(No Model.) 2 Sheets—Sheet 1.

# E. C. KEYSER.

## ROLLER MILL.

No. 334,389. Patented Jan. 12, 1886.

Fig. 1.

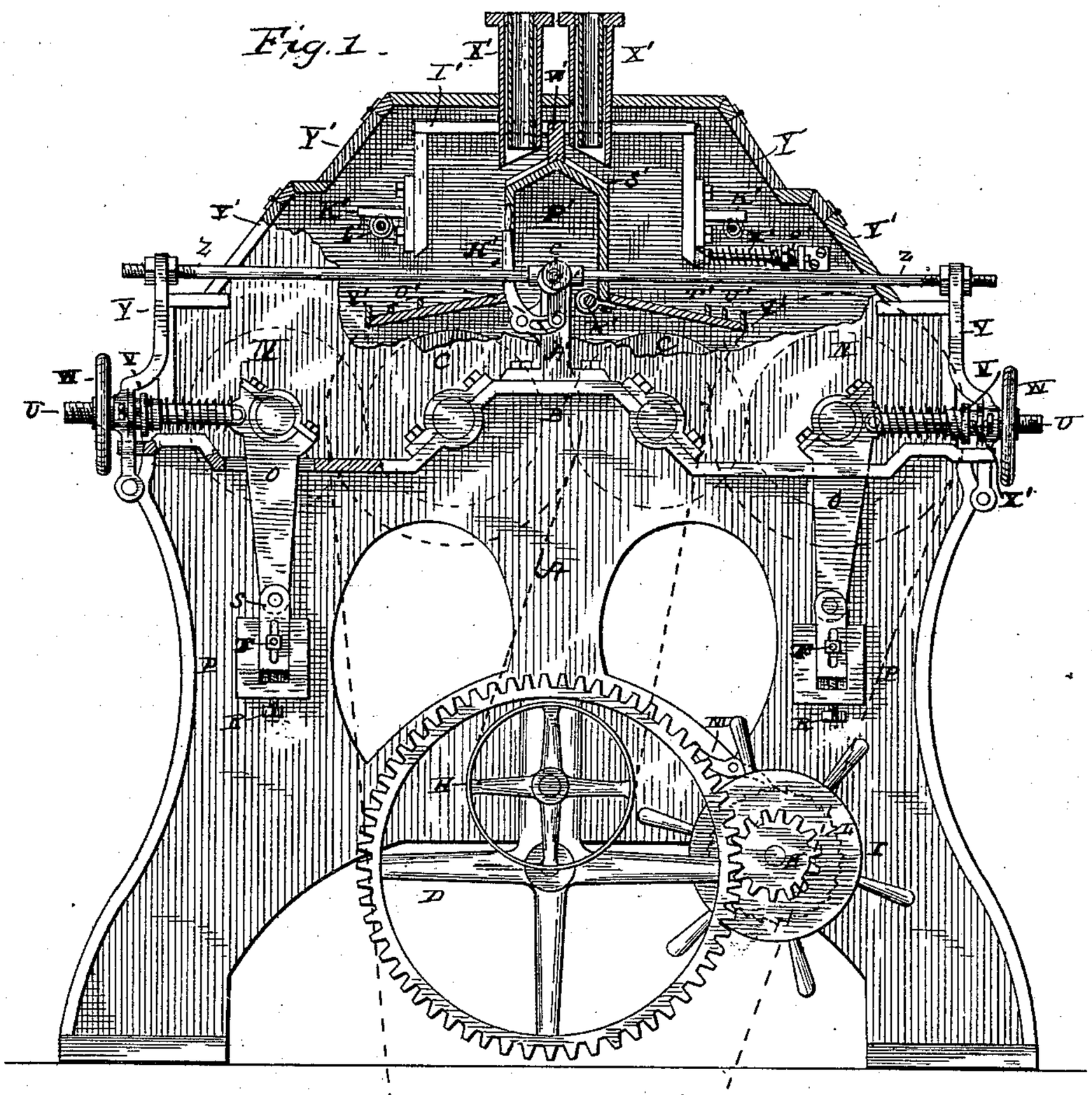


Fig. 2.

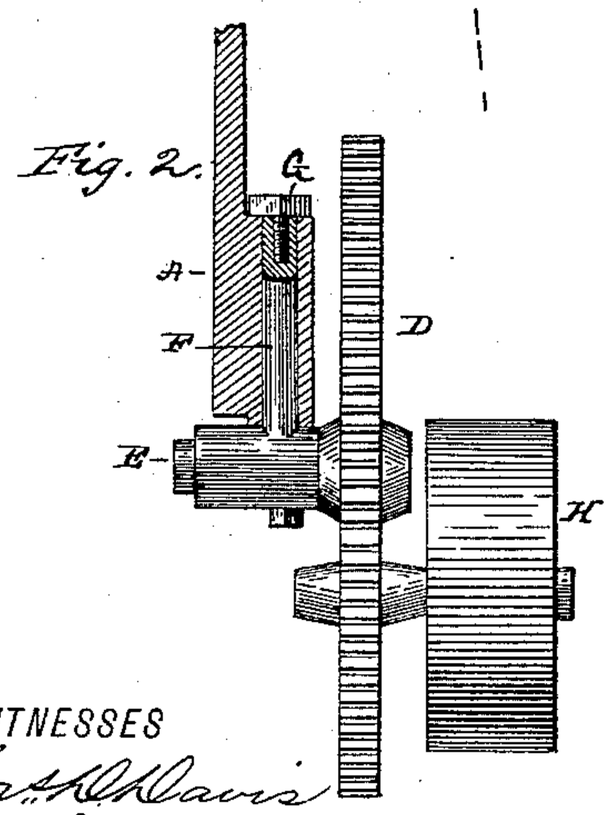
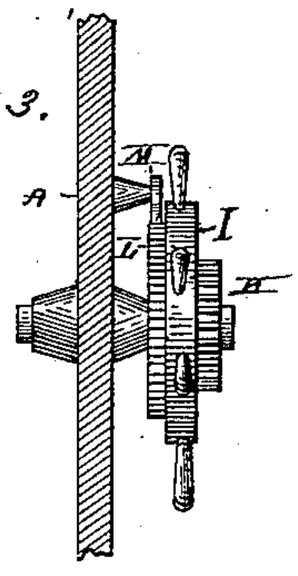


Fig. 3.



WITNESSES

Chas. H. Davis

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(No Model.) 2 Sheets—Sheet 2.

# E. C. KEYSER.

## ROLLER MILL.

No. 334,389. Patented Jan. 12, 1886.

Fig. 4.

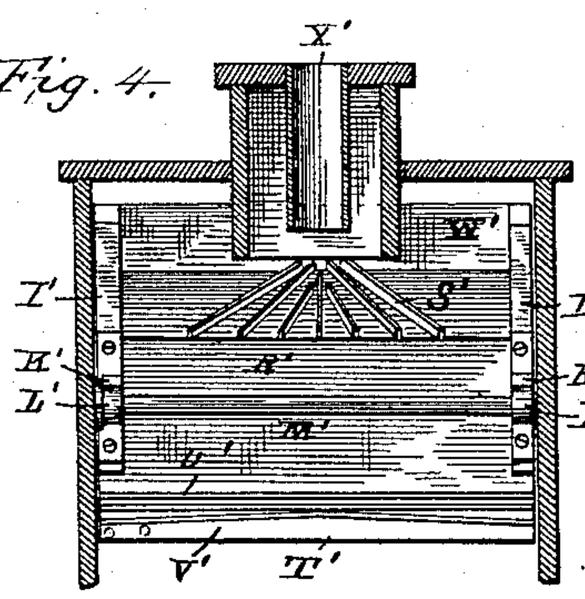



Fig. 5.

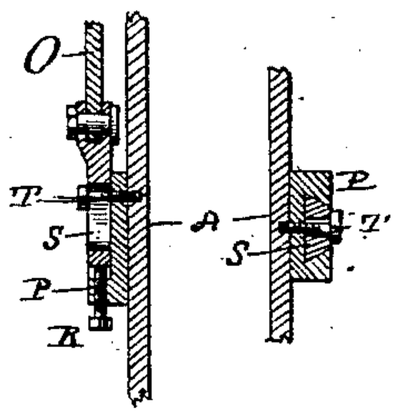



Fig. 6.

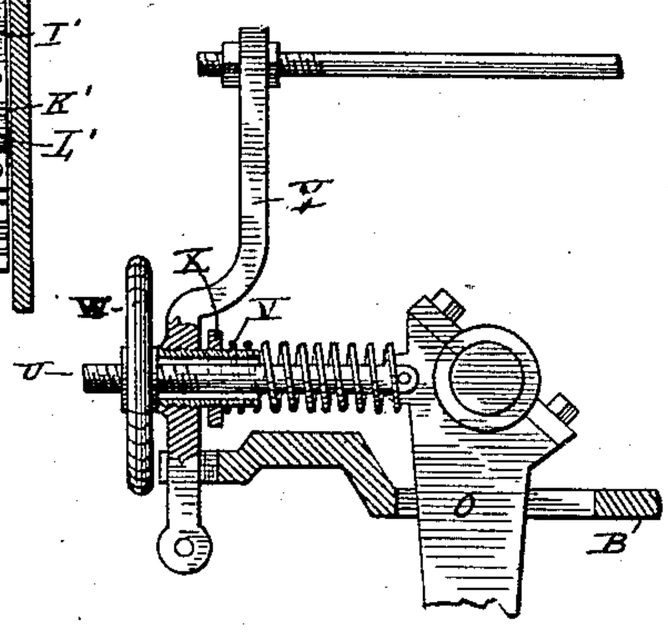



Fig. 7.

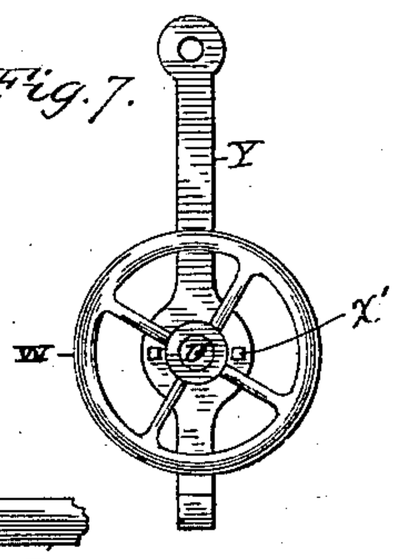



Fig. 8.

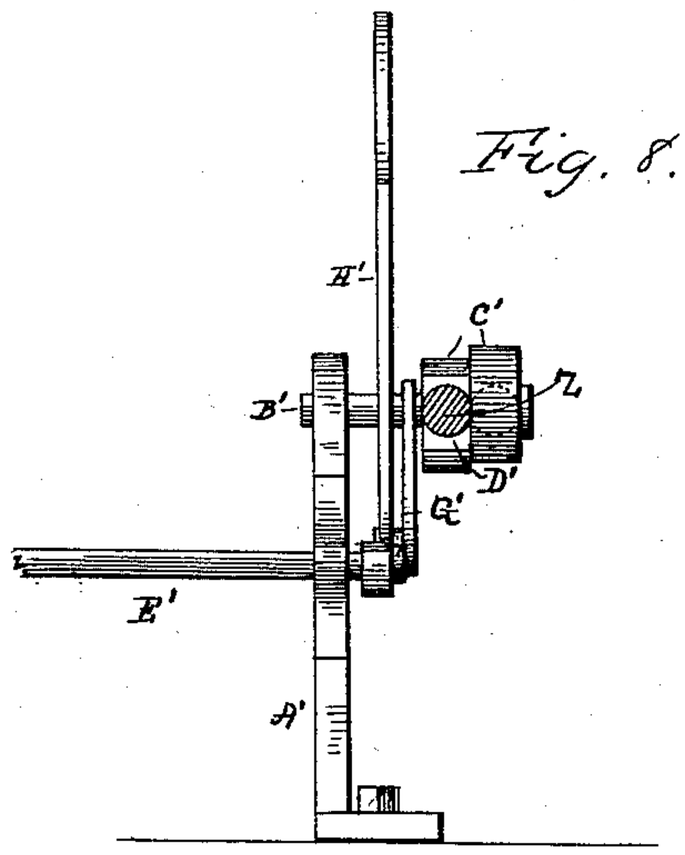



Fig. 9.

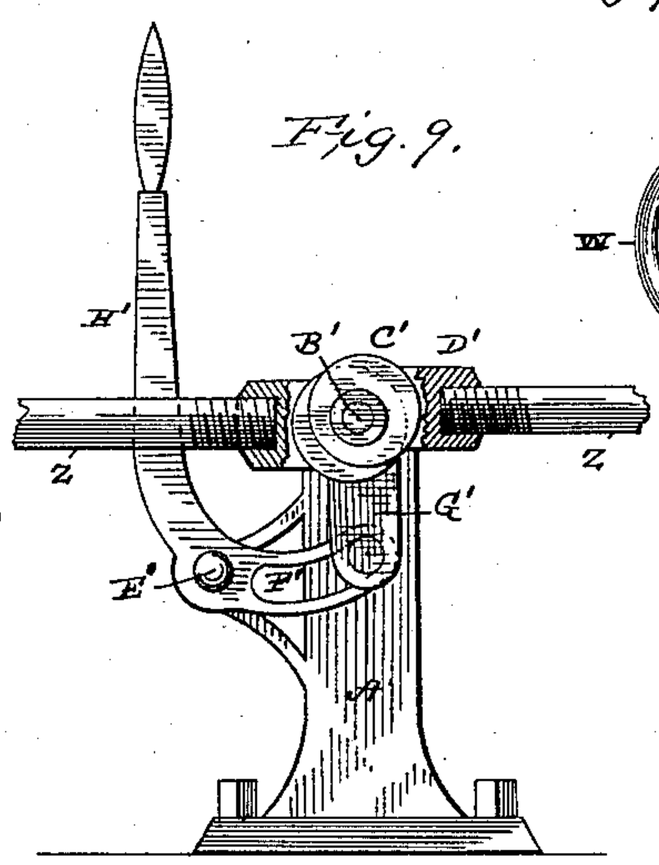
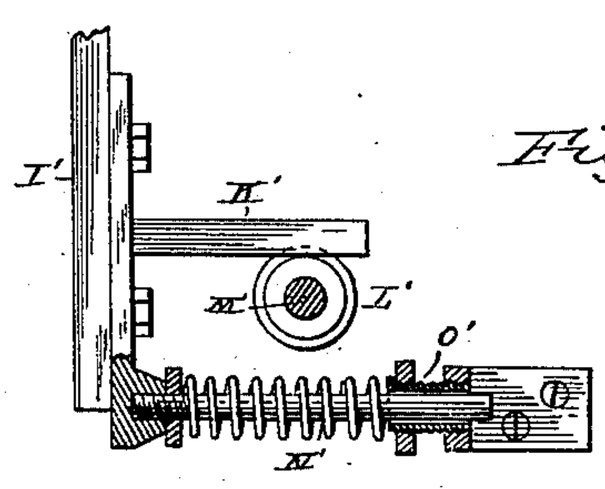



Fig. 10.




WITNESSES

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# UNITED STATES PATENT OFFICE.

EPHRAIM C. KEYSER, OF ABILENE, KANSAS.

## ROLLER-MILL.

SPECIFICATION forming part of Letters Patent No. 334,389, dated January 12, 1886.

Application filed June 4, 1885. Serial No. 167,640. (No model.)

*To all whom it may concern:*

Be it known that I, EPHRAIM C. KEYSER, a citizen of the United States, residing at Abilene, in the county of Dickinson and State of Kansas, have invented certain new and useful Improvements in Roller-Mills, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention relates to roller-mills, and is designed to produce a mill in which the rolls may be adjusted relative one to the other and thrown out of operation, the grain delivered to the said rolls in an even equable manner, either to one or both sets, and the drive-belt readily tightened, the whole being accomplished by the novel construction comprising the improvement.

In describing the invention reference is had to the annexed drawings, in which Figure 1 represents a side elevation of the mill, the pulleys on the roller-shafts being removed and the upper portion of the casing broken away; Fig. 2, an edge view of the belt-tightener; Fig. 3, an edge view of the hand-wheel for operating the belt-tightener; Fig. 4, a vertical section of the receiving-box and distributer; Fig. 5, two sectional views, vertical and transverse, of the mechanism by which the movable roller-bearings are adjustably supported; Fig. 6, a detail of the mechanism for adjusting the movable rollers horizontally and for spreading the rolls; Fig. 7, a detail view of the hand-wheel and its bearings shown in Fig. 6; Fig. 8, an edge view of a portion of the mechanism for throwing the rolls out of contact; Fig. 9, a side view of the same, and Fig. 10 a detail of the mechanism supporting the vibrating feed-box shown in Fig. 4.

The casing A has on each side a flange, B, in which the rollers C have their bearings. On the shafts of the rollers C, which have a rotative movement only, are the usual pulleys (not shown in the drawings) for actuating them.

The belt-tightener consists of a large gear-wheel, D, supported on the lower portion of the casing-frame, as shown in Figs. 1 and 2. The journal-box E has an extended rod or spindle, F, which passes through a vertical hole or passage in the casing, and is kept in position by a tap-bolt, G, or similar means. The wheel D, with the pulley H on one of its arms, may thus be brought, by its lateral adjustment, into the same plane as the pulleys on the rolls, and thereby prevent the belt from running off said pulley or pulleys. A wheel or disk, I, with hand-spokes on its periphery, and a pinion, K, on one side and a ratchet-wheel, L, on the other side, is supported in a bearing on the casing, the pinion intermeshing with the gear D, and a pawl, M, on the casing engaging with the ratchet-wheel. The wheel I may be operated by the foot to throw the pulley H from the position shown in Fig. 1 to any position desired in the arc in which it travels. The said line of travel is toward the right in the drawings. In Fig. 2 the pulley is shown low down. Thus it is evident any degree of tension may be given to the belt.

Opposing the stationary rolls C when the mill is in operation are independent adjustable rolls N. These rolls N are each supported at each end upon blocks O, which are extended downward and are supported upon adjustable pivot-bearings. These bearings consist of castings P, on the sides of the casing, having undercut grooves, into which enter tap-screws R. Resting on the ends of these tap-screws are beveled pieces S, to which the downward extensions of the blocks O are pivoted. Through slots in the pieces S pass tap or set screws T, which, when the bearing-blocks are properly adjusted vertically, hold the same in place.

The construction above described is shown in Figs. 1 and 5.

The rolls are adjusted horizontally by means of spring-surrounded partially screw-threaded rods U, Figs. 1, 6 and 7, each passing through a sleeve, V, and provided with a hand-wheel, W. Each sleeve is provided with a shoulder, X, against which the spring rests, and is adjustable by means of set-screws X′, Figs. 1 and 7, which are tapped into an arm, Y, the lower end of which is pivoted to the casing and the upper end connected to a rod, Z. Both the bearing-blocks and the arms Y pass through suitable slots in the flanges B.

On the flange B, on each side of the mill, centrally, (see Figs. 1, 8, and 9,) is raised a standard, A′, supporting a short shaft, B′, carrying two eccentrics, C′, projecting diametrically opposite and resting within the boxes D′,

one at the inner end of each of the rods Z. There is an adjustable bearing-block at each end of the shaft of each roll N, and the adjusting mechanism, as well as the rods Z and eccentrics C', are duplicated, one set on each side the machine. Passing through the machine is a shaft, E', journaled on the side of the standards A', and carrying at each end a slotted curved arm F', in the slot of which engages a pin on a short downward-projecting arm, G', secured one at each end on the shaft B'.

On one or both ends of the shaft E', and integral with the arm F', is a handle or hand-lever H', by means of which the arms F' are caused to swing the arms G' to one side sufficiently to partially revolve the eccentrics and bring them against the boxes on the rods Z, which are thus moved in opposite directions, carrying, through their connections, the rolls N out of operation.

The feeding mechanism, (see Figs. 1, 4, and 10) consists of a frame or frames I', having lateral-projecting strips K' on their downward projections. These strips rest on friction wheels or pulleys L', one on each end of shafts M', which extend across the machine. On one or both sides of the frames are spring-surrounded rods N', passing at one end through guiding-sleeves O', secured to the casing. These act as spring-buffers, and impart to the feed-box P', which the frames support, an even steady motion when actuated by the eccentric R', Fig. 1, on a shaft having suitable connection to the driving mechanism. The feeder has a pitched top provided on each side with spreading guides S'. The lower portions, T', of the feeder slant somewhat, and extend over the conjunctive point of each set of rolls. Lateral strips U' cause the grain or other material to approach the edges evenly, and a strip, V', at the edges, slanting or inclined from the center toward its ends, insures an even feed to the rolls through the entire length of the feed-box, since the reciprocating motion tends to cause the material to accumulate at the center of the box. Along the ridge of the pitched top is a divider, W', which causes the material received through the chutes X' to go in its appropriate direction and set of rolls. Doors Y' in the side of the casing render the interior mechanism readily accessible.

One set of rolls may be used only, or the two sets may simultaneously be used for different substances.

I claim—

1. In a roller-mill, a feed mechanism consisting of a reciprocating box having a slanting top provided with spreading guides, and slanting extensions having retarding-strips, and an edge strip inclined from the center toward the edges, substantially as and for the purpose specified.

2. In a roller-mill, the combination of a feed-box, supporting-frames having extending strips, wheel or roller bearings, and buffers consisting of rods, springs surrounding said rods, and guides therefor, substantially as and for the purpose specified.

3. In a roller-mill, a feed mechanism consisting of a reciprocating box having a slanting or pitched top provided with spreading guides, slanting extensions having retarding-strips, and edge strips inclined from the center toward the edge, supporting-frames having strips, wheel or roller bearings, spring-buffers consisting of rods, springs surrounding said rods, and guides therefor, and a dividing-strip on the pitched top of the said box, substantially as and for the purpose specified.

4. In a roller-mill, the combination of a lever, a through-shaft having curved and slotted arms, shafts, each carrying eccentrics and a projecting arm, connecting-rods with boxes receiving the eccentrics, pivoted arms to which said rods are secured, and means for connecting said pivoted arms to the bearings of the movable rolls, substantially as and for the purpose specified.

5. The combination of pivotal bearings for the rolls, spring-surrounded rods pivoted to said bearings, shouldered sleeves supported by suitable bearings, set-screws passing through said bearings and bearing against the shoulders on the sleeves, and hand-wheels traveling on the screw-threaded portions of said rods, substantially as and for the purpose specified.

6. In a roller-mill, in combination with the rolls, the belt, and the pulleys on said rolls, a belt-tightener consisting of a large gear-wheel carrying a pulley, and a pawl-retained operating-wheel carrying a pinion intermeshing with the gear, substantially as and for the purpose specified.

7. In a roller-mill, in combination with the rolls, the belt, and the pulleys on said rolls, a belt-tightener consisting of a large gear-wheel having a bearing with pivotal adjustment at right angles to its plane of rotation and carrying a pulley at a distance from its center, and an operating-wheel with a ratchet and pawl, and a pinion intermeshing with the large gear, substantially as and for the purpose specified.

In testimony whereof I affix my signature in presence of two witnesses.

EPHRAIM C. KEYSER.

Witnesses:

S. A. BURROUGHS,

J. H. LUCAS.