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ROLLER FOR SURFACING MACHINES

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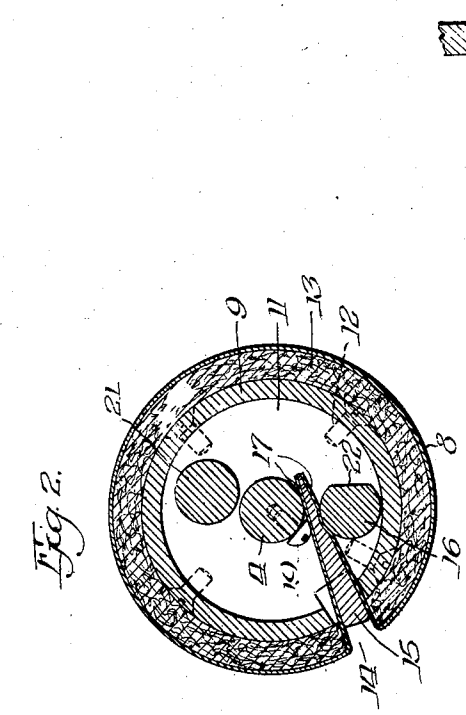


Fig. 2.

Fig. 1.

Witness:
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UNITED STATES PATENT OFFICE

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ROLLER FOR SURFACING MACHINES

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This invention relates to surfacing rollers of the type wherein the roller is usually covered with a relatively soft material and is provided with an outer abrasive or polishing covering of surfacing paper or cloth which requires frequent renewal.

Rollers of this type are frequently used in connection with machines, such as the surfacing machine of my copending application for patent, Serial No. 164,403 filed January 29, 1927. From the nature of such machines, the accessibility to the rollers is limited, and it is accordingly the primary object of this invention to provide a roller of the above type in which the outer covering may be renewed with a maximum of convenience, even where the acccessibility to the roller is limited. While the roller of my invention has particular utility in connection with the surfacing machine illustrated and described in said copending application, it will be understood that the inventive features of my roller will be of advantage to many other types of machine.

Another object is to provide means for gripping and holding the abrasive or polishing covering, which may be incorporated and used in rollers of much smaller diameter than it has heretofore been possible to equip with any known gripping and holding device.

It is also an object of this invention to provide a roller of the above type, the abrasive or polishing covering of which may be renewed without the exercise of any mechanical skill.

It is further an object of this invention to provide a roller of the above type which is rugged, simple and efficient.

Other objects of the invention will become apparent as the same becomes better understood from the description and claims when considered in connection with the accompanying drawings, wherein

Fig. 1 is a horizontal sectional view with parts in elevation, showing a roller embodying this invention, and

Fig. 2 is a vertical section at the line 2—2 of Fig. 1.

Referring to the drawings more particularly, a surfacing roller 3 is shown for illustrative purposes only, the same being the auxiliary surfacing roller generally described in my aforesaid copending application. The drive shaft 4 is journaled in suitable ball-bearings 5 between the forward ends of arms 6 which form the secondary frame (not shown). A sprocket wheel 7 is mounted on the shaft 4 at one side on the roller 3 thereon and is driven, as indicated in said copending application.

The interior of the roller 3, because of its small size, is of limited accessibility which renders the mounting of gripping and holding means therein a difficult problem. The roller comprises a hollow cylindrical drum or shell 9 surrounding the shaft 4 and supported thereon by discs or ends 11, one secured in each end of said drum by screws 12 and fitting the shaft loosely enough to rotate relatively thereto. A layer 13 of felt or similar soft and resilient material is secured to the outer periphery of the drum 9. The drum 9 and layer 13 thereon are provided with a longitudinal slot 14 adapted to receive the longitudinal edges of the covering 8 of abrasive or polishing material and a wedge 15, such edges and wedge being directed between the peripheries of the drive shaft 4 and a parallel shaft or roll 16 journaled in the discs. The shaft 16 has a flat sided extension 18 thereon, extending outwardly of one of the discs 11, so that a tool may be used to turn the shaft, thus drawing the edges of the covering 8 with the wedge 15 therebetween inwardly between said shaft, and the drive shaft 4. Screws 19 on the shaft 4 permit only a limited amount of relative rotation between said shaft and the roller 3 whereby said roller may be driven by said shaft through the medium of said screws which are adapted to engage the shaft 16 in one direction and a counterbalancing third shaft 21 in the other direction. The shaft 21 is parallel to the shaft 4 and mounted in the disc 11 opposite to the shaft 16. Relative movement being permitted between the shaft 4 and the roller, the latter may be moved sufficiently so that the screws 19 will not obstruct the passage

between the shaft 4 and roll 16 and in addition, the shaft 4 will not resist the inward movement of the edges of the covering 8 and the wedge 15, but on the other hand, the periphery of said shaft will move with said edges and wedge. The roller 3 may instead be rigidly connected with the shaft 4, and a sleeve provided on said shaft to facilitate inward movement of said edges and the wedge as the shaft 16 is turned.

The roll 16 is provided with a cut-a-way of flat, longitudinal portion 22 which is normally substantially parallel to the edges of the covering 8 and the wedge 15 to facilitate entrance of said edges between the shafts 4 and 16. As the roll 16 is rotated, the rest of the periphery thereof will cam into the edges of the covering 8, locking them between the shaft 4 and roll 16.

In the operation of renewing the covering 8, the drum is first rotated in a counter clockwise direction; viewing Fig. 2, relatively to the drum shaft 4 to retract the screws 19 from the covering. The roll 16 is then turned in the same direction by a suitable tool to loosen the edges of said covering and the wedge 15 by bringing the flat portion 22 substantial parallel relation with said edges. The wedge 15 may then be removed, together with the covering 8 and a new covering applied by projecting its edges thru the slot 14 into the space between the shaft 4 and roll 16, the wedge 15 of suitable thickness being also simultaneously inserted. The flat face 22 of the roll 16 being opposed to the drive shaft 4 provides ample space between the shaft and roll to accommodate the ends of the covering and the wedge. The roll 16 is now again rotated, this time in a clockwise direction, as viewed in Fig. 2 to clamp and lock the edges of the covering 8 and the wedge between said shaft 4 and roll 16. As the roll 16 is rotated, a slight inward movement will be given the edges of the covering 8 which will be further increased when the shaft 4 rotates relatively to the drum to bring the screws 19 into engagement with the drum covering when the machine is started up.

It will be observed that the roller herein described affords a maximum of space economy and is simple and efficient, and that the surfacing cover 8 may be renewed with a maximum of convenience.

I am aware that many changes may be made throughout a wide range without departing from the principles of this invention, and I therefore do not wish to be limited to what is shown or described herein.

I claim:

1. In a surfacing machine, the combination of a drive shaft, a hollow roller thereon driven by said shaft, a covering of surfacing material, and a clamping roll mounted within said roller in axially spaced parallel relation with respect to said shaft and adapted to cooperate therewith for gripping the edges of said covering, said roller having a longitudinal slot in the periphery thereof adapted to receive said edges.

2. In a surfacing machine, the combination of a drive shaft, a hollow roller thereon driven by said shaft, a covering of surfacing material and a clamping roll journaled within said roller in axially spaced parallel relation with respect to said shaft and adapted to cooperate therewith for gripping the edges of said covering, said roller having a longitudinal slot in the periphery thereof adapted to receive said edges, the roll having a portion of its periphery cut away to facilitate entrance of said edges, the remaining portion of the periphery of said roll being adapted to lock said edges between said shaft and roll.

In witness of the foregoing I affix my signature.

ARTHUR E. CHAPPELL.