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J. WALKER.

ROLLER MILL.

No. 347,667. Patented Aug. 17, 1886.

Fig. 1.

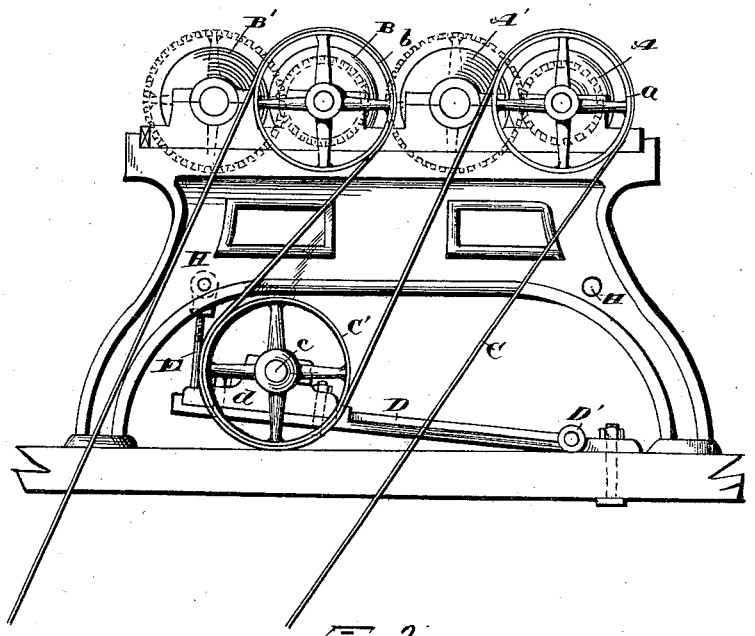
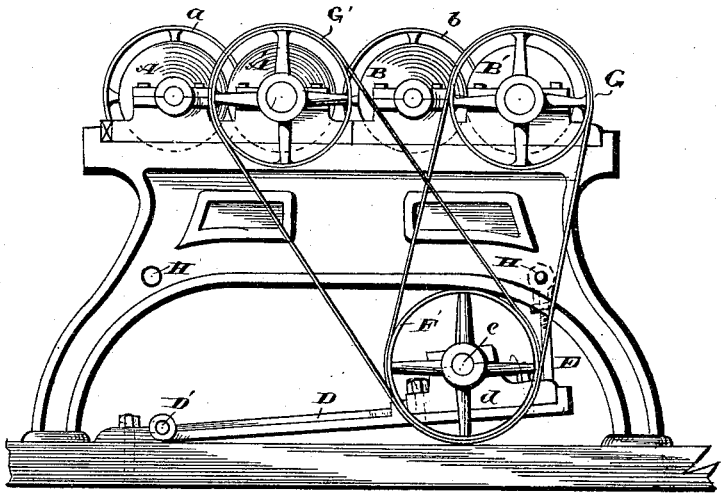


Fig. 2.



WITNESSES

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Chas. F. Doren

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(No Model.) 2 Sheets—Sheet 2.

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Fig. 3.

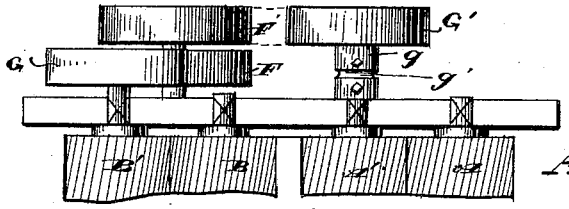


Fig. 4

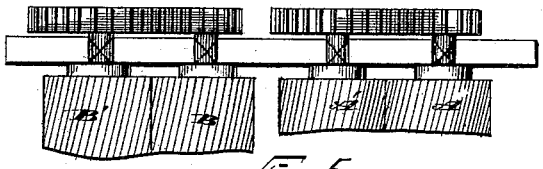


Fig. 5.

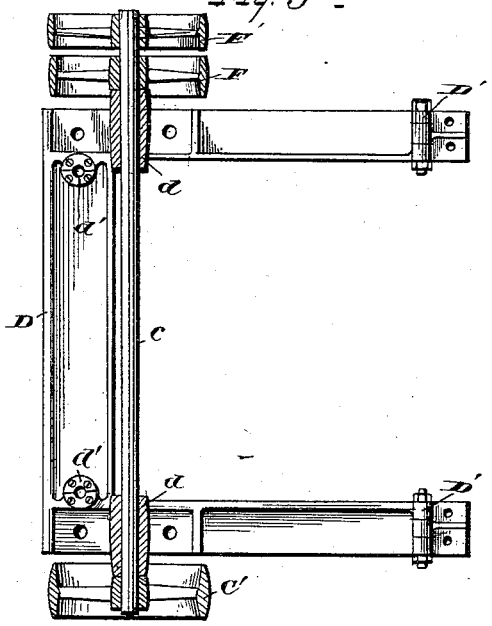


Fig. 6.

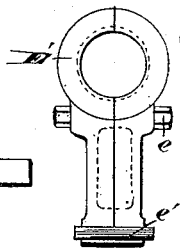
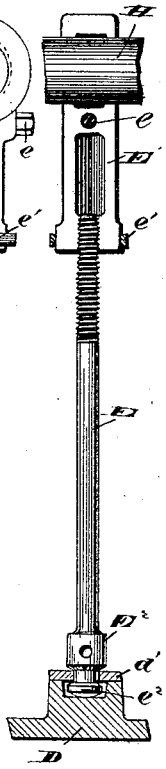


Fig. 7.



WITNESSES

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UNITED STATES PATENT OFFICE.

JOHN WALKER, OF CLEVELAND, OHIO.

ROLLER-MILL.

SPECIFICATION forming part of Letters Patent No. 347,657, dated August 17, 1886.

Application filed October 31, 1885. Serial No. 181,518. (No model.)

To all whom it may concern:

Be it known that I, JOHN WALKER, of Cleveland, in the county of Cuyahoga and State of Ohio, have invented certain new and useful Improvements in Roller-Mills; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it pertains to make and use the same.

My invention relates to improvements in mechanism for roller flouring-mills, designed more especially for converting the old style rolls that were geared into the modern style of rolls that are driven by belts.

Formerly were made in large numbers a style of mill-rolls in which one roll of each set was driven by a belt, and each belt-driven roll was intergeared with its respective co-operating roll. These mills were not a success as compared with the roller-mills now in common use, where each and all of the rolls are driven by belts, the unsatisfactory action of the gearing being too well known to require further notice here. Such intergeared rollers, consisting of the usual two sets or in all four rolls, with the frame and other attachments, constitute an expensive and heavy machine. To remove such machine and remodel the same would involve a great expense and long delay. I have therefore devised means by which the geared rolls can be converted into the modern belt-driven rolls with little expense or delay.

In the accompanying drawings, Figure 1 is a front side elevation of flouring-mill rolls, illustrating my improvements, and showing also in dotted lines the old style gearing on the rear side that is superseded by my improved mechanism. Fig. 2 is a rear side elevation showing the rolls with the gears removed and the pulleys and other attachments substituted, embodying my invention. Fig. 3 is a plan view of the pulleys at the rear side, and Fig. 4 shows the gearing for which the band-wheels are substituted. Fig. 5 is a plan view of a swinging frame and counter-shaft, the same being an essential feature of my invention. Figs. 6 and 7 are elevations of one of the connecting-rods and clasps for adjusting the swinging frame.

The usual flouring-mill rolls consist of four rolls, A, A′, B, and B′, arranged in pairs, as shown. The rolls A and B have respectively the band-wheels *a* and *b*, over which passes the driving-belt C, the latter also passing around the idle-pulley C′. This pulley C′, I mount on a shaft, *c*, that is long enough to extend through and project on the other side of the machine. The shaft *c* is journaled in suitable boxes, *d*, that are attached to or integral with the frame D. This frame at one side is hinged at D′ to the floor. On the other side the frame is held by the adjustable rods E, hereinafter more fully described. On the rear end of the shaft *c* are mounted the band-wheels F and F′.

To convert one of the old-style machines having intergeared rollers, as shown in Fig. 4, into a more modern machine, I remove the gear-wheels and cut off the trunnions of the rollers A and B, which are driven by the belt C, just outside of the journal-boxes. On the trunnion of the roller B′, I place the band-wheel G in line with the wheel F, with which it is connected by a belt. On the trunnion of the roll A′ is mounted the band-wheel G′ in line with the pulley F′. The pulley G is made with a long hub, *g*, as shown, to carry it out in line with its driving-pulley F′. A groove, *g′*, is for a round belt that drives the feed mechanism above. (Not shown.) It will be seen from the arrangement of the main belt C that the pulley C′ must necessarily turn in an opposite direction from the rolls A and B, and, consequently from the connections already shown, the rolls A′ and B′ will move in the same direction as when operated by the gears shown in Fig. 4—that is, in the opposite direction from the rolls A and B. Of course the sizes of the different pulleys are arranged to give the required relative speeds to the different rolls.

The geared machines almost universally have large stay-rods H extending from one side of the frame to the other. To one of these rods I connect the rods E in the following way: Clasps E′, made in halves, are made to fit easily on the rod H. The two halves of each clasp are secured by the clamp-bolt *e* and the band *e′*. With this construction these clasps are placed upon the rod H without removing or unfastening the latter from the machine. The parts

of the clasps that extend around the rod H are usually cored, as shown in Figs. 6 and 7, leaving merely chipping-pieces outside that may be easily fitted by hand to the rod H in case a lathe or machine to bore the clasps is not conveniently near at hand. The lower end of each clasp is threaded internally to receive the threaded end of the rod E. An enlarged portion, E^2, of the rod E has pin-holes; or it may be squared to receive a wrench for turning the rod E. At the extreme lower end of the rod E is the collar e^2, and between the parts E^2 and e^2 the rod E fits the cap d'. These caps are made in halves and bolted to the frame D, as shown in Fig. 5. It will be seen that these parts may be assembled without disturbing the old machine. By unscrewing the rods the connection is of course lengthened and the front end of the frame D is thereby depressed, which depression would of course tighten all of the belts, or by screwing up the rods E all of the belts would be loosened. When new belts are put on, the frame D is elevated, and afterward (by turning the rods E) is depressed a trifle from time to time as the belts stretch. The frame D and attachments therefor serve as a tightener, and what was an idle-pulley, C', is converted into a driving-pulley, from which power is transmitted to the rolls A' and B', as aforesaid.

In making new machines, about the only change that I would suggest would be to extend the rear end of the frame D and hinge it to the rear legs of the machine, so that the attachments would be complete when the machine was shipped. In case the stay-rods H were wanting studs could be attached to the side frames in place of the rod H, and to such studs the clasps E' could be attached.

What I claim is—

In a roller grinding-mill, the combination, with the frame, the stay-rod H, and the rollers having the belt-pulleys thereon, of a frame pivotally secured at one end to the foundation or floor at a point below the machine-frame, screw-threaded rods and clasps connected at their upper ends to the stay-rod and at their lower ends to the free end of the frame for adjusting said frame, a shaft mounted on said frame near the free end thereof, and a pulley mounted on said shaft in a position to serve as a drive and idle pulley for the main belt, the parts being arranged so that power from said drive and idle pulley is transmitted to the opposite side of the machine to drive the rolls not driven directly by the main belt, substantially as set forth.

In testimony whereof I sign this specification in the presence of two witnesses, this 10th day of October, 1885.

JOHN WALKER.

Witnesses:
CHAS. H. DORER,
ALBERT E. LYNCH.