

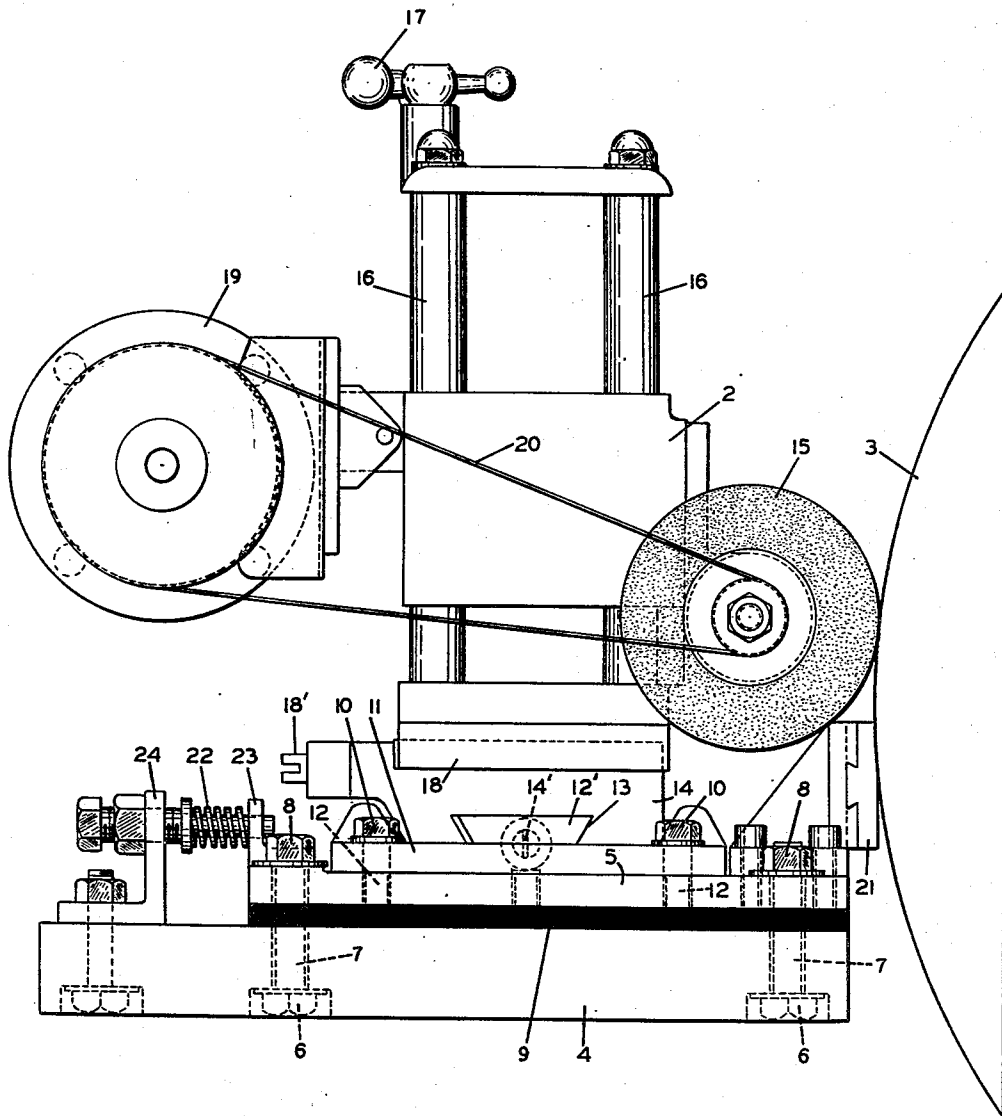
April 13, 1954

R. W. SENFT

2,674,835

ROLLING GRINDING DEVICE AND METHOD

Filed Nov. 3, 1950



INVENTOR
RUSSELL W. SENFT

by
Watten + Conner

ATTORNEY

UNITED STATES PATENT OFFICE

2,674,835

ROLLING GRINDING DEVICE AND METHOD

Russell W. Senft, Manheim Township, Lancaster County, Pa., assignor to Armstrong Cork Company, Lancaster, Pa., a corporation of Pennsylvania

Application November 3, 1950, Serial No. 193,783

4 Claims. (Cl. 51—254)

1

This invention relates to a roll grinding device and more particularly to a device for grinding the surface of large calender rolls without necessitating the removal of the roll from the calender.

In grinding the surface of calender rolls such as those used in the manufacture of linoleum and other similar sheet material, it has been common practice to remove the roll from the calender and place the same in a rigid roll grinding machine so that the position of the journals of the roll will be such that the roll cannot move. This is necessary to insure that the relationship between the axis of the roll journal and the axis of the grinding wheel is the same at all times. This method of grinding has always involved a great amount of work in disassembling the calender, transporting the roll to the grinding machine which, in some instances, is located several miles from the factory in which the roll is used, and then reassembling the roll in the calendaring equipment.

One of the reasons that calender rolls could not previously be ground without removal from the calender has been the fact that the calender roll journals fit loosely in the bearings to permit the roll to flex when operating under full load. This loose fit is necessary to prevent binding of the bearings when the rolls flex. Due to this condition it was never possible to grind the surface of the calender rolls without removing the same from the calender and placing them in a roll grinding machine in which the bearings are tight.

In order to overcome the disadvantages enumerated above, I have developed a grinding device with which it is possible to grind the rolls without necessitating their removal from the machine. With the device of this invention, the distance between the calender roll axis and the axis of the grinding wheel remains the same as the roll rotates.

An object of this invention is to provide a device for grinding the surface of large calender rolls without necessitating the removal of the same from the calender equipment.

Another object of this invention is to provide a device which will insure the maintenance of a uniform distance between the longitudinal central axis of the calender roll and the axis of rotation of the grinding wheel.

A further object of this invention is to provide a method of grinding rolls in which the grinding wheel will maintain the same relative position with respect to the roll surface being ground

2

regardless of whether the roll moves in its bearings.

In order that this invention may be more readily understood, it will be described in connection with the attached drawing, which shows the position of the grinding device while being utilized to grind a calendar roll.

The drawing shows a grinding device 2 in position to grind the surface of a roll 3. The grinding device 2 is affixed to a platform or other support 4 which may be of metal or wood. Secured to the platform 4 is a bedplate 5. This bedplate 5 is secured by bolts 6 passing through the platform 4 and through the bedplate 5. It will be noted that the clearance between the shaft 7 of the bolts 6 and the platform 4 is sufficient to allow the bolt to move horizontally in the platform 4. This same clearance is present in the bedplate 5. The nuts 8 on the bolts 6 are drawn sufficiently tight to hold the bedplate 5 but not sufficiently tight to prevent horizontal movement of the same. A layer of synthetic rubber or other tough resilient material 9 is interposed between the platform 4 and the bedplate 5. This resilient layer 9 permits a limited amount of horizontal drift to the bedplate 5. The bedplate 5 serves as the mounting for the grinding device 2, the same being secured to the bedplate 5 by means of machine screws 10 passing through the mount 11 into threaded holes 12 in the bed plate 5.

The grinding device 2 is mounted for three-directional movement with respect to the mount 11. The device is capable of transversing movement along the face of the roll by means of the guide 12', which works on a suitable bearing surface 13 in the bottom portion and the traversing member 14. This transversing movement may be accomplished by a screw device 14' or other suitable mechanism. The grinding wheel 15 may be moved vertically by means of the grinding mechanism 2 being moved in a vertical direction on the columns 16. Such movement is accomplished by means of a screw passing through the member 2, which is rotated by means of the handle 17. The grinding wheel 15 may be moved toward and away from the roll being ground by means of the slide 18, which works in and out on the bearing surface on the traversing member 14. This movement is effected by operating the screw 18'.

Any suitable motor 19 may be used, such as an electric or air motor. Motor 19 transmits rotary movement to the grinding wheel 15 through belt 20.

Positioned on the bedplate 5 is a platen surface

21, which is preferably made of babbitt or other soft metal which will not injure the face of the roll 3. This platen 21 is in engagement with the roll 3 while the roll is being ground. Platen 21 is urged into engagement with roll 3 by means of a spring 22 attached to the side of the bedplate 5, opposite the side to which the platen 21 is attached, spring 22 being compressed between a bracket 23 on the bedplate 5 and a bracket 24 rigidly secured to the platform 4. This spring 22 causes the bedplate 5 to be urged toward the roll by means of the yielding qualities of the resilient layer 9.

In an arrangement of this type, the grinding wheel 15 is adjusted by means of the vertical adjustment and the horizontal adjustment so that it is properly positioned to engage the roll surface 3 while the platen 21 is in engagement with the roll surface. As the roll 3 rotates, the platen 21 remains in engagement therewith; and, therefore, the grinding wheel 15 engages the surface of the roll and grinds the same uniformly. In the event the roll journal moves in the roll bearings, the spring 22 urges the entire grinding assembly toward the roll so that the platen 21 remains in engagement with the roll and the grinding wheel 15 continues to grind. In the event the roll moves toward the grinding equipment, the spring 22 is compressed. In an arrangement of this kind, the relationship between the position of the grinding wheel 15 and the roll 3 always remains the same due to the fact that any change in the position of the journal of the roll in the bearing is taken care of by the spring 22.

It will be obvious from the foregoing that the grinding device covered by this application is a departure from the conventional grinding equipment in that rigidity of the device is not essential; but, on the contrary, the grinding device is capable of movement to a limited extent to make up for any movement of the roll other than rotation while it is being ground.

I claim:

1. A device for grinding the surface of rolls, the elements comprising a rigid base having a substantially plane upper surface, a layer of non-metallic material lying on said surface, a substantially rigid mounting plate mounted on the upper surface of said layer, connecting means fastening the rigid base, nonmetallic layer, and mounting plate together to permit limited movement of the mounting plate relative to said rigid base, a grinding wheel journaled on said plate on an axis generally transverse to the longitudinal extent of the plate, a platen mounted on said plate and having a surface extending generally parallel to the axis of the grinding wheel and substantially in alignment with the peripheral working surface of the grinding wheel, and resilient urging means connecting said plate to said rigid base.

2. A device for grinding the surface of rolls, the elements comprising a rigid base having a substantially plane upper surface, a layer of nonmetallic material lying on said surface, a sub-

stantially rigid mounting plate mounted on the upper surface of said layer, connecting means fastening the rigid base, nonmetallic layer, and mounting plate together to permit limited movement of the mounting plate relative to said base, a grinding wheel journaled in said plate on an axis generally transverse to the longitudinal extent of the plate, a platen mounted on said plate and having a surface extending generally parallel to the axis of the grinding wheel and substantially in alignment to the peripheral working surface of the grinding wheel, and a spring interposed between said rigid base and said mounting plate.

3. A device for grinding the surface of rolls, the elements comprising a rigid base having a substantially plane upper surface, a layer of synthetic rubber lying on said surface, a substantially rigid mounting plate mounted on the upper surface of said layer of synthetic rubber, connecting means fastening the rigid base, synthetic rubber layer, and mounting plate together to permit limited movement of the mounting plate relative to said rigid base, a grinding wheel journaled in said plate on an axis generally transverse to the longitudinal extent of the plate, a platen mounted on said plate and having a surface extending generally parallel to the axis of the grinding wheel and substantially in alignment with the peripheral working surface of the grinding wheel, and resilient urging means connecting said plate to said rigid base.

4. In a method for grinding the surface of rolls, the steps comprising urging a grinding wheel and a platen mounted on a common mounting plate into engagement with the roll to be ground, said grinding wheel having its axis of rotation parallel to the longitudinal axis of said roll being ground and said platen having a surface extending generally parallel to the axis of the grinding wheel and substantially in alignment with the peripheral working surface of the grinding wheel, said common mounting plate being attached to a rigid base having a substantially plane upper surface with a layer of resilient nonmetallic material disposed between said rigid base and said mounting plate to permit limited movement of said mounting plate with respect to said base, said urging being provided by means exerting yielding pressure on the mounting plate to constantly urge said grinding wheel and platen into engagement with the roll being ground.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
1,186,616	Strecker	June 13, 1916
1,549,955	Barcichowski	Aug. 18, 1925
2,002,971	Zimmerman	May 28, 1935
2,032,011	Gould	Feb. 23, 1936

FOREIGN PATENTS

Number	Country	Date
3,933	Great Britain	Dec. 1, 1873
459,551	Great Britain	Jan. 11, 1937