

(No Model.)

2 Sheets—Sheet 1.

J. M. SCHUTZ.
BELT GEARING FOR ROLLER MILLS.

No. 337,444.

Patented Mar. 9, 1886.

Fig. 2.

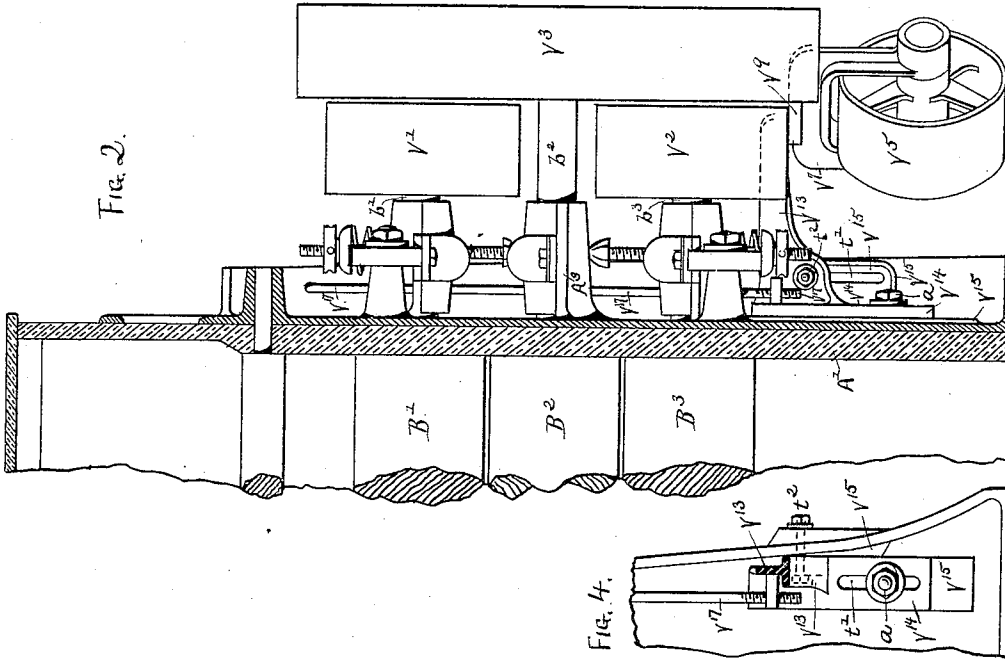


Fig. 4.

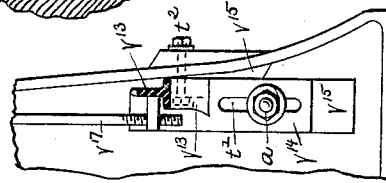
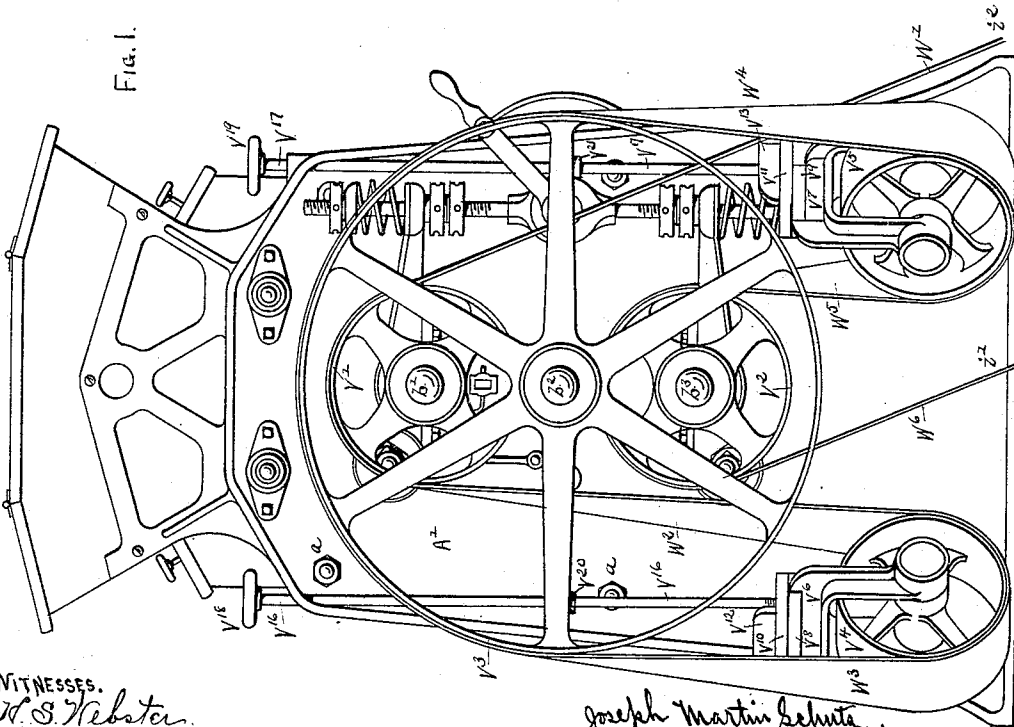


Fig. 1.



WITNESSES.

H. S. Webster.
Wm. C. Brown.

Joseph Martin Schutz,
INVENTOR, BY
Charles H. Woodward
att'y.

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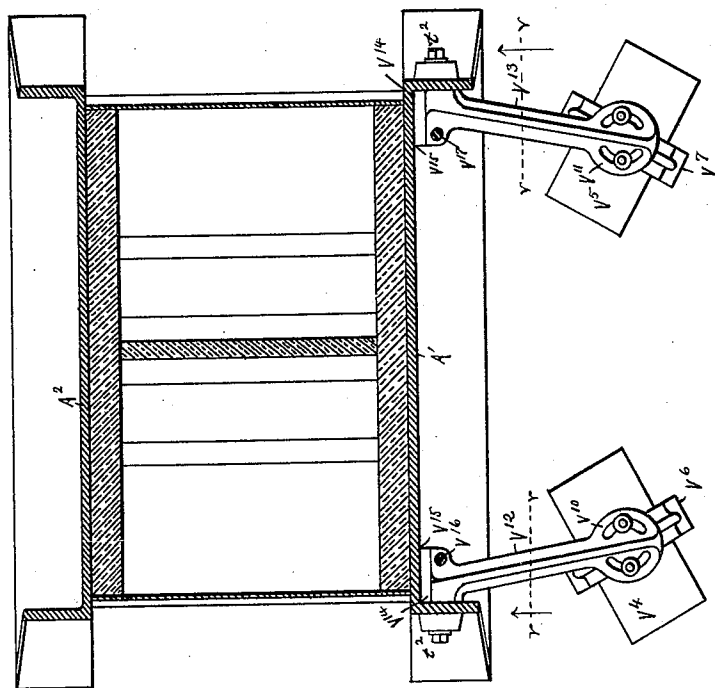
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FIG. 3.



WITNESSES.

Wm C. Brown

H. S. Webster,

Joseph Martin Schutz.

INVENTOR BY
Charles H. Woodward
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UNITED STATES PATENT OFFICE.

JOSEPH M. SCHUTZ, OF MINNEAPOLIS, MINNESOTA.

BELT-GEARING FOR ROLLER-MILLS.

SPECIFICATION forming part of Letters Patent No. 337,444, dated March 9, 1886.

Application filed October 25, 1884. Serial No. 146,506. (No model.)

To all whom it may concern:

Be it known that I, JOSEPH MARTIN SCHUTZ, a citizen of the United States, and a resident of Minneapolis, in the county of Hennepin and State of Minnesota, have invented certain new and useful Improvements in Belt-Gearing for Roller-Mills, of which the following is a specification.

Figure 1 is a side elevation of the roller-mill completed. Fig. 2 is a sectional elevation showing the belt-gearing at right angles to its position in Fig. 1. Fig. 3 is a horizontal section of the mill directly above the idle-pulley-supporting device, showing the same in plan. Fig. 4 is a vertical section of a portion of the mill in a plane indicated by the line *v v* in Fig. 3.

A' A² are the side frames, between which the rolls are journaled, and connected together by the tie beams or bolts *a*, in the ordinary manner.

B' B² B³ are three grinding-rolls placed in line perpendicularly between the sides A' A², and with their journals *b' b² b³* passing out through the said sides, as shown. The center roll is held in a fixed relation to the frame A' A² by being journaled in fixed bearings on the frame, while the upper and lower rolls are made adjustable with relation to the center roll by means of levers D' D², in which their journals *b' b²* are arranged to be held by caps.

On the ends of the shafts of the rolls B' B² belt-pulleys V' V² are secured, and on the corresponding end of the shaft of the center roll, B³, a larger pulley, V³, is secured, the latter overlapping the outer edges of the pulleys V' V², as shown. The sizes of these pulleys may be varied to suit the circumstances, it being necessary to the perfect action of the apparatus that the upper and lower rolls should be revolved at a greater speed than the center roll; hence the relative sizes between the pulleys V' V² and the pulley V³ will be made to secure the proper variations of speed.

In practice I have found the relative sizes shown in the drawings to be about the proper ones for ordinary work, giving the upper and lower rolls a speed of about two and a half revolutions to one of the center roll; or, in other words, if the center roll makes two hundred and eighty revolutions per minute, the upper and lower rolls would make seven hundred revolutions per minute.

Attached by adjustable hangers to the lower part of the side A', and beneath pulleys V' V² V³, are two angularly-set "idler-pulleys," V⁴ V⁵, their office being to transfer the driving-belt from the pulley V' to the pulley V³ and from the pulley V³ to the pulley V², as follows: The main driving-shaft will be located below the line of support on which the roller-frame A' A² stands, and will be provided with a belt-pulley in line below the pulleys V' V². The pulley and the main shaft are not shown in the drawings, the belt being shown broken off at *i' i²* and represented as just coming up from the pulley below. The belt first passes up at W' and over the pulley V', thence down at W² and around the idler V⁴, which will be set at an angle, so as to lead the belt at W³ up over the large pulley V³, and thence down at W⁴ to and around the other idler, V⁵, which will be so set as to lead the belt, as at W⁵, up over the pulley V², and from thence, as at W⁶, back to the pulley beneath the floor. By this simple means only one belt is required to revolve all three of the rollers B' B² B³, and in the proper directions and at the required speed.

By changing the sizes of the pulleys V' V² V³ any desired variation of speed may be obtained.

The "idlers" V⁴ V⁵ are supported by yoke-frames V⁶ V⁷, the latter being in turn secured by horizontal disks V⁸ V⁹ to similar disks, V¹⁰ V¹¹, on hangers or brackets V¹² V¹³. The disks are slotted and perforated, so that the yoke-frames may be adjusted around the center of the disks, while the brackets V¹² V¹³ are also adjustable upon the side A', so that the idlers may be adjusted to properly "lead" the belt from one pulley to the other.

The brackets V¹² V¹³ are formed with right-angled surfaces V¹⁴, to fit into the corners of the side A' upon properly-prepared upright surfaces V¹⁵, as shown. The edges of the frame A' are pierced with upright slots *t'*, through which the brackets are secured to the side frame by bolts *t²*, while the other portions of the parts V¹⁴ of the brackets are similarly secured to the main part of the frame A' by the bolts of the lower tie-bars, *a*, as shown, the slots in this case being in the bracket instead of in the frame.

V¹⁶ V¹⁷ are rods journaled through the rim of the frame A', and also through the bridge-tree

A³, and provided on their upper ends with hand-wheels V¹⁶ V¹⁹, and tapped by their lower ends into the brackets, so that by turning the hand-wheels the brackets may be run upward and downward to loosen or tighten the driving-belt.

Collars V²⁰ V²¹ will be attached to the rods V¹⁶ V¹⁷ beneath the bridge-tree A³, to prevent the rods rising when revolved in the brackets.

10 In the drawings I have shown the mechanism for adjusting the rolls, in order that the main parts of the mill may be shown complete, and I reserve to myself the making of such mechanism the subject-matter of another application
15 for Letters Patent.

Having thus described my invention, what I claim as new is--

1. In a roller-mill, the combination of roll B', provided with pulley V', roll B², provided
20 with pulley V³, roll B³, provided with pulley V², said rolls being arranged in line perpen-

dicularly and supported in a suitable frame-work, angularly-set idlers V⁴ V⁵, and a belt adapted to pass around all of said pulleys, substantially as and for the purpose specified. 25

2. In a roller-mill, the combination of roll B', provided with pulley V', roll B², provided with pulley V³, roll B³, provided with pulley V², said rolls being arranged in line perpendicu-
larly and supported in a suitable frame-work, 30 idlers V⁴ V⁵, yoke-frames V⁶ V⁷, disks V⁸ V⁹, brackets V¹¹ V¹², means for adjusting said yoke-frames upon said brackets, and means for adjusting said brackets upon said supporting frame-work, substantially as set forth. 35

In testimony thereof I have hereunto set my hand in the presence of two subscribing witnesses.

JOSEPH M. SCHUTZ.

Witnesses:

W. H. DONAHUE,
C. N. WOODWARD.