Aug. 24, 1926. 1,597,099

W. L. MITCHELL

MACHINE FOR PAINTING, VARNISHING, ENAMELING, AND THE LIKE

Filed Sept. 8, 1924 4 Sheets-Sheet 1

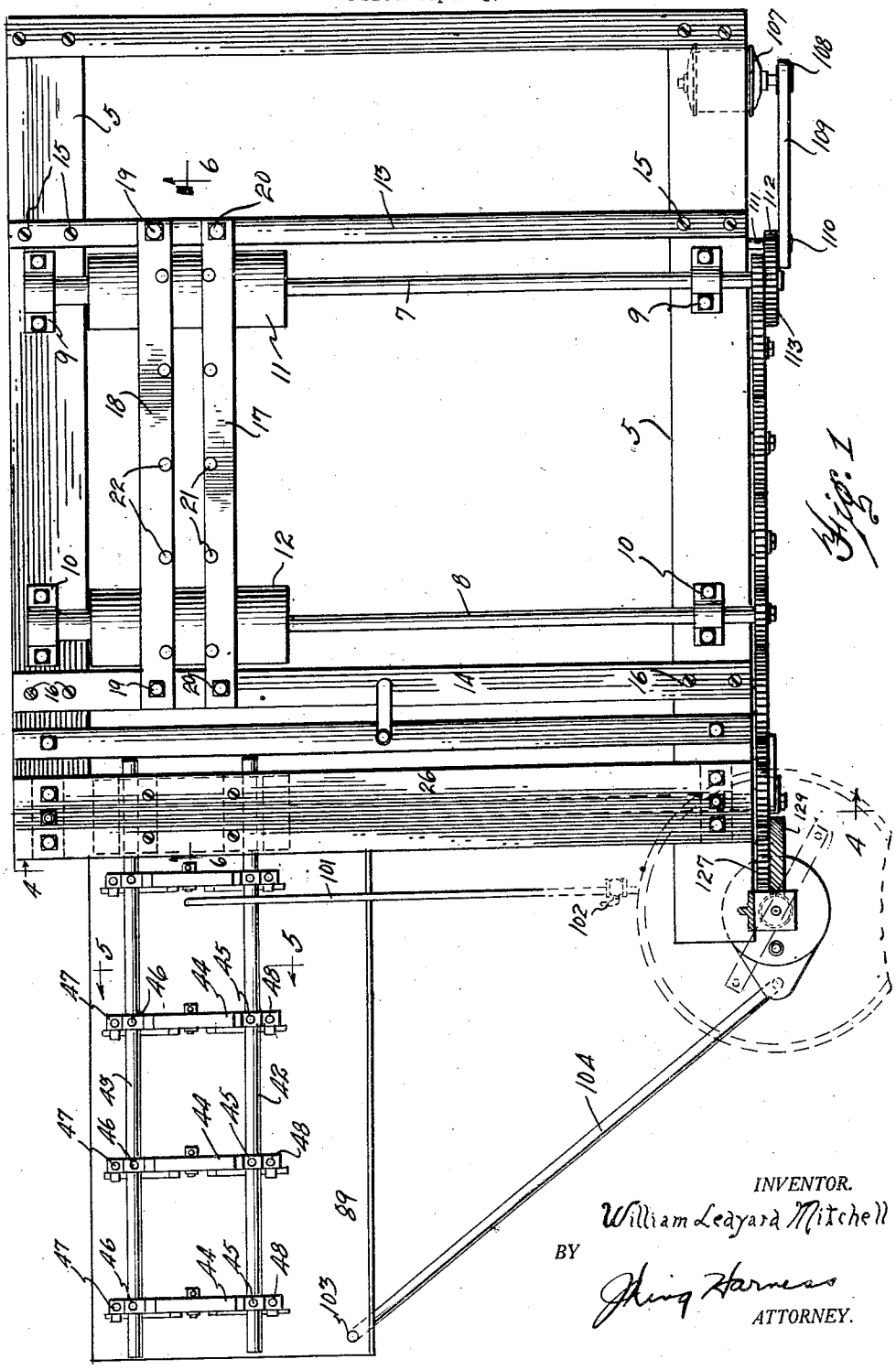


Fig. 1

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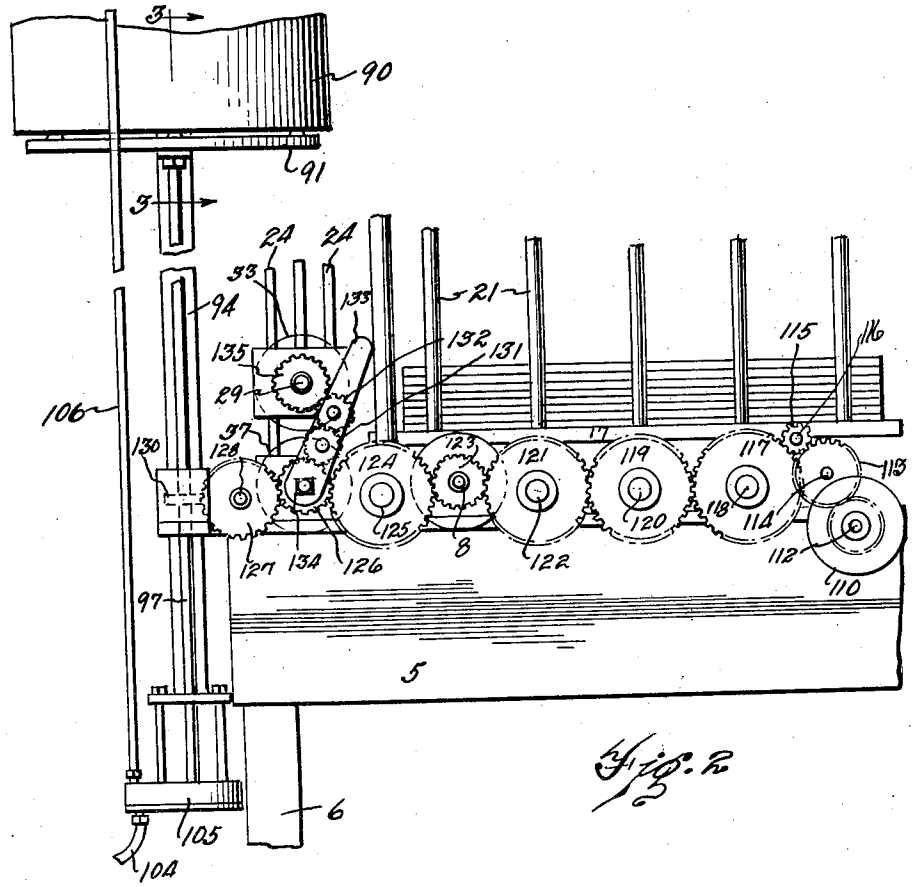


Fig. 2.

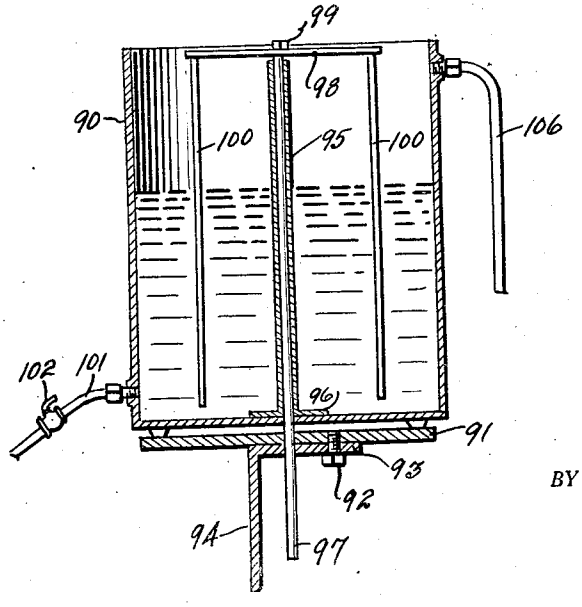


Fig. 3.

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MACHINE FOR PAINTING, VARNISHING, ENAMELING, AND THE LIKE

Filed Sept. 8, 1924 4 Sheets-Sheet 3

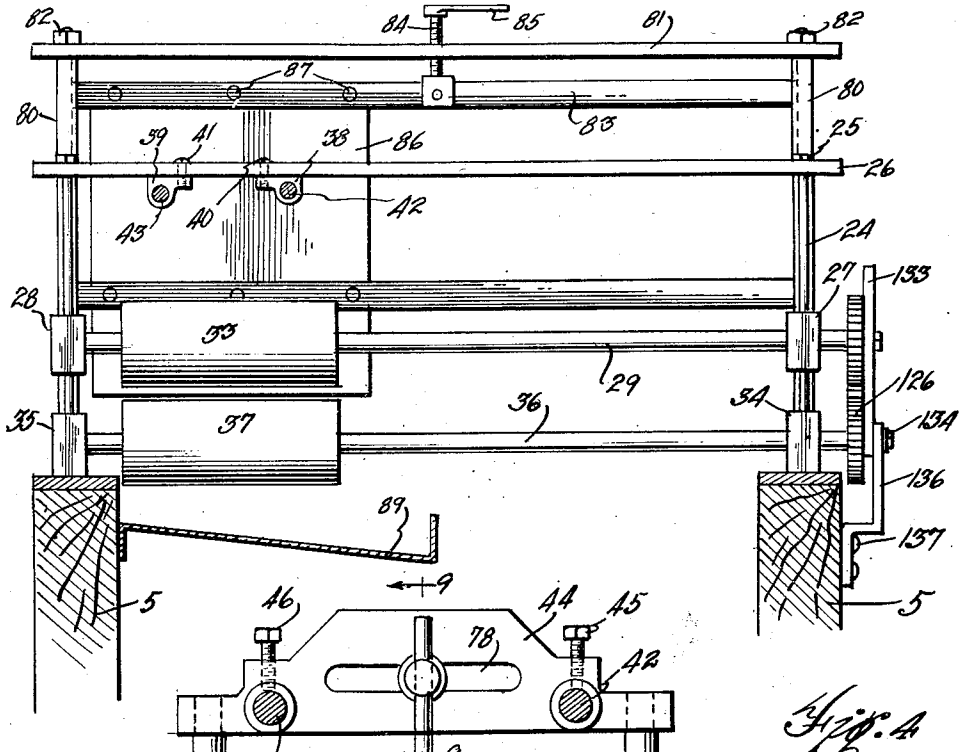


Fig. 4

Fig. 5

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MACHINE FOR PAINTING, VARNISHING, ENAMELING, AND THE LIKE

Filed Sept. 8, 1924 4 Sheets-Sheet 4

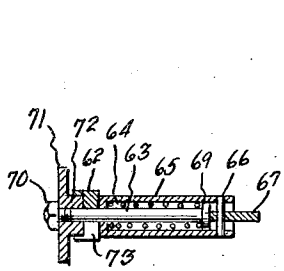


Fig. 8

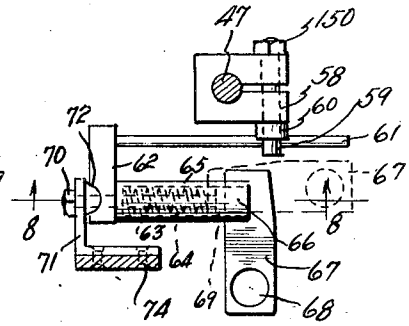


Fig. 7

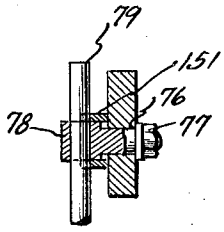
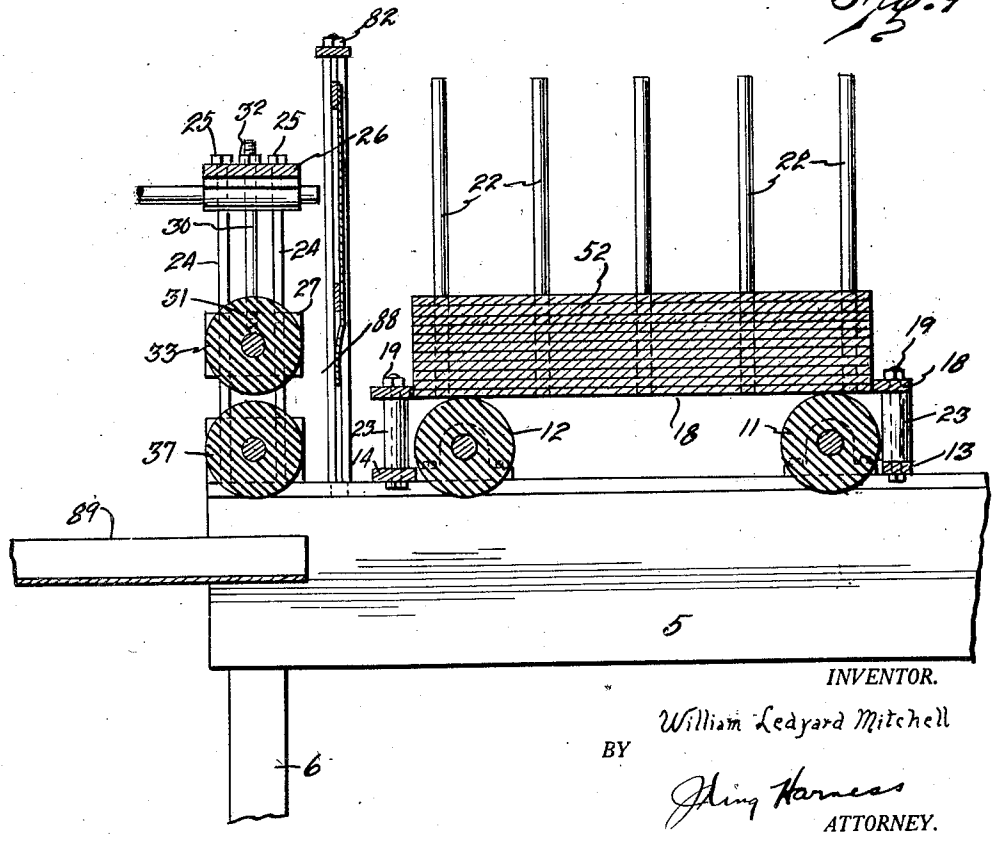


Fig. 6

Fig. 9



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Patented Aug. 24, 1926. 1,597,099

UNITED STATES PATENT OFFICE.

WILLIAM LEDYARD MITCHELL, OF GROSSE POINTE FARMS, MICHIGAN.

MACHINE FOR PAINTING, VARNISHING, ENAMELING, AND THE LIKE.

Application filed September 8, 1924. Serial No. 736,439.

It is the primary object of my invention to provide a machine within which strips of material to be painted, varnished, enameled, stained or otherwise coated may be placed and fed through, with the result that, when they have passed through the machine, they have been completely coated as desired.

Among the other objects of my invention are the provision of automatic feeding devices for the strips; simple and automatic feeding mechanism for the coating material; a construction which will permit the accomplishment of one or several coating operations by the same machine; easy and simple adjustment for the various parts; easy and quick removability for the brushes and the container for the coating material, adjustability for varying sizes and thicknesses of strips and the like.

With the above, and other objects, in view, my invention consists in the arrangement, combination and construction of the various parts of my improved device, as described in the specification, claimed in my claims and shown in the accompanying drawings, in which:

Fig. 1 is a top or plan view of my improved device.

Fig. 2 is a side elevation of the same with the end portions cut away.

Fig. 3 is a sectional view taken on line 3—3 of Fig. 2.

Fig. 4 is a sectional view taken on line 4—4 of Fig. 1.

Fig. 5 is a sectional view taken on line 5—5 of Fig. 1.

Fig. 6 is a central sectional view taken on line 6—6 of Fig. 1.

Fig. 7 is a sectional view taken on line 7—7 of Fig. 5.

Fig. 8 is a sectional view taken on line 8—8 of Fig. 7.

Fig. 9 is a sectional view taken on line 9—9 of Fig. 5.

I have shown a pair of longitudinally disposed supports 5, which may be suitably mounted upon legs 6 in order to elevate the machine from floor. Extended across between the members 5 are a pair of shafts 7 and 8 running in bearings 9 and 10 respectively, provided at either end thereof. Mounted on the shaft 7 is a roller 11 and on the shaft 8 is a roller 12. Also extended across between the members 5 are a pair of members 13 and 14 secured to the members 5 by screws 15 and 16 respectively at either end thereof.

Mounted on the members 13 and 14 and extending between them are a pair of supporting members 17 and 18 held in place by bolts 19 and 20 at either end thereof. Secured in the members 17 and 18 are a plurality of rods 21 and 22, forming a tray or hopper for the placing of a plurality of strips 52, or the like, to be coated.

Hollow tubular members 23 are disposed around the bolts 19 and 20 between the cross members 13 and 14 and the members 17 and 18 so that they may act in effect as spacers and by changing them the height of the members 17 and 18 may be varied.

Extended upwardly from the members 5 are two pairs of rods 24 having secured on their upper ends by means of nuts 25 a cross member 26. Suspended intermediate the ends of the rods 24 are a pair of bearings 27 and 28, in which is positioned a shaft 29. Extending through the cross member 26, one at either end thereof, are a pair of rods 30 attached to the bearings 27 and 28 as at 31. A nut 32 is provided on the upper end of the rod 30 so that the height of the bearing and correspondingly the height of the shaft 29 may be varied by screwing the nut 32 upwardly or downwardly. Positioned on the shaft 29 is a roller 33.

Positioned on the members 5 are another pair of bearings 34 and 35, similar to the bearings 27 and 28, and in which is disposed a shaft 36 having a roller 37 thereon directly beneath the roller 33.

Extending forwardly from brackets 38 and 39, secured at 40 and 41 to the cross member 26, are a pair of rods 42 and 43, on which are disposed a plurality of brush holding devices consisting of a top cross member 44, suitably apertured to receive the rods 42 and 43 and provided with set screws 45 and 46 adapted to bear against the rods 42 and 43 to hold the same in any desired stationary position on the rods 42 and 43. Depended from the cross member 44 are a pair of rods 47 and 48 joined together at the bottom thereof by cross member 49, secured by nuts 50 and 51 to the rods 47 and 48 respectively.

A bottom brush 53 is secured by means of a clip 54 on the bottom thereof to the cross member 49, the clip being bent intermediate

its ends in a somewhat U shaped formation so as to fit over the cross member 49. A bolt 55 may be disposed through the slotted opening 56 in the cross member 49 and through the clip 54 in order to secure the clip and brush in any desired position, the slot 56 permitting transverse adjustment.

Side brushes 57 are secured to the rods 47 and 48 by means of a split clamp 58, drawn to a closed position by means of a bolt 59 extended through the split ends of the clamp. Extending through an aperture in the bolt 59 is a rod 61 on the end of which is the member 62. The rod 61 is secured in place by clamping against the sleeve 60 when the nut 150 on the bolt 59 is screwed tight. Extended through the free end of the member 62 is a bolt 63, having a coiled spring 64 disposed around it and enclosed in a casing 65 on one side of the member 62. Pivoted as at 66 to the casing 65 is a cam member 67 having a finger aperture 68 therein and adapted when moved on its pivot to swing as shown in dotted lines in Fig. 7, so as to bring its upper edge to bear against the enlarged head 69 on the bolt 63, thus compressing the spring 64 and moving the bolt head 70 outwardly. A member 71 having a round boss 72 is adapted to seat in a depression provided in the member 62. The member 71 is apertured and the bolt 63 passes therethrough so that when the cam member 67 is in the position shown in full lines in Fig. 7, the member 71 is securely held in place, while when the cam member takes the position shown in dotted lines in Fig. 7, pressure on the face of the member 71 is released by reason of the nut 70 on the bolt 63 being pushed outwardly and the member 71 may then be moved out through the slot 73 in the member 62 and the brushes 57, which are secured on the end of the member 71 by screws, rivets or other suitable devices 74, completely disassembled.

The assembly for both side brushes 57 is the same.

A top brush 75 is depended from the top cross member 44 by means of a bolt 76 extended through the slotted opening 78 in the cross member 44, and having a nut 77 on one end thereof. The opposite end of the bolt 76 is enlarged as at 78 and centrally apertured to accommodate the brush handle 79, which handle is held securely by bearing against the sleeve 151. If desired, the same construction for removability of the brush, as in the case of the brushes 57, may be placed upon the handle 79.

It will be noted that the four above described brushes entirely encompass one of the strips 52 so as to brush the entire area of the strip when it is passed between them. As many sets of brushes as may be necessary or desirable may be used. I have here shown three sets.

Between the rollers 33 and 37 and the spacers 23 are a pair of rods 80 secured to the beams or supports 5 at the bottom and having a cross member 81 extended between them at the top and secured in place by nuts 82 on the ends of the rods. A second cross member 83 is positioned between the rods 80 and has attached thereto a screw threaded rod 84 which extends through a screw-threaded opening in the cross member 81. A handle 85 is provided on the upper end of rod 84 and by rotating the handle 85 and correspondingly the rod 84 in opposite directions, the height of the cross member 83 may be varied. A shield 86 is secured to the cross member 83 as at 87 and extends downwardly adjacent the mouth of the hopper containing the strips 52. The bottom of the shield 86 is slightly dished forwardly as at 88 so as to provide a barrier to the strips 52, the bottom of the shield being just high enough to permit one of the strips to pass beneath it from the roller 12 between the rollers 33 and 37.

A tray 89 is positioned beneath the brushes so as to catch any excess coating material which may drip therefrom.

Elevated above the brushes is a container 90, in which may be placed the paint, varnish, stain or other coating material. The container 90 is adapted to sit on a member 91 secured by the bolt 92 to a plate 93 on the upper end of the standard 94 and is provided with a hollow tube 95 secured to the bottom thereof as at 96. A power driven shaft 97 extends upwardly through the tube 95, which shaft has a transversely extending member 98 secured on the end thereof by a nut 99. Depended from the transverse member 98 are a pair of rods 100, which are adapted, when shaft 97 is rotated, to stir the liquid in the container. Should the rotation be too fast, one of the rods may be removed.

A supply pipe 101 extending from adjacent the bottom of the container 90 and having a shut-off valve shown diagrammatically in Fig. 3 at 102 has its bottom end extended over the point through which the strips 52 will pass, between the rods 42 and 43, as shown in Fig. 1, so that a continuous supply of coating material may pass therethrough and be permitted to flow over the strips, or other articles, being coated, in any desired quantity. The excess coating material will drip into the pan 89 and drain therefrom through the opening 103 and will then pass through the piping 104 to a pump 105, also operated by the power driven shaft 97 and will be returned through the pipe 106 into the top of the container 90 where it may be re-used.

When it is desired to change from one coating material to another, the container 90 with its component fittings may, by simply

removing the nut 99, be removed as a unit and a new container with another coating material therein substituted.

As a means of supplying power for the machine, I utilize an electric motor 107 having a pulley 108 on the end thereof connected by a belt 109 with a pulley 110 on the end of a shaft 111 secured in one of the beams 5. Also mounted on the shaft 111 is a gear 112 adapted to mesh with a gear 113 mounted on the shaft 7, so as to rotate the said shaft.

Another gear 114 is also mounted on the shaft 7 and adapted to mesh with a gear 115 mounted on a short shaft 116. The gear 115 in turn meshes with a gear 117 provided on the shaft 118, the gear 117 meshing with the gear 119 on the shaft 120. The gear 119 meshing with the gear 121 on the shaft 122, the gear 121 meshing with the gear 123 on the shaft 8, the gear 123 meshing with the gear 124 on the shaft 125, the gear 124 meshing with the gear 126 on the shaft 36, the gear 126 meshing with the gear 127 on the shaft 128. Also mounted on the shaft 128 is a worm 129 meshing with a worm gear 130 on the shaft 94. A pair of gears 131 and 132 are mounted on an arm 133 secured to a bracket 136 by a bolt 134, the bracket 136 being secured as at 137 to a side beam 5, the gear 131 meshing with the gear 126 on one side and with the gear 132 on the other. The gear 132 in turn meshing with the gear 135 on the shaft 29. By positioning the gears 131 and 132 on the arm 133, they may be adjusted upwardly or downwardly by loosening the bolt 134 and thus accommodate themselves to the upward or downward movement of the gear 135 when the shaft 29 and the roller 33 are adjusted upwardly or downwardly to accommodate varying widths of strips or other articles to be coated.

Thus it will be seen that strips or other articles to be coated are placed in the hopper formed by the rods 21, with the bottom strip resting upon the rollers 11 and 12. The motor or other source of power is then started with the result that the rollers 11 and 12 are rotated upon the shafts 7 and 8 and the bottom strip will be forced between the rollers 33 and 37 the portion 88 of the shield 86, preventing the passage of more than one strip at a time. The rollers 33 and 37 will in turn force the strip between the brushes 53, 57 and 75, which brushes will spread the coating material which has been dropped on the strip through the piping 101. The strips will follow through the rollers one directly behind the other and they may be collected by conveyers or other suitable means after having passed between the last series of brushes.

It will be noted that one series of brushes is provided behind the outlet of the piping 101, the function of which is to prevent the coating material from flowing backwardly and spreading over the rollers 33 and 37.

While I have here shown but one series of brushes and one series of rollers, it will be noted that the machine is wide enough to accommodate several series and I desire to point out that additional series of rollers and brushes may be added so as to multiply the amount of work performed. Likewise, by providing additional containers and pumps suitably geared with the source of power, different coating operations may be performed at the same time on the same machine. That is to say, one series of brushes and rollers may stain, another varnish and another enamel, or any other suitable arrangement of operations.

While I have here shown a plurality of brushes arranged for bottom, top and side brushing, and have so defined the brush arrangement in my claims, I desire to point out that a single brush arranged in circular or the like formation is the full equivalent of the plurality of brushes in so far as the brushing of the strips is concerned.

I further desire to point out that the system of gearing herein illustrated and described is used purely for convenience, a number of small gears being used in preference to a smaller number of larger gears, and that any other suitable source of power transmission may be used, as desired.

It is obvious that various other changes may be made in the arrangement, combination and construction of the various parts of my improved device without departing from the spirit of my invention and it is my intention to cover by my claims such changes as may be reasonably included within the scope thereof.

What I claim is:

1. A device of the class described comprising a hopper adapted to receive, a plurality of articles to be coated, coating brushes adjacent said hopper, a shield, between said brushes and said articles, so positioned as to permit only one of the articles at a time to pass from the hopper, means for adjusting said shield to receive varying sized articles, means for forcing the free article in the hopper therefrom and against the brushes and means for disposing a coating material on said article before it reaches the brushes.

2. A device of the class described comprising a frame, rollers in said frame, a hopper disposed over said rollers adapted to receive, a plurality of articles to be coated, the bottom article resting on said rollers, a pair of rollers, one superposed over the other, adjacent said hopper, means for rotating all of said rollers whereby said articles will be fed from said hopper through said superposed rollers, coating brushes adjacent said last rollers and adapted to receive said

articles and means for disposing a coating material on said articles before they reach said brushes.

3. A device of the class described comprising a frame, rollers in said frame, a hopper over said rollers, adapted to receive a plurality of articles to be coated, a shield adjacent the mouth of said hopper and so positioned as to permit only one article at a time to be fed therefrom, means for adjusting said shield to accommodate varying sized articles, a pair of superposed rollers supported on said frame adjacent said shield and adapted to receive said articles between them, means for adjusting at least one of said rollers to receive varying sized articles, a source of power for all of said rollers adapted to rotate them and feed said articles individually from said hopper and through said superposed rollers, brushes arranged adjacent the delivery side of said superposed rollers and against which said articles are forced and means for disposing a coating material on the articles before they reach said brushes.

4. A device of the class described comprising a container having a coating material therein, piping carrying said coating material to an article to be coated, a drip pan under said piping and adapted to catch excess material, a drain for said drip pan, piping from said drain, a pump connected with said last piping and means for operating said pump and forcing the material in said drain pipe into said container, and a shaft connected with said pump, leading into said container and having means thereon, when said shaft is rotated, for agitating the material in said container.

5. A construction as set forth in claim 2 including a shield positioned at the mouth of said hopper adapted to permit only one article to be fed to the superposed rollers at a time and means for adjusting both said superposed rollers and said shield to accommodate different sized articles.

6. A device of the class described comprising a frame, rollers in said frame, a hopper disposed over said rollers adapted to receive a plurality of articles to be coated, the bottom article resting on said rollers, a pair of rollers, one superposed over the other, adjacent said hopper, means for rotating all of said rollers whereby the articles will be fed from said hopper through said superposed rollers, a shield positioned at the mouth of said hopper adapted to permit only one article to be fed to the superposed rollers at a time, and means for adjusting both said superposed rollers and said shield to accommodate varying sized articles.

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