a feed-roll, a hopper having rigid sides extended upward from said roll, and a second roll provided

with longitudinal ribs and mounted within the hopper immediately above and parallel with the first-named roll, a free unobstructed space being left for the passage of the material continuously downward past the upper roll, as described and shown.

3. In combination with the hopper B and the feed-roll C, located thereunder, the second feed-roll, D, provided with the longitudi-

nal ribs, and mounted in a free uncovered position within the hopper, immediately above the roll C, and driving mechanism, substantially such as described and shown, adapted to drive the rolls in opposite directions.

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Witnesses:

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