

J. H. K. KIRNER.
 ROLLER GRINDING MACHINE.
 APPLICATION FILED OCT. 26, 1911.

1,055,187.

Patented Mar. 4, 1913.

Fig:1.

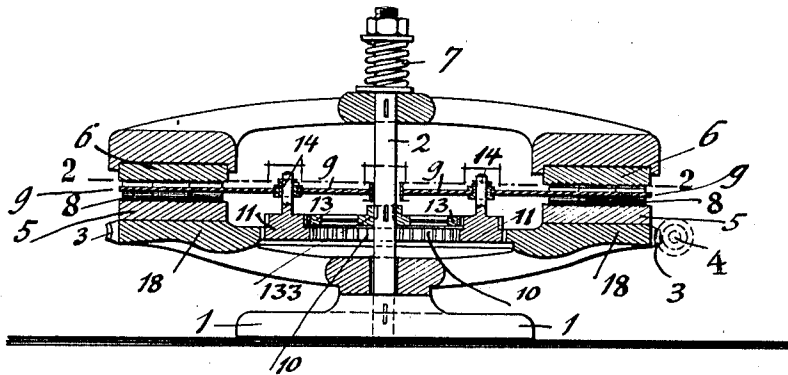


Fig:2.

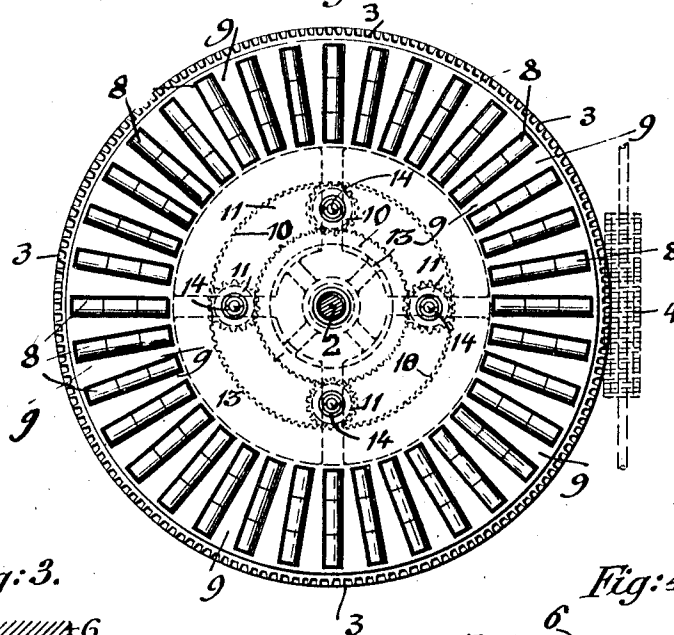


Fig:3.

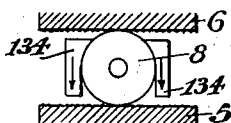
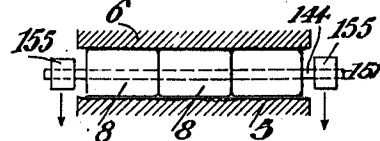


Fig:4.



Witnesses:
 John Murtagh
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UNITED STATES PATENT OFFICE.

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ROLLER-GRINDING MACHINE.

1,055,187.

Specification of Letters Patent.

Patented Mar. 4, 1913.

Application filed October 26, 1911. Serial No. 656,829.

To all whom it may concern:

Be it known that I, JOSEF HERMANN KARL KIRNER, a citizen of the Empire of Germany, and a resident of Stuttgart, in the Kingdom of Wurttemberg, in the Empire of Germany, have invented certain new and useful Improvements in Roller-Grinding Machines, of which the following is a specification.

This invention relates to roller grinding machines and has for its object to provide improvements therein whereby the velocity of the rollers to be ground is different from that of the grinding disks.

In roller grinding machines, the rollers to be ground generally make a rolling movement on the grinding surface, which movement is produced by their being pressed against the grinding surface by a grinding surface which has a speed different from that of the grinding surface. The rollers therefore at the places which encounter the grinding surface have absolute velocities which are equal to those of the parts of the grinding surface with which they are in contact.

This invention consists in providing means whereby these two sets of velocities are differentiated. By these means, a substantial increase in the grinding action is obtained, by adding a sliding movement in the direction in which the rollers travel to the simple rolling movement of the rollers on the grinding surface.

In carrying out the invention various means are available for making the velocity of the rollers to be ground different from that of the grinding disk. For instance, the roller cage may have a different speed imparted to it than that which corresponds to the average of the speeds of the two disks between which the rollers travel, this being accomplished by separately driving the rollers or simply by exerting a brake action thereon. The rollers themselves may, however, be directly braked.

In the accompanying drawings, Figure 1 is an axial section of a grinding machine, having grinding disks lying substantially horizontally, Fig. 2 represents a plan-view of the machine, partly in horizontal section, on line 2, 2, Fig. 1, Fig. 3 shows a detail of one form of brake applied to each roller individually, and Fig. 4 shows perforated rollers which are braked by means of

weights centrally applied to a common axis passing through the rollers.

Similar letters of reference indicate corresponding parts throughout the several figures.

Referring to the drawings, a shaft 2 is mounted in a pedestal 1 and on this shaft is rotatably mounted a wheel 18 which carries an annular grinding disk 5. This is provided with teeth 3 of a peripheral worm wheel and also with ordinary internal teeth 10. With the peripheral worm wheel or gear, a driving worm 4 gears, but of course the wheel may be driven in any other suitable way. The rollers 8 which are to be ground are pressed on the grinding disk 5 by means of an annular plate 6 which itself may be loaded in any suitable way, for instance by means of a spring 7.

The rollers 8 are carried in a cage 9 driven by means of pins 14. This driving is effected from the inner toothing 10 on which preferably several planet wheels 11 travel, each of which has a second ring of teeth 12 with which it meshes with a pinion 13 firmly mounted by keys 133 on the shaft 2, whereby it is held stationary. By a suitable selection of gears, the result may be obtained that the speed of revolution of the cage 9 amounts to a little more or less than half the speed of rotation of the grinding disk 5. The rollers 8 then slide over the grinding disks instead of simply rolling over them as heretofore, and thereby the grinding action is considerably improved and a uniform treatment of the entire surface of the rollers obtained. Heretofore when the cage was simply carried along by the rollers, each roller would always tend to adapt itself as closely as possible at a certain zone of its surface to the speed of the grinding disk, so as to be less acted on there than at other places.

In detail of course the construction of the grinding disks as well as the means for driving them and for driving the cage may be varied. The object sought after by the invention is simply attained by the rollers being compelled to travel at a different absolute peripheral velocity than the parts of the grinding disks with which they are in contact. A simple braking of the cage by means of a brake block or the like may be employed even if such an arrangement is somewhat less advantageous. Fig. 3 shows,

however, how the braking action can be produced. Here the parts 134 used as brake blocks engage substantially above the axis of the roller and are simply loaded from above, as indicated by the arrows. In the case of perforated rollers a pin or shaft 144, as shown in Fig. 4, may be passed through the perforations and this pin loaded by weights 155.

10 I have shown several embodiments of my invention, but it is clear that changes may be made therein without departing from the spirit of my invention, which consists in providing an improved apparatus by
15 means of which the grinding of the rollers may be perfected, and by which the velocity of the rollers to be ground is caused to be different from the velocity of the grinding disks.

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

1. A grinding machine for treating rollers, comprising means for grinding the rollers placed substantially radially to the

grinding disk, and means for imparting to the rollers a peripheral velocity, the parts of the rollers adjacent the grinding disks having an absolute velocity different from that of the contacting parts of the grinding disks.

2. A roller grinding machine, comprising superposed grinding disks, means for rotating said disks, a roller-cage interposed between the disks, and means for rotating the cage at a different speed from the disks.

3. A roller grinding machine, comprising rotary grinding disks, a roller-cage interposed between the disks, means for rotating the cage at a different speed from the disks, and means for exerting a braking action on the rollers in the cage.

In testimony, that I claim the foregoing as my invention, I have signed my name in presence of two subscribing witnesses.

JOSEF HERMANN KARL KIRNER.

Witnesses:

MAX SCHWEIKERT,
CARL RUPP.