(No Model.) 2 Sheets—Sheet 1.

W. T. DOUGAN.

GRINDING MILL.

No. 347,232. Patented Aug. 10, 1886.

Fig. 1.

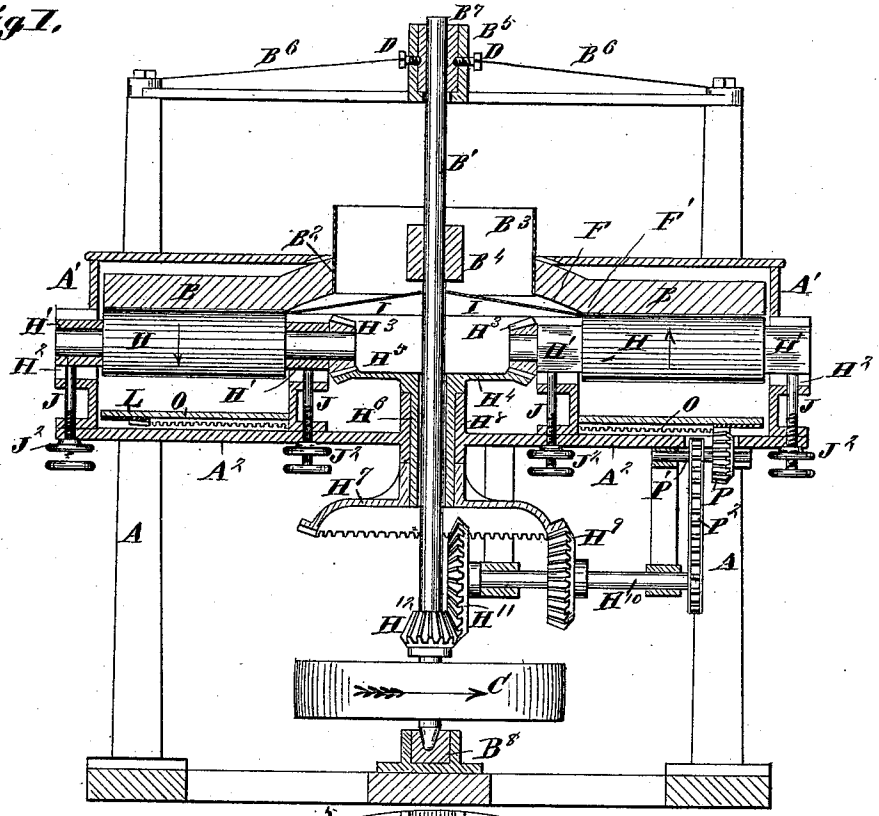
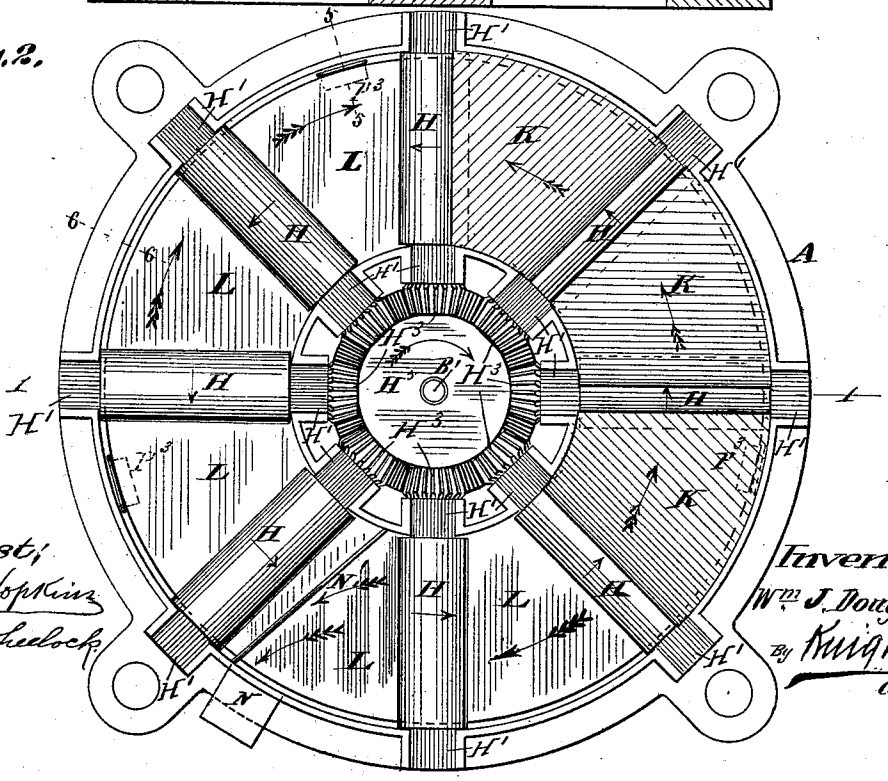


Fig. 2.



Attest,
F. A. Hopkins
Geo. H. Wheelock.

Inventor,
Wm. J. Dougan
By Knight Bro
attys

(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

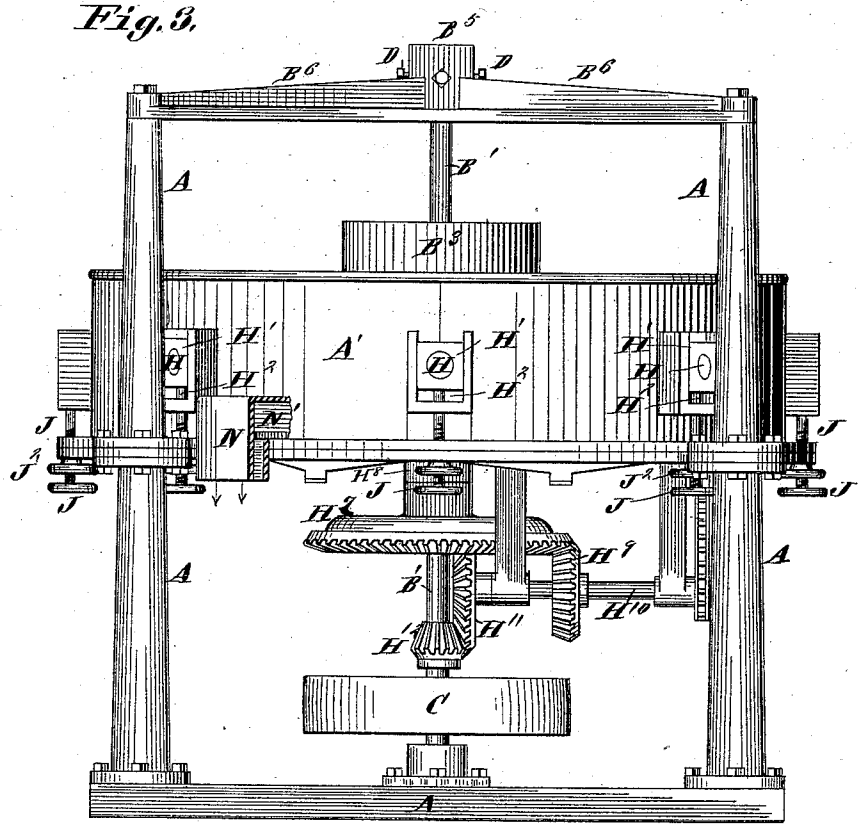


Fig. 4.

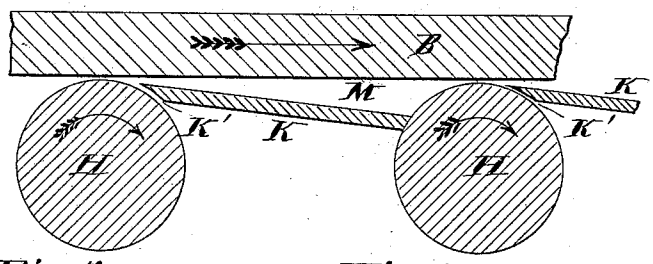


Fig. 5.

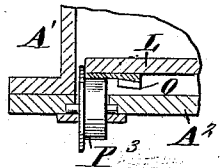
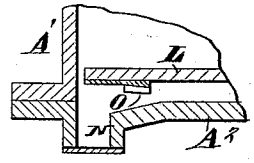


Fig. 6.



Attest:

F. A. Lipkins.

Geo. L. Wheelock.

Inventor:

Wm. T. Dougan

By Knight Bros

Attys.

UNITED STATES PATENT OFFICE.

WILLIAM T. DOUGAN, OF SALEM, MISSOURI.

GRINDING-MILL.

SPECIFICATION forming part of Letters Patent No. 347,232, dated August 10, 1886.

Application filed February 26, 1886. Serial No. 193,353. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM T. DOUGAN, of Salem, in Dent county, and State of Missouri, have invented a certain new and useful Improvement in Grinding-Mills, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming part of this specification, and in which—

Figure 1 is a vertical section of my improved mill, taken on line 1 1, Fig. 2. Fig. 2 is a top view of my improved mill with the stone and part of the inclined feed-boards removed. Fig. 3 is a side elevation. Fig. 4 is a detail section showing two of the rollers, part of the stone, and part of the inclined feed-boards. Fig. 5 is a detail view of the discharger, taken on line 5 5, Fig. 2. Fig. 6 is a similar view taken on line 6 6, Fig. 2.

My invention relates to an improvement in grinding-mills for making flour; and it consists in features of novelty hereinafter fully described, and pointed out in the claims.

Referring to the drawings, A represents the frame of the mill.

B represents the grinding stone or disk, which may be made of metal or other suitable material, and which is supported on a central spindle, B′, to which it is secured in the same manner as a car-wheel is secured to its axle. It has a central opening, B^2, to receive a feed-tube, B^3, a central cross-piece, B^4, being left, by which the stone is secured to the spindle. The lower end of the spindle is stepped into a bearing, B^8, secured to the frame A, and the upper end is journaled in a box, B^5, supported by arms B^6, secured at their outer ends to posts or frame A.

The stone may be adjusted horizontally by set-screws D, that pass through the box B^5 and jam against a bushing, B^7, at their inner ends, the bushing surrounding the end of the spindle B′. (See Fig. 1.) The spindle B′ is driven by a pulley, C, thereon. Outside of the stone is a casing, A′.

From the opening B^2 the under side of the stone is inclined, as shown at F, Fig. 1, to a point, F′. The under side or face of this part of the stone, as well as the entire under side or bottom of the stone, is made smooth; or it may be corrugated for first, second, and third break. Beneath the stone or disk are rollers H, between which and the disk the material is ground.

Beneath the opening B^2 of the stone and extending outward to the rollers H is a plate, I, which carries the stuff to the rolls H as it falls from the tube B^2.

The rolls H are supported in boxes H′, fitting in slots H^2 of the casing A′ of the mill, and they are driven by cog-wheels H^3 on the inner ends, meshing into the cogs on the upper head, H^5, of a master-wheel, H^4, through which the shaft B′ passes. The master-wheel has a neck, H^6, connecting its upper head, H^5, to a lower head, H^7, the neck being journaled in a sleeve or box, H^8, on a plate, A^2, that forms a bottom to the casing A′. The wheel H^7 is turned by a cog-wheel, H^9, meshing into cogs on the head H^7, the wheel H^9 being on a shaft, H^{10}, which has a cog-wheel, H^{11}, meshing into a wheel, H^{12}, on the spindle or shaft B′. The contiguous faces of the rollers H and the stone B turn in the same direction, and may be either smooth or corrugated on their outer surface, as desired, and provided with means whereby the distance between their contiguous faces may be regulated at pleasure. For this purpose I provide set-screws J, which pass through threaded openings in the plate A^2 of the machine, one of which engages each of the boxes H′ and controls its position. The surface-speed of the disk is greater than that of the rolls, and the difference may be changed at will to suit the character of the material and the grade of the product desired.

Between the rolls are inclined feed-boards K, there being a small space, K′, left between the upper end of each board and the adjacent roll for the passage of the flour or fine material, whence it falls onto a circular pan or table, L. The stuff feeds downward upon these inclined boards K, as indicated by the arrows thereon, until it comes to a roll, and then the fine stuff that can pass between the roll and stone is carried by the former upward and over the roll and is discharged through the space K′, while the coarser material is held back by the stone until it is ground sufficiently fine to pass between the stone and the roll. There are therefore a number of spaces or chambers, M, one between each board and the stone, or one between each pair of rolls. As the flour falls through the spaces K′ onto the

table L, it is carried around by the latter until it comes in contact with a vertical deflector, N′, which extends across the top of the table, (preferably tangentially,) whereby it is forced to the periphery of the said table and discharged into a spout, N. The table has cogs O on its lower face engaged by a pinion, P, on a horizontal shaft, P′, which is connected by chain-wheels and belt P^2 to the shaft H^{10}. The table is supported on rollers P^3.

The adjustable screws J may be provided with jam-nuts J^2, to prevent them from turning accidentally.

I claim as my invention—

1. In a grinding-mill, the combination of the stone, hopper, plate beneath the hopper, rolls, inclined feed-boards between the rolls, and means for revolving the stone and rolls, substantially as described.

2. The combination of the stone, hopper, plate beneath the hopper, adjustable rolls, inclined feed-boards, table beneath the rolls, discharge-spout, and mechanism for revolving the rolls and stone, substantially as and for the purpose set forth.

3. The combination of the stone, hopper, plate beneath the hopper, rolls, mechanism for revolving the rolls and stone, inclined feed-boards between the rolls, table beneath the rolls, discharge-spout, and means for turning the table, substantially as and for the purpose set forth.

4. The combination of the stone, hopper, plate beneath the hopper, rolls, means for revolving the rolls and stone, screws for adjusting the rolls to or from the stone, table located beneath the rolls, discharge-spout, cogs on the bottom of the table, and gearing for turning the table, substantially as and for the purpose set forth.

5. In a grinding-mill, the combination of the stone, rolls, inclined feed-boards between the rolls, forming a space, K′, between the upper ends of the boards and rolls, and means for revolving the stone and rolls, substantially as shown and described, for the purpose set forth.

WILLIAM T. DOUGAN.

Witnesses:
W. L. LYLES,
JOHN C. RAINEY.