

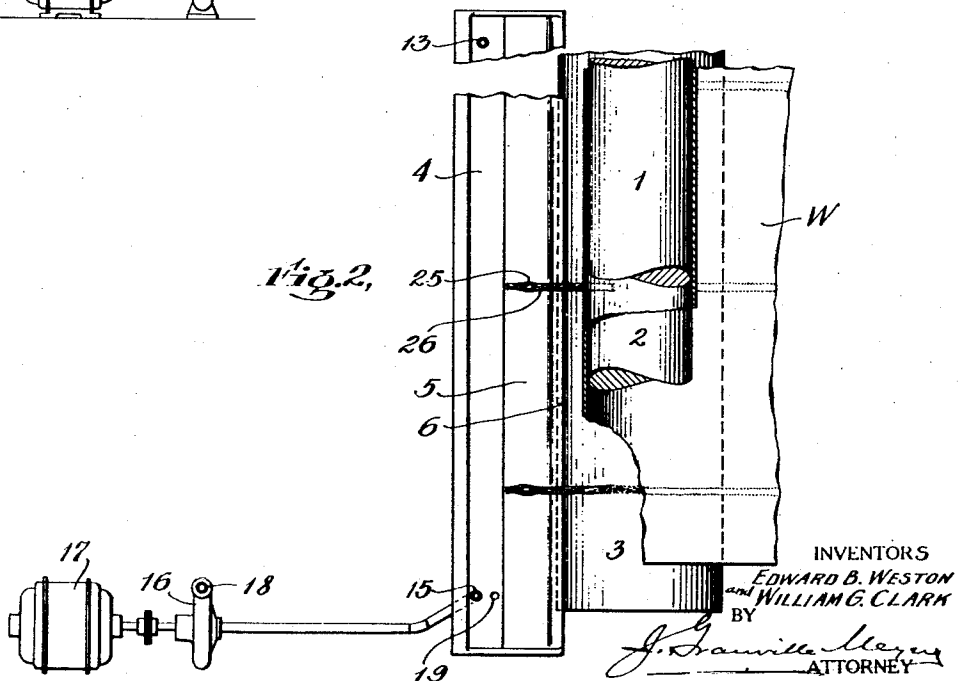
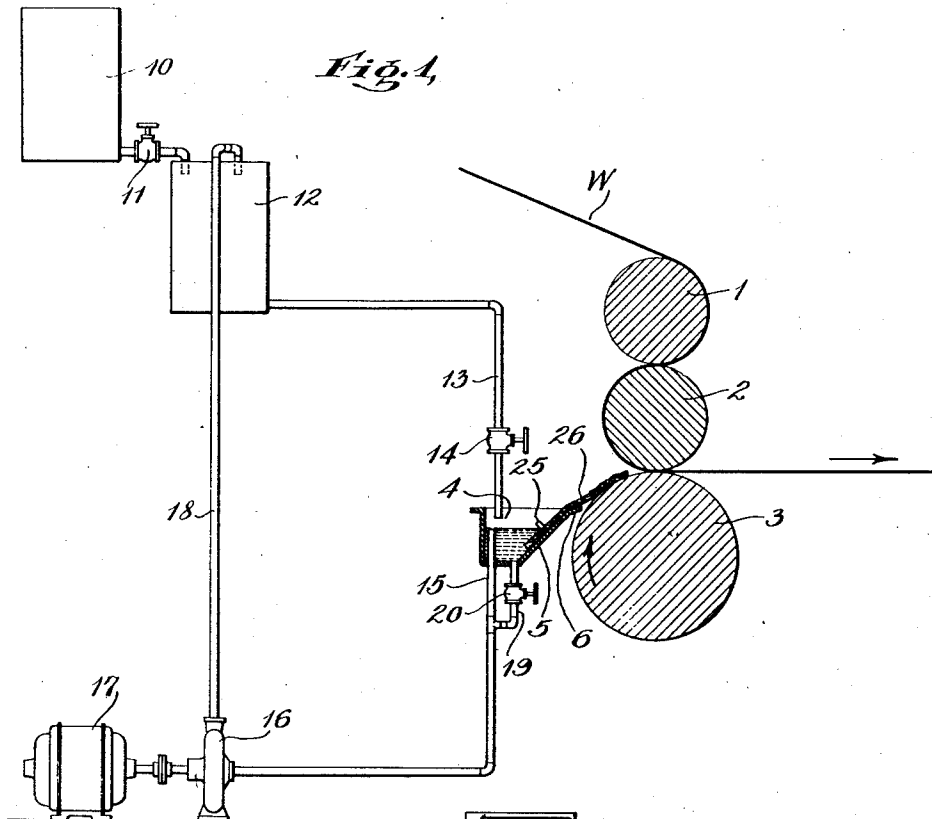
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ART OF STRIPING PAPER

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ART OF STRIPING PAPER.

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Our invention relates to the art of striping paper and includes mechanism and methods for that purpose.

The general object of the invention is to provide for economically applying one, or a plurality of parallel stripes of distinctive color to paper as it comes from, or at a convenient point in its course through, the paper making machine, without interference with the normal structure or operation of the machine, and further to provide for striping at the normal speed of the machine so that the rate of output is not reduced. The stripes are applied for the purpose of producing various decorative effects, or more especially, to provide upon the paper a distinctive trade-mark, consisting of spaced parallel stripes of a color distinct from that of the paper. The word "color" as here used is inclusive of black and white, and is intended to comprise any suitable pigment for application to paper or like materials.

Another object is to provide for applying the stripes by a new and improved offset method.

Another object is to provide for the proper supply of "color," which preferably includes means for continuously supplying the liquid coloring, and keeping it constantly in proper condition; and to provide other means for handling the color, as described in detail hereafter.

A more particular object of the invention is to provide for applying color by means of capillary wick-strands arranged to draw liquid color from a trough adjacent a roll of a paper making machine, these wick-strands running outward from the trough and lying on a surface of the roll anterior to the point of roll contact with the paper web so that the strands will be straightened by the drag of the roll and the color is first applied to the roll surface and then to the web as it passes in contact with the roll.

The characteristics and advantages of the invention are further sufficiently explained in connection with the following detail description of the accompanying drawing, which shows one representative embodiment of the invention. After considering this example, skilled persons will understand that many variations may be made, and we contemplate the employment of any struc-

tures that are properly within the scope of the appended claims.

Fig. 1 is a diagrammatic view, partly in elevation and partly in section, of mechanism embodying the invention in one form.

Fig. 2 is a fragmentary plan.

Both views also explain the process forming part of the invention.

The drawing shows diagrammatically, certain rolls 1, 2 and 3, which are web-operating or directing rolls of a paper machine, and may specifically be one set or a part of a set of drying rolls near the discharge end of the machine. The paper web W, which may be straw board, chip board of moderate thickness, or in fact almost any grade of paper capable of being handled in the described manner, passes in a circuitous course through the series of rolls and is finally pressed by roll 3 against roll 2 as it passes away from this part of the paper machine in the direction indicated by the arrow.

A color trough 4 is supported adjacent roll 3 at the side ahead of roll contact with the web. This trough is longer than the roll, and desirably has an inclined or sloping wall 5 next to the roll, the upper edge or lip 6 of which is usually located at a tangent to and substantially below the upper roll surface. The trough may be relatively narrow and may be located as shown, without in any way interfering with the normal construction and operation of the paper machine.

Suitable color supply means are located at one side of the machine, that is, at a point beyond the ends of rolls 1, 2, 3 or other rolls of the machine, so that the color handling means is outside the frame limits of the paper machine and interferes in no way with its normal construction and operation. Such means comprises, in the present example, the following: A main or storage tank 10 is located at a suitable elevation for gravity feed and supplies a suitable color, which may be an aniline ink or dye or almost any other suitable coloring material, under control of a valve 11, to a supply or mixing tank 12, which is at a suitable elevation for gravity feed to trough 4. A pipe 13 supplies color from tank 12 to the trough under control of a valve 14. Communicating with the trough at a suit-

able level therein, which determines the level of color in the trough, is an overflow pipe 15, this being preferably located near the opposite end of the trough from pipe 13 to provide for circulation of color throughout the length of the trough. Pipe 15 leads to a centrifugal or other pump 16, driven by a motor 17 or otherwise, and from the pump a return pipe 18 goes to the supply or mixing tank 12. Desirably, also, a drain pipe 19 connects with the trough at its bottom so that when a valve 20 therein is opened the trough may be completely drained back to the supply tank.

On the inner face of inclined trough wall 5 is a series of pins or other suitable feed-strip holders 25, these being spaced in accordance with the desired spacing of the stripes. A feed strip or applicator 26 is connected to each holder. These strips or applicators may be of any material suitable for drawing color from the trough by capillary action, such as narrow strips of felt or other fabrics. Specifically, we have employed for this purpose, single strands of ordinary wool yarn, and this material is preferred in many cases. When such feed strips are used they are easily connected to the holders or pins 25 by simply impaling the strands of yarn thereon near one end of the strand, which dips into the color in the trough. The other end of the strand is laid upon the surface of roll 3 anterior to its point of contact with the web, and in the rotation of the roll the strand is straightened out by the drag of the roll and caused to continuously run true to maintain the proper spacing of the strips.

The strands or wicks 26 draw the color from the trough by capillary action and apply it to the surface of the roll, by which the color is applied to the surface of the web in parallel spaced stripes. At the normal speed of the paper machine and with wicks or feed strips of the character described, the color is applied at the proper rate for the desired striping effect, that is, the stripes are of moderate width and the color dries rapidly and no special provision for drying the color is required.

If, for any reason, it is desired to omit striping, an attendant merely withdraws the wicks from the roll surface by turning them back into the trough or upon the wall 5 or lip 6 thereof, and means may be provided for simultaneously manipulating the wicks, but it is sufficient in practice to manipulate them individually by a long rod.

The color is continually maintained in condition for use by circulation through the trough, as above sufficiently explained, and whenever desired, the trough may be completely drained for cleaning or change of color by manipulation of the drain valve 20.

The method forming part of the inven-

tion consists in providing a supply of liquid color adjacent a roll of a paper machine which specifically may be a drying roll, supplying one or more stripes of color to the roll at a point anterior to web contact by capillary feed or by the use of wick or equivalent device, and then bringing the striped face of the roll in contact with the web to imprint the stripe or stripes upon the web; and it also includes as additional or subordinate features, the circulation or replenishment of the color supply to maintain it in proper quantity and condition, or more specifically, the continuous circulation of color from a supply tank to the trough and continuous return of excess color to the supply tank.

While not absolutely necessary, we prefer to apply the stripes to the web W, while the latter is still warm and before it has lost the heat imparted thereto by the drying rolls of the paper making machine, as the heat has a tendency to more quickly set the color and a clearer and cleaner stripe results. These results are also aided from the fact that the roll 3 is also warm when the color stripes are applied thereto, and there is therefore, little or no tendency for the stripe to run or spread. The relative arrangement of the color applying devices and the rolls 2 and 3, is such that the stripes will be pressed into the web W, continuously as the web is formed and almost immediately the stripes are applied to the roll 3.

We claim:—

1. A striping attachment for paper-making machines, adapted to cooperate with one of a pair of plain faced web-finishing rollers of the machine, said attachment comprising a color trough having a lip arranged adjacent and at a tangent to the periphery of the lowermost of said pair of rollers, and a plurality of wick-strands each having intermediate portion supported by the lip of said trough, and the other end resting upon the periphery of said last-named roller to be straightened by the drag thereof, the arrangement being such that spaced lines of color will be applied to the said roller by the said wick-strands to be immediately transferred to the paper web passing between the said pair of finishing rollers.

2. A striping attachment for paper-making machines adapted to cooperate with one of a pair of plain-faced web-finishing rollers of the machine, said attachment comprising a color trough having a lip arranged adjacent and at a tangent to the periphery of the lowermost of said pair of rollers, a plurality of wick-strand-holding means arranged at regular intervals along the length of the said lip, and a plurality of wick-strands, each having an intermediate portion supported by the lip of said trough, one end of

each strand extending into the trough and removably engaged by the said holding means, and the other end resting upon the periphery of said last-named roller prior to its engagement with the web and adapted to be straightened by the drag of the roller, the arrangement being such that spaced lines of color will be applied to said roller by the said wick strands to be immediately transferred to the paper web passing between the said web-finishing rollers.

3. A striping attachment for paper-making machines adapted to cooperate with one of a pair of plain faced web-finishing rollers of the machine, said attachment comprising a color trough having an inclined wall terminating in a lip arranged adjacent and at a tangent to the periphery of the lower one of said pair of rollers, a plurality of wick-strand holding pins arranged at regular intervals along the length of the inclined wall of the trough, and a plurality of wick-strands, each having an intermediate portion supported by the said inclined wall and lip of said trough, one end of each strand extending into the trough and engaged by one of said wick-holding pins, and the other end resting upon the periphery of said last-named roller prior to its engagement with the web, and adapted to be straightened by the drag of the roller, the arrangement be-

ing such that lines of color will be applied to said roller by the said wick-strands to be immediately transferred to the paper-web passing between said web-finishing rollers. 35

4. In combination with a pair of plain-faced web-finishing rollers of a paper-making machine, a striping attachment for applying spaced color lines to the paper web as it passes between said rollers, said attachment comprising a color trough having its front wall arranged adjacent and at a tangent to the periphery of the lowermost of said pair of rollers, and a plurality of color applicators arranged at regular intervals along the front wall of said trough, each applicator comprising a strand of yarn, one end of which extends into the trough and the other end supported upon the periphery of the said last-named roller and adapted to be straightened by the drag thereof, the arrangement being such that spaced lines of color will be applied to the periphery of said roller by the said strands to be immediately transferred by the roller to the paper web passing between said pair of rollers. 55

Signed at Dayton in the county of Montgomery and State of Ohio this 28 day of June A. D. 1926.

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