

1,238,561.

Patented Aug. 28, 1917.

3 SHEETS--SHEET 1.

Fig. 1.

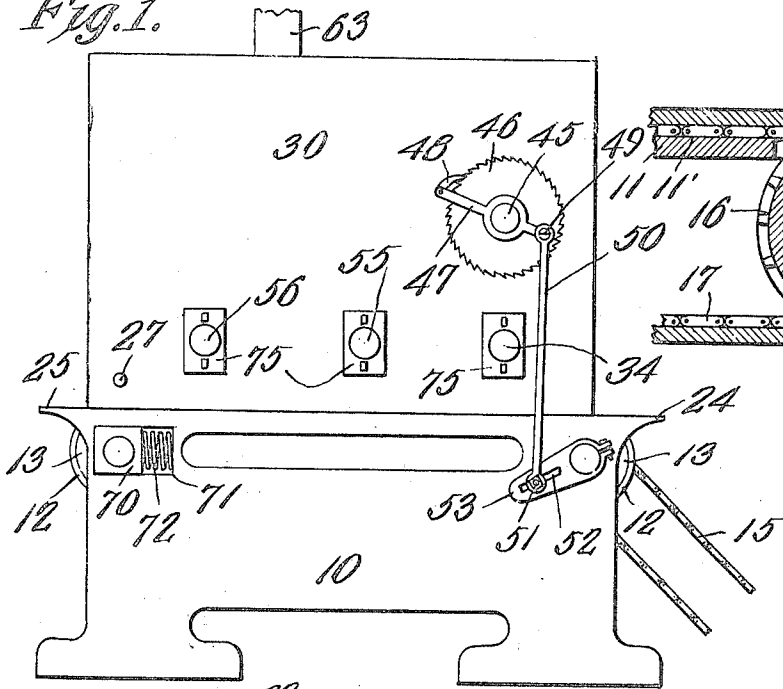


Fig. 6.

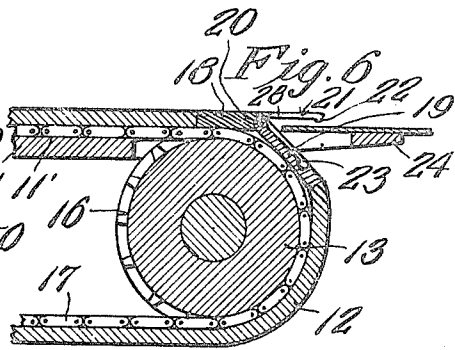


Fig. 7.

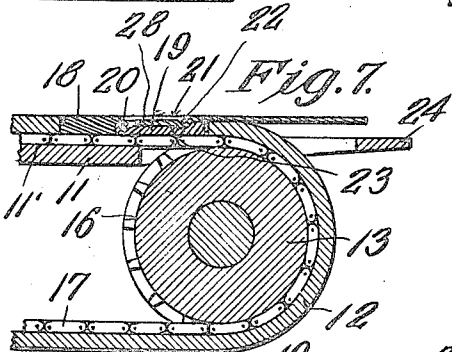


Fig. 8.

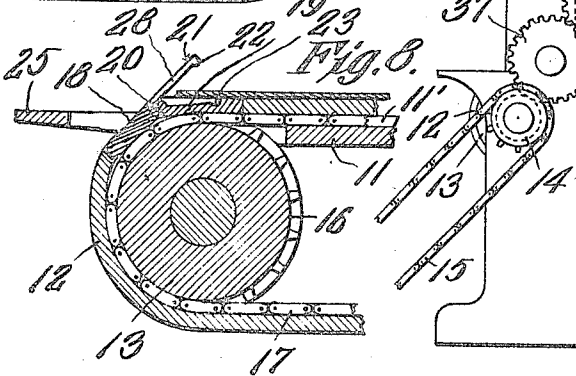
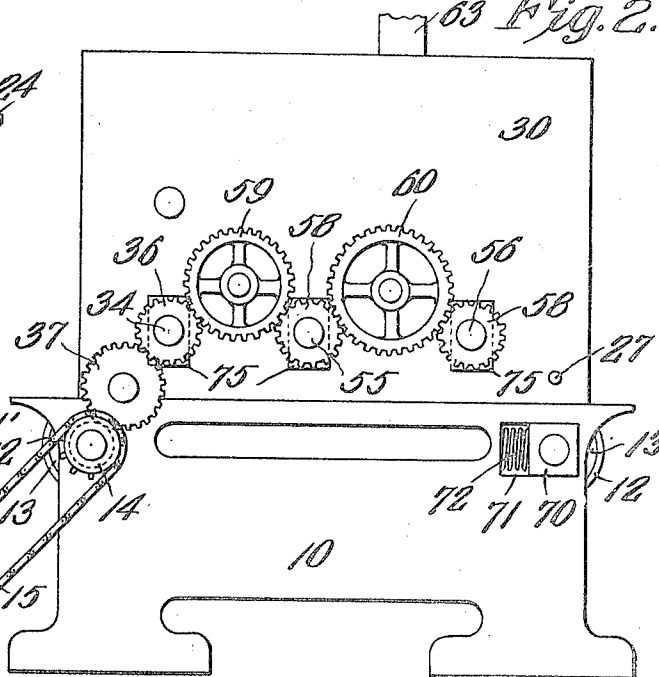


Fig. 2.



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3 SHEETS—SHEET 2.

Fig. 3.

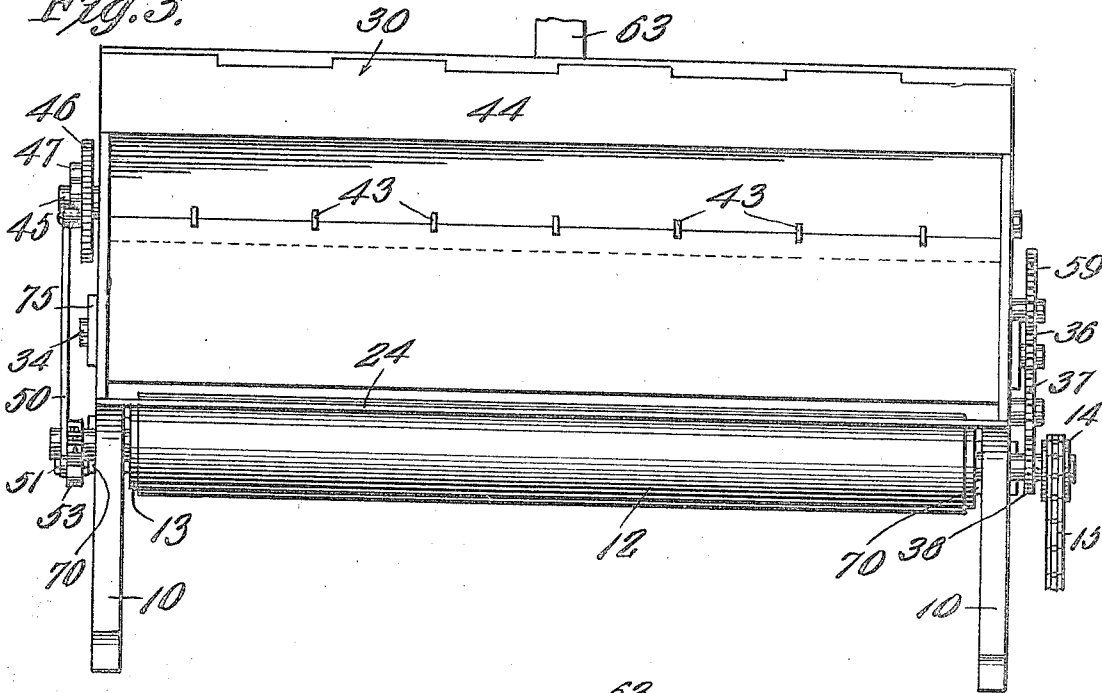
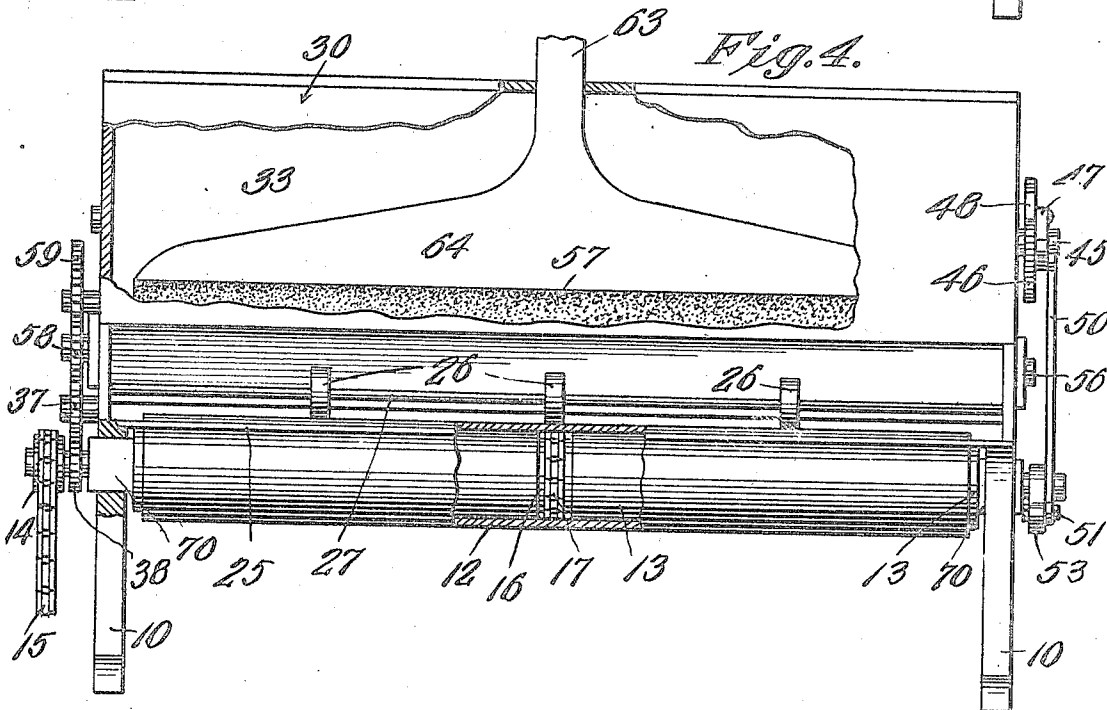


Fig. 4.



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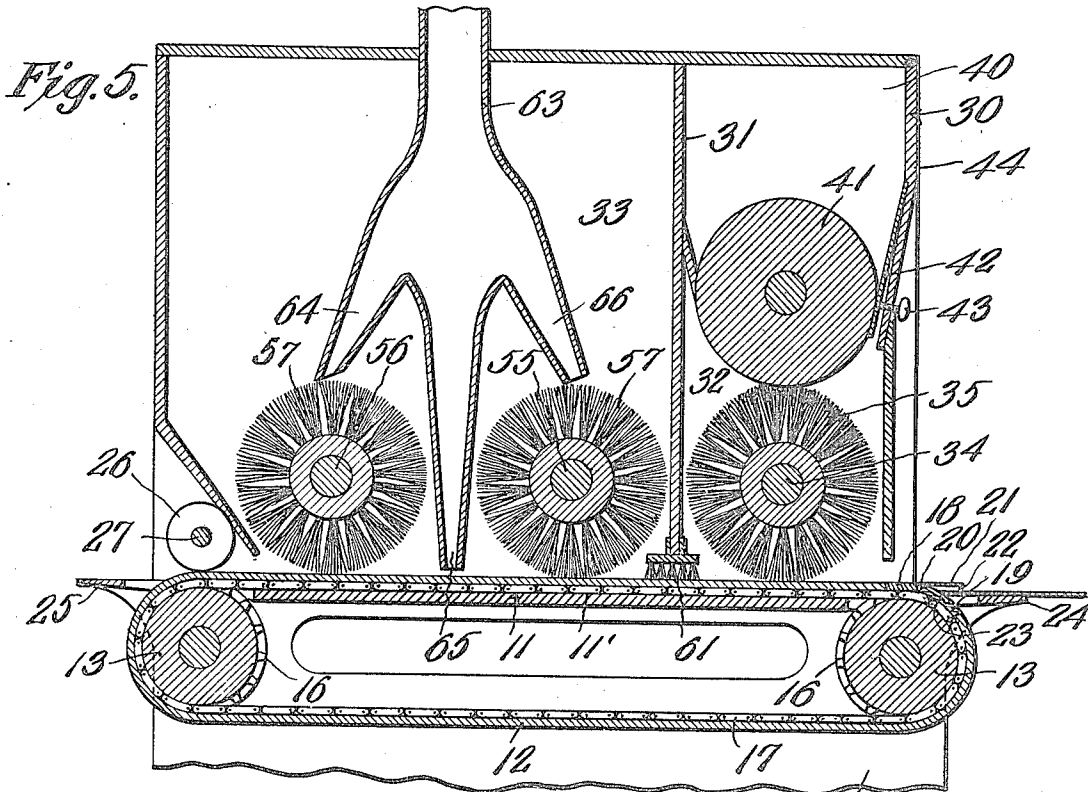
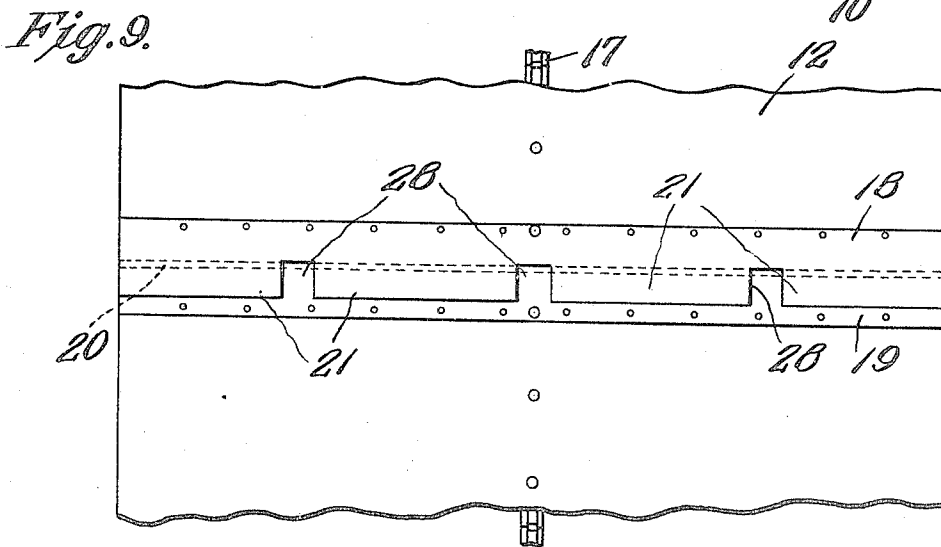
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3 SHEETS—SHEET 3.



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UNITED STATES PATENT OFFICE.

HERMAN OHL, JR., OF NEW YORK, N. Y.

COATING-MACHINE.

1,238,561.

Specification of Letters Patent.

Patented Aug. 28, 1917.

Application filed December 5, 1916. Serial No. 135,230.

To all whom it may concern:

Be it known that I, HERMAN OHL, Jr., citizen of the United States, residing at Bronx, in the county of Bronx and State of New York, have invented certain new and useful Improvements in Coating-Machines, of which the following is a specification.

This invention relates to coating machines, and particularly to mechanisms for bronzing sheets.

The invention aims primarily to provide means whereby sheets may be coated with the coating material and cleaned of the surplus material at a single operation, and whereby the coating material will be greatly economized. A further object of the invention is to provide a mechanism for this purpose which is wholly automatic and positive in operation, and which will prove thoroughly efficient in practice.

A still further object of the invention is to provide a coating mechanism which includes a coating chamber, and wherein improved means is provided for carrying the sheets through the coating chamber and ejecting the sheets therefrom after the same have been coated, and wherein the possibility of damage to the sheets during the operation is reduced to a minimum.

Still further objects reside in the novel combination and arrangement of parts, all as will be described more fully hereinafter, illustrated in the drawings, and particularly pointed out in the claims.

In the drawings:—

Figure 1 is a side elevation of a coating machine constructed in accordance with the invention;

Fig. 2 is a similar view of the reverse side of the machine;

Fig. 3 is a front elevation of the improved machine;

Fig. 4 is a rear elevation, parts broken away, of the machine;

Fig. 5 is a longitudinal sectional view taken through the machine, the view being on a slightly enlarged scale;

Figs. 6, 7, and 8, are detail sectional views, illustrating the sheet gripping mechanism in different stages of its operation; and

Fig. 9 is a fragmentary top plan view of the conveyer, and showing the particular sheet gripping means.

The invention comprehends broadly a coating mechanism which includes a brush, and against which the sheets to be treated

are forced into engagement. After the sheets have been thus treated, they are subjected to a cleaning process, and the surplus coating material is removed from the sheets. Means is provided in the coating and cleaning mechanisms for economizing the coating material, whereby the latter may be again used. Improved means is also provided for automatically feeding the material to the coating brush during the operation of the machine, so that the sheets are assured of proper treatment. The means for conveying the sheets through the coating machine comprises a belt, which is equipped with gripping fingers for holding the sheets. After the sheets have been subjected to the coating and cleaning mechanisms, the belt is relieved of the sheets and the latter are deposited upon a table or fly board.

The device is constructed in such manner as to be connected with a cylinder press, but it will be understood that the machine may be used independently of printing mechanisms. The device in its present embodiment is referred to as being used for the purpose of bronzing the sheets, but it is obvious that the machine may be used equally as well for coating with other materials.

Referring now particularly to the drawings, 10 indicates a suitable base or stand upon which the coating machine is positioned. This base includes a top board or table 11, over which a conveyer 12 travels. The conveyer comprises an endless belt as shown; the said belt passing over drums 13 arranged in spaced relation upon the frame or base adjacent the upper end thereof. These drums are rotatably mounted in the base, and one drum has its journal extended and equipped with a sprocket 14, over which a power chain 15 passes. Each of the drums is provided intermediate its ends with a sprocket 16, and the said sprockets are connected by a chain 17. It will be observed, particularly with reference to Fig. 5, that the sprocket chain 17 rests within a groove 11' in the upper surface of table 11, and the belt 12 is secured to the chain. From this construction, it is apparent that when power is applied through chain 15 to the sprocket 14, both of the drums 13 will rotate, and the upper portion of the endless belt or conveyer 12 will pass along the upper surface of the table 11 and will rest thereon. The belt 12 is provided with an improved gripper mechanism for holding

the sheets during the coating and cleaning processes, and to this end laterally extending relatively narrow strips 18 and 19 are secured in the length of the belt. These strips are of non-flexible material and extend throughout the width of the belt. The strips are hinged together as at 20 at their abutting edges and the strip 18 has secured to its upper face a finger 21. This finger extends throughout the width of the strip to which it is attached and projects at its outer end over the adjacent strip 19. The extremity of the finger is provided with a longitudinally disposed bead 22, adapted to fit within a groove 23 at the innermost edge of the strip 19. The finger is formed of a semi-rigid material, and when the strips 18-19 are between the drums 13, the finger will lie flat upon strip 19, and in gripping engagement therewith. As the strip 18 passes around the drum at the rear end of the base, the finger 21 will be lifted from its engagement with the strip 19, (see Fig. 8), and the sheet is released from the belt. As the strips are traveling around the drum at the forward end of the machine (Fig. 6), the finger 21 is spaced above the strip 19, and a sheet may be inserted beneath the same. A feed board 24 is provided at the forward end of the machine over which the sheets may be fed to the gripper mechanism, and a fly board or table 25 is arranged at the rear end of the machine to receive the coated sheets.

To remove the sheets from the conveyer after the same have been treated and after the finger 21 has become disengaged from the strip, rollers 26 are provided. These rollers are mounted upon a shaft 27, and are arranged in spaced relation thereon. The shaft 27 is disposed in vertical alinement with the axis of the drum 13 at the rear end of the machine, and the rollers bear upon the belt 12. The finger 21 is notched as at 28 at intervals in its length, the said notches being arranged to pass beneath the rollers 26 arranged in spaced relation upon the shaft 27. It will be understood, of course, that the shaft upon which the rollers 26 are mounted may be driven by suitable power mechanism, and when the sheet held by the gripper mechanism advances, the rollers will press upon the same and tend to force the sheets in the direction of travel of the belt. When the forward strip 18 of the gripper mechanism passes upon the drum adjacent the roller, the finger 21 will be lifted, and the sheet formerly held thereby will be released to the action of the rollers 26. These rollers force the sheet rearwardly upon the fly board.

Coating, scraping or brushing and cleaning mechanism is arranged within a housing or casing indicated generally at 30 upon the base 10. The housing is provided with a

transverse partition or wall 31 which divides the housing into forward or coating, and rearward and cleaning compartments 32 and 33 respectively. The forward compartment contains a horizontally disposed shaft 34 upon which a coating brush 35 is carried, and the said brush is so constructed and arranged that its bristles will engage the upper face of the belt 12 passing beneath the said compartment. One end of the shaft 34 is equipped with a gear 36 in mesh with a gear 37 interlocking with a gear 38 fixed to the journal of the forward drum 13. This gearing imparts rotary movement to the brush 35 when the machine is in operation.

A feed tank or hopper 40 is disposed above the brush 35, and a fountain roller 41 is journaled in the housing at the base of the feed tank. This roller is disposed transversely of the casing and engages at its lower point with the bristles of the brush 35. To regulate the flow of the bronze or other coating material to the brush 35, a feed plate 42 is provided, and screws 43 are employed to move the feed plate toward or away from one side of the roller 41. From this construction, it is obvious that the flow of the coating fluid or material from the hopper 40 to the brush 35 may be accurately regulated. If desired, the feed plate 42 may be carried by a hinged door or section 33 at the forward end of the machine, the said door affording means for gaining access to the interior of the hopper.

The journal for the fountain roller 41 projects at one end beyond the housing 30 and is indicated at 45. This journal has secured thereto, a toothed wheel 46, and a lever 47 is mounted for rotation upon the said journal. This lever carries at one end a pawl or detent 48 which engages with the ratchet teeth in the periphery of the tooth wheel. The opposite end of the lever is pivotally connected as at 49 with one end of a link 50, the opposite end of the link carrying a bolt or pin 51 extending through an elongated slot 52 in the crank arm 53 secured at one end to the journal of the roller 13 at the forward end of the machine.

From the foregoing, it is apparent that rotary movement delivered through the chain 15 to the roller 13 will cause the fountain roller to rotate intermittently. As the crank arm 53 travels around, the link 50 will be caused to move upwardly and downwardly. Upward movement of the link 50 does not affect the movement of the fountain roller, as the detent 48 idles over the teeth in the toothed wheel 46. However, downward movement of the link 50 will cause the detent 48 to move in upward direction, and the said pawl will carry the toothed wheel a short distance. This relatively slow rotary movement applied to the fountain roller will be sufficient to feed the proper

quantity of the coating material to the brush 35. The quantity of the material carried from the hopper may, as has been heretofore mentioned, be regulated by adjustment of the screws 43.

Disposed within the compartment 33 and above the surface of the table 11 in spaced parallel relation are shafts 55 and 56, which carry cleaning brushes 57. These brushes engage the upper surface of the conveyer or belt 12 as the latter passes beneath the same, and removes surplus quantities of the coating material from the surfaces of the sheets carried by the conveyer. The shafts 55 and 56 project beyond one side of the casing, and have gear wheels 58 affixed thereto. These gears intermesh with intermediate gears 59 and 60; the former being also in mesh with the gear 36 carried by the shaft 34, and the gear 60 being disposed between and in mesh with the gears 58 upon the shafts 55 and 56. It is apparent from this construction that as the machine is operated, the intermediate gears 59 and 60 will cause the brush shafts 55 and 56 to rotate, and the said shafts will both rotate in the same direction.

To prevent quantities of the coating material being carried by the belt or sheets into the cleaning compartment, a scraper brush 61 is secured upon the bottom of the partition 31 separating the said compartments. This brush extends throughout the width of the casing, and engages with the upper face of the belt.

To recover the coating material which passes into the compartment 33 and which is collected upon the cleaning brushes therein, a vacuum or suction tube 63 is provided. This tube is provided with branch mouth pipes 64, 65, and 66, the mouths 64 and 66 being disposed above the brushes 57 carried by the shafts 56 and 55, while the mouth 65 extends downwardly between the brushes and into close proximity to the face of the conveyer 12. This tube at its outer end may be equipped with a suitable fan for creating a partial vacuum in the tube, and it is obvious that the material collected from the brushes and from the belt may, in this manner be recovered and again used.

The shaft supporting the drum 13 at the rear end of the machine has its ends journaled in bearing blocks 70, which are capable of sliding longitudinally of the base 10 in the slots 71. An expansion spring 72 normally holds the bearing blocks at the limit of their movement rearwardly, so that the belt 12 constituting the conveyer is at all times properly tensioned.

The ends of the brush shafts 34, 55, and 56 are mounted in vertically movable blocks

75, so that the said brushes may be adjusted toward and away from the belt 12.

From the foregoing description, it is obvious that I have provided an extremely simple and yet thoroughly efficient coating machine, and one which is wholly automatic in operation. The various parts are so constructed and assembled as to be positive in operation and the opportunity for breakage or jamming of the parts of the machine during the operation is remote.

While the present disclosure is that of what I believe to be the preferred embodiment of the invention, it is to be understood that the invention is not limited thereto, but that various changes may be made in the construction, arrangement, and proportion of parts, without departing from the spirit of the invention, as defined in the appended claims.

What is claimed is:—

1. In a sheet coating machine, a coating mechanism, a belt passing beneath said mechanism, strips secured to said belt and extending transversely thereof, the upper surface of one of said strips having a longitudinally disposed groove, a finger projecting from the other of said strips, and a bead on said finger adapted to engage said groove.

2. In a sheet coating machine, a coating mechanism, a belt passing beneath said mechanism, strips secured to said belt and extending transversely thereof, the upper surfaces of said strips being disposed in the same plane with said belt, the upper surface of one of said strips having a longitudinally disposed groove, a finger projecting from the other of said strips, a bead on said finger adapted to engage in said groove, and the upper surface of said finger being in the same plane with said strips and belt.

3. In a sheet coating machine, a coating mechanism, drums adjacent said mechanism, a belt passing over said drums, strips secured to said belt and extending transversely thereof, the upper surfaces of said strips being disposed in the same plane with said belt, a finger projecting outwardly from one of the longitudinal edges of one of said strips, the opposite strip being provided in its upper face with a recess to receive said finger, and the upper surfaces of said strips and finger being disposed in the same plane with said belt.

In testimony whereof I affix my signature in presence of two witnesses.

HERMAN OHL, JR.

Witnesses:

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CHARLES KRAETZ.