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WAXING MACHINE

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3 Sheets-Sheet 1

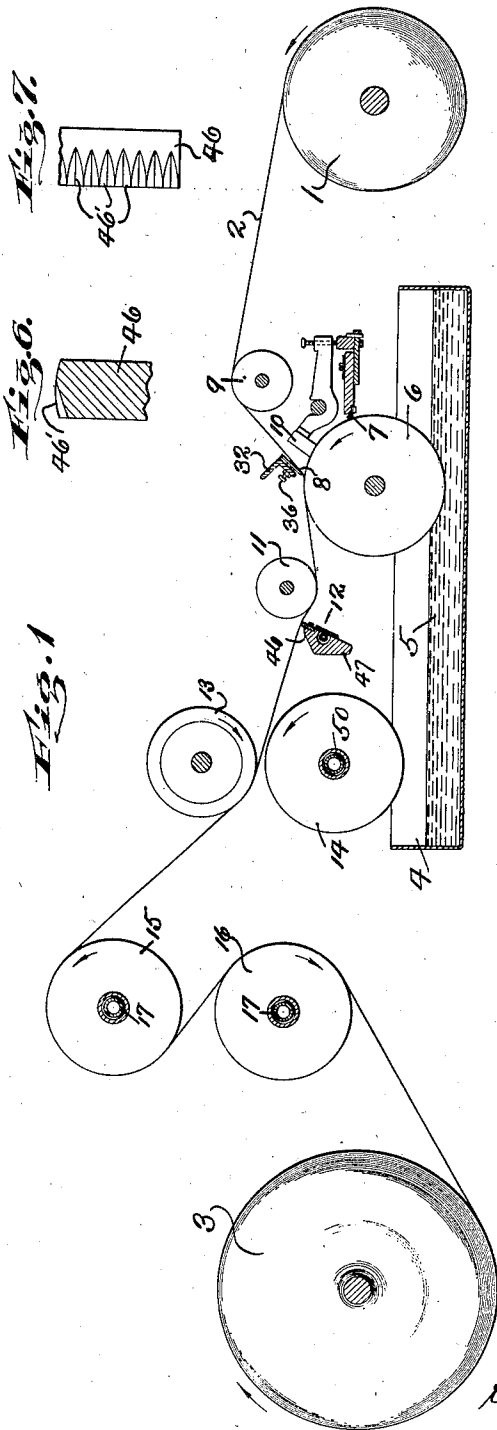


Fig. 7.

Fig. 6.

Fig. 1.

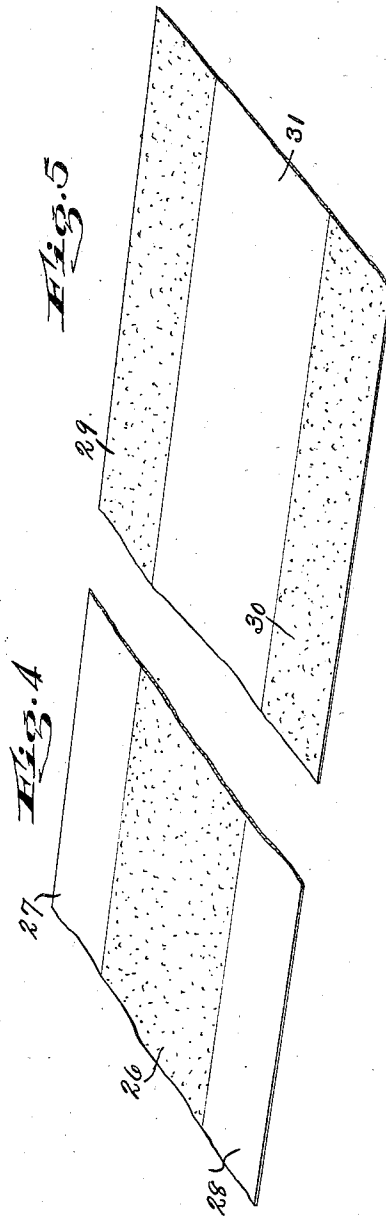


Fig. 5.

Fig. 4.

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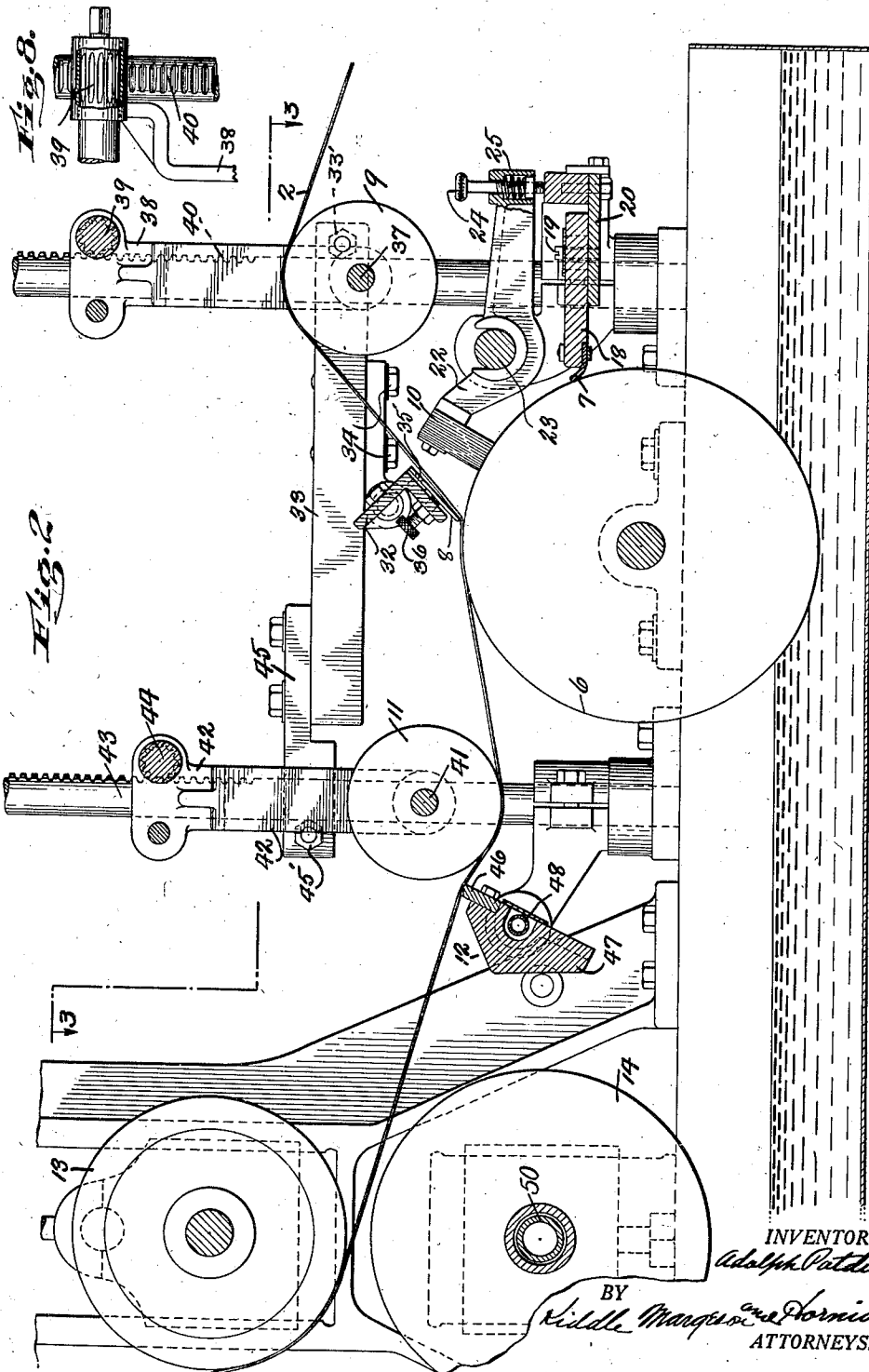
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WAXING MACHINE

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3 Sheets-Sheet 2



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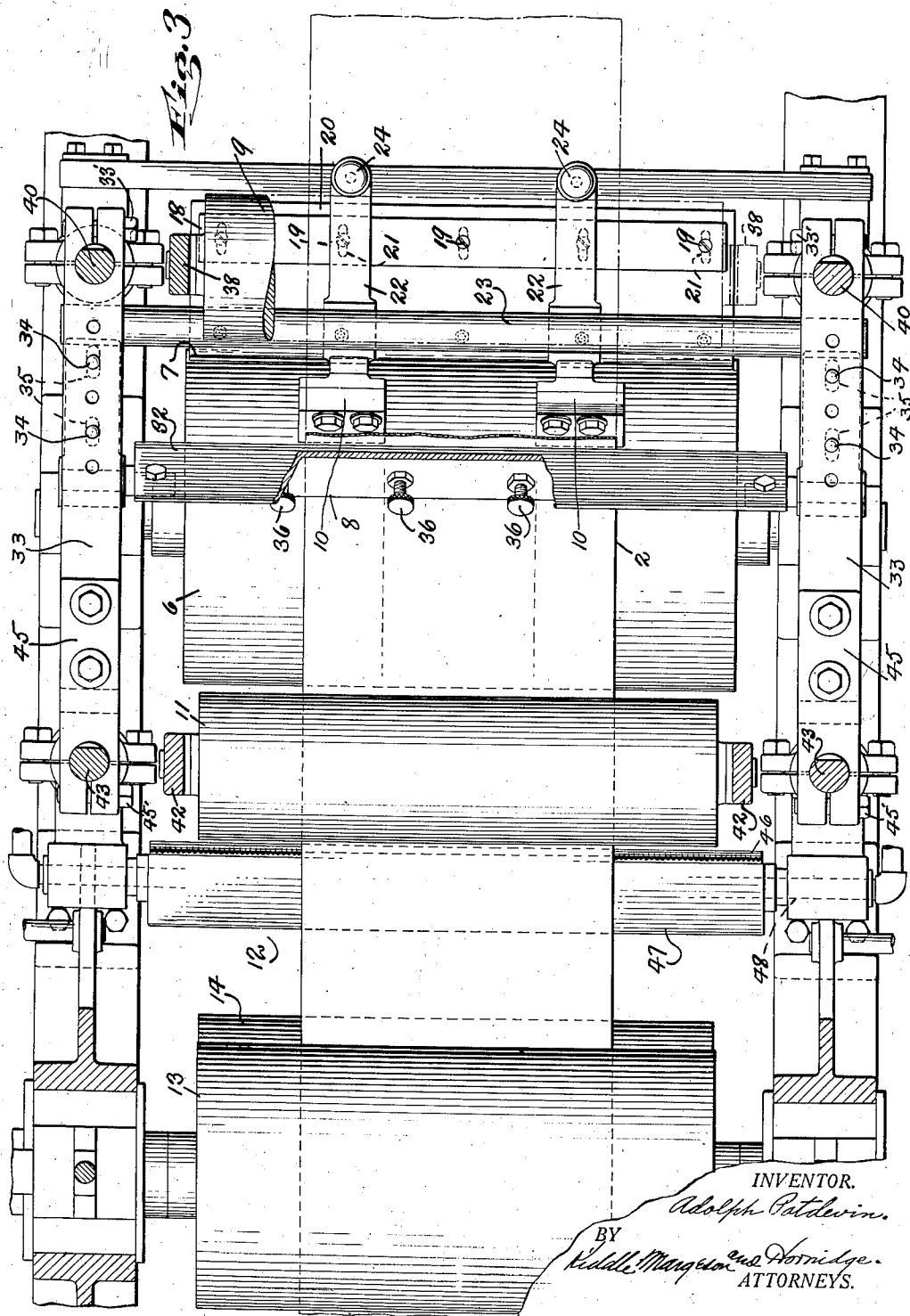
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WAXING MACHINE

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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

1,968,911

WAXING MACHINE

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corporation of New York

Application February 7, 1931, Serial No. 514,123

11 Claims. (Cl. 91—55)

This invention relates to an improvement in waxing machines for waxing paper webs, and has for one of its objects the provision of a machine which may be operated continuously, and in which the wax may be applied in stripes if desired as distinguished from waxing the entire surface, means being provided whereby the location of the stripes on the web may be varied.

In the drawings accompanying this application:

Fig. 1 is a more or less diagrammatic view of a machine embodying my invention;

Fig. 2 is a part sectional elevational view of the apparatus adjacent the wax tank;

Fig. 3 is a sectional plan substantially on the line 3—3 of Fig. 2;

Figs. 4 and 5 are perspective views of a section of paper web waxed in my improved machine;

Figs. 6 and 7 are details of a presser plate constituting part of the machine; and

Fig. 8 is a detail of rack and pinion mechanism provided for certain adjustments.

Referring to the drawings in detail, 1 designates a supply roll from which the paper web, designated 2, is drawn through the machine and finally wound up as shown at 3. Intermediate the supply roll 1 and the finished roll 3 is an open top vat or tank 4 which contains the wax 5 which is to be applied to the paper. Rotating in this wax 5 is a driven waxing roller 6.

It is to be understood that the type of drive employed in the machine is immaterial to my invention and hence the same will not be described in detail.

Adjacent the periphery of the waxing roller 6 and in contact therewith is a doctor blade 7 which, as will be described, is adjustable relatively to the waxing roller, this blade being provided for the purpose of regulating the amount of wax upon the roller.

Above the waxing roller is an adjustable plate 8 provided for the purpose of regulating the contact of the web 2 with the roller, this plate being adjustably mounted so that its position relatively to the waxing roller may be adjusted to reduce to the minimum sucking of air between the paper web and roller and formation of bubbles from this source. The web as will be seen from the drawings passes over a guide roller 9 and then downwardly between the plate 8 and the periphery of the waxing roller. The roller 9 is also adjustably mounted.

Intermediate the plate 8 and doctor blade 7 are adjustably mounted blocks designated 10.

These blocks may be of wood, for example, and are maintained in contact with the periphery of the waxing roller, and are in the nature of scrapers for the purpose of removing the wax from that part of the roller with which they contact so that instead of the entire width of the web of paper being coated the web will be striped, those portions of the web corresponding to the location of these blocks being left free of wax.

After the paper web moves out of contact with the roller 6 it passes under a guide roller 11, also adjustably mounted and then over a plate or ironer 12. It is to be noted that the doctor blade 7, blocks 10 and plate 12 are all mounted above the tank or vat so that all wax removed thereby returns to the tank.

The paper next passes between the rollers 13 and 14. The roller 13 is adjustable in relation to the roller 14 and is provided with a rubber covering, while the roller 14 is heated. The rollers 13 and 14 may be adjusted so that the waxed side of the web will come just close enough to the surface of the heated roller 14 to derive a leveling effect of the wax from the hot roller without coming into actual contact therewith, or the roller 13 may be adjusted low enough to have the waxed side of the web come into actual contact with the hot surface of roller 14, or roller 13 can be adjusted to subject the web to an actual squeeze between the two rollers, as the nature of the work may demand. The web then passes about chilling rollers 15 and 16, each of which is provided with a pipe 17 for circulating a cooling fluid therethrough and from thence the web is wound up in finished condition at 3.

The doctor blade 7, as will be seen from Fig. 3, extends completely across the periphery of the waxing roller 6 and is mounted on a plate 18 which extends transversely of the machine. This plate is in turn adjustably secured by screws 19 to a plate 20 lying beneath it. The plate 18 is slotted as shown at 21 so that the plate together with the blade may be adjusted toward and away from the periphery of the waxing roller 6 thereby to regulate the depth of the wax on this roller.

As above mentioned 10 designates blocks which are adapted to contact with the periphery of the roller 6. These blocks are preferably of wood mounted on arms 22. These arms are adapted to pivot about a rod 23 extending transversely of the machine and at their rear are provided with an adjusting screw 24, a spring 25 surrounding these screws so that the blocks are yieldingly

held against the periphery of the waxing roller 6. The setting of the screws 24 determines the pressure of the blocks against the roller. When the two blocks 10 are employed they will remove the wax from the roller so that the web 2 of the paper being waxed will only have wax applied to the portion designated 26 in Fig. 4, the two portions 27 and 28 at each side of this waxed portion being unwaxed. It is sometimes desirable to wax the portions 29 and 30 of the paper shown in Fig. 5 and to leave the middle portion 31 unwaxed in which event a single block is substituted for the two blocks 10, this block being supported in the arms 22 but centrally located with respect to the roller 6 instead of adjacent each end thereof, i. e., adjacent each side of the web being treated. It will be appreciated, furthermore, that the blocks 10 may be substituted by other blocks of different width or they may be differently disposed so as to stripe or wax the paper as desired.

As above mentioned the paper web after it passes over the guide roller 9 passes under a plate 8 by which it is brought into contact with the face of the waxing roller. This plate 8 is mounted in an adjustable bracket 32 extending transversely of the machine, this bracket being carried by rails 33 at each side of the machine and held to these rails by bolts 34. The bracket is slotted as shown at 35 so that it may be moved along the rails lengthwise of the machine to vary the distance between the plate and the face of the waxing roller. In addition to this adjustment the plate is held to its bracket 32 by screws 35' adjacent one end of the plate while the end adjacent the periphery of the roller 6 is adapted to be adjusted by adjusting screws 36 which pass down through the bracket and into engagement with the plate so as to place the plate under tension. By varying the setting of these screws the plate may be further adjusted as will be appreciated. It will be seen that this adjustable mounting of the plate enables the plate to be adjusted at such an angle to the periphery of the roller 6 that trapping of air between the paper web and surface of the roller 6 with consequent formation of bubbles on the face of the web is reduced to a minimum.

The guide roller 9 over which the paper passes as it comes from the supply roll is carried on a shaft 37 mounted in bearings in bearing members 38 carried at each side of the machine, each of these bearing members extending upwardly and being provided with pinions 39. The pinions 39 mesh with fixed vertically extending racks 40. The rails 33 are clamped at one end by bolts 33' to the racks 40 so as to be adjusted vertically. By rotating the pinions 39 it is obvious that the roller 9 can also be adjusted vertically.

The guide roll 11 is supported on a shaft 41 mounted in bearings in bearing members 42 similar to the bearing members 38. Each bearing member is equipped with a pinion 44 engaging a rack 43 similar to racks 40. The rails 33 have an extension 45 clamped to the rack 43 by bolts 45'. If the pinions 44 be rotated the roller 11, it is obvious, can be adjusted vertically to vary its position with respect to member 12 and with respect to roller 6.

The ironer 12 which engages the waxed side of the paper as the web leaves roller 11 is in the nature of a plate 46 extending transversely of the machine and hence transversely of the web 2, this plate being secured to a rotatably adjustable mount 47. This mount is provided with a pipe 48 through which steam or hot water is passed

so as to heat the plate 46. It will be appreciated that adjustment of the roller 11 above described will vary the pressure of the ironer against the coated side of the web.

The plate 46 is provided in the edge which contacts with the web with serrations 46'. These serrations as will be seen from Figs. 6 and 7 are more or less triangular in shape, and as the plate is adjusted rotatably in a clockwise direction, as viewed in Fig. 2, it will be appreciated less wax will be removed from the webs. The contrary is of course true on adjustment in the opposite direction.

After leaving the plate 46 the web, as above pointed out, passes beneath the roller 13 and between it and a hot roller 14 which lies beneath it, the unwaxed face of the web contacting with the roller 13.

The roller 14 is heated by steam or hot water, for instance, supplied through pipe 50. After leaving roller 13 the paper, as before explained, passes about chilling rollers 15 and 16 and is finally wound up at 3.

It will be seen from the foregoing that my machine is very simple and inexpensive in construction and operation, and that the various adjustments above described insure a smooth even coating of the paper.

What I claim is:—

1. In an apparatus of the class described, the combination of a waxing roller, adjustably mounted guide rollers at either side of the waxing roller, a plate immediately above the waxing roller and intermediate the guide rollers, a doctor blade for regulating the wax coating on said roller, said blade and plate being adjustable relatively to the periphery of the roller to regulate the amount of wax on the roller and the angle with which the paper contacts with the roller.

2. In apparatus of the class described, the combination of a waxing roller, means for regulating the coating of wax on the roller, a plate adjustably mounted adjacent the periphery of the waxing roller for contacting a continuously moving paper web with the wax on the periphery of said roller, at a predetermined angle and a heated adjustable plate adapted to be contacted by the waxed surface of the paper after leaving the roller.

3. In an apparatus of the class described, the combination of a waxing roller, an adjustable doctor blade for regulating the amount of wax on the surface of the roller, a plate adjustably mounted for contacting a continuously moving paper web with the surface of said roller, and means intermediate the doctor blade and plate for removing predetermined portions of the wax from the surface of said waxing roller whereby only a part of the surface of the paper is waxed.

4. In a machine of the class described, a waxing roller, a plate for maintaining a web of paper being treated in contact with the surface of the waxing roller, and guide rollers at each side of the plate and adjustable vertically, adjustment of the rollers with respect to the plate varying the pressure of the web on the waxing roller.

5. In a machine of the class described, the combination of a waxing roller, a pair of guide rollers, a plate intermediate said guide rollers, and rack and pinion mechanism for adjusting the guide rollers vertically and independently relatively to the plate to vary the pressure of the paper web upon the periphery of the waxing roller.

6. In a machine of the class described, the combination of a waxing roller, a pair of spaced guiding rollers, an intermediate plate to bring a con-

tinuously moving web of paper into contact with the surface of said waxing roller, mounts for said guiding rollers, pinions carried by said mounts and fixed racks cooperating with said pinions whereby said guiding rollers may be raised and lowered with respect to the waxing roller.

7. In a machine of the class described, the combination of a waxing roller, a chilling roller, a guide roller and a heated roller intermediate said waxing roller and chilling roller, the guide roller being so located with respect to the heated roller and the chilling roller that a web of paper passing from the waxing roller to the chilling roller will be maintained out of physical contact with the heating roller but will travel adjacent the surface thereof.

8. In a machine of the class described, the combination of a waxing roller, a chilling roller, a guide roller and a heated roller intermediate said waxing roller and chilling roller, said guide roller being so located with respect to the chilling roller as to maintain the waxed face of a web of paper passing from the waxing roller to the chilling roller close to but out of contact with the periphery of the heated roller.

9. In a machine for waxing paper, the combination of a waxing roller, a chilling roller and a

guide roller and a heated roller intermediate said waxing roller and chilling roller, said guide roller and said heated roller being adjustably mounted to maintain the paper out of contact with the heated roller.

10. In a machine of the class described, the combination of a waxing roller for applying wax to one face of a paper web, a plate adapted to contact with the waxed face of the web, and adjustable about an axis transverse of the web, the face of said plate contacting with the web being provided with converging serrations of varying depth, the width and depth of the serrations increasing as the plate is adjusted in a direction opposed to the direction of travel of the paper.

11. In an apparatus of the class described, the combination of a waxing roller, guide rollers adjustably mounted at either side of the waxing roller, and a plate immediately above the waxing roller and intermediate the guide rollers for engaging a paper web passing about the guide rollers with said waxing roller, said plate being adjustable to vary the angle between the periphery of the waxing roller and the web to restrict the entry of air between the web and roller.

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