

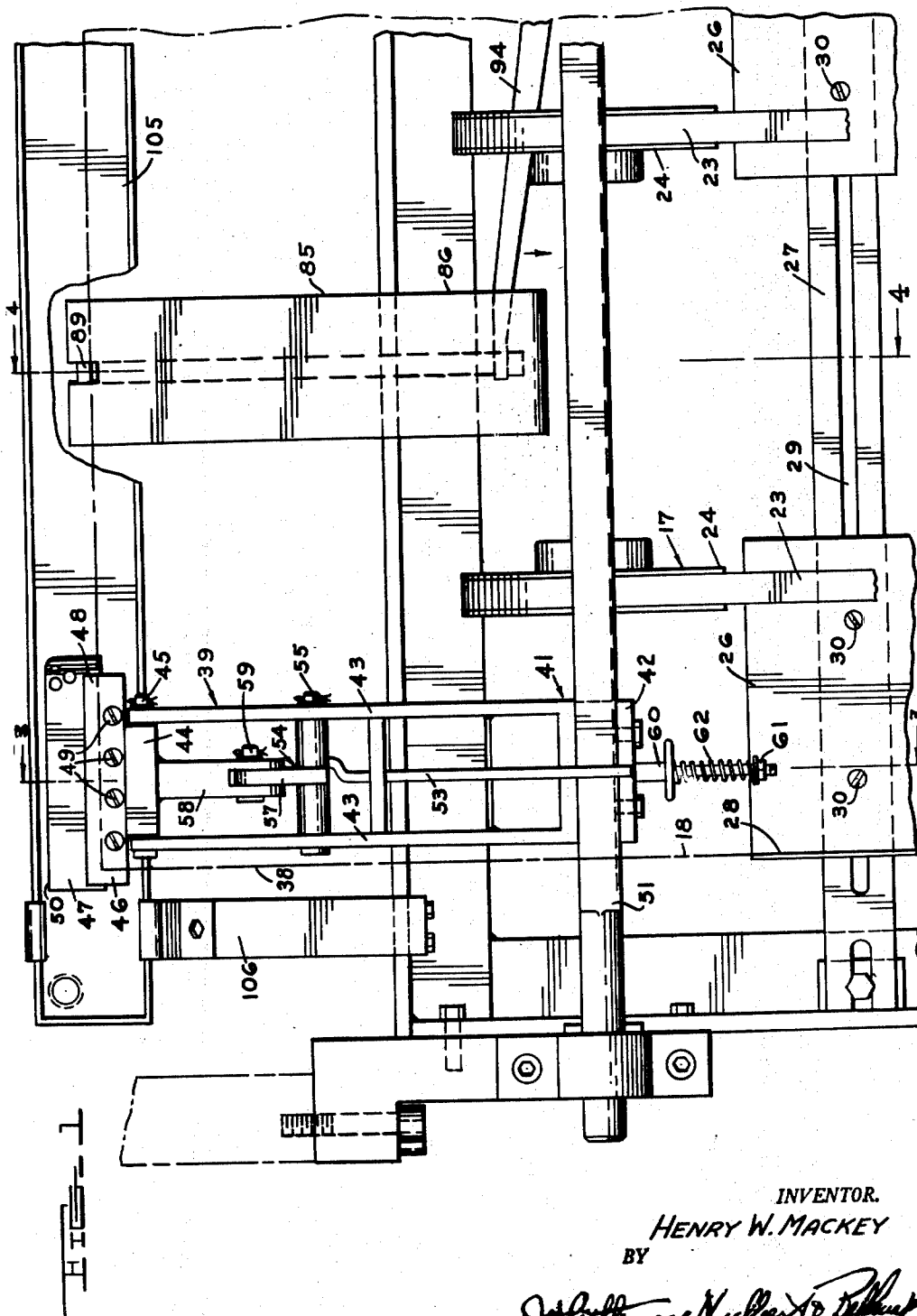
Oct. 17, 1950

H. W. MACKEY
SURFACE COATING APPARATUS

2,525,920

Filed Jan. 27, 1947

6 Sheets-Sheet 1



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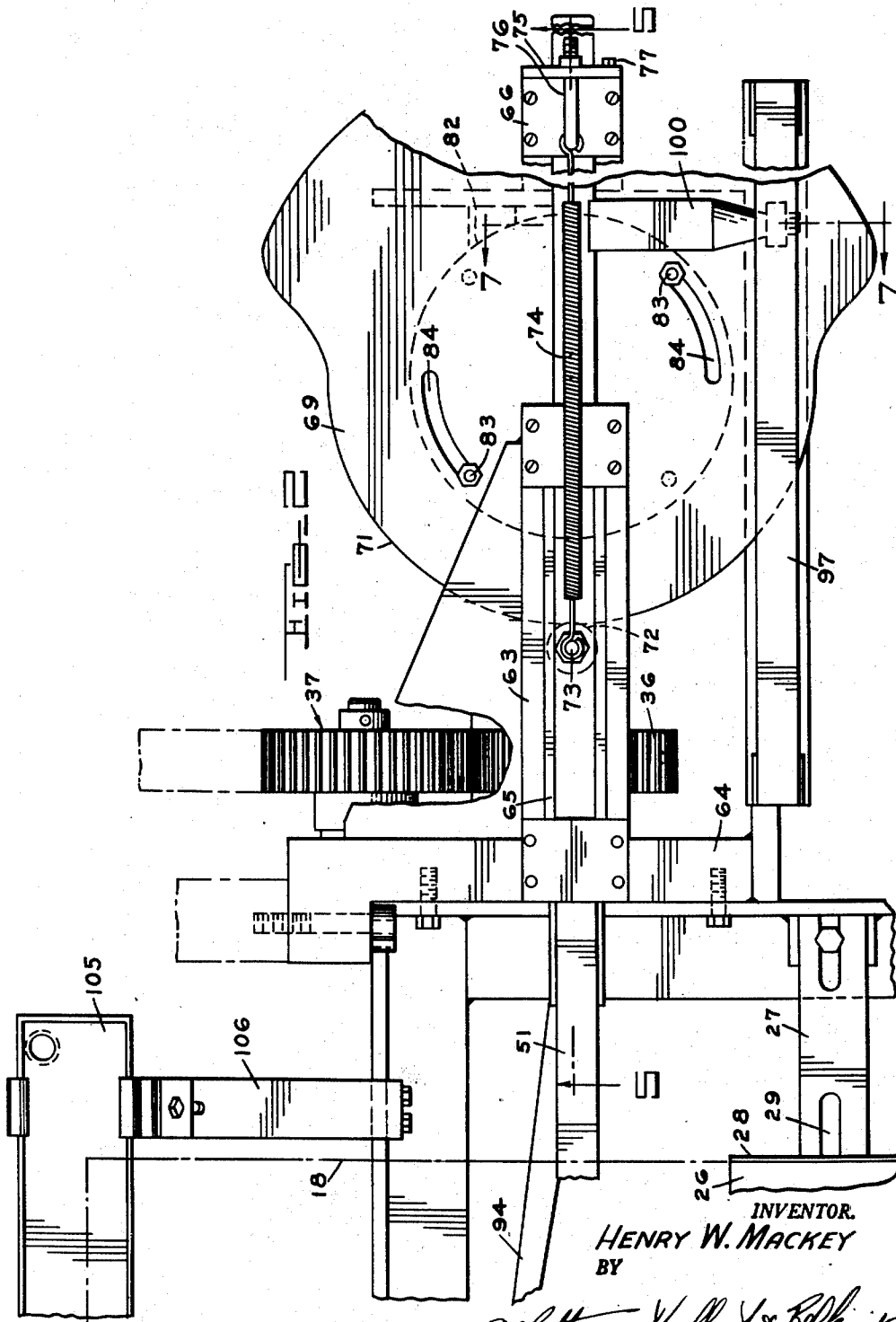
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6 Sheets-Sheet 2



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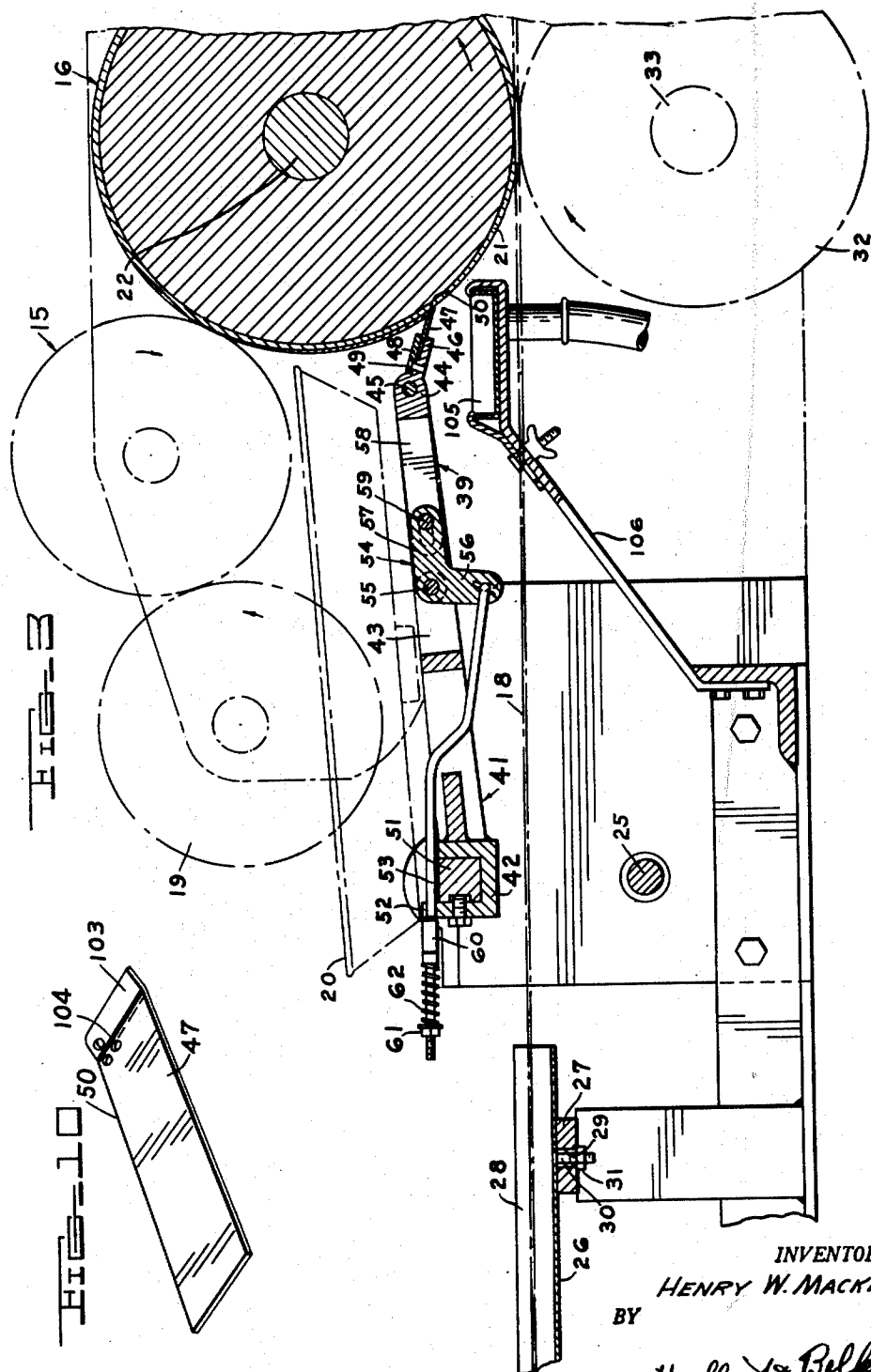
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6 Sheets-Sheet 3



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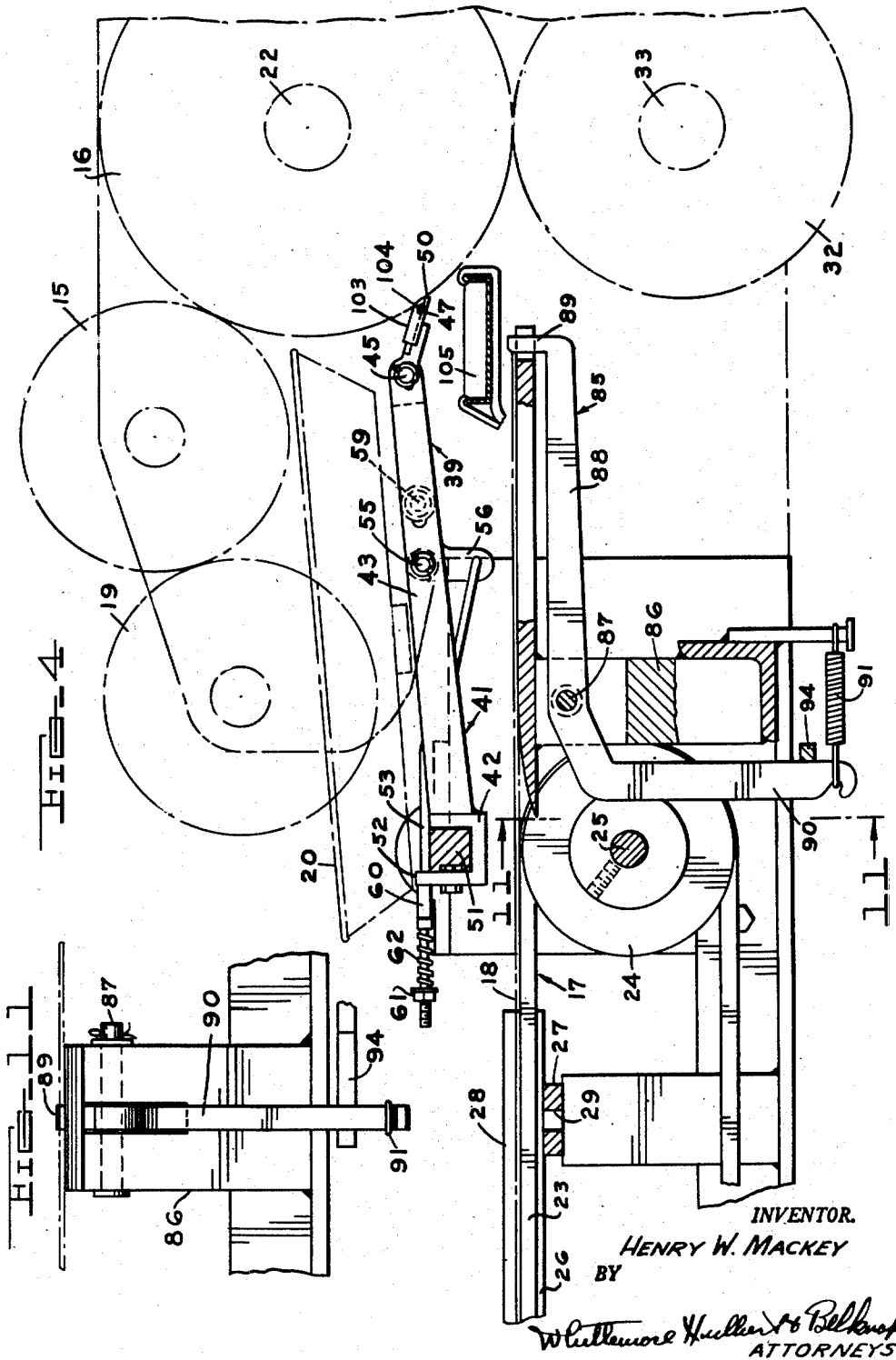
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6 Sheets-Sheet 4



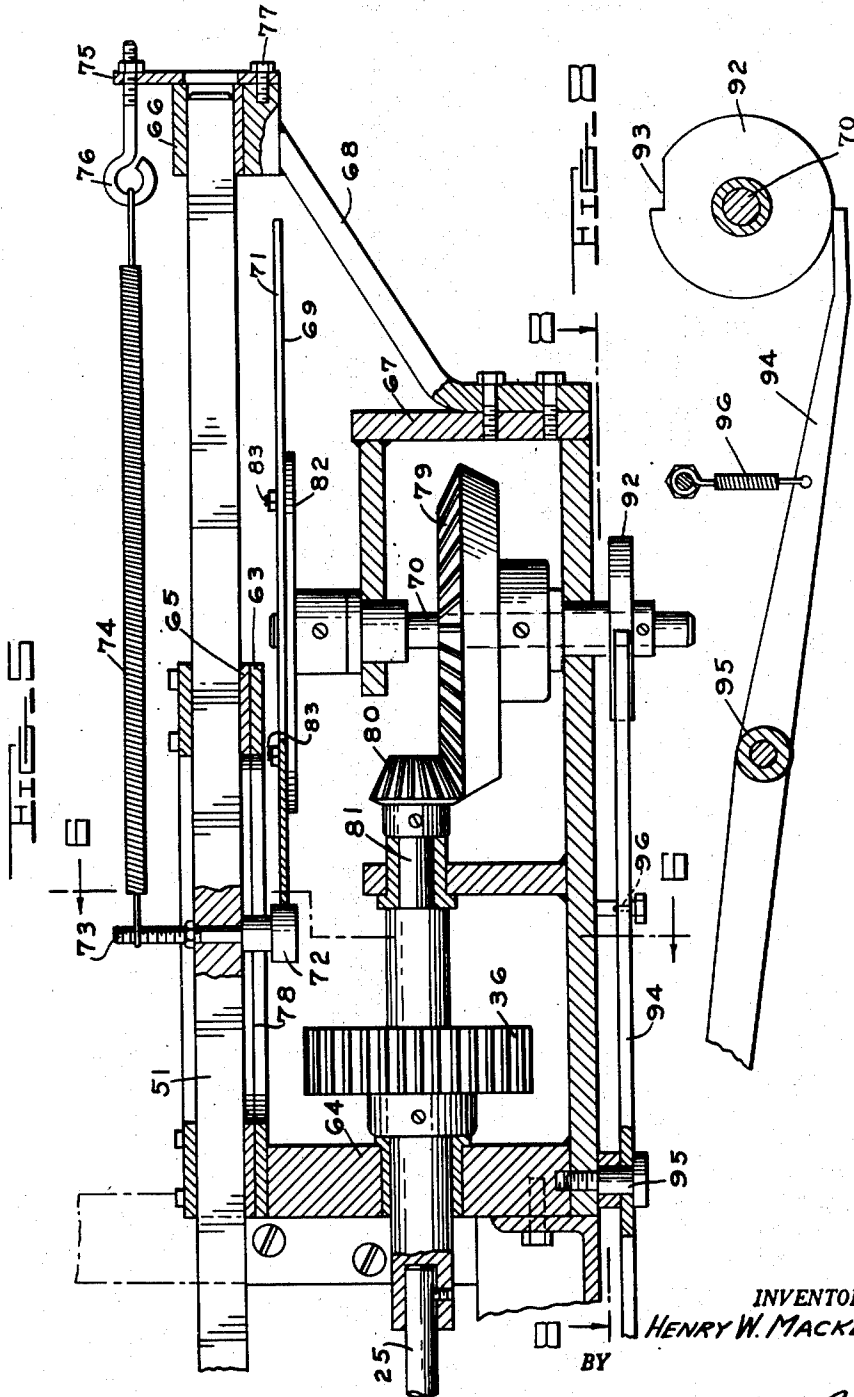
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6 Sheets-Sheet 5



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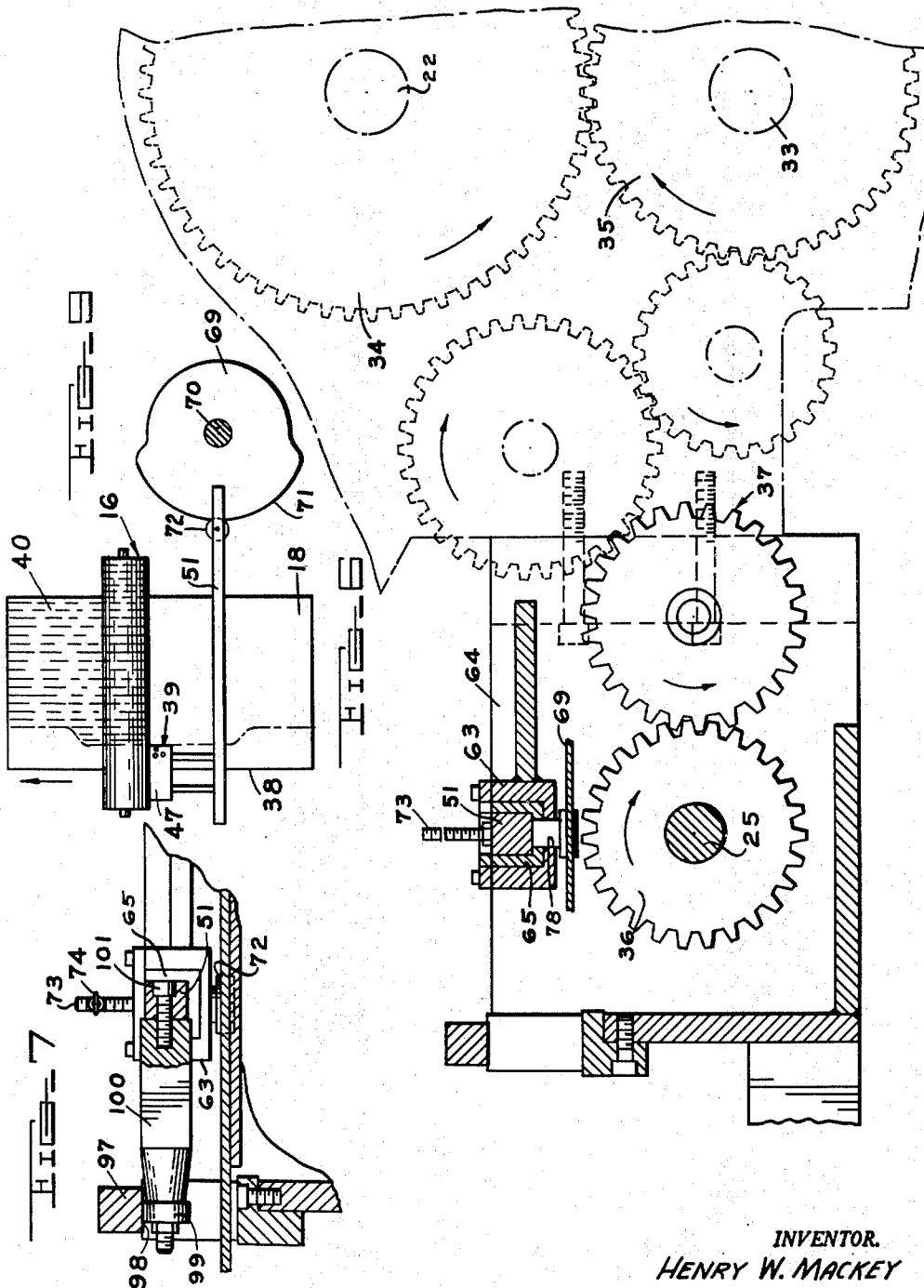
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SURFACE COATING APPARATUS

6 Sheets-Sheet 6



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UNITED STATES PATENT OFFICE

2,525,920

SURFACE COATING APPARATUS

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Application January 27, 1947, Serial No. 724,602

17 Claims. (Cl. 91—50)

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Although the apparatus forming the subject matter of this invention may be successfully used in many instances where it is desirable to paint or otherwise coat panels, nevertheless, it finds particular utility when employed in connection with equipment of the type used in applying wood or other graining effects to panels.

When applying wood or other graining effects to panels by the printing process it is usually necessary to apply one or more base or under-coatings to the panel. In production, the base coating is ordinarily applied by a coating roll having a length at least as great as the width of the panel to be decorated so that the pigment or other coating is applied to the entire surface of the panel. This procedure is satisfactory in cases where it is desired to decorate a panel throughout the area of one surface but is not practical in instances where only preselected portions of the panel require decoration as it necessitates masking the panel. Such practice is very costly not only because it requires considerable time and thereby retards production but also because of the waste involved.

With the above in view, it is one of the objects of this invention to provide surface coating apparatus constructed to enable decorating only the required portions of the panel surface without the necessity of masking or removing the coating material from the panel. Thus, the additional time consuming step of removing or masking the coating substance from the portions of the panel surface it is desired to leave plain is avoided.

Another object of this invention is to provide coating apparatus with means for removing the pigment or coating material from preselected areas of the coating roll prior to engagement of the peripheral face of the roll with the work or panel.

Still another feature of this invention is to engage the peripheral face of the coating roll with a blade or scraper supported between the pigment applying means and work for sliding movement in opposite directions substantially parallel to the coating roll axis.

A further feature of this invention is to reciprocate the scraper or blade in timed relation to the rotation of the coating roll by a cam having a contoured surface corresponding to the specified configuration of the area of the work surface to be left blank.

A still further object of this invention is to provide means associated with the scraper for rapidly draining the pigment removed from the coating roll and thereby assure the provision of

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a sharp line of demarcation between the area decorated and the adjacent blank area.

Still another object of this invention is to interrupt advancement of the work into operative relation to the coating roll by latch means releasable in timed relation to the operation of the cam for reciprocating the scraper.

The foregoing as well as other objects will be made more apparent as this description proceeds, especially when considered in connection with the accompanying drawings, wherein:

Figure 1 is a fragmentary plan view of a part of the surface coating apparatus embodying the features of this invention;

Figure 2 is a fragmentary plan view of the part of the apparatus adjoining the part shown in Figure 1;

Figure 3 is a sectional view taken on the line 3—3 of Figure 1;

Figure 4 is a sectional view taken on the line 4—4 of Figure 1;

Figure 5 is a sectional view taken on the line 5—5 of Figure 2;

Figure 6 is a sectional view taken on the line 6—6 of Figure 5;

Figure 7 is a sectional view taken substantially on the line 7—7 of Figure 2;

Figure 8 is a sectional view taken on the line 8—8 of Figure 5;

Figure 9 is a semi-diagrammatic plan view of a part of the surface coating apparatus;

Figure 10 is a perspective view of the scraper embodied in the apparatus; and

Figure 11 is a sectional view taken on the line 11—11 of Figure 4.

The present invention is shown for the purpose of illustration in connection with a surface coating machine comprising a spreader roll 15, a coating roll 16 and a conveyor 17 for supporting a panel 18 to be decorated. The spreader and coating rolls have a length somewhat greater than the width of the panel 18 and are suitably supported for rotation with the peripheral surfaces thereof frictionally engaging each other.

A fountain roll 19 is mounted for rotation about an axis parallel to the axis of rotation of the spreader roll 15, and is supported with the peripheral surface thereof contacting the corresponding surface of the spreader roll throughout the length of the latter. As shown particularly in Figure 3 of the drawings, a tray or container 20 containing the desired pigment is suitably supported beneath the fountain roll 19 in a position to receive the lower portion of this roll. Thus, as the fountain roll is revolved, pigment in the

tray 20 collects on the periphery of this roll and is transferred by the latter to the peripheral face of the spreader roll 15.

The coating roll 16 has peripheral surfaces 21 of resilient material, such for example, as gum or some type of gelatin composition. The roll 16 has a length somewhat greater than the width of the panel 18 to be decorated, and is supported on a shaft 22 having its axis extending parallel to the axis of rotation of the roll 15. Referring again to Figure 3 of the drawings, it will be noted that the roll 16 is positioned with the peripheral surface thereof frictionally engaging the top surface of the panel 18 and the peripheral face of the roll 15. Thus the pigment collected by the spreader roll 15 is applied to the peripheral face of the roll 16, and is transferred by the roll 16 onto the top surface of the panel 18.

The conveyor 17 comprises laterally spaced endless belts 23 respectively reeved around pulleys 24 secured in axial spaced relationship to a drive shaft 25. The drive shaft 25 is rotated in a clockwise direction to move the top surfaces of the conveyor belts 23 in a direction toward the coating roll 16, and the panel 18 is guided throughout its movement with the conveyor by guides 26 secured to a transverse frame member 27. The guides 26 are in the form of plates having upstanding flanges 28 respectively positioned at opposite sides of the conveyor for engagement with the opposite longitudinal edges of the panel 18. In order to compensate for panels of different width, the transverse frame member 27 is formed with an elongated slot 29, and the fastener elements 30 for the guide plates are extended downwardly through the slot 29 for engagement with the clamping nuts 31. Thus the guide plates 26 may be moved to different relative positions on the frame member 27 by merely loosening the nuts 31.

The delivery end of the conveyor 17 terminates short of the coating roll, and the portion of the panel extending beyond the delivery end of the conveyor is gripped between the periphery of the coating roll 16 and the periphery of a feed roll 32. The feed roll 32 is secured to a shaft 33 having its axis parallel to the axis of the shaft 22 and located beneath the panel 18 directly below the shaft 22. The feed roll 32 and the coating roll 16 are rotated in the general direction of advancement of the panel 18 by the conveyor 17 and cooperate with one another to assist the conveyor 17 in moving the panel 18 throughout its path of travel. Thus the decoration applied to the coating roll by the spreader roll is printed on the panel 18 as it is advanced along its path of travel.

The coating roll 16, feed roll 32 and conveyor 17 are operated in timed relationship by the gearing shown in Figure 6 of the drawings. In general a relatively large gear 34 is secured to the coating roll shaft 22 beyond one end of the roll, and is adapted to mesh with a gear 35 secured to the feed roll shaft 33. The gear 35 is operatively connected to a gear 36 secured to the conveyor drive shaft 25 through the medium of three intermeshing idler gears 37. The characteristics of the above described gearing are such that the coating roll 16 and the feed roll 32 are rotated at substantially the same peripheral speed in the direction of advancement of the panel 18 by the conveyor 17. As pointed out, the peripheral face of the pattern roll 15 frictionally engages the corresponding surface of the coating roll 16 and is accordingly rotated by the latter. The

peripheral surface of the spreader roll also frictionally engages the fountain roll 19, and accordingly, imparts rotation to the latter.

The apparatus thus far described operates to apply the coating to the panel 18 throughout the full area of the top surface thereof. However, as briefly pointed out in the preamble of this description, it is frequently essential or desirable to leave a preselected portion of the panel surface blank, so that this portion may be subsequently formed without disturbing the coating. For the purpose of this invention, it will be assumed that it is desired to omit the coating from the top surface of the panel 18 adjacent the side edge indicated in Figure 9 of the drawings by the numeral 38 and to impart an irregular contour to the adjacent marginal edge of the coating indicated graphically by the numeral 40. A panel decorated in this manner may be subsequently formed in a suitable press to provide a typical instrument panel for motor vehicles.

In order to accomplish the above result, a scraper blade assembly 39 is suitably supported in a position to engage the peripheral face of the coating roll 16 prior to engagement of this face with the panel 18. Upon reference to Figures 1 and 3 of the drawings, it will be noted that the scraper assembly 39 comprises a supporting frame 41 having a U-shaped portion 42 at the outer end and having laterally spaced side members 43 extending inwardly from opposite ends of the U-shaped portion 42. A holder 44 is positioned between the inner ends of the members 43 and is pivotally connected to the latter members by means of a pin 45. The pin 45 extends parallel to the axis of rotation of the coating roll 16 to enable swinging movement of the holder 44 in a vertical plane. An attaching portion 46 extends inwardly from the holder 44 and is recessed to receive a blade 47. The blade 47 is removably clamped to the attaching portion 46 by a plate 48 secured to the portion 46 by screws 49. The portion 46 is inclined downwardly from the holder 44 and supports the blade 47 with the working edge 50 in contact with the peripheral face of the coating roll 16 at the end of the latter adjacent the side 38 of the panel 18.

The assembly 39 is supported to effect engagement of the edge 50 on the blade 47 with the coating roll substantially below a horizontal plane including the axis of rotation of the coating roll, and the working edge 50 of the blade is yieldably held in contact with the adjacent portion of the peripheral face on the coating roll. In detail the U-shaped portion 42 at the outer end of the frame 41 receives and is secured to a rail 51 extending transversely of the path of travel of the panel 18. Referring again to Figure 3 of the drawing, it will be noted that the outer flange of the U-shaped portion 42 extends above the rail 51 and is formed with a slot 52 open at the top and adapted to receive a rod 53. The inner end of the rod 53 is connected to the holder 44 through the medium of a bell crank lever 54 pivotally supported intermediate the arms thereof on the frame 41 between the members 43 by a pin 55. One arm 56 of the bell crank lever is connected to the inner end of the rod 53 and the other arm 57 is pivotally connected to the outer end of an extension 58 projecting outwardly from the holder 44 between the members 43 of the frame 41. It will be noted from Figure 1 of the drawings that the outer end of the extension 58 is bifurcated to receive the arm 57 of the bell crank lever 54 therebetween, and a pin 59 ex-

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tends through aligned openings in the furcations of the extension and adjacent end of the bell crank lever arm 51 to pivotally connect the latter to the holder. Referring again to Figure 3 of the drawings, it will be noted that the opening through the arm 51 for receiving the pin 59 is elongated to compensate for the different angular paths of travel of the arm 51 and extension 58 when the latter are swung about their respective pivots 55 and 45. The outer end of the rod 53 extends beyond the U-shaped portion 42 and a sleeve 60 is slidably supported thereon. The sleeve 60 has a diameter greater than the width of the slot 52 and is adapted to abut the adjacent side of the U-shaped portion 42 in the manner indicated in Figure 3 of the drawings. The outer end of the rod 53 is threaded to receive an abutment or nut 61 and a coil spring 62 is supported on the rod between the abutment 61 and sleeve 60. Thus the coil spring yieldably urges the sleeve 60 into engagement with the U-shaped portion 42 and also acts through the bell crank 54 to yieldably maintain the working edge 50 of the blade 47 in contact with the adjacent peripheral surface of the coating roll 16. The above construction is so arranged that the blade 47 may be readily released from the peripheral surface of the coating roll 16 by merely retracting the sleeve 60 against the action of the spring 62 and lifting the rod 53 out of the slot 52.

In order to impart a preselected irregular contour to the edge of the decoration 40 adjacent the side 38 of the panel, the scraper assembly 39 is moved in opposite direction substantially parallel to the axis of rotation of the coating roll 16. In the present apparatus the required motion is transmitted to the scraper assembly 39 by reciprocating the rail 51. Upon reference to Figures 2, 5 and 6 of the drawings, it will be noted that the rail 51 is slidably supported in a U-shaped track 63 suitably secured to a part 64 of the machine frame beyond one side of the path of travel of the panel 18. If desired the track may be lined with a U-shaped member 65 of wear resisting material. The free end of the rail 51 shown in Figure 5 of the drawings is slidably supported in a bushing 66 secured to a part 67 of the machine frame by a bracket 68. Thus it will be noted that the rail 51 is supported for sliding movement transversely of the path of travel of the panel or parallel to the axis of rotation of the coating roll 16.

The rail 51 is operated by means of a cam 69 positioned directly below the rail support 63 and secured to the upper end of a vertical shaft 70. The contoured surface 71 of the cam is engageable with a follower 72 secured to the rail 51 and positioned at the underside of the portion of the rail guided in the supporting means 63. As shown in Figure 5 of the drawings, the follower is secured to the lower end of a stud 73 projecting upwardly through an opening in the rail 51 and forming an anchorage for one end of a coil spring 74. The opposite end of the coil spring 74 is connected to the upper end of a bracket 75 by a hook 76, and the lower end of the bracket is secured to the bushing 66 by studs 77. The base portions of the U-shaped support 63 and associated liner 65 are formed with registering elongated slots 78 for receiving the follower 72.

It follows from the above that the spring 71 maintains the follower 72 in frictional contact with the contoured surface 71 of the cam 69, and since the follower is secured to the rail, the latter is reciprocated in response to rotation of the

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cam. It has also been pointed out above that the scraper assembly 39 is secured to the rail 51, and accordingly, this assembly is moved as a unit with the rail relative to the coating roll 16. It is important to note that the path of travel of the scraper assembly is dependent upon the contour of the surface 71 on the cam 69, and in the present instance, this contour is predetermined to form the marginal edge of the decoration 40 adjacent the edge 38 of the panel to the contour indicated in Figure 9 of the drawings. Other contours may, of course, be provided by merely changing the shape of the cam 69. In other words, the blade 47 on the scraper assembly 39 is moved relative to the coating roll 16 to scrape the pigment from a preselected portion of the peripheral surface of the coating roll prior to engagement of this surface with the panel 18.

It follows from the above that the cam 69 should be rotated at a rate timed with respect to the peripheral speed of the coating roll 16. With this in view, reference is made to Figure 5 of the drawings wherein it will be noted that a beveled gear 79 is secured to the vertical shaft 70 and meshes with a beveled pinion 80 secured to one end of a horizontal stub shaft 81. The stub shaft 81 is suitably journaled on the machine frame and actually forms a continuation of the conveyor drive shaft 25. It has been previously stated that the driving gear 36 for the coating roll 16 and feed roll 32 is secured to the shaft 25, and accordingly, the cam 69 is rotated in timed relation to these rolls. In this connection, it may further be pointed out that the cam 69 is secured to the vertical shaft 70 through the medium of a driving plate 82. The driving plate 82 is formed with circumferentially spaced or tapped openings therethrough for receiving studs 83, and the cam is formed with arcuate slots 84 concentric to the axis of rotation of the cam for receiving the studs 83. Thus the cam may be angularly adjusted relative to the vertical drive shaft 70 to provide the required operation of the scraper assembly relative to the coating roll 16.

It will further be understood from the foregoing that it is necessary to time the interval the panel 18 is admitted to the coating roll 16 in relation to the operation of the cam 69. In this connection it will be noted from Figure 4 of the drawings that advancement of the panel 18 toward the coating roll 16 is interrupted by latch mechanism 85. The latch mechanism 85 comprises a bell crank lever pivoted intermediate the ends thereof on a part 86 of the machine frame by a pin 87 positioned to enable swinging movement of the bell crank lever in a vertical plane. One arm 88 of the bell crank lever extends inwardly to a position adjacent the entrant side of the coating roll 16 and feed roll 32. The inner end of the arm 88 is provided with an upwardly extending part 89 which projects across the path of travel of the panel 18 and is adapted to engage the leading edge of the panel to arrest movement of the latter by the conveyor. The other arm 90 of the bell crank lever extends downwardly and forms an anchorage for one end of a spring 91 having the opposite end connected to the part 86 of the machine frame. Thus the bell crank lever is normally urged to a position wherein the part 89 is located to arrest advancement of the panel to a position between the coating roll 16 and cooperating feed roll 32. The bell crank lever is swung in a clockwise

direction to release the latch 85 by a cam 92 secured to the lower end of the vertical cam shaft 70 and having a notch 93 in the peripheral surface thereof. The periphery of the cam 92 is frictionally engaged by one end of a lever 94 pivoted intermediate its ends on the machine frame by a pin 95 and having the opposite end abutting the inner edge of the arm 90 on the bell crank latching lever 85. The lever 94 is yieldably maintained in contact with the periphery of the cam 92 by a spring 96 having one end connected to the end of the lever 94 adjacent the cam 92 and having the other end secured to the machine frame.

The cam 92 is positioned on the shaft 70 with the notch 93 so arranged with respect to the contoured surface of the cam 69 that the latch 85 is released to initiate graining of the panel at the proper interval. In this connection, it will, of course, be noted that as the cam 92 rotates to a position wherein the notch 93 registers with the adjacent end of the lever 94, the latter is operated by the spring 96 to swing the bell crank lever 85 in a direction to release the part 89 from the panel 18. Thus the panel 18 is free for movement by the conveyor to a position wherein it is gripped between the coating roll 16 and feed roll 32.

Inasmuch as the scraper blade assembly is supported by the rail 51, and extends for a substantial distance laterally from the rail 51, it follows that a force component is exerted on the rail tending to rotate the rail. To overcome this reaction on the rail 51, a track 97 is supported on the part 84 of the machine frame laterally beyond the side of the rail 51 opposite the side from which the scraper assembly projects. The track 97 is provided with a horizontal bottom surface 98, which extends parallel to the rail 51 and is engaged by a roller 99. The roller 99 is rotatably supported on the outer end of an arm 100 having the inner end secured to the adjacent side of the rail 51 by a stud 101. Thus the action of the rail is stabilized, and binding of the rail in its guides is prevented.

When scraping the peripheral surface of the coating roll to form the coating 40 with the contoured edge illustrated in Figure 9 of the drawings, it is desired to avoid the accumulation of pigment at the contoured edge of the coating. This is accomplished in the present instance by providing means on the blade 47 for assuring rapid drainage of the pigment scraped from the peripheral surface of the coating roll by the blade. With specific reference to Figure 10 of the drawings, it will be noted that the inner edge of the blade is bent upwardly to form a flared flange 103 and openings 104 are formed in the flange and blade immediately adjacent the working edge 50 of the blade. During operation it has been discovered that the pigment scraped from the coating roll by the working edge 50 of the blade is rapidly carried away through the openings 104 to the collecting pan 105 suitably supported immediately below the blade 47 by a bracket 106. The rapid drainage of the pigment from the blade 47 is further assisted by what appears to be a vacuum formed immediately below the working edge of the blade during operation thereof. In any case the resulting panel is provided with a coating having a contoured edge wherein the line of demarcation between the coating and blank portion of the panel is no heavier than the remainder of the coating.

What I claim as my invention is:

1. Apparatus for coating a surface of a work piece as the latter is advanced along a predetermined path of travel, comprising a rotatable roll, means for applying a surface coating substance to the peripheral surface of the roll, a scraper having a working edge of less length than the roll and positioned with the working edge in frictional contact with the roll at one end thereof, and means for moving the scraper back and forth along the roll in the direction of the axis of the roll to provide the coating on said roll with a contoured edge adjacent the end aforesaid of the roll.

2. Apparatus for coating a surface of a work piece as the latter is advanced along a predetermined path of travel, comprising a rotatable roll, means for applying a surface coating substance to the peripheral surface of the roll, a scraper having an edge extending in the direction of the roll axis and having an effective length less than the length of the roll, means supporting the scraper for sliding movement in the direction of the roll axis with said edge in frictional engagement with peripheral surface of the roll, and means for moving the scraper back and forth along the roll in the direction of the axis of rotation of the roll to remove preselected portions of the coating substance from the peripheral surface of said roll.

3. Apparatus for coating a surface of a work piece as the latter is advanced along a predetermined path of travel, comprising a rotatable roll, means for applying a surface coating substance to the peripheral surface of the roll, a scraper having an edge extending in the direction of the roll axis and having an effective length less than the length of the roll, means supporting the scraper for sliding movement in opposite directions substantially parallel to the roll axis with said edge in frictional contact with the peripheral surface of the roll, and a rotatable cam for moving the scraper back and forth along said roll.

4. Apparatus for coating a surface of a work piece as the latter is advanced along a predetermined path of travel, comprising a rotatable roll, means for applying a surface coating substance to the peripheral surface of the roll, means for contouring the edge of the substance at one end of the roll including a scraper having a working edge shorter than the length of the roll and extending in the direction of length of the roll, said scraper being positioned with the working edge in frictional engagement with the peripheral surface of the roll adjacent the end aforesaid thereof, means supporting the scraper for sliding movement back and forth along the roll in the direction of the axis of said roll, and cam means for reciprocating the scraper.

5. Surface coating apparatus comprising means for advancing the work to be coated along a predetermined path of travel, a roll positioned for engagement with the work and rotatable in the direction of advancement of the work, means for applying a surface coating material to the peripheral surface of the roll, means for contouring the edge of the substance at one end of the roll including a scraper having an edge shorter than the length of the roll and positioned to frictionally engage the peripheral surface of the roll adjacent the end aforesaid thereof prior to engagement of said surface with the work, means supporting the scraper for sliding movement back and forth in the direction of

length of the roll, and means operatively connected to the scraper for sliding the same back and forth along said roll.

6. Apparatus for coating a surface of a work piece as the latter is advanced along a predetermined path of travel, comprising a rotatable roll, means for applying a surface coating substance to the peripheral surface of the roll, a scraper having an edge extending in the direction of the roll axis and having an effective length less than the length of the roll, means supporting the scraper for sliding movement in opposite directions substantially parallel to the roll axis with said edge in frictional contact with the peripheral surface of the roll, and means operating in timed relation to rotation of the roll for reciprocating the scraper to remove preselected portions of the coating substance from the peripheral surface of the roll.

7. Apparatus for coating a surface of a work piece as the latter is advanced along a predetermined path of travel, comprising a rotatable roll, means for applying a surface coating substance to the peripheral surface of the roll, means for contouring the edge of the substance at one end of the roll including a scraper having an edge shorter than the length of the roll and frictionally engageable with the peripheral surface of the roll adjacent the end aforesaid thereof, means supporting the scraper for sliding movement in opposite directions substantially parallel to the roll axis, a rotatable cam operatively connected to the scraper for reciprocating the latter, and means for rotating the cam in timed relation to rotation of said roll.

8. Surface coating apparatus comprising means for advancing the work to be decorated along a predetermined path of travel, a roll positioned for engagement with the work and rotatable in the direction of advancement of the work, means for applying a surface coating material to the peripheral surface of the roll, means for contouring the edge of the substance at one end of the roll including a scraper having an edge shorter than the length of the roll and positioned to frictionally engage the peripheral surface of the roll prior to engagement of said surface with the work, means supporting the scraper for sliding movement in opposite directions substantially parallel to the roll axis, a rotatable cam operatively connected to the scraper for reciprocating the latter, means for rotating the cam, and means operating in timed relation to the rotation of the cam for controlling advancement of the work by said first named means.

9. Surface coating apparatus comprising a roll having the peripheral surface coated with a coating substance, means for rotating the roll, means for introducing a work piece to the roll with the surface to be coated in contact with the coated peripheral face of the roll, means for interrupting advancement of the work into engagement with the roll, means for contouring the coating substance on the periphery of the roll adjacent one end of the latter including a scraper having an edge shorter than the length of the roll and frictionally engageable with the roll, means supporting the scraper for movement in opposite directions substantially parallel to the roll axis, means for reciprocating the scraper relative to the roll, and means operating in timed relation to the reciprocation of the scraper to actuate said interrupting means.

10. Surface coating apparatus comprising a roll, means for rotating the roll, means for ap-

plying a surface coating substance on the peripheral face of the roll, means for introducing a work piece to the roll with the surface to be coated in contact with the coated peripheral face of the roll, latch means in advance of the roll and engageable with the leading edge of the work piece to interrupt advancement of the work into engagement with said roll, a scraper having a length less than the length of the roll and positioned to engage the periphery of the roll between the substance applying means and work, means supporting the scraper for sliding movement in opposite directions lengthwise of the roll, a rotatable cam for reciprocating the scraper to impart a predetermined contour to the marginal edge of the coating substance adjacent one end of the roll, and means operating in timed relation to the rotation of the cam for actuating said latch means.

11. Surface coating apparatus comprising a roll, means for rotating the roll about its axis, means for applying a liquid coating substance to the peripheral surface of the roll, means for removing the coating substance from a limited area of said surface including a scraper having a length less than the length of the roll and movable in opposite directions lengthwise of the roll and frictionally engageable with the roll face, means for reciprocating the scraper, and drainage means for the scraper for rapidly dispensing the liquid removed thereby.

12. Surface coating apparatus comprising a rotatable roll, means for applying a liquid coating substance to the peripheral face of the roll, means for removing the coating substance from a limited area of the peripheral face of said roll including a blade movable in opposite directions lengthwise of the roll, said blade having a working edge shorter in length than the length of the roll and frictionally engageable with the roll face, means for reciprocating the blade lengthwise of the roll, and a drain opening in the blade adjacent said edge for rapidly disposing the liquid removed thereby.

13. Surface coating apparatus comprising a roll, means for rotating the roll, means for applying a liquid coating substance to the peripheral surface of the roll, and means for removing the coating substance from a limited area of said surface including a scraper movable in opposite directions lengthwise of the roll, said scraper having a flange at the working edge extending in a direction away from the direction of rotation of the roll surface and being shorter in length than the length of the roll and frictionally engageable with the roll face, means for reciprocating the scraper lengthwise of the roll, and a drain opening in the scraper providing for rapid disposal of the liquid removed thereby.

14. Surface coating apparatus comprising a rotatable roll, means for applying a liquid coating substance to the peripheral face of the roll, means for removing the coating substance from a limited area of the peripheral face of said roll including a blade movable in opposite directions lengthwise of the roll and having an upwardly flared flange at the working edge of less length than the length of the roll, means supporting the blade with the working edge of the flange in frictional contact with the peripheral face of the roll below a horizontal plane passing through the roll axis, means for reciprocating the blade in the direction of length of the roll axis, and drainage means associated with the blade providing for quick disposal of the liquid substance removed by the blade.

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15. Surface coating apparatus comprising a rotatable roll, means for applying a liquid coating substance to the peripheral face of the roll, means for removing the coating substance from a limited area of the peripheral face of said roll including a blade movable in opposite directions lengthwise of the roll, said blade having a working edge of a length less than the length of the roll and frictionally engageable with the roll face, means adjacent said edge for rapidly draining the liquid removed by the blade, and means for sliding the blade back and forth along the roll.

16. Surface coating apparatus comprising a roll, means for rotating the roll, means for applying a surface coating substance on the peripheral face of the roll, means introducing a work piece to the roll with the surface to be coated in contact with the coated peripheral face of the roll, means for removing the coating substance from a limited area of the peripheral face of the roll prior to contact of the latter face with the work piece, said means including a blade movable in opposite directions lengthwise of the roll, said blade having a working edge of a length less than the length of the roll and frictionally engageable with the peripheral face of the roll, means for reciprocating the blade in the direction of length of the roll, and drainage means providing for rapid disposal of the substance removed by the blade.

17. Surface coating apparatus comprising a roll, means for rotating the roll, means for applying a surface coating substance on the peripheral

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face of the roll, means introducing a work piece to the roll with the surface to be coated in contact with the coated peripheral face of the roll, means for removing the coating substance from a limited area of the peripheral face of the roll prior to contact of the latter face with the work piece, said means including a blade movable in opposite directions lengthwise of the roll, said blade having a flange at the working edge thereof extending in a direction away from the direction of rotation of the roll and having a length less than the length of the roll, means supporting the blade with said flange in frictional contact with the peripheral face of said roll, a drain opening in the blade positioned to provide rapid disposal of the substance removed by the flange, and means for reciprocating the blade in the general direction of the roll axis.

HENRY W. MACKEY.

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2,097,428	Bergstein	Nov. 2, 1937
2,161,187	Mueller	June 6, 1939
2,163,712	Shearer	June 27, 1939
2,294,520	Staude	Sept. 1, 1942