

(No Model.)

ROLLER MILL ADJUSTMENT.

No. 571,266.

Patented Nov. 10, 1896.

Fig. 1.

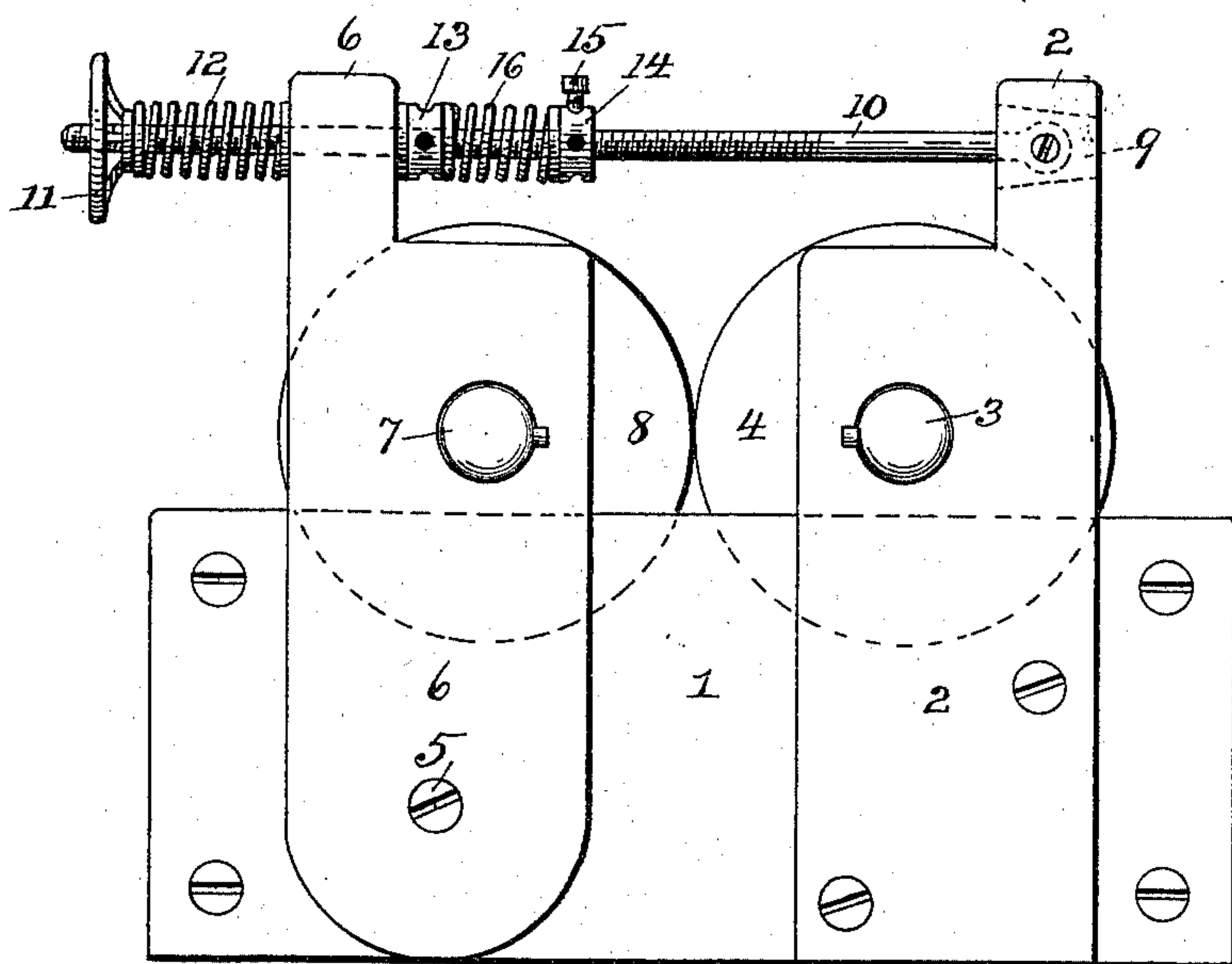
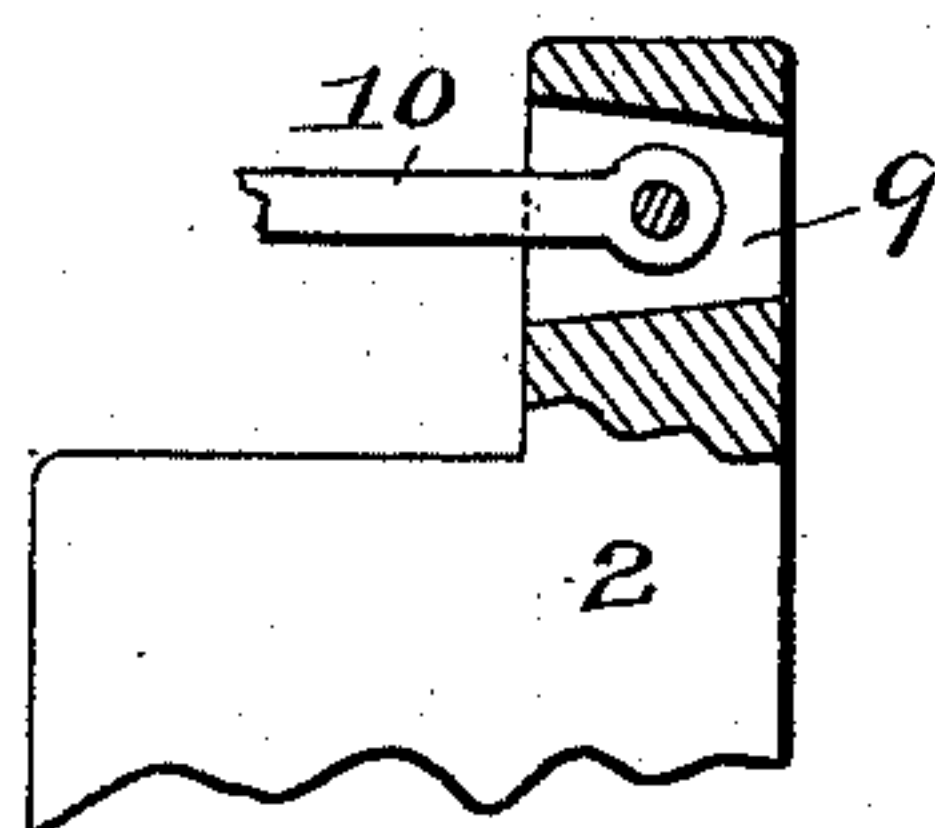


Fig. 2.



Witnesses

Witnesses
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UNITED STATES PATENT OFFICE.

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ROLLER-MILL ADJUSTMENT.

SPECIFICATION forming part of Letters Patent No. 571,266, dated November 10, 1896.

Application filed January 15, 1896. Serial No. 575,600. (No model.)

To all whom it may concern:

Be it known that I, MICHAEL FAVROW, a citizen of the United States, residing at St. Cloud, in the county of Stearns and State of Minnesota, have invented certain new and useful Improvements in Roller-Mill Adjustments, of which the following is a specification.

My invention relates to grinding and other mills, more particularly those in which the grinding-rollers are made adjustable with respect to each other, and has for its object to provide an improved construction of the adjusting mechanism for the bearings of the adjustable roller whereby the same may be readily and accurately arranged in any desired position with respect to the fixed roller and will at the same time be locked in this adjusted position without danger of accidentally altering the adjustment.

The adjustment of the rollers in mills for crushing grain has usually been accomplished by means of stop-nuts and jam-nuts on threaded rods, one end of which is attached to the fixed bracket which supports one of the rollers, the opposite end of the rod passing through an aperture in the movable bracket which supports the other roller of the pair. The outer ends of the rods are encircled by a spiral spring, one end of which rests against the bracket and is held in contact therewith by a nut or nuts and the pressure of the spring regulated thereby. A stop-nut is screwed against the inner side of the bracket and prevents the rollers from being forced in contact with each other by the pressure of the spiral spring and also regulates the degree of fineness of the crushing operation. As the quality of the grain or material which is being crushed or ground changes it becomes necessary to regulate the distance between the pair of rollers, or by increasing or decreasing the pressure of the springs on the outer ends of the rods when the hardness of the grain being crushed varies. The constant tremor of the mill and the varying pressure against the stop-nuts resting against the inner side of the bracket cause the stop-nuts to change their position slightly, to prevent which jam-nuts have been used to hold them in place. The use of the jam-nut renders it more difficult to obtain an accurate adjust-

ment of the rollers than would be the case if but a single nut was used, as there are two nuts that constantly change their position slightly instead of one.

To obviate the above-named difficulties, I interpose a spiral spring between the jam-nut and stop-nut, the spring encircling the rod and its ends resting in contact with the nuts. In order to prevent as far as possible any movement of the jam-nut, I insert therein a set-screw to secure it to the rod. By the use of the spring I am able to obtain and maintain a more accurate and regular adjustment of the rollers than is otherwise obtainable, the outer and inner springs acting together to keep the stop-nut in approximately the same position. There being but the single nut the adjustment may be made quickly and with great nicety. This object I accomplish in the manner and by the means hereinafter described in detail and claimed, reference being had to the accompanying drawings, in which—

Figure 1 is a side elevation of a portion of a grinding-mill, showing the bearings of the grinding-rollers on one side of the machine with my improvement attached thereto. Fig. 2 is a detail vertical sectional view of the upper end of the fixed grinding-roller support, showing the adjusting-rod pivoted therein.

In the said drawings, the numeral 1 denotes the frame of the machine having fixed thereto a supporting-bracket 2, carrying near its upper end one of the bearings 3 of the fixed grinding-roller 4. Also carried by said frame, but pivoted at 5 instead of fixed, is a second supporting-bracket 6, carrying one of the bearings 7 of the adjustable grinding-roller 8, as shown.

It will be understood that the opposite side of the machine is provided with similar fixed and pivoted brackets for supporting the opposite ends of the grinding-roller bearings, and that the novel adjusting mechanism for the adjustable roller, hereinafter described, is also duplicated on the other side.

In a slot 9 in the upper end of the fixed bracket 2 is pivoted one end of an adjusting-rod 10, the said slot flaring at the side nearest the adjustable roller 8, as shown in Fig. 2, to afford room for limited play to said adjusting-rod. This rod is threaded for the

greater portion of its length and near its free end passes loosely through an aperture in the upper end of the pivoted bracket 6, projecting for a distance to the other side thereof, as shown.

Screwed upon the outer end of said rod is an adjusting-nut 11, having interposed between it and the bracket 6 the coiled spring 12. Also carried by said rod, between the brackets 2 and 6, is a stop-nut 13 and a jam-nut 14, both of which are in threaded engagement with said rod and have preferably a series of holes in their peripheries to receive a suitable key for turning the same. The jam-nut 14 is also provided with a set-screw 15, tapped therethrough and adapted to engage with the rod 10 when it is desired to retain said nut in any adjusted position. Interposed between these nuts 13 and 14 is a coiled spring 16 for a purpose hereinafter described.

If desired, suitable washers may be interposed between the ends of the spring 12 and the adjusting-nut 11 and the bracket 6, between nut 13 and bracket 6, and between the ends of spring 16 and nuts 13 and 14.

The operation of my improved device will be understood to be as follows: By properly adjusting the nuts 11 and 13 on the rods 10 on each side of the machine the brackets 6, carrying the bearings 7 of the adjustable roller 8, can be arranged at any desired distance from the fixed grinding-roller 4, the nuts 13 limiting their inward movement, while the interposed springs 12 will permit a limited outward give to said roller 8 when rendered necessary by the passage of any hard substance between the grinding-rollers. By locating the jam-nuts 14 a little distance from the stop-nuts 13 and interposing between them the springs 16 I provide for effectually preventing any accidental rotation of said stop-nuts, in setting the jam-nuts 14, and at the same time permit their ready adjustment within a limited space without the necessity of first moving the jam-nuts 14, which would be required if they abutted. By providing a longitudinal movement for the jam-nuts 14 any extraordinary adjustment of the grinding-rollers is rendered practical.

Having thus described my invention, what I claim as new, and desire to secure by Letters Patent, is—

1. A roller-mill provided with a pair of crushing-rollers, one of the pair journaled in a fixed bracket and the other journaled in a movable bracket, adjusting-rods secured to said fixed brackets, stop-nuts carried by said rods between said brackets and against the sides of the movable bracket, springs carried by said rods and resting against said nuts and held in contact therewith by jam-nuts and means for securing said jam-nuts to said rods, substantially as shown and described.

2. In a roller-mill provided with crushing-rollers journaled in a fixed and in a movable bracket, the combination with said rollers, of threaded adjusting-rods secured in said brackets and provided with stop-nuts resting in contact with the inner side of said movable bracket, a coiled spring resting against said nuts and held in position therewith by jam-nuts and said jam-nuts held in a fixed position on said rods by set-screws in said jam-nuts, substantially as shown and described.

3. In a roller-mill, the combination with a roller journaled at each of its ends in fixed brackets, and a roller journaled at each of its ends in brackets pivoted at their lower ends, of adjusting-rods pivoted at one of their ends to said fixed brackets, their opposite ends threaded and passing loosely through apertures in said pivoted brackets and having a coiled spring on the ends thereof resting against said brackets and held in an adjustable position thereon with a stop-nut, stop-nuts on said rods on the inner side of said brackets and in contact therewith, a coiled spring on each of said rods held in contact with said stop-nut by a jam-nut and said jam-nut having a set-screw therein for rigidly holding it on said rod, substantially as shown and described.

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

MICHAEL FAVROW.

Witnesses:

H. A. MCKENZIE,
J. H. BOEHM.