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ADJUSTING DEVICE FOR ROLL COATER APPARATUS

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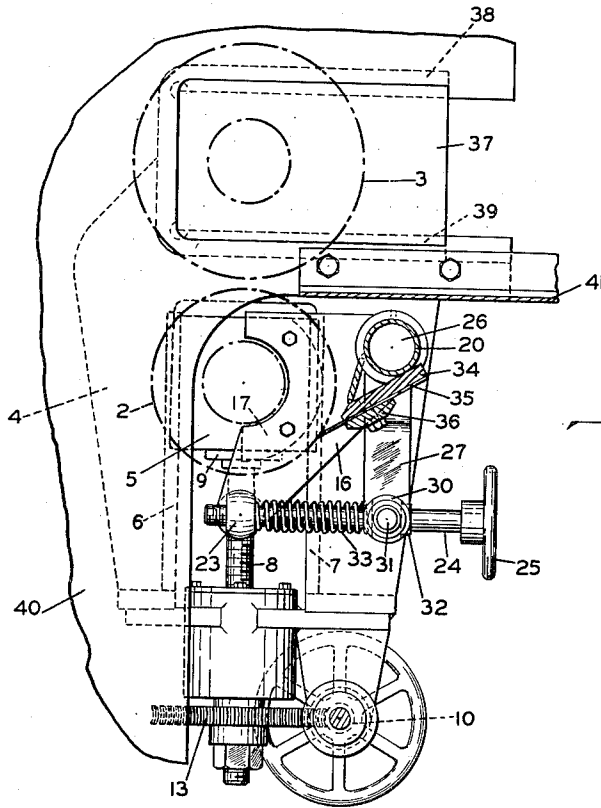


Fig. 2

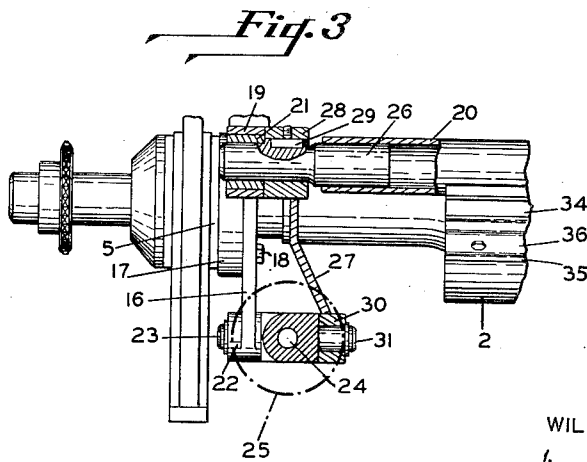


Fig. 3

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ADJUSTING DEVICE FOR ROLL COATER APPARATUS

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3 Claims. (Cl. 118-249)

This invention relates to an adjusting device and is concerned particularly with a roll coater including a feed roll and an applicator roll with a scraper for the feed roll and an adjusting device for positioning the scraper with respect to the feed roll.

The device will be useful in a roll coater for the application of wax or other surface-finishing material to pieces of cork tile or the like. In such a coating device, the feed roll is movable vertically with respect to the applicator roll to provide for feeding pieces of different thicknesses and to vary the degree of pressure application between the rolls. The applicator roll may also be arranged for horizontal movement to vary its position with respect to a transfer roll which applies the coating material to the applicator roll. With the applicator roll disposed above the feed roll and with the intermittent feeding of tiles or similar pieces between the rolls for application of a coating to one surface of the tiles or other pieces, there is a tendency for coating composition to be deposited upon the feed roll, especially during any interval between the feeding of pieces. It is necessary, therefore, to provide for cleaning of the feed roll to obviate the deposit of the coating from the feed roll onto the back of the tiles.

Another object of the invention is to provide a roll coater or the like in which a scraper for one of the rolls, such as a feed roll, is mounted for adjustable positioning with respect to the roll by adjusting mechanism provided on opposite ends of a scraper bar, arranged to eliminate the need for simultaneous operation of the adjusting mechanism at opposite ends of the bar.

A further object of the invention is to provide a roll coater or the like in which there is provided a horizontally adjustable applicator roll, a vertically adjustable feed roll, and an adjustable scraper for the feed roll, with the parts so constructed and arranged that the horizontal adjustment of the applicator roll may be effected without alteration of the vertically adjusted relationship of the two rolls and the vertical adjustment of the feed roll may be effected without alteration of the relationship of the scraper with the feed roll.

Other objects of the invention will be obvious from consideration of the attached drawings illustrating an embodiment of the invention in which:

Figure 1 is a side elevation of a roll coater embodying the invention;

Figure 2 is a sectional view taken along the line II-II of Figure 1 but with the applicator roll and feed roll shown in chain lines rather than in section to facilitate illustration of the adjusting mechanism; and

Figure 3 is a detailed view partially broken away and in section showing one end of the scraper adjusting mechanism.

The arrangement shown in the drawing includes a feed roll 2 and an applicator roll 3. The feed roll is mounted upon a frame 4 and is movable vertically with respect to the applicator roll 3. This is accomplished by mounting the feed roll 2 in bearing blocks 5 which are slideable in ways 6 and 7 shown in Figure 2 and provided in the frame structure. The mechanism is essentially the same on each side of the machine, and only one will be described. Corresponding numbers have been applied to the complementary parts on each side. Adjusting screws 8, one of which is shown in Figure 2, are provided for moving the bearing blocks 5. The blocks are supported by pedestals 9 mounted on the adjusting screws 8. Simultaneous movement of the

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adjusting screws on each side of the machine is effected through worms 10 and 11 (Figure 1) mounted upon a cross shaft 12 and meshing with worm wheels 13 and 14 which are keyed to the adjusting screws 8. An adjustable coupling 15 may be provided between worms 10 and 11, joining sections 12a and 12b of cross shaft 12. Any suitable mechanism may be provided for raising and lowering the feed roll 2. The details of this mechanism are not of important significance, so far as the present invention is concerned.

A feed roll scraper mechanism is provided, the same being so mounted that adjustment of the position of the feed roll with respect to the applicator roll does not affect the position of the scraper mechanism with respect to the feed roll. This action is obtained by mounting the feed roll scraper mechanism on the vertically adjustable feed roll bearing blocks 5 in the following manner:

Doctor bar supports 16 are bolted to roll bearing blocks 5 with spacers 17 (Figure 1) being interposed between the supports 16 and the bearing blocks 5. Securing bolts 18 pass through the doctor bar supports 16 and are received in the bearing blocks 5. Sleeves 19 (Figure 3) are secured to the supports 16, and a doctor bar 20 is journaled in bearings 21 mounted within the sleeves 19.

Bearings 22 are fixed to the supports 16 and in these bearings are journaled pivot members 23. These pivot members are threaded, as indicated in Figure 2, and each receives an adjusting screw 24 to which is attached an adjusting handwheel 25.

Gudgeons 26 (Figure 3) are positioned on opposite ends of the doctor bar 20, and keyed to the gudgeons 26 are arms 27, one of which is shown in Figure 3. A sleeve 28 is welded to each arm 27, and the sleeve encircles gudgeons 26. Keys 29 fix the sleeves to the gudgeons, and thus movement of either of the arms 27 effects a movement of doctor bar 20. A bearing 30 is welded to each arm 27, and in these bearings are journaled pivot members 31 which are bored to receive the adjusting screws 24 (Figure 2) which pass freely therethrough for rotation therein. Limiting collars 32 are secured to the adjusting screws or are formed integrally therewith and lie in engagement with flat finished surfaces provided on the pivot members 31. Springs 33 are disposed in encircling engagement with the adjusting screws 24 and are held under compression between pivot members 23 and 31 as shown in Figure 2.

A doctor blade holder 34 is welded to doctor bar 20, and a doctor blade 35 is secured to the holder 34 by a clamp 36 which is bolted through appropriate slots in the blade 35, the bolts passing into and being received in the holder 34.

Movement of the doctor blade toward the feed roll 2 into scraping position is effected by turning the handwheels 25 in a clockwise direction. Referring to Figure 2, when one of the handwheels 25 is rotated in a clockwise direction, its adjusting screw 24 threads through pivot member 23 which is secured to stationary support 16 for pivotal movement. Collar 32 engages pivot member 31 mounted on movable arm 27 which is thereby pivoted in a clockwise direction, rotating doctor bar 20 in its bearings 21. Since the opposite arm 27 which is keyed on the other end of doctor bar 20 is free to move by compression of spring 33 and pivotal movement of pivot member 31 through which adjusting screw 24 passes, there is no binding, and the blade 35 is moved into proper engagement with the feed roll 2. After this adjustment has been made on one end of the doctor blade adjusting mechanism, the handwheel 25 on the left-hand side of the machine is rotated to bring the limiting collar 32 on its adjusting screw 24 into engagement with pivot member 31 to hold the doctor bar and blade in properly adjusted position on both sides of the machine.

To facilitate cleaning of the machine, it is necessary to back the doctor blade 35 away from the feed roll 2; and to accomplish this the operator turns one of the handwheels 25 (the one at the right in Figure 1, for instance) in a counterclockwise direction, and this causes the adjusting screw 24 to which the handwheel 25 is attached to move through threaded pivot member 23. The limiting collar 32 will move away from the pivot

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member 31, but the blade will remain in its adjusted position in engagement with the feed roll, for the adjusting mechanism on the opposite side of the machine will hold the doctor bar 20 against rotation. Thereupon, the operator turns the left-hand handwheel (Figure 1) in a counterclockwise direction; and, since the doctor bar 20 is now free to rotate in its bearings 21, spring 33 which is interposed between pivot members 23 and 31 on the right-hand adjusting screw will cause the bar to move uniformly throughout its length without any binding. In the absence of means for yieldingly urging the arms 27 about the axis of the sleeve 28, it would be necessary for the operator or operators to back off both sides of the doctor bar moving mechanism simultaneously. With the arrangement of the present invention, the operator may readily back off one adjusting screw and then upon similar rotation of the opposite screw effect backing off of the doctor bar moving mechanism.

The applicator roll 3 is mounted in bearing blocks 37 which slide horizontally in ways 38 and 39 (Figure 1) provided in the main frame 40 of the machine. It will be noted that the subframe 4 is secured to the bearing blocks 37, and thus movement of the applicator roll bearing blocks 37 in the ways 38 and 39 will also effect movement of the feed roll and its associated scraper blade and blade-adjusting mechanism in unison therewith. Suitable mechanism (not shown) will be provided for adjusting the applicator roll and for delivering coating material thereto. The material to be coated will be delivered to the feed roll 2 over a table 41 bolted to the main frame 40.

I claim:

1. In a roll coater, the combination of a main frame, a roll, bearing blocks for said roll mounted in said main frame for horizontal sliding motion, a second roll disposed in cooperative relationship with said first roll, a subframe carried by said first roll bearing blocks, bearing blocks for said second roll mounted in said subframe for vertical sliding motion, and a scraper for said second roll carried by said second roll bearing blocks.

2. In a roll coater including a feed roll and bearing blocks for said feed roll mounted in frame members for limited motion to effect adjustment of said feed roll with respect to a coating roll, the combination of a scraper for the feed roll and means for adjusting the position of the scraper with respect to the feed roll, all mounted on the bearing blocks for the feed roll for motion therewith and comprising: scraper bar supports secured to said bearing blocks for said feed roll, a scraper bar journaled to said scraper bar supports for pivotal motion, a scraper blade for said feed roll attached to said scraper bar, and means for pivoting said scraper

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bar to bring said scraper blade into adjusted position with respect to said feed roll comprising an arm fixed to said scraper bar, a pivot member mounted on said arm, a second pivot member mounted for motion with one of said bearing blocks, an adjusting screw passing freely through the pivot member on said arm for rotation therein and threaded into said second pivot member, an abutment on said adjusting screw engageable with said pivot member on said arm to limit pivotal movement of said arm in one direction and to engage said pivot member to move said arm in the opposite direction, and yielding means for urging said pivot member on said arm toward said abutment.

3. In a roll coater including a feed roll and bearing blocks for said feed roll mounted in frame members for motion to effect adjustment of said feed roll with respect to a coating roll, the combination of a scraper for the feed roll and means for adjusting the position of the scraper with respect to the feed roll, all mounted on the bearing blocks for the feed roll for motion therewith and comprising: a pair of scraper bar supports secured to said bearing blocks for said feed roll, a scraper bar journaled to said scraper bar supports for pivotal motion, a scraper blade for said feed roll attached to said scraper bar, and means for pivoting said scraper bar to bring said scraper blade into adjusted position with respect to said feed roll comprising an arm secured to said bar adjacent to each of the opposite ends thereof, a pivot member secured to each of said arms, a pivot member secured to each of said bar supports, a pair of adjusting screws passing freely through said pivot members on said arms for rotation therein and threaded into said pivot members on said supports, an abutment on each adjusting screw engageable with its respective arm-mounted pivot member to limit pivotal movement of said arm in one direction and to engage said pivot member to move said arm in the opposite direction, and springs encircling said screws and disposed between said pivot members to urge said pivot members on said arms toward said abutments on said adjusting screws.

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