June 6, 1939. E. MUELLER 2,161,187

LIQUID APPLYING MACHINE

Original Filed Oct. 19, 1936

Fig. 1.

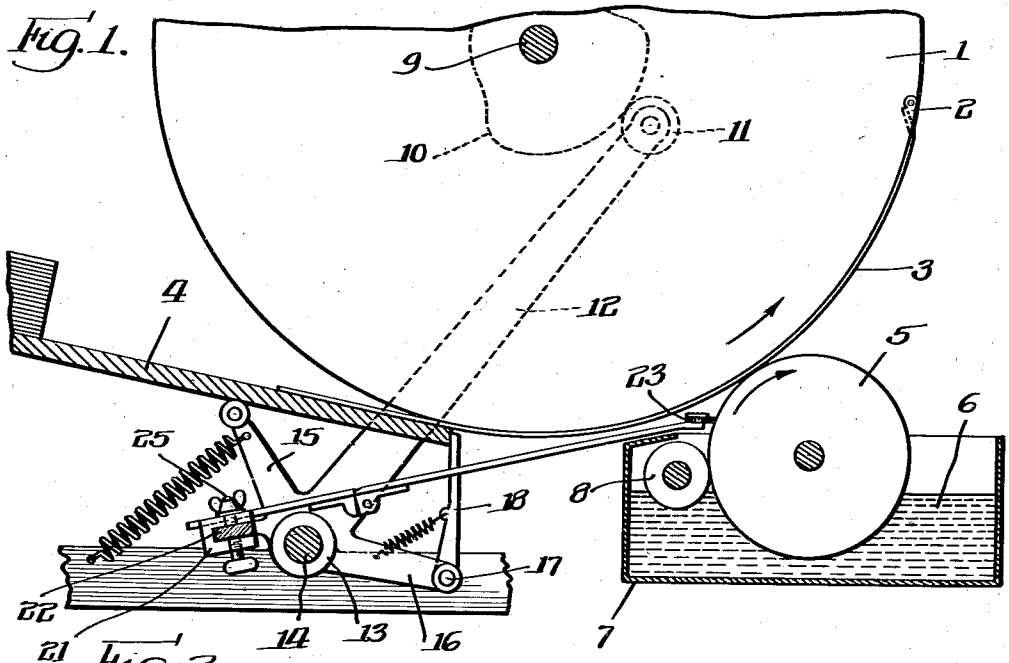


Fig. 2.

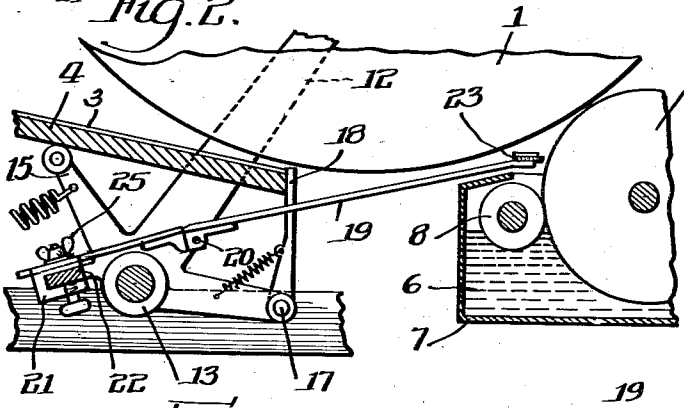


Fig. 4.

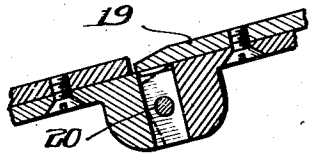
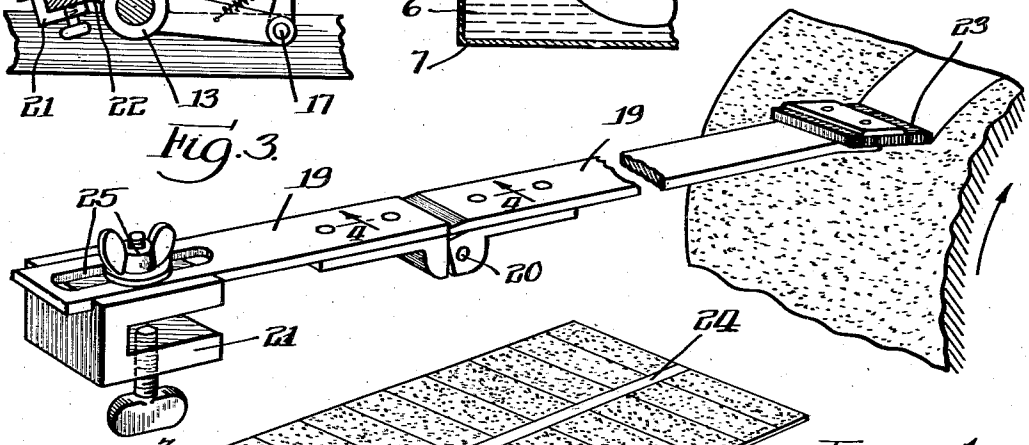


Fig. 3.



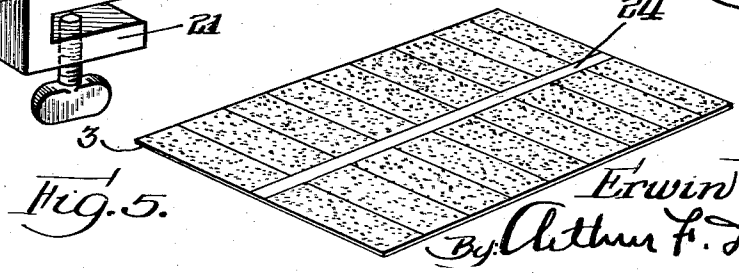


Fig. 5.

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UNITED STATES PATENT OFFICE

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LIQUID APPLYING MACHINE

Erwin Mueller, Chicago, Ill.

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Renewed October 17, 1938

13 Claims. (Cl. 91—51)

This invention relates to the varnishing of labels, or to the application of liquid material to other surfaces. In connection with work of this kind, it is often desirable to leave a dry strip on the surface of the label or other sheet or surface. This has been done, in one way or another, but not in an entirely satisfactory manner.

Generally stated, therefore, the object of the invention is to provide a novel and improved construction and arrangement of the means for applying the varnish or other liquid to the surface of the label or other sheet, whereby the fountain roller that supplies the varnish or other liquid to the label sheet is scraped clean over an area corresponding to the area where no film of varnish or other liquid is desired on the labels, so that no varnish or other liquid will be applied by the roller to the said area on the labels where no varnish or other liquid is desired.

It is also an object to provide certain details and features of construction tending to increase the general efficiency and desirability of a varnishing or coating apparatus of this particular character.

To these and other useful ends, the invention consists in matters hereinafter set forth and claimed and shown in the accompanying drawing, in which—

Fig. 1 is a sectional fragmentary view, more or less diagrammatic in character, showing a varnish or coating apparatus embodying the principles of the invention.

Fig. 2 is a similar view, showing the parts in different positions.

Fig. 3 is an enlarged perspective of the member that scrapes the varnish or liquid off the fountain roller, with a portion of the surface of said roller shown in position to be engaged by the end of said member.

Fig. 4 is an enlarged detail section on line 4—4 in Fig. 3 of the drawing.

Fig. 5 is a perspective of the sheet after it is varnished, showing the dry or uncoated streak caused by the action of the scraper on said fountain roller.

As thus illustrated, the invention comprises a main and feed roller or sheet carrier 1, having means at 2 for gripping the edge portion of the sheet 3 to which the varnish or other liquid is to be applied. This roller takes the said sheet from the feed table 4, which latter is of a well known form of construction. The fountain roller 5 takes the varnish or other liquid 6 from the tank or receptacle 7 and rolls it onto the surface of the sheet 3, as the latter passes between the two rollers, in the manner shown in Fig. 1 of the drawing. The roller 8 is adjustable in any suitable or desired manner, to regulate the thickness of the film to be carried up on the surface of the roller 5 and applied to the sheet of paper or other sheet material.

The shaft 9 of the roller 1 has a cam 10 thereon, for engagement with the roller 11 on the upper end of the arm 12, which latter has its hub 13 mounted on a horizontal rock shaft 14 of any suitable character. This hub 13 has a rigid arm 15 for engagement with the under side of the table 4, and also has a rigid arm 16 pivoted at 17 to the lower end of the feed arm 18 that controls the feed of the sheets from the table 4 to the rollers, so that the arm 12 controls the sheet feeding mechanism.

A scraper arm 19, preferably loosely jointed at 20, is provided with a clamp 21, by which it is removably clamped upon the bar 22 that is rigid with the hub 13 previously mentioned. The element 21, it will be seen, is in the nature of a block recessed at one side to receive the bar 22, and provided with a set-screw on the bottom of the block, to engage the under side of said bar, to rigidly clamp the proximal end portion of the arm 19 on the rock shaft. This arm has its distal end provided with a scraper 23, of any suitable or desired material, for engagement with the surface of the roller 5, previously mentioned. The scraper is adjustable laterally, on the bar 22, to engage any point on the roller 5 between the ends of the latter. When the cam 10 is in engagement with the roller 11, as shown in Fig. 1, the feed arm 18 is down, allowing the sheet to pass, and in addition, the scraper 23 is in engagement with the surface of the roller 5, thereby scraping off a quantity of the varnish or other liquid, over an area corresponding to the dry area or streak desired for the sheet. When the cam 10 disengages the roller 11, allowing the arm 12 to swing upward and backward a distance, because of the spring shown attached to the arm 15, the parts then assume the position shown in Fig. 2 of the drawing, and at this time the upper end of the arm 18 is against the edge of the next sheet 3, holding the latter in position on the table 4, previously mentioned. The table 4 moves downward a distance, so that the roller 1 will not engage the paper. In addition, the scraper 23 drops down a distance, because of the joint 20, and in this way the scraper is disengaged from the surface of the roller 5, and does not re-engage such surface until the high portion of the cam 10 again re-

engages the roller 11, thereby causing the parts to again assume the position shown in Fig. 1 of the drawing. The joint 20 also prevents the scraper 23 from moving upward against the roller 1, when the arm 12 moves to the left. When the cam 10 engages the roller 11 and moves the arm 12 downwardly to the right, the table 4 moves upwardly and presses the next sheet against the roller or sheet carrier 1, and the feed finger 18 moves downwardly, in such timed relation that the front edge of the sheet is gripped by the device 2, which latter is of well known form, and the sheet then travels around until it engages the fountain roller 5, as shown in Fig. 1 of the drawing. Thus the rocking of the shaft 14 not only produces the successive feeding of the sheets, but also causes the alternate engagement and disengagement of the scraper 23 with the fountain roller 5, so that the scraper automatically skips or jumps certain places or areas on the roller 5, resulting in alternate uncoated areas on said roller, with intermediate coated areas between the alternate areas.

In this way, the varnish or other liquid is scraped off the fountain feed roller, circumferentially thereof, automatically, and in this way no varnish or other liquid will be applied to a certain area of the surface of the sheet, thus forming the so-called dry streak 24, indicated thereon in Fig. 5 of the drawing. In this way, each label, when the sheet is cut apart to form the separate labels, will have an end portion provided with a clean, dry surface, and with the edge of the varnish or other liquid film clean and straight, so that the overlapping of the ends of the label, as when applied to a can, will be effective for the desired purpose.

The arm 19 is adjustable endwise, by means of the slot and screw means indicated at 25, thereby to insure the desired pressure of the scraper 25 on the surface of the fountain roller.

Of course, it is obvious that the dry area on the paper, produced by scraping some of the area of the fountain roller, can be of any width or extent necessary or desirable for different purposes. In fact, one-half, more or less, of the sheet could be left dry or unvarnished, by scraping the liquid off the roller the desired distance back from one end thereof. Thus varnished and unvarnished labels could be run through at the same time, by predetermining the dry area on the roller and on the sheet necessary for the unvarnished labels.

When the scraper 23 is withdrawn from contact with the roller 5, as shown in Fig. 2 of the drawing, the scraping action on the roller is discontinued. Thus, by making the scraping action intermittent, so that the scraping is only done while a sheet of paper is passing between the feed rollers, the danger of creating ridges on the roller, by hard masses of the coating liquid along the edges of the strip of surface that is scraped clean, is avoided. The liquid tends to harden along the edges of the clean strip of surface on the roller, but this tendency is minimized by the automatic control of the scraper, so that the latter engages and then disengages the roll 5, in the manner shown and described. And all this, it will be observed, is accomplished automatically by the actuation of the paper feeding mechanism, inasmuch as the scraper is carried by the latter.

What I claim as my invention is:

1. Apparatus for varnishing or coating paper labels or other sheet material, comprising a rotary fountain roller for carrying the liquid in a film thereon, and for directly engaging and thereby rolling said film onto the sheet, while the latter is moving with the roller, and means of less width than the length of the roller for automatically scraping off some of the film thereon, leaving an uncoated circumferential area thereon, between coated areas, thereby to provide an uncoated area on the surface of the sheet, between coated areas, together with paper feed controlling means to automatically control said scraper, thereby to disengage the latter from the roller when the sheet is finished, said scraping means comprising a rocker arm provided at its distal end with a scraper for engaging said roller, with a loose joint in said arm permitting said scraper to drop down a distance when disengaged from the roller by said controlling means, preventing the scraper at such time from engaging the paper.

2. The combination of a fountain roller, a sheet carrier, mechanism for feeding the sheet to the carrier so that it will pass between the roller and the carrier, mounted on a rock shaft, a scraper mounted on said rock shaft to engage the roller and remove some of the liquid therefrom, and cam means for actuating said mechanism and thereby engaging and disengaging said scraper.

3. A structure as specified in claim 2, said scraper having a joint therein to enable it to disengage the roller.

4. A structure as specified in claim 2, said alternate engagement and disengagement of the scraper serving to produce successive uncoated areas on the roller, that alternate with coated areas thereon.

5. A structure as specified in claim 2, said cam means comprising a rotary cam on a shaft parallel with said rock shaft, an arm rigid with said rock shaft, and a roller on the end of said arm for engaging said cam.

6. A structure as specified in claim 2, said carrier comprising a rotary cylinder having means thereon for gripping the forward edge of the sheet, and said cam means comprising a rotary cam mounted upon the axis of said cylinder, and rotating in unison with the latter, together with an arm rigid with said rock shaft, and a roller on the end of said arm for engaging said cam.

7. A structure as specified in claim 2, comprising a transverse bar parallel with said rock shaft and rigidly mounted thereon, a block recessed at one side to engage said bar, means for adjustably and removably clamping said block on said bar, and means for adjustably clamping the scraper on the top of said block, so that the scraper may be adjusted relative to the fountain roller.

8. A structure as specified in claim 2, said cam means being operated by the operation of said carrier.

9. A structure as specified in claim 2, said scraper comprising an arm having its proximal end rigidly mounted on said shaft, and having its distal end provided with a plate for engaging the roller.

10. A structure as specified in claim 2, said scraper comprising an arm having its proximal end rigidly mounted on said shaft, and having its distal end provided with a plate for engaging the roller, said arm having a joint therein to enable the scraper to disengage said roller and

at the same time preventing the scraper from engaging said carrier.

11. The combination of a fountain roller, a sheet carrier for engaging the sheet with said roller, a rock shaft, a scraper mounted on said rock shaft to engage the roller and remove some of the liquid therefrom, and cam means including a cam on the axis of said carrier for actuating said rock shaft and thereby engaging and disengaging said scraper with said roller.

12. A structure as specified in claim 11, and means actuated by said cam for feeding the sheet to said carrier.

13. A structure as specified in claim 11, said scraper underlying the bottom of said carrier.

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