

(No Model.)

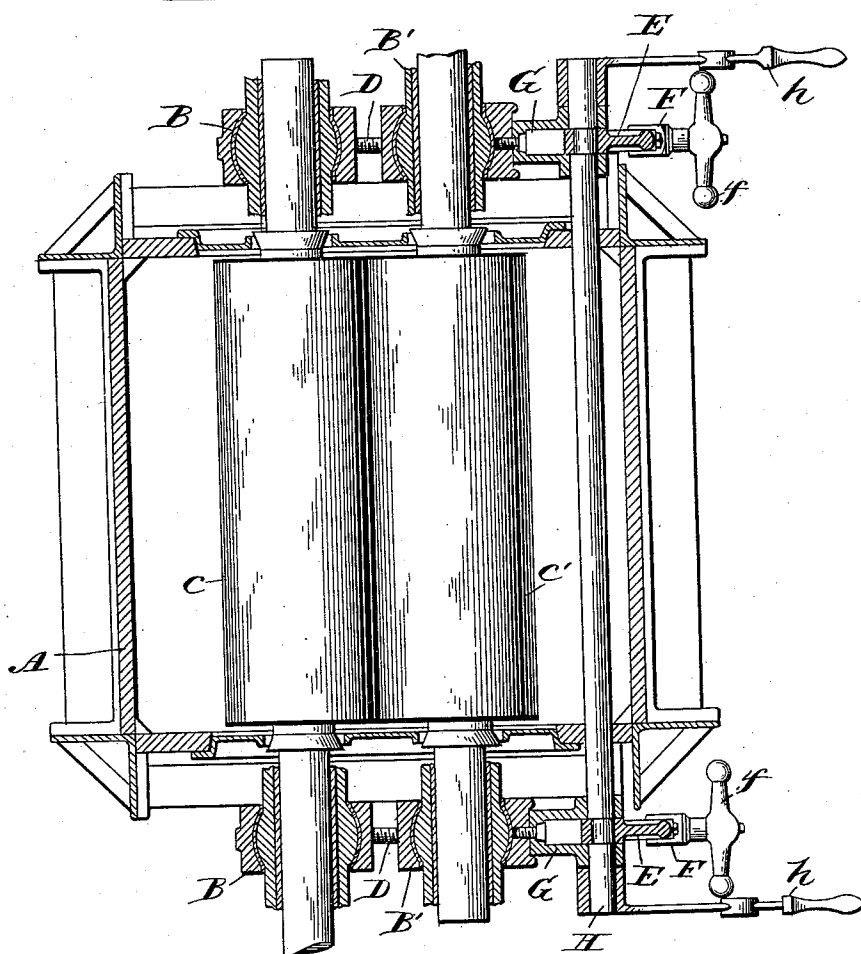
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J. B. ALLFREE.
GRAIN REDUCING MACHINERY.

No. 578,534.

Patented Mar. 9, 1897.

Fig. 1.



Witnesses.
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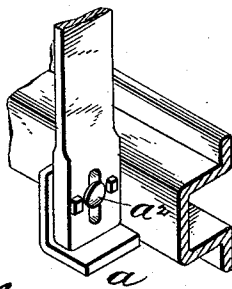
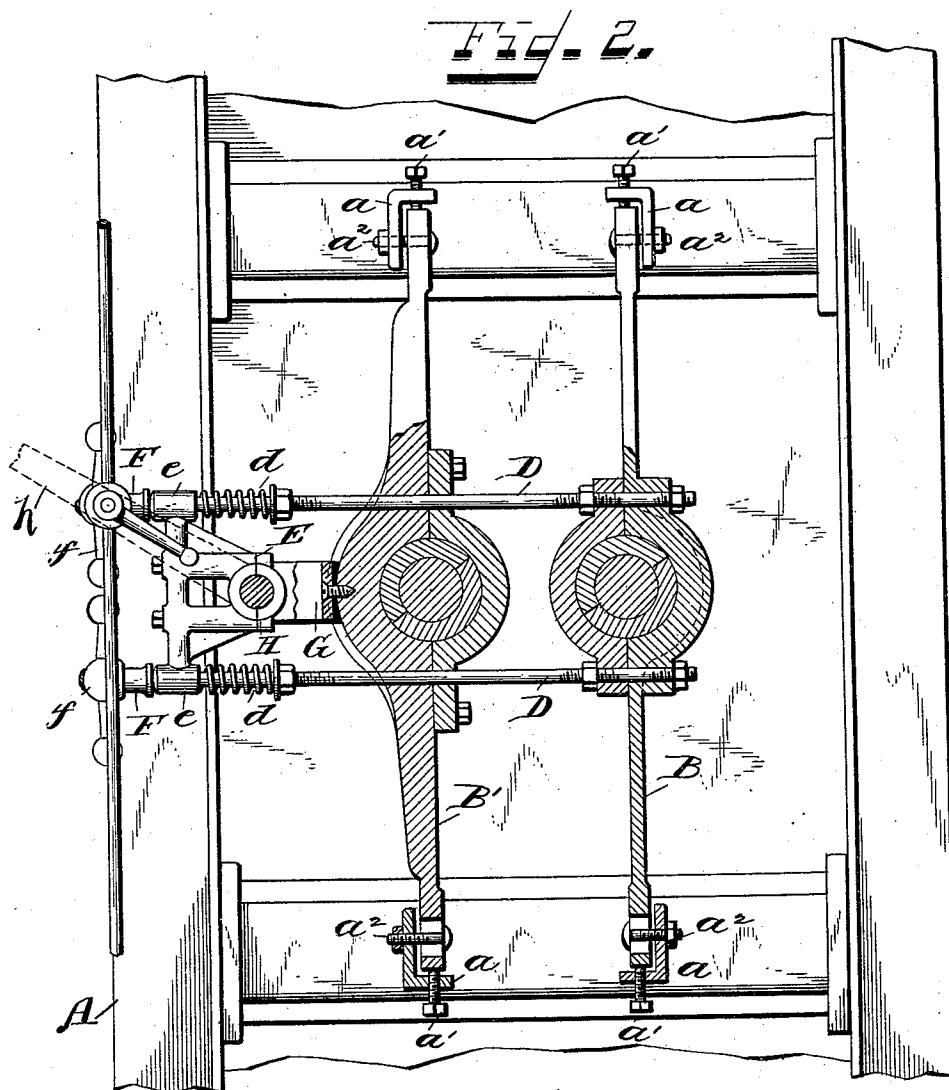
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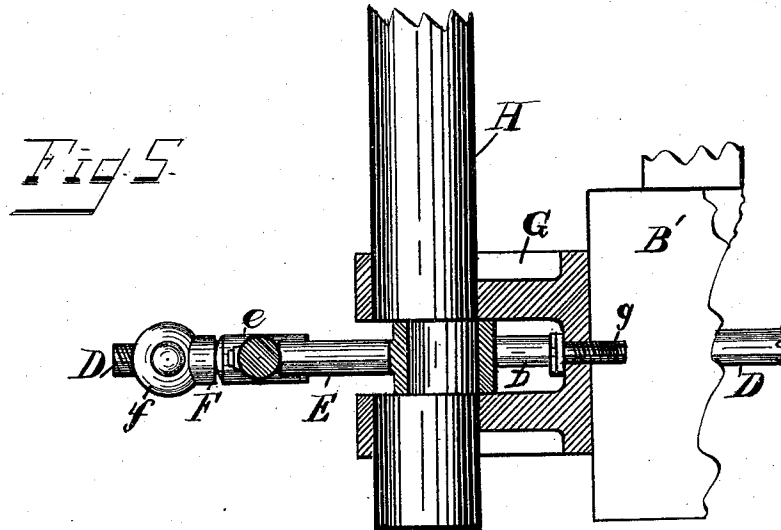
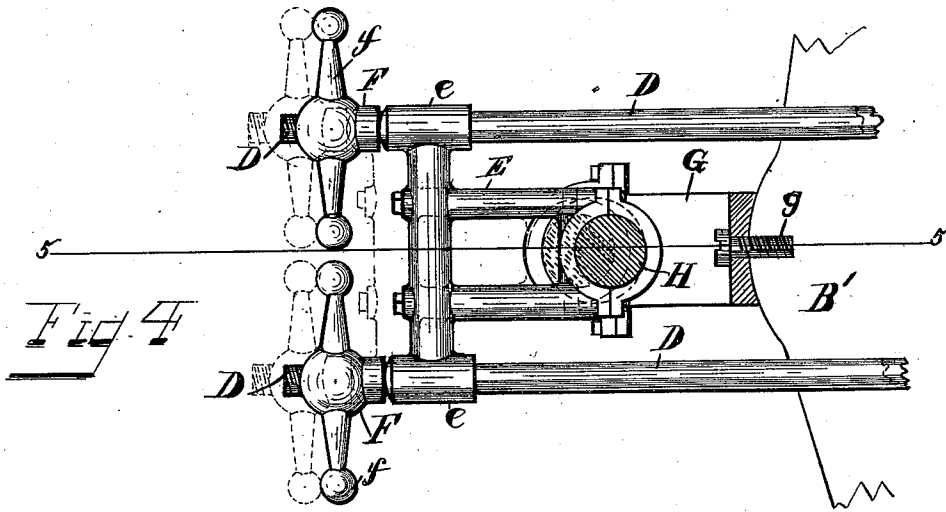
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UNITED STATES PATENT OFFICE.

JAMES B. ALLFREE, OF INDIANAPOLIS, INDIANA.

GRAIN-REDUCING MACHINERY.

SPECIFICATION forming part of Letters Patent No. 578,534, dated March 9, 1897.

Application filed August 9, 1894. Serial No. 519,788. (No model.)

To all whom it may concern:

Be it known that I, JAMES B. ALLFREE, a citizen of the United States of America, residing at Indianapolis, in the county of Marion and State of Indiana, have invented certain new and useful Improvements in Grain-Reducing Machinery, of which the following is a specification.

Flour composed of granules of uniform size has greater bread-producing capacity and produces bread of better quality than flour composed of particles of irregular size, and mechanism which reduces the grain to granules of uniform size gives a larger yield of flour than mechanism which reduces the grain to particles of irregular size. It has been commonly supposed that considerations of safety require at least one of each pair of reducing-rolls to be yieldingly held to its work. All rolls so mounted are subject to tremor or vibration, which causes imperfect grinding, overloads the rolls with material returned, and therefore requires excessive power, yields a product of irregular-sized particles which is lacking in bread-making capacity, and produces an unnecessary quantity of dust. I find that with grain properly prepared rolls unyieldingly held to their work may be operated with safety and will produce a larger yield and flour of better quality and of greater bread capacity than that produced by yielding rolls.

The object of my invention is to provide grain-reducing mechanism in which the tremor or vibration of the rolls is reduced to the minimum and which will produce the maximum product and flour of the highest bread-making capacity.

The invention consists in the parts and combination and arrangement of parts hereinafter described and claimed.

In the drawings, Figure 1 is a horizontal section of a grinding-mill embodying my invention. Fig. 2 is an end elevation, and Fig. 3 a detail perspective, of one of the adjustments; Fig. 4, an enlarged view of the bearing-plate and yoke; and Fig. 5, a section on line 5 5 of Fig. 4, showing the machine partially completed.

A is a frame or housing of any suitable construction upon which are mounted pairs of standards or carriers B and B', provided with

suitable bearings for grinding-rolls C and C'. One of these carriers is resilient or movable, while the other is preferably substantially rigid. In the form illustrated B is the resilient carrier. When the rolls are in grinding engagement, the resilient carrier is under stress, being held by the rods, yokes, and bearing-plates, and the strain upon the resilient carrier is distributed upon the rigid carrier. The carriers are thus clamped together and the rolls held in the proper relation.

To provide for vertical adjustment or tram of the rolls, I mount the carriers adjustably upon brackets *a*, projecting from the frame A. The ends of the carriers rest upon screws *a'* and are held in position by bolts *a''*, taking through the carrier and the brackets, either the carrier or the bracket being provided with a slot *b*. By actuating the screws *a'* either or both of the carriers, and consequently the rolls, may be raised or lowered, and by tightening the bolts *a''* the carriers may be made fast when the desired adjustment is obtained.

To provide for adjustment of the rolls to parallelism in a horizontal plane and for throwing the rolls in or out of grinding position, I employ pairs of rods D, rigidly secured to the resilient carrier B, taking through the carrier B' and through sleeves *e* of a yoke E, connecting the rods of each pair. The ends of the rods are threaded and take into correspondingly-threaded sleeves F, adapted to be rotated by suitable handles *f* and bearing against the sleeves *e* of the yoke. Taking over the yoke E is a forked bearing-plate G, in which the yoke is adapted to slide, resting against carrier B' and secured thereto by a screw *g* or other fastening which permits a pivotal movement upon the carrier.

H is a shaft taking through the yokes E and the bearings G at each end of the mill, eccentric to its axis of rotation at the yoke-bearings, and provided with a lever *h*, by which it may be actuated.

The rolls may be adjusted to parallelism in a horizontal plane by actuating either of the handles *f*, thereby moving the roll-bearings nearer to or farther away from each other in a horizontal plane. The roll B may be thrown in or out of its grinding adjustment by ac-

tuating the lever *h*, which gives a partial rotation to the eccentric shaft *H* and advances or retracts the yoke *E* relatively to the bearing-plates *G*, permitting roll *C* to recede
 5 from its mate by reason of the spring of carrier *B* if the yokes are retracted and drawing it toward its mate if the yokes are advanced.

The sleeves *e* are loose enough on rods *D*
 10 to prevent their cramping on the rods as the eccentric shaft is rotated.

Fig. 4 shows in full and dotted lines the positions of the rods *D* and yokes *E* before
 15 and after a half-rotation of the eccentric shaft.

To take up any lost motion between the rods, yokes, and threaded sleeves, springs *d* are placed upon the rods *D*, bearing against the yokes. The tension of these springs may
 20 be regulated by means of nuts *d'* on the rods.

I claim as my invention—

1. The combination, in a grinding-mill, of two roll-carriers, one of which is resilient; rods connected with one of the carriers; a
 25 bearing-plate pivotally secured to the other roll-carrier, and a yoke loosely connected with the rods and adjustable on the bearing-plate, substantially as and for the purpose specified.

2. The combination, in a grinding-mill, of
 30 two roll-carriers, one of which is movable, a bearing-plate taking against one of the carriers; a yoke movable upon the bearing-plate; rods connecting the other carrier and the yoke; an eccentric shaft connecting the bearing-plate and the yoke, and adapted to move
 35 one of them relatively to the other and means

for actuating the eccentric shaft, substantially as and for the purpose specified.

3. The combination, in a grinding-mill, of two roll-carriers, one of which is resilient; 40 rods connected with one of the carriers; a bearing-plate taking against the other roll-carriers; a yoke movable upon the bearing-plate; an eccentric shaft connecting the bearing-plate and the yoke and adapted to move 45 one of them relatively to the other, and means for actuating the eccentric shaft, substantially as and for the purpose specified.

4. The combination, in a grinding-mill, of two roll-carriers, one of which is resilient; 50 threaded rods on each side of the roll-bearings connected with one of the carriers; a yoke loosely mounted on and connecting the rods and having a bearing on the other carrier; threaded sleeves on the rods adapted to en- 55 gage with the yoke; means for rotating the sleeves and springs having a bearing on the yoke and the rods, substantially as and for the purpose specified.

5. The combination, in a grinding-mill, of 60 roll-carriers *B* and *B'*, adjusting-rods, *D*, bearing-plates, *G*, taking against one of the roll-carriers; yokes, *E*, connecting the rods, and adjustable on the rods, an eccentric shaft, *H*, adapted to move the yokes, relatively to 65 the bearing-plates, and threaded sleeves, *F*, adapted to engage with the yokes, substantially as and for the purpose specified.

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Witnesses:

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