W. G. CROSS.

COATING MACHINE.

APPLICATION FILED OCT. 24, 1908.

1,117,341.

Patented Nov. 17, 1914.

2 SHEETS—SHEET 1.

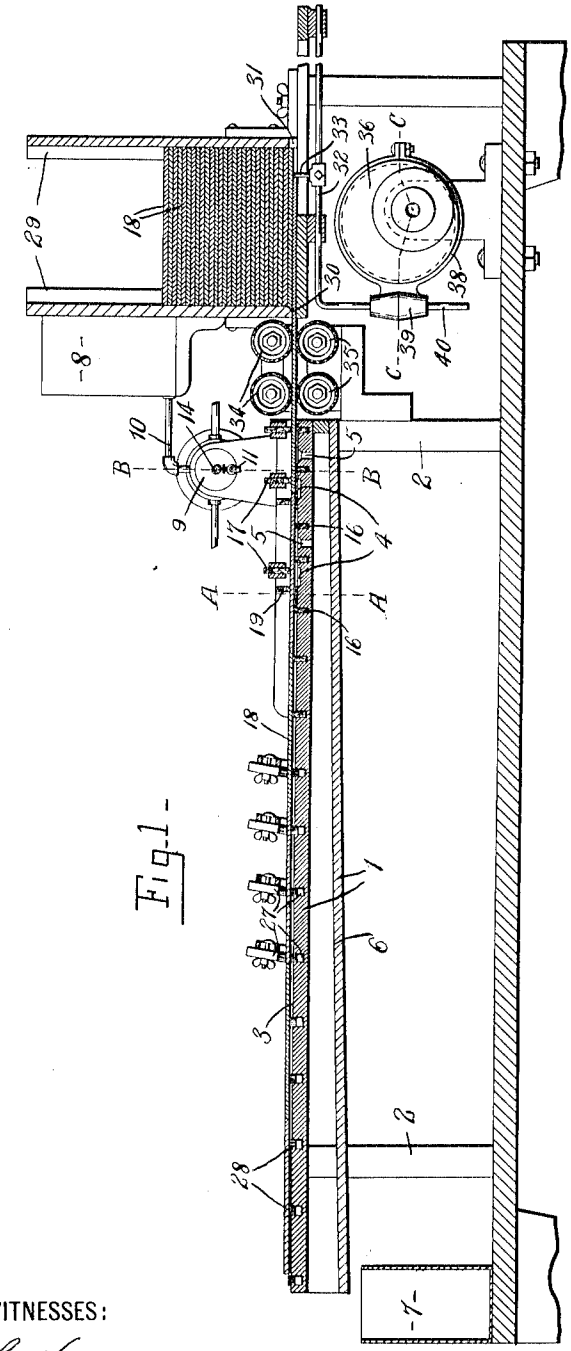


Fig. 1.

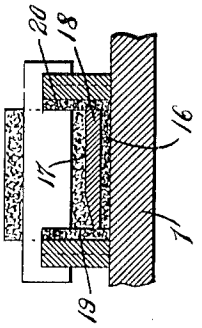


Fig. 3.

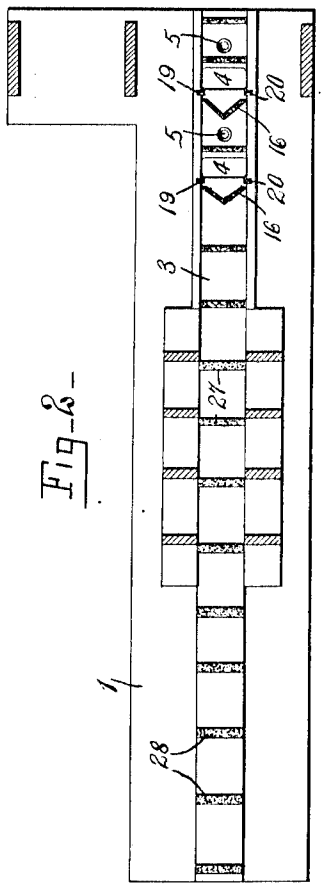


Fig. 2.

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2 SHEETS—SHEET 2.

Fig 4.

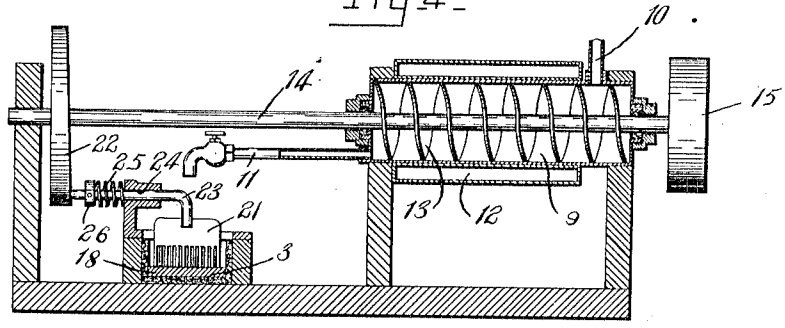
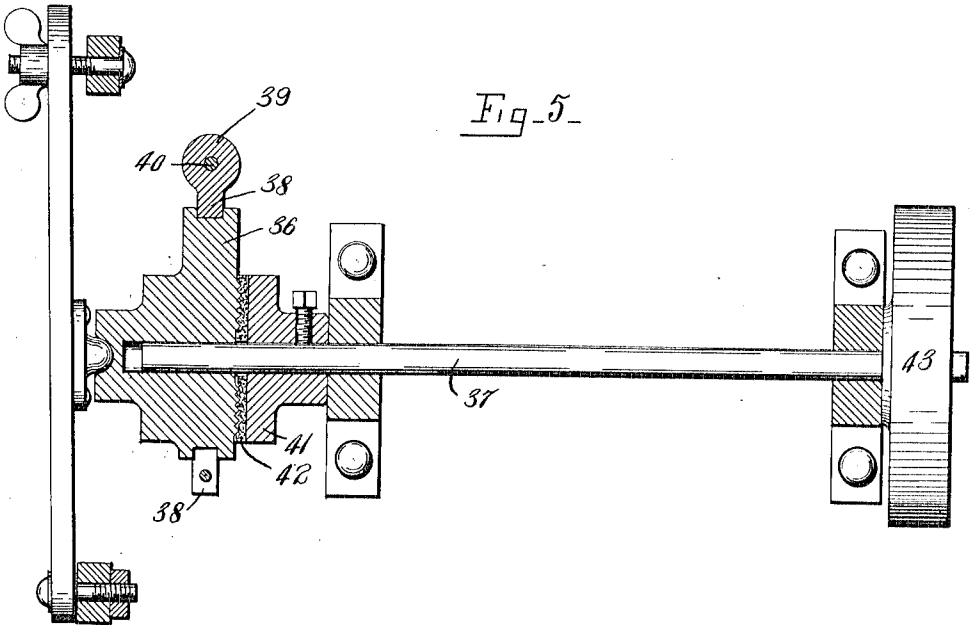


Fig 5.



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UNITED STATES PATENT OFFICE.

WILLIAM G. CROSS, OF SENECA FALLS, NEW YORK.

COATING-MACHINE.

1,117,341. Specification of Letters Patent. Patented Nov. 17, 1914.

Application filed October 24, 1908. Serial No. 459,332.

To all whom it may concern:

Be it known that I, WILLIAM G. CROSS, of Seneca Falls, in the county of Seneca and State of New York, have invented a certain new and useful Coating-Machine, of which the following is a specification.

My invention relates to coating machines and has for its object a particularly simple and efficient machine for varnishing strips of wood, as rulers; and it consists in the combinations and constructions hereinafter set forth and claimed.

In describing this invention reference is had to the accompanying drawing in which like characters designate corresponding parts in all the views.

Figure 1 is a longitudinal sectional view of my coating machine. Fig. 2 is a plan of parts seen in Fig. 1. Figs. 3, 4 and 5 are sectional views taken, respectively, on lines A—A, B—B and C—C, Fig. 1.

This coating machine comprises a stationary guide for the articles being coated, and means for causing a free body of the coating liquid to contact with the underside of each article as it is passed through the guide, the guide being here shown as a channel constructed to hold the coating liquid. It also preferably comprises means at the bottom of the channel for causing the liquid to rise and wash and adhere to the bottom of such articles during the passage of the articles through the channel.

The coating machine here illustrated comprises a frame formed with a channel through which the articles to be coated or varnished are passed, means for supplying liquid to said channel, means for distributing the liquid over the surfaces of the articles passing through the channel, and thereby applying a coating of liquid to such articles, a magazine for the articles to be coated or varnished, and means for feeding such articles one by one from the magazine and endwise through the channel.

The frame may be of any desirable form, size and construction, and as here shown comprises a table 1 supported by uprights 2 and formed with a channel 3 through which the articles to be coated are passed. Said table 1 is also formed with basins 4 in the bottom of the channel and with passages 5 opening through the bottom of the channel. The channel constitutes means whereby the liquid is applied to the surfaces of the articles. An inclined trough or receptacle 6 is arranged beneath the portion of the table 1 formed with the channel 3 and beneath said passages 5, said trough or receptacle 6 emptying at its lower end into a can 7.

The means for supplying a liquid to the channel comprises a reservoir 8 arranged above the table 1, a mixing chamber 9 connected to the reservoir by a pipe 10, and an outlet pipe 11 leading from the mixing chamber 9 and having a downturned end arranged over the advance end of the channel 3. Said mixing chamber 9 is preferably surrounded by a jacket 12 for a heating medium, as steam, and is provided with an agitator 13 mounted on a rotary shaft 14 which is driven by a pulley 15 designed to be connected in any suitable manner to a motor, not shown.

The means for distributing the liquid over the articles in the channels 3 includes a surface preferably imperforate and arranged at the bottom of the channel at an angle thereto, and serving as a dam to obstruct the flow of the coating liquid in the channel and cause the same to rise up in rear of such surfaces and wash and adhere to the under sides of such articles, such surfaces being here shown as provided on the element projecting above the bottom of the channel.

The means for distributing the liquid or varnish over the surface of the articles in the channel 3 and thereby applying a coat of liquid to such articles, comprises elements 16 and 17 extending, respectively, across the bottom and the upper portion of the channel 3 in position to engage the upper and lower surfaces of the article, as a ruler 18 in the channel 3, and additional elements 19 and 20 arranged in upright positions at the sides of the channel in position to engage the remaining two sides or edges of said article or ruler, said elements 16, 17, 19 and 20 being formed of yielding material in order to conform to the contour of the articles or rulers 18 being operated upon.

Some of the lower elements 16 have portions thereof arranged on a bias with the channel, and preferably the opposite portions thereof converge from the other sides of the channel 3 toward the central line thereof in order to feed the varnish from the sides of the channel toward the center and thereby distribute the varnish over the bottom face of the article 18 being operated upon. As best seen in Fig. 2 this machine is provided with two sets of means for supplying a coat of varnish to the articles in the channel, these sets being arranged in advance, respectively, of the basins 4. However it will be understood that it is not necessary that the distributing surfaces extend above the bottom and that the upper edges thereof may be flush with the bottom and form merely a basin as the basin 4, as any surface tending to obstruct the flow of the liquid through the channel during the passage of the articles therethrough serves the purpose of causing the liquid to rise up in rear of such surfaces. The varnish distributing means also includes an element for graining the articles in the channel 3, this element being a brush 21 movable reciprocally across the channel 3, in order to form wave-like streaks or grains on the articles or rulers passing through the channel. This brush 21 may be reciprocated by any suitable mechanism, here shown as a cam 22 mounted on the shaft 14, and engaging with an arm 23 which is connected to the brush 21 and is slidable in a guide 24 supported by the table 1. The cam 22 actuates the brush in one direction against a spring 25 encircling the arm 23 and located between the frame or table 1, and a shoulder 26 on said arm, this spring 25 actuating the brush in the opposite direction. My machine is also provided with means for wiping the articles after being operated upon by the coating means, the wiping means comprising a series of pairs of brushes 27, members of each pair extending, respectively, across the bottom and upper portion of the channel 3 for engaging upper and lower faces of the articles in the channel. The upper brushes are preferably adjustable toward and from the lower. Near the outer end of the channel, the table is provided with additional brushes 28 extending across the bottom of the channel, such brushes forming rests for the moist articles 18 after the same have been passed through the coating and wiping means.

In operation the varnish feeds from the pipe 11 and falls upon the ruler in the advance or inner end of the channel, or into the channel itself, and flows over the edges of the rulers and fills the basins 4. When the rulers are passed through the channel 2 the varnish is distributed over their upper surfaces and edges by the elements 17, 19 and 20, and over their lower surfaces by the element 16, the converging portions of which direct the varnish forced over the edges of the rulers by the element 17 toward the center of the ruler. From the distributing means the rulers pass between the wiping brushes 21 and upon the rest 28, from whence they may be removed by hand, or in any suitable manner. The varnish in the basins 4 and channel 3 smears on the lower faces of the articles or rulers in the channel and the overflow from the basins and channels passes into the trough 6 and can 7.

The distributing means 16 and 19 constitute wipers for engaging the under sides and side edges respectively of the articles, and the parts 17 constitute means for holding said articles engaged with the wipers and pressing the same downwardly toward the channel, these wipers 16 and 19 being arranged at a point in the rear of the point the varnish or other liquid is applied, with respect to the feeding movement of the articles or rulers so that the surplus liquid does not pass by the wipers but is forced back into the channel in the rear of the wipers.

The magazine for holding the articles to be coated may be of any desirable form, size and construction, and is here shown as two uprights spaced apart and formed with grooves 29 which receive the ends of the rulers piled in the magazine one upon another. The front upright is formed with an exit opening 30 at its lower end alined with the channel 3, and the rear upright is formed with a recess 31 opposite to the exit opening 30 and forming a continuation of the space occupied by the lowermost ruler.

The means for feeding the articles one by one from the magazine and end to end from the channel, comprises a reciprocating part 32 movable below the magazine and having a shoulder or pusher 33 for engaging the rear end of the lower-most ruler in the magazine and forcing said ruler out of the exit opening, and feed rollers 34, 35, for receiving the ruler from the magazine and forcing it through the channel 3. The feed rollers 34 are thus arranged on the front side of the point to which the liquid is applied to the under sides of the articles and the wiping means at the opposite side of such point. During the rearward movement of the reciprocating part 32, the shoulder 33 enters the recess 31 in rear of the lowermost ruler, and during the forward movement of said part 32 the shoulder 33 pushes the ruler through the exit opening to the first feed rollers 34, the ends of the ruler in the channel abutting against each other, so that the movement of the rulers throughout the entire length of the channel is effected by the rollers 34, 35. Preferably two pairs of feed rollers 34, 35 are employed.

The reciprocating part, as here shown is actuated by an eccentric 36 mounted on a shaft 37 which may be actuated in any suitable manner, the strap 38 of the eccentric having a guide 39 which receives an arm 40 extending downwardly from the reciprocating part 32. The eccentric 36 is connected to the shaft 37 by friction means of any suitable construction as a clutch member 41 fixed on the shaft 37 and having a friction face 42 which coacts with a similar face provided on the eccentric 36. Obviously, if for any reason the reciprocating part is held from movement the shaft can rotate relatively to the eccentric. Said shaft 37 is also provided with a pulley 43 which may be connected to a motor in any suitable manner.

What I claim is:—

1. In a coating machine and in combination, means for holding the articles to be coated, feeding means for the articles, a stationary guide, and means for causing a free body of the coating liquid to contact with the entire under side of each article as it is fed through the guide, substantially as and for the purpose described.

2. In a coating machine and in combination, means for containing the articles to be coated, feeding means therefor, a guide, and means coöperating directly with the articles fed along the guide in the movement of the articles along the guide for causing a free body of liquid to rise into contact with the under side of the articles, and means in the guide engaging with the articles for wiping the surplus coating therefrom, substantially as and for the purpose specified.

3. A coating machine comprising a channel containing a coating liquid and through which the articles to be coated are passed, and means in the channel for causing the liquid to rise as a body against the under sides of the articles, substantially as and for the purpose set forth.

4. A coating machine comprising a channel for containing a coating liquid and through which the articles to be coated are passed, the channel being provided with means at its bottom for causing the liquid to rise as a body against the under sides of such articles, substantially as and for the purpose described.

5. A coating machine comprising a channel for containing a coating liquid and through which the articles to be coated are passed, and means by which the liquid is forced against said articles, substantially as and for the purpose specified.

6. A coating machine comprising a channel for containing a coating liquid and through which the articles to be coated are passed, the channel being provided with means at its bottom for causing the liquid to rise, during movement of the articles through the channel, and wash and adhere to the under side of such articles, said means also operating to remove the surplus liquid substantially as and for the purpose set forth.

7. A coating machine comprising a frame formed with a channel through which the articles to be coated are passed, the channel being constructed to hold the liquid and being formed with a basin in its bottom, said basin having a wall arranged to deflect the liquid upwardly against the bottom of the article passing through the channel, substantially as and for the purpose described.

8. A coating machine comprising a frame formed with a channel through which the articles to be coated and the coating liquid are passed, and means for applying the coating to the under sides of the articles passing through the channel, said means including a surface arranged at an angle to the bottom of the channel and serving as a dam to obstruct the flow of the coating liquid in the channel and cause the same to rise up in rear of such surface and wash the under sides of such articles, substantially as and for the purpose specified.

9. A coating machine comprising a frame formed with a channel through which the articles to be coated and the coating liquid are passed, and means for applying the coating to the under sides of the articles passing through the channel, said means including a surface arranged at an angle to the bottom of the channel and at an oblique angle to the axis of the channel and serving as a dam to obstruct the flow of the coating liquid in the channel and cause the same to rise up in rear of such surface and wash the under sides of such articles, substantially as and for the purpose set forth.

10. A coating machine comprising a frame formed with a channel through which the articles to be coated and the coating liquid are passed, and means for applying the coating to the under sides of the articles passing through the channel, said means including imperforate surfaces arranged at an angle to the bottom of the channel, and serving to obstruct the flow of liquid in the channel causing the same to rise upwardly in rear of such surfaces and wash the bottoms of such articles, substantially as and for the purpose described.

11. A coating machine comprising a frame formed with a channel through which the articles to be coated and the coating liquid are passed, and means for applying the coating to the under sides of the articles passing through the channel, said means including surfaces arranged at an angle to the bottom of the channel, and converging toward the center of the channel, such surfaces serving as a dam to obstruct the flow of the coating liquid in the channel and cause the same to

rise in rear of such surfaces and wash the under sides of such articles, substantially as and for the purpose specified.

12. A coating machine comprising a frame formed with a channel through which the articles to be coated and the coating liquid are passed, means for applying the coating to the under sides of the articles passing through the channel, such means including substantially imperforate surfaces arranged at an angle to the bottom of the channel, and at an angle to the axis of the channel, and other substantially imperforate surfaces for wiping the sides and top of such articles, substantially as and for the purpose set forth.

13. A coating machine comprising a frame formed with a channel through which the articles to be coated are passed, and with a basin in the bottom of the channel, means for supplying a liquid to said channel and basin, and means for distributing the liquid over surfaces of the article passing through the channel and thereby applying a coating of such liquid to said article, substantially as and for the purpose described.

14. A coating machine comprising a frame formed with a channel through which the articles to be coated are passed, and with a basin in the bottom of the channel, means for supplying a liquid to said channel and basin, and means for distributing the liquid over the surfaces of the article passing through the channel and thereby applying a coat of such liquid to said article, the last-mentioned means including elements arranged on and elevated above the bottom and elements arranged across the top of the channel in advance of said basin, the elements at the bottom of the channel having portions converging toward the central line of the channel, substantially as and for the purpose described.

15. A coating machine comprising a frame formed with a channel through which the articles to be coated are passed, means for supplying a liquid to the channel comprising a reservoir, a shaft extending through the reservoir and having an agitator mounted thereon within the reservoir, means for applying a coat to the article in the channel, said means including a brush reciprocally movable across the channel in position to engage a face of the article passing therethrough, a holder connected to the brush extending parallel to said shaft, a cam mounted on the shaft and engaging the end of the holder, substantially as and for the purpose described.

16. A coating machine comprising a frame formed with a channel through which the articles to be coated are passed, and with a basin in the bottom of the channel, and also with an outlet for the liquid, opening through the bottom of the channel at one side of the basin, means for supplying a liquid to said channel, means for distributing the liquid over the surfaces of the articles, and thereby applying a coating of such liquid to the articles, and a trough extending beneath said channel for receiving the liquid passed through the outlets, substantially as and for the purpose set forth.

17. A coating machine comprising a frame formed with a channel through which the articles to be coated are passed, means for applying a coat to the articles in the channel, a magazine for such articles, and means for feeding the articles one by one from the magazine and end to end through the channel, the advance ends of the articles abutting against the rear ends of the articles previously fed from the magazine, said means comprising a reciprocating part having a shoulder for engaging the end of the lowermost article in the magazine and forcing the same endwise from the magazine, substantially as and for the purpose set forth.

18. A coating machine comprising a frame formed with a channel through which the articles to be coated are passed, means for applying a coat to the articles in the channel, a magazine for holding said articles one upon another, the magazine being of substantially the same length as the length of such articles and having an exit opening at its lower end alined with said channel, and also having a recess opposite to said exit opening and forming an extension of the space occupied by the lowermost article in the magazine, means for feeding such articles one by one from the magazine including a reciprocating part having a shoulder, said part being movable in one direction for carrying the shoulder into said recess and permitting the next article in the magazine to fall in front of said shoulder and in the other direction for forcing the lowermost article through the exit opening, substantially as and for the purpose specified.

19. A coating machine comprising a frame formed with a channel through which the articles to be coated are passed, means for supplying a liquid to said channel, means for distributing the liquid over the surfaces of the articles and thereby applying a coating of liquid to such articles, the last-mentioned means including elements arranged on the bottom and across the top of the channel for engaging opposite sides of said article, and an element extending across the channel and movable reciprocally crosswise thereof, a magazine for the articles to be coated, means for feeding the articles one by one from the magazine and end to end through the channel, the feeding means comprising a reciprocating part having a shoulder for engaging

the rear end of the lowermost article in the magazine and forcing the same from the magazine, substantially as and for the purpose described.

In testimony whereof, I have hereunto signed my name in the presence of two attesting witnesses, at Seneca Falls, in the county of Seneca, in the State of New York, this 8th day of August, 1908.

WILLIAM G. CROSS.

Witnesses:
A. SEYMOUR POLLARD,
WILLIAM C. NEWBY.