(No Model.) 3 Sheets—Sheet 1.

C. G. W. KAPLER.

ROLLER GRINDING MILL.

No. 447,951. Patented Mar. 10, 1891.

Fig. 2.

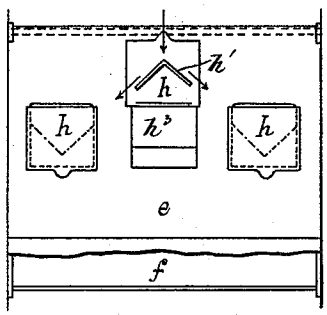
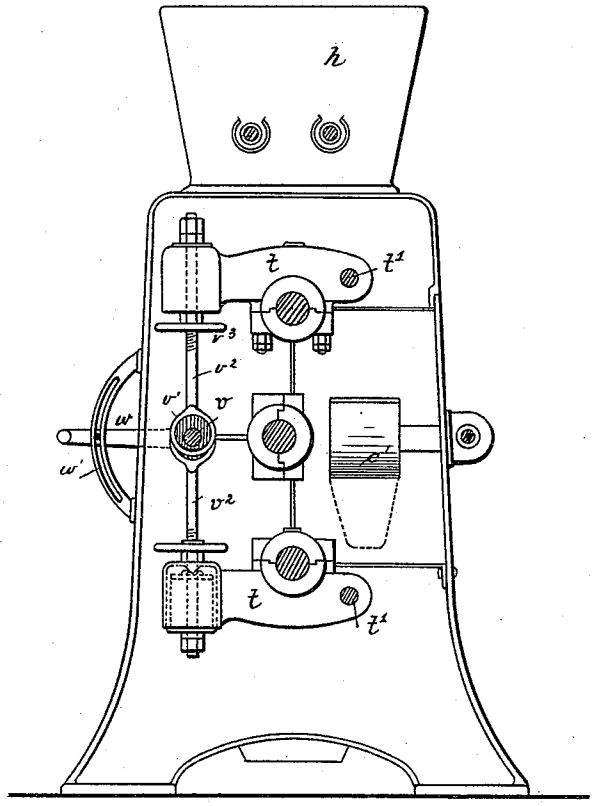


Fig. 1.



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Fig. 3.

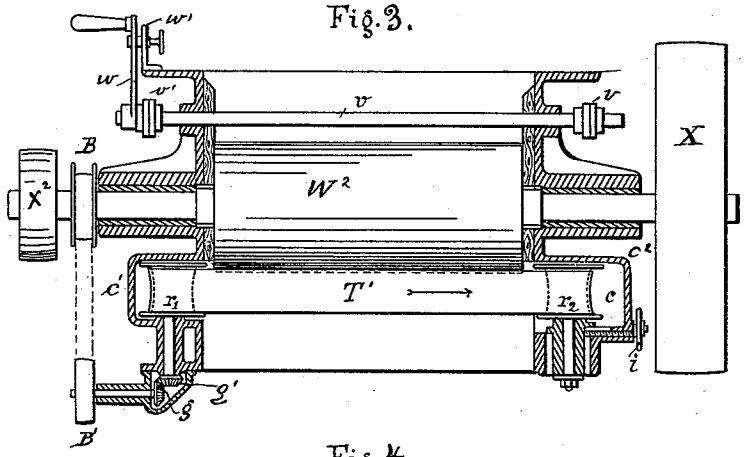
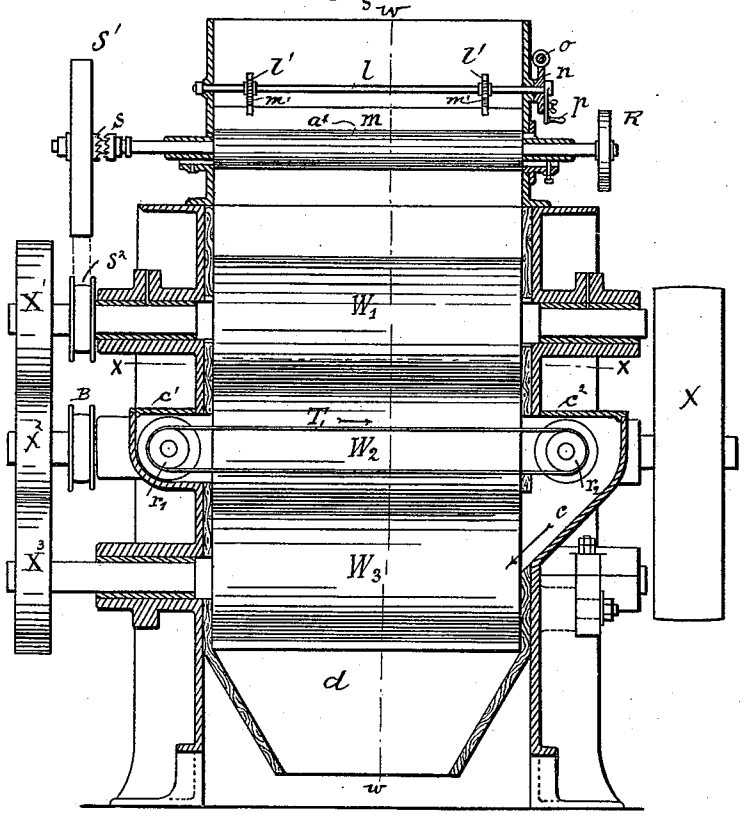


Fig. 4.



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C. G. W. KAPLER.

ROLLER GRINDING MILL.

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Fig. 5

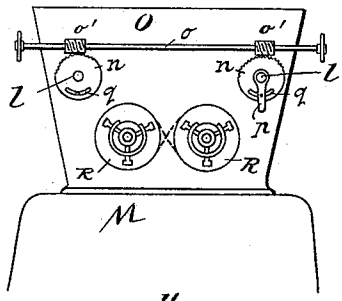
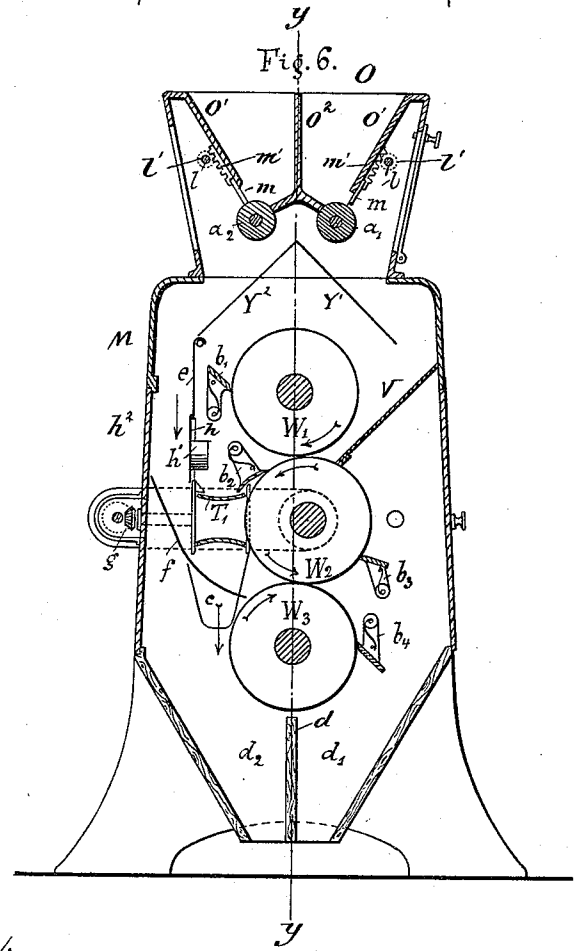


Fig. 6.



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UNITED STATES PATENT OFFICE.

CARL GUSTAV WILHELM KAPLER, OF BERLIN, GERMANY.

ROLLER GRINDING-MILL.

SPECIFICATION forming part of Letters Patent No. 447,951, dated March 10, 1891.

Application filed January 10, 1889. Serial No. 296,034. (No model.) Patented in Germany March 28, 1888, No. 45,567; in England November 6, 1888, No. 16,049; in Switzerland November 15, 1888, No. 67, and in Austria-Hungary January 31, 1889, No. 44,789 and No. 68,106.

To all whom it may concern:

Be it known that I, CARL GUSTAV WILHELM KAPLER, of Berlin, Kingdom of Prussia, and Empire of Germany, a subject of the King of Prussia, have invented certain new and useful Improvements in Roller Grinding-Mills, (for which Letters Patent heretofore were granted to me by the Government of Germany, dated March 28, 1888, No. 45,567; by the Government of Austria-Hungary, No. 44,789 and No. 68,106, dated January 31, 1889; by the Government of England, No. 16,049, dated November 6, 1888; by the Government of Switzerland, No. 67, dated November 15, 1888,) of which the following is a specification.

This invention relates to improvements in that class of grinding-mills in which three rollers are used for producing two different kinds of flours at the same time.

The invention consists in the construction and combination of parts and details, as will be fully described hereinafter, and finally pointed out in the claim.

In the accompanying drawings, Figure 1 is an elevation of one end of my improved roller grinding-mill, parts being in section and others omitted. Fig. 2 is a detail elevation of the partition containing the testing-gates. Fig. 3 is a horizontal sectional view of my improved roller grinding-mill on the line $x\,x$, Fig. 4. Fig. 4 is a vertical longitudinal sectional view on the line $y\,y$, Fig. 6, parts being omitted. Fig. 5 is an end view of the hopper and attachments on the same. Fig. 6 is a vertical transverse sectional view of my improved roller grinding-mill on the line $w\,w$, Fig. 4.

Similar letters of reference indicate corresponding parts.

The mill is constructed with three grinding-rollers W′, W², and W³, which are mounted one above the other and are surrounded by a casing M, which is surmounted by the hopper O, divided by a partition O² into two compartments. At the bottom of these compartments feeding-rollers $a'\,a^2$ are mounted, on which gates m rest, which are mounted to slide on the outer surfaces of the inclined sides O′ of the hopper, each gate m being provided with a rack m', engaging a pinion l' on a shaft l, extending longitudinally through the hopper. On one end of each shaft l a worm-disk n is loosely mounted, said disks being each provided with a slot q, through which a screw can pass from a fixed arm p on the end of the shaft l, thus permitting of locking said disks n on the arms p. The worm-disks n engage worms o' on a transverse shaft o on one end of the hopper, said shaft having hand-wheels at its ends. When both worm-disks n are locked to the shafts l and the shaft o is turned, both gates m will be moved proportionately from the rollers $a'\,a^2$ and the feed thus regulated equally for both rollers. If it is desired to operate one gate only, the worm-disk n of the other gate is disconnected from the arm p or shaft l, respectively. On the ends of the shafts of the feed-rollers $a'\,a^2$ the pulleys R are mounted, over which a driving-belt passes. (Shown in dotted lines in Fig. 5.)

On the opposite end of one of the shafts of the feed-rollers $a'\,a^2$ a belt-pulley S′ is loosely mounted, which can be coupled to the shaft by means of a clutch S. The driving-belt shown in dotted lines in Fig. 4 passes over the pulley S′ and over a pulley S² on the shaft of the uppermost roller W′. Below the hopper the two deflecting-partitions Y′ Y² are provided, forming a peaked deflector above the uppermost roller W′, and from the bottom edge of the partition Y² the vertical partition e extends downward parallel with one side of the casing M. A short distance below the bottom edge of the other deflecting-partition Y′ the inclined deflecting-plate V is arranged, which extends from the side of the casing to the upper part of the intermediate roller W². The bottom of the casing is tapered and is provided with a longitudinal partition d, forming the two outlet-chutes d' and d^2 for the different kinds of flour or meal. The endless belt T′ passes over two rollers $r\,r'$, which have their periphery grooved, so that the longitudinal central part of the belt will be lower than the edge parts, so as to form a pocket, said belt being parallel with and at the side of the intermediate roller W². The rollers r' and r^2 are arranged within pockets c' and c^2, projecting from the ends of the casing, as

shown in Fig. 4, the bottom of the pocket c^2 being beveled or inclined to form a chute c, through which the flour can drop into the outlet-chute d^2. The shaft of the roller r' carries a bevel-pinion g', engaging a bevel-pinion g on the same shaft with a belt-pulley B', over which a belt passes, that also passes over a pulley B on the shaft of the intermediate roller W^2. The journal of the pulley r^2 is connected with a screw i, by means of which the tension of the belt T' can be adjusted. A deflecting-partition f extends from the side of the casing under the endless belt T' to the top part of the rim of the bottom roller W^3. A scraper b' rests on the periphery of the roller W'. A scraper b^2 rests against the top part, and a scraper b^3 against the bottom part, of the periphery of the intermediate roller W^2, and a scraper b^4 rests against the side of the periphery of the roller W^3, which scrapers scrape off the flour or meal from the roller.

The partition e has apertures h^3, which are closed by outwardly-swinging gates h, hinged at the top of said openings. Said gates are provided on their inner surface with V-shaped guards h', so that when a gate is swung up into the position shown in Fig. 2 to permit of passing the hand through the aperture h^3 for examining the flour that is ground by the uppermost and intermediate rollers W' and W^2, respectively, the grain that drops down on the outside of the partition e will strike the projection h', which is now in inverted-V shape, and will be deflected and not mixed with the contents of the hand when the same is withdrawn through the aperture h^3. A gate h^2 in the side of the casing permits reaching the apertures h^3. The shaft of the intermediate roller W^2 is mounted in fixed bearings of the casings; but the shafts of the top and bottom rollers W' W^3 are mounted in adjustable bearings, said bearings being held in levers t t, pivoted at t' t', which levers t are arranged at each end of the casing.

On a shaft v eccentric disks v' are mounted, the straps of which are connected by rods v^2 with the levers t, and cushion-springs, which can be adjusted by means of hand-wheels v^3, are provided to permit the rollers to yield in case of hard objects—such as a nail or stone—passing in between them. The shaft v can be turned by means of a lever w, which is guided on a curved frame w', and can be locked on the same by means of a suitable binding-screw. By turning the shaft v the bearings of the roller W' and W^2 can be adjusted farther from or nearer to the intermediate roller W^2, and thus the grade of flour or meal—that is, the fineness of the same—regulated. The contents of the right-hand hopper-section drop from the roller a' upon the partition Y', slide down the deflecting-plate V, are ground between the rollers W' and W^2, are scraped off the roller W' by the scraper b' and off the roller W^2 by the scraper b^2, and drop upon the belt T', which, passing in the direction of the arrow shown in Fig. 4, drop them into the pockets c^2, down the inclined bottom c of which they slide into the outlet-chute d'. The contents of the left-hand hopper-section drop upon the inclined partition Y^2, slide down the outer surface of the partition e upon the partition f, which guides them upon the roller W^3, between which and the roller W^2 they are ground, the ground material dropping into the outlet-chute d'. Belt-gears X' X^2 X^3 rotate the rollers, the shaft of the intermediate roller carrying the belt-pulley X.

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

In a roller grinding-mill, the combination, with a casing, of a gate h^2 in the same, the three rollers W', W^2, and W^3, one above the other, a conveyer-belt parallel with and adjacent to the side of the roller W^2, the partition e, extending upward from the inner edge of the conveyer-belt, a peak-shaped deflecting-guard above the uppermost roller, an inclined deflecting-partition below the endless belt, and gates in the partition e, which gates are provided on their under sides with V-shaped projections, substantially as set forth.

In witness whereof I have hereunto set my hand in presence of two witnesses.

CARL GUSTAV WILHELM KAPLER.

Witnesses:
B. ROI,
ALEX. SCHOLZE.