

No. 687,481.

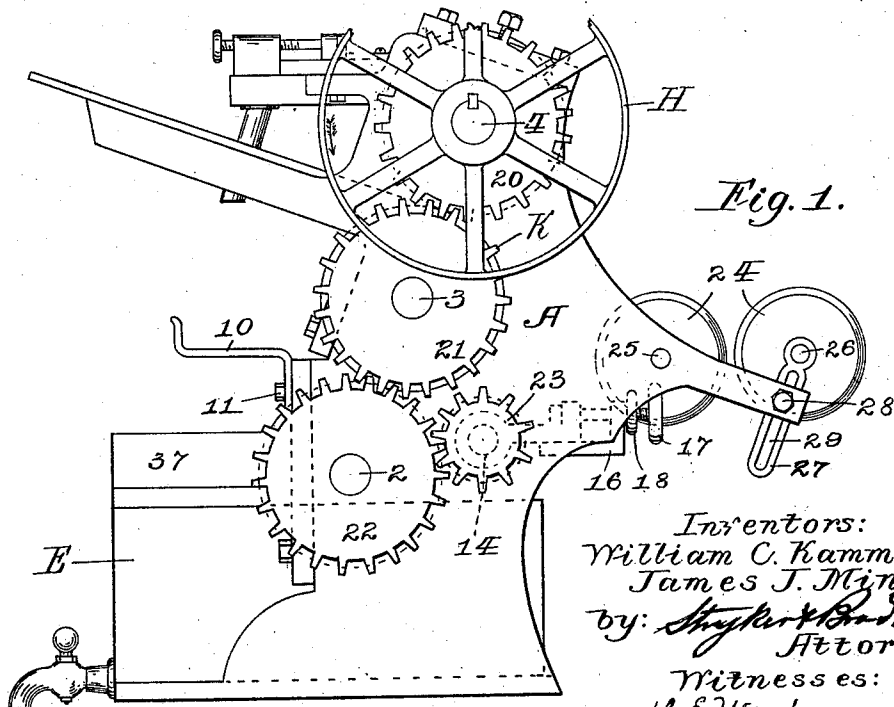
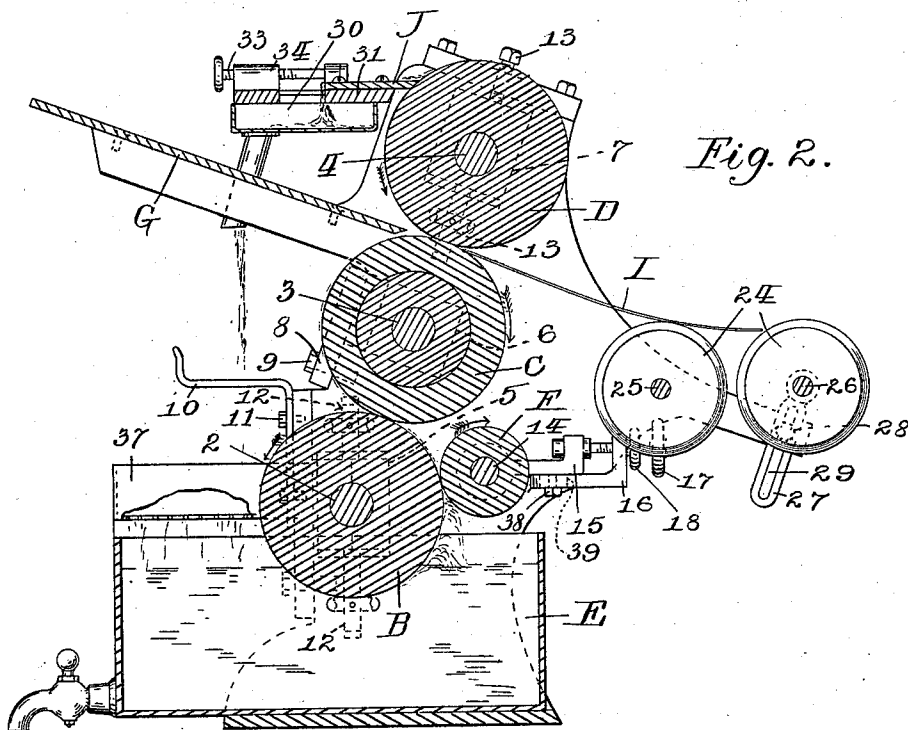
Patented Nov. 26, 1901.

W. C. KAMMERER & J. J. MINER.
MACHINE FOR APPLYING VARNISH, &c.

(Application filed Apr. 4, 1901.)

(No Model.)

2 Sheets—Sheet 1.



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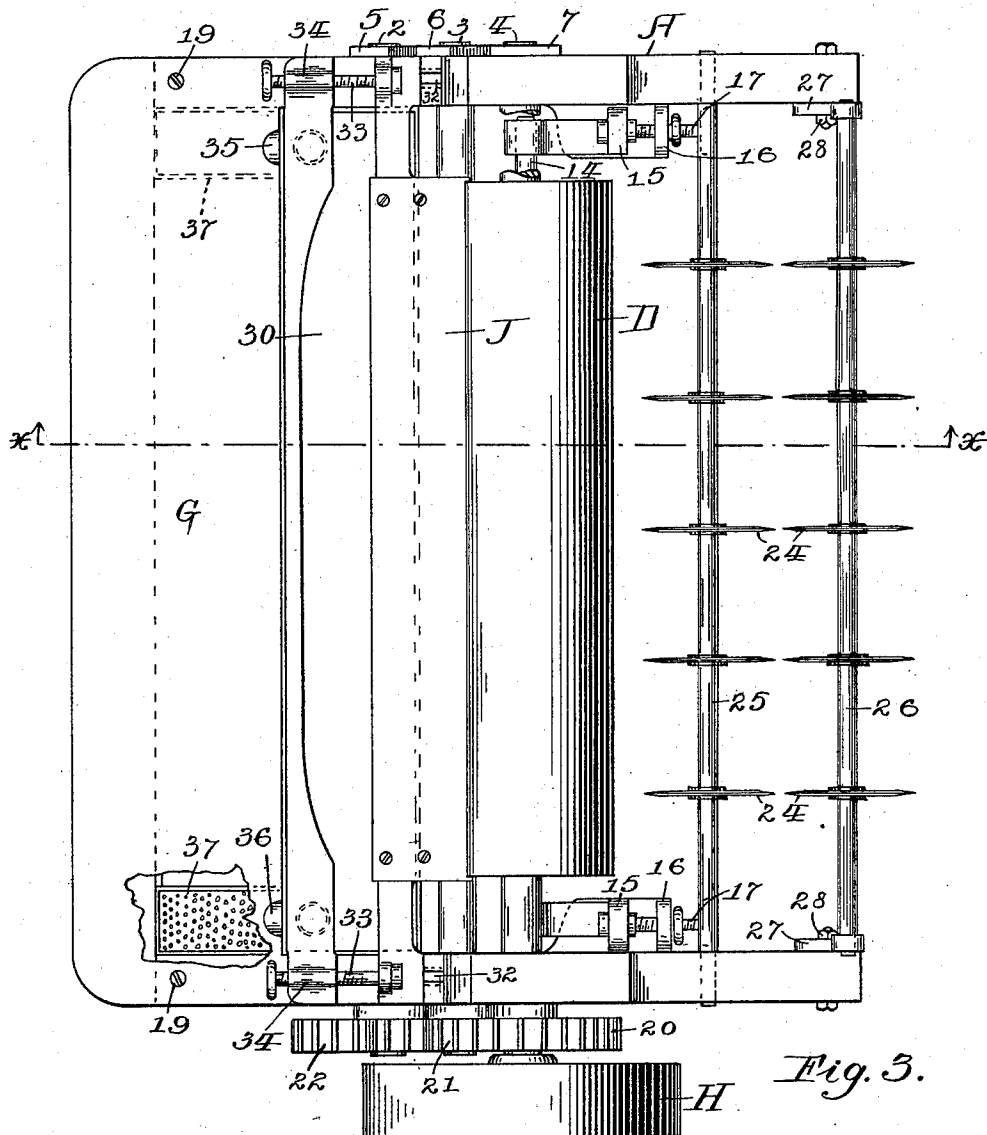


Fig. 3.

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UNITED STATES PATENT OFFICE.

WILLIAM C. KAMMERER AND JAMES J. MINER, OF ST. PAUL, MINNESOTA.

MACHINE FOR APPLYING VARNISH, &c.

SPECIFICATION forming part of Letters Patent No. 687,481, dated November 26, 1901.

Application filed April 4, 1901. Serial No. 54,259. (No model.)

To all whom it may concern:

Be it known that we, WILLIAM C. KAMMERER and JAMES J. MINER, citizens of the United States of America, and residents of St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Machines for Applying Varnish, &c., of which the following is a specification.

Our invention relates to improvements in machines for applying varnish or other finishing liquid to the surface of sheet metal or other material.

To this end our invention consists, primarily, of a series of rolls or rollers each rotating in contact with the next in series. The first roll rotates in a bath containing the fluid to be applied to the sheet metal and is for convenience herein termed the "varnish-roll." The second roll is resilient or of flexible surface and is called by us the "coating-roll," and the third roll, which coöperates with the coating-roll to draw the sheet through the machine, we designate the "conveying-roll." The conveying-roll is provided with a scraper, which returns the varnish from its surface to the reservoir containing the bath. All these rolls move with equal surface speed, and the coating-roll is adapted to gather the liquid from the varnish-roll, which has raised it from the bath, and apply it to the lower face of the sheet metal or other article to be coated which passes between the coating and carrying rolls. The sheet metal after passing between the coating and conveying rolls is delivered by a system of rotary disks.

We have found in practice that by applying the varnish to the face of the sheet metal from below and by returning the varnish from the surface of the conveying-roll to the bath it is possible to simplify the construction of the machine and to operate it more rapidly, as well as to finish the sheet metal more efficiently and uniformly than with devices of this character formerly in use which have applied the varnish from above. This improvement also promotes cleanliness and the economic use of the finishing fluid.

Our machine consists of the features of construction and novel combination of parts, which are more specifically pointed out in the following specification and claims.

In the accompanying drawings, forming part of this specification, Figure 1 is a side elevation of our improved machine. Fig. 2 is a section in elevation, taken on the line X X of Fig. 3; and Fig. 3 is a plan view of the improved machine.

In the drawings, let A represent the frame on which the rolls B, C, and D are journaled. All the rolls are adapted to rotate in feeding contact with the contiguous rolls at equal surface speed and in the direction of the arrow shown in Fig. 2. The varnish and conveying rolls B and D are made, preferably, of steel or other slightly-resilient material, while the coating-roll C is elastic, similar to those in common use, as a printer's roll. The varnish-roll rotates in a reservoir E and is immersed in the fluid to be applied to the surface of the sheet metal. The fluid adhering to the varnish-roll is by it transferred to the coating-roll. The varnish, coating, and conveying rolls are mounted, respectively, on the shafts 2, 3, and 4. These shafts are journaled, respectively, in the blocks 5, 6, and 7, which are slotted into the frame. The blocks 6 are held in the frame by the strap-bars 8 and bolts 9. By removing the bolts and strap-bars the coating-roll may be lifted out of the frame and placed upon the brackets 10 free from contact with the varnish and feed rolls. This is done for convenience in cleaning the coating-roll and to prevent damage due to contact with varnish when not in use. The brackets are attached to the frame by bolts 11.

The journal-blocks 5 and 7 are adjustable in the frame by the set-bolts 12 and 13, so that the pressure between the varnish and coating rolls or the coating and conveying rolls may be varied, also that the peripheral faces of the coating and conveying rolls may be separated when thick sheets of metal are coated.

The ancillary roll or dam F is journaled by the shaft 14 on the movable bars 15, by which it is adjustable toward and away from the varnish-roll. These bars are moved upon the brackets 16 of the frame A by the hand-screws 17. The bars are held in place upon the brackets by the bolts 38, which pass through the slots 39. The hand-screws may be locked in position by the hand lock-nuts

18. By turning the screws 17 when the lock-nuts 18 are loosened the roll F may be moved to and from the periphery of the varnish-roll B, so as to regulate the amount of varnish 5 carried by the varnish-roll on its upper surface. By this adjustment the amount of fluid fed to the coating-roll, and in consequence the thickness of the coat of varnish applied to the surface of the article passing through 10 the machine, is fixed.

G represents the table from which the sheet metal is fed into the machine, attached to the frame by the screws 19. (Shown in Fig. 3.) The shaft 4 carries the drive-pulley H, by 15 which the rolls are driven. Motion is transmitted to the rolls from the drive-pulley by the train of gearing K, which consists of the gears 20, 21, 22, and 23. These gears are respectively carried by the shafts 4, 3, 2, 20 and 14.

When the machine is in operation, the sheet of metal or other material to be coated (represented by I in Fig. 2) is placed by hand upon the table and fed between the conveying-roll and the coating-roll. Its lower face 25 receives the coat of varnish from the coating-roll as it moves forward. The coated plate passes from the rolls out upon the disks 24, which are free to revolve on the shafts 25 and 30 26. The shaft 25 is attached to the frame A and is stationary. The shaft 26 is attached to the slotted arms 27, which are adjustable upon the frame A, by the bolts 28. These bolts pass through the slots 29. By this 35 means of adjustment the outer row of disks, as shown in Fig. 3, may be positioned to accommodate any size of sheet metal that is coated in the machine. The peripheries of the disks are preferably beveled to a sharp edge, so 40 that the coated surface of the article may not be mutilated upon delivery from the coating and conveying rolls. The plates may be lifted from the disks by hand and put away to dry, as is customary with machines having 45 an endless belt or stationary table for delivering the coated article.

The scraper J is provided for the conveying-roll to clean its surface and prevent the varnish from coating the back of the sheet of 50 metal.

When the sheets of metal are not between the rolls, the conveying-roll receives the coat of varnish from the coating-roll. The scraper removes this coat, and the varnish so removed 55 drips into the trough 30, directly below the scraper. The scraper is attached to the bar 31, which is recessed into the grooves 32 at each side of the frame and is movable in the grooves by the hand-screws 33, which are 60 threaded at 34 in the frame. By turning these hand-screws the scraper is moved toward and away from the surface of the conveying-roll. The trough is provided with outlets 35 and 36, which are positioned, respectively, on either side of the machine and penetrate 65 the table G. The strainers 37, carried by the reservoir, receive the varnish from the

outlets of the troughs. These strainers are positioned over the reservoir into which the varnish passes.

It is obvious that this machine may be constructed to coat articles other than sheet metal without departing from the principles which we have applied and also that the liquid used may be varnish, paint, or any other 75 fluid.

Having described our invention, what we claim as new, and desire to protect by Letters Patent, is—

1. An apparatus of the class described, consisting of a coating-roll, a conveying-roll in feeding contact with and above said coating-roll, gears for driving said rolls at equal surface speed, a varnish-reservoir, means for feeding the varnish from said reservoir to the surface of said coating-roll, a scraper directed against the surface of said conveying-roll, and a trough below the scraper having return-outlets to the reservoir.

2. An apparatus of the class described, consisting of a coating-roll, a conveying-roll above said coating-roll, gears for driving said rolls in forward direction at equal surface speed, a varnish-reservoir, means for feeding the varnish from said reservoir to said coating-roll, and means for returning the surplus varnish from the surface of the conveying-roll to the reservoir; said rolls having their peripheral surfaces in close proximity to feed the article forward and coat its lower surface.

3. A machine of the class described, consisting of a resilient coating-roll, a conveying-roll rotating in close proximity above the coating-roll, a varnish-roll rotating with its surface in contact with the surface of the coating-roll, a varnish-reservoir in which the varnish-roll rotates, means for regulating the amount of varnish on the surface of said varnish-roll, a scraper directed against the surface of the conveying-roll, a trough with return-outlets to the reservoir positioned below the scraper, and means for driving the rolls at equal surface speed.

4. An apparatus of the class described, consisting of a coating-roll, a conveying-roll above said coating-roll, with its peripheral face in feeding contact with the coating-roll, a varnish-reservoir, means for feeding the varnish from said reservoir to said coating-roll, a scraper directed against the surface of the conveying-roll, a trough below the scraper with return-outlets to the reservoir, a table adjoining the rolls for feeding the article to be coated between the rolls, a plurality of disks for delivering the article coated from between the rolls, said disks arranged in rows and journaled on shafts, means for adjusting the disks vertically and horizontally and gears for driving said rolls at equal surface speed.

5. A machine of the class described, consisting of a varnish-roll, a coating-roll and a conveying-roll, each having its surface in contact with its neighbor, a chain of intermeshing gears for driving said rolls in forward di-

rection, a reservoir containing a bath of varnish; said varnish-roll positioned in said bath, means for regulating the supply of varnish to said varnish-roll, a scraper directed against the surface of the conveying-roll for preventing the coating of the back of the article operated upon and the conveying-roll, a trough below the scraper having return-outlets to the reservoir and strainers between said outlets and the reservoir.

6. A machine for coating the surface of sheet metal, consisting in combination of a varnish-reservoir, a varnish-roll in said reservoir, a coating-roll in feeding contact with said varnish-roll, a rotating dam, means for adjusting said dam toward the surface of the varnish-roll to regulate the amount of varnish fed to the coating-roll from the reservoir, a conveying-roll above said coating-roll having its peripheral face in close proximity to the surface of the coating-roll, a train of intermeshing gears on said varnish, coating, and conveying rolls and rotating dam, a scraper J directed against the surface of the

conveying-roll, a trough below said scraper having return-outlets to the reservoir, a table G for supporting the article to be passed between the conveying and coating rolls and the delivery-disks 24 journaled upon a frame for receiving the article from the conveying and coating rolls.

7. A machine for coating the surface of sheet metal, consisting in combination with a series of rolls in surface contact each with its neighbor, means for driving said rolls at equal surface speed, and a reservoir in which one of said rolls revolves, of a plurality of journaled disks to deliver the article coated from between two of said rolls.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

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JAMES J. MINER.

Witnesses:

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