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A. C. HOUGH

METHOD OF AND MEANS FOR COLOR STRIPING WOOD STRIPS

Filed Nov. 14, 1924

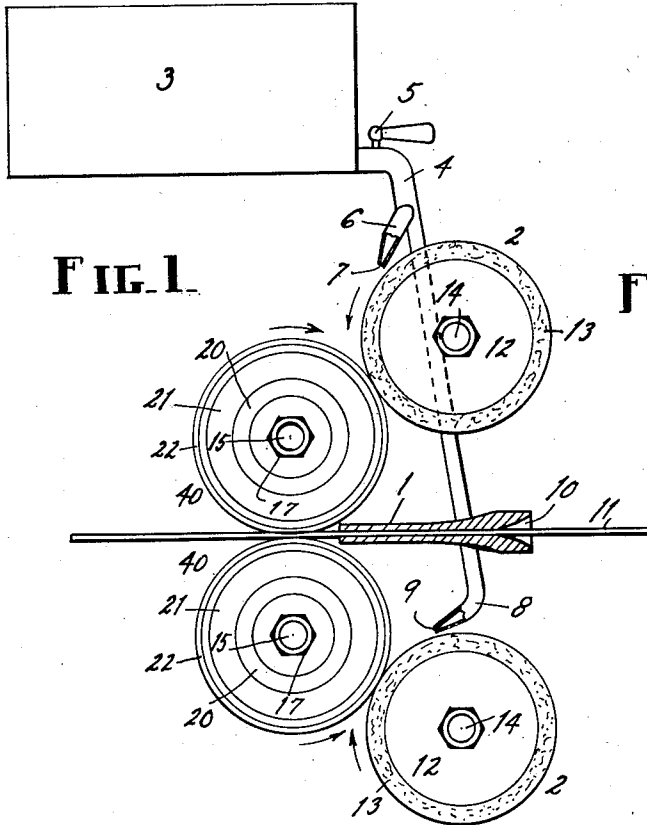


FIG. 1.

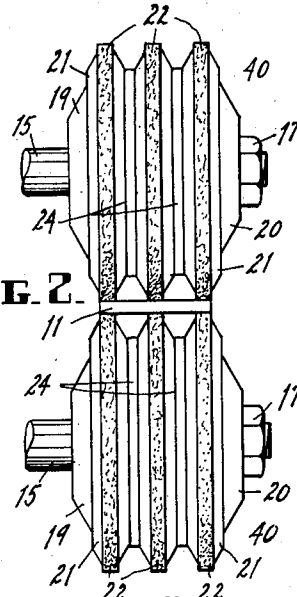


FIG. 2.

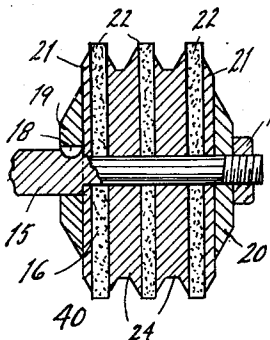


FIG. 3.

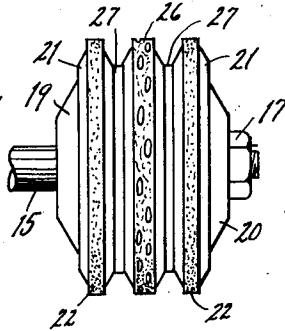


FIG. 4.

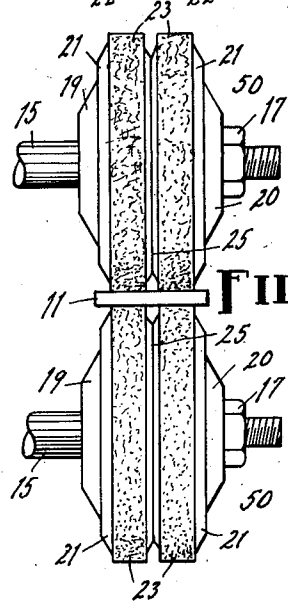


FIG. 5.

INVENTOR.
Axel C. Hough,
BY
Frank A. Cutler,
ATTORNEY.

UNITED STATES PATENT OFFICE.

AZEL C. HOUGH, OF JANESVILLE, WISCONSIN, ASSIGNOR TO HOUGH SHADE CORPORATION, OF JANESVILLE, WISCONSIN, A CORPORATION OF CONNECTICUT.

METHOD OF AND MEANS FOR COLOR STRIPING WOOD STRIPS.

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To all whom it may concern:

Be it known that I, AZEL C. HOUGH, a citizen of the United States of America, and a resident of Janesville, in the county of Rock and State of Wisconsin, have invented a new and useful Method of and Means for Color Striping Wood Strips, of which the following is a specification.

efficient means for color striping wood strips, which means is susceptible of a wide range of variation, so that practically any color combination may be employed, to the end that wood strips can be striped in an almost endless variety of colors, shades, or tints, and with varying numbers of stripes on such strips.

If desired, mottled effects in the stripes may be produced by my method and with my mechanical means.

The mechanical means which forms part of my invention is simple as well as practicable and efficient.

Other objects and advantages will appear in the course of the following description.

I attain the objects and secure the advantages of my invention by the method hereinafter set forth in detail, and preferably with the aid of the mechanical means illustrated in the accompanying drawings, in which—

Figure 1 is a side elevation of a preferred form or embodiment of my invention so far as the mechanical means for applying color stripes to wood strips are concerned, the guide being in section; Fig. 2, an enlarged elevation of two of the printing wheels of said mechanical means, with a wood strip between them in the act of being striped, such elevation being at right-angles to the elevation of the printing wheels in the preceding view; Fig. 3, a central, vertical section through one of said wheels; Fig. 4, an enlarged elevation of a printing wheel which is adapted to produce a mottled stripe, and, Fig. 5, an enlarged elevation of the second pair of printing wheels, with the strip between in the act of being striped, the wheels in said second pair being complementary to the wheels in said first pair.

Similar reference characters designate similar parts throughout the several views.

In detail, my method of color striping wood strips consists in applying to both sides of a wood strip stripes of color or stain which are spaced apart so as to leave between them uncolored or unstained stripes, in drying the color or stain thus applied to the strip, in applying again to both sides of said strip stripes of color or stain to the uncolored portions thereof, with the stripes last applied slightly overlapping at their longitudinal edges the contiguous edges of

My invention relates to the art of applying stripes of coloring matter or material to wood slats or strips, such, for example, as are commonly used in the manufacture of porch or other shades having wood slats for their weft units, and consists in printing on or applying to opposite sides of a strip color stripes or stripes of stain which cover only portions of such sides, in drying the stain thus applied, and in applying to both sides again of said strip other color stripes or stripes of stain, the stain this time being applied to the portions of the strip left uncolored or unstained by the first application, the edges of the stripes lastly applied preferably slightly overlapping the edges of the stripes first applied, two pairs or sets of printing rolls or wheels of peculiar construction being employed in applying the stain to the strip, the wheels in one pair or set being provided with color-applying felt discs each of which approximates in width or thickness the distance between adjacent color-applying felt discs with which each wheel in the other pair or set is provided, together with feed rolls for the printing wheels, and such other parts and members as may be necessary or desirable in order to render complete and serviceable in every respect the mechanical means employed in carrying out the method, all as hereinafter set forth.

Attempts have been made for a period covering many years to color stripe wood slats or strips in a uniform and satisfactory manner by methods and means which were commercially practicable, but without avail until I discovered and devised the present method and means. The primary object of my invention is, therefore, to color stripe wood strips in an economical, expeditious, efficient, and highly satisfactory manner, thereby overcoming or removing the difficulties which heretofore have stood in the way of accomplishing this most desirable and valuable result.

Another object is to provide practical and

the stripes first applied, and in drying the stripes last applied. The strip thus colored or stained bears on opposite sides thereof stripes of the stain first applied and between such stripes other stripes of the stain lastly applied, and, where the two colors overlap, it being assumed naturally that the stains are different in color or shade from each other, narrow intermediate stripes are produced which are of still a different color, shade, or tint.

Although various mechanical means may be employed in carrying out the above method, I have found that the mechanical means illustrated in connection herewith and described in detail below is more practical and efficient than any other which I have been able to devise or discover up to the present time.

The aforesaid means comprises a guide 1, upper and under striping or printing rolls or wheels of special and peculiar construction, as hereinafter described, stain-applying or feed rolls 2—2, a tank or reservoir 3 for the color or stain, a conduit 4 which is provided with a valve 5, and leads from said reservoir downwardly therefrom to discharge the stain on the peripheries of said feed rolls. The conduit 4 has a branch 6 extending therefrom and opening at 7 over the upper feed roll 2, and a branch 8 extending therefrom and opening at 9 over the lower feed roll 2. Each of the openings 7 and 9 is practically of the same length as the width of the adjacent feed roll. The guide 1 has at the right-hand or front end a flaring mouth 10, and there is a longitudinal passage extending rearwardly from said mouth clear through said guide, which passage is of a size and shape to embrace on the top and bottom and longitudinal edges a slat or strip, as 11, when the same is fed into and through the guide.

Each feed roll 2 preferably consists of a wood disc 12 and a moderately thick, peripheral band 13 of felt. The feed rolls 2 are mounted on shafts 14—14, one being above and the other below the guide 1.

Two or more pairs or sets of printing wheels are required in any given case, and two shafts 15 are provided for the wheels in each pair or set. The shafts 15 are located above and below the horizontal, central plane of the guide 1, and equal distances from such plane, with their axes in the same vertical plane. The shafts 15 are so positioned that they carry the printing wheels mounted thereon in firm contact with the top and bottom of the strip 11, when the same passes between said wheels, and the feed rolls 2 are carried by their shafts 14 in position to bear with their peripheries firmly against the peripheries of the printing wheels, or against the printing or striping portions of the peripheries of such wheels. The print-

ing wheels on the shafts 15 and the feed-rolls 2 should be driven in unison in the directions indicated by the associated arrows in Fig. 1, and for this purpose any of the old and well-known mechanical driving means for groups of wheels, rollers, and the like, may be employed.

In the present embodiment of the mechanical feature of my invention, I employ one pair of printing wheels 40, which wheels lay on or apply to opposite sides of the strip six stripes in spaced-apart relationship, and a second pair of printing wheels 50, which last-named wheels apply to opposite sides of the strip four stripes that are spaced apart and cover the surfaces left uncovered by the first pair of printing wheels. Thus there are five stripes on top and five stripes on the bottom of the strip. It is very obvious, however, that a great variety of stripe combinations may be obtained, merely by varying in number and width or thickness the portions of the printing wheels, that directly apply the stripes to the wood, and I do not, therefore, desire in any way to be limited as to the number or width of the striping portions of the printing wheels.

Each shaft 15 is shouldered at 16 some little distance from one end thereof, and said shaft at such end or terminal is screw threaded to receive a nut 17. Mounted on the shaft 15 and secured thereto by means of a key 18 is a collar 19. The collar 19 is mounted on the shaft 15 with one face of said collar flush with the shoulder 16. A collar 20 is also mounted on the shaft 15 back of the nut 17. Between the collars 19 and 20 are two supporting and clamping discs 21 of metal or other rigid material, three felt striping discs 22, or two felt striping discs 23, and two supporting and clamping discs 24, or a single metallic disc 25, of metal or other rigid material. In different printing wheels the number and thickness of the striping discs 22 and 23 and of the clamping discs 24 and 25 will vary, and may vary very widely or greatly. The discs 22 and 23 are the parts of the printing wheels which apply the color or tint directly to the wood strip, they applying the same with their peripheries, and receiving it on their peripheries from the peripheries of the feed rolls 2.

Each printing wheel 40 is assembled by slipping onto its shaft in the order named, when the nut 17 and the collar 20 are removed, one of the discs 21, one of the discs 22, one of the discs 24, another of the discs 22, the second disc 24, the third disc 22, and the other disc 21, after which the collar 20 and the nut 17 are placed on the shaft, and said nut tightened against said last-named collar, with the result that the parts between the said collars are forced together and firmly compressed between said collars,

so that all parts of the wheel are rigidly held and secured to the shaft. This description applies to either of the wheels 40, which comprises three striping discs. In the case of either of the printing wheels 50, which comprises two striping discs (23) and a single intermediate supporting disc (25), the parts are assembled and secured to the shaft in practically the same manner as that just described, except that there are less members.

The clamping discs 21, 24, and 25 are made as large in diameter as possible without contacting with the strip being striped and interfering with the striping operation, in order that the felt discs 22 and 23 shall be supported as near their peripheries as possible. The peripheries of the discs 21 are preferably beveled, and the discs 24 and 25 are preferably channeled to provide peripheral parts that correspond with the beveled edges of said first-named discs, substantially as shown.

Assuming that the printing wheels 40 are in place on the shafts 15, and that said wheels with the feed rolls 2 are in motion, with the color or stain feeding through the pipe 4 and the outlets 7 and 9 from the branches 6 and 8, respectively, onto said rolls, the wood slat or strip 11 to be striped is inserted at one end of the mouth 10 of the guide 1 and pushed through said guide and between the said wheels. As soon as the strip 11 is received in the bite between the wheels 40, its rearward movement is continued by the action of said wheels thereon, and, as said strip is thus actuated between said wheels, the felt discs 22 impress or impose on both sides of the strip, that is to say, on the top and bottom thereof, three stripes of the color which is being fed to the rolls 2 and by them to said discs. The stripes impressed on the strip at this time are located at and adjacent to the edges of said strip and in the longitudinal center thereof, on both sides.

After the strip 11 has been striped by the wheels 40, said strip is dried in any suitable manner and by any suitable means. It may be laid aside until dry, or it may be subjected to hot-air or heat in some form.

Meanwhile, the printing wheels 40 are removed from the shafts 15 and the printing wheels 50 are placed on said shafts. It will be remembered that the collars 19 are permanently attached to the shafts 15, consequently said collars are not changed when the printing wheels are changed. The strip 11, after the color thereon has become dry, is again thrust into the mouth of the guide 1 and pushed through said guide into the bite between the wheels 50, when the latter grasps said strip and actuates it rearwardly until it passes clear of said wheels. In being actuated by and in passing between

and in contact with the wheels 50, the felt discs 23 of said wheels impose or apply to both sides of said strip stripes of the color being supplied to said discs by the feed rolls 2 from the reservoir 3, just as was the case with the wheels 40. The stripes applied by the discs 23 cover the portions on both sides of the strip that were left uncovered by the discs 22. The color applied to the strip by the wheels 50 is, of course, different from that applied to said strip by the wheels 40.

Inasmuch as each felt disc 23 is a little wider or thicker than the space between each pair of felt discs 22, it necessarily follows that the color or stain applied by said first-named discs overlaps a little the color or stain applied by said second-named discs, with the results that no ragged edges between the stripes are left, no part of the top or bottom of the strip 11 is left bare, and narrow stripes of a third color, shade, or tint, which is a combination of the two colors applied by the wheels 40 and 50, extend the entire length of the strip on both sides, said narrow stripes being between the stripes made directly on the wood with the discs 22 and the stripes made directly on the wood with the discs 23. After the strip 11 leaves the wheels 50 the stripes lastly imposed thereon are dried, when said strip is complete so far as the present invention is concerned.

If it be desired to produce a mottled effect on the wood strip, the same may be accomplished by forming pits, depressions, or indentations in the periphery or peripheries of one or more of the felt discs. In Fig. 4 is shown a printing wheel having an intermediate felt disc 26, in the periphery of which are numerous recesses or indentations. When the disc 26 is applied to a strip, the color or stain imposed by said disc on said strip is incompletely distributed and a spotted or mottled effect is thus produced, such result being due to the fact that the indented portions of said disc do not print, but leave the wood bare. The striping disc 26 is a little wider than the other striping discs in the wheel, which latter felt discs correspond with the striping discs 22 in each wheel 40, and the end and intermediate supporting discs, of the wheel of which the disc 26 is a part, correspond with similar discs in each wheel 40, except that here the intermediate supporting discs, indicated by the numeral 27, are a little narrower than the discs 24. One or more of the felt discs in a wheel may be pitted or recessed, and one or more of the felt discs in the companion wheel may be pitted or recessed. Thus it is seen that a wood strip may have one or more mottled stripes on one side and plain stripes on the other side, or it may have mottled stripes on both sides which may be similar or relatively different.

The passage through the guide 1 for the strip 11 is at right-angles to the vertical plane in which are located the axes of the shafts 15, and the horizontal central plane of said passage if continued would bisect said vertical plane between said axes.

The terms "color" and "stain", and their derivatives, are intended to include any coloring material of any tint, shade, or character whatsoever, that is or may be applicable for use in carrying out my method, or in connection with the particular mechanical means herein described. And the term "felt" is considered as including any fibrous material that is suitable for my purpose.

The striping discs are made entirely of felt for the reason that only with such discs is it practicable or even possible to obtain the required effect. Such effect can not be obtained with printing wheels constructed like the feed rolls 2, for example.

Other modifications and changes, such as will readily occur to one skilled in the art, and in addition to those hereinbefore specifically pointed out, may be made in my invention and its application without departing from the spirit of the same or exceeding the scope of what is claimed.

What I claim as my invention, and desire to secure by Letters Patent, is—

1. A method, of color striping wood strips, consisting in moving such strip longitudinally, in applying to such strip, while thus being moved, a color stripe which is of less width than the strip, in drying such stripe, in again moving said strip longitudinally, and in applying to said strip, while thus being moved a second time, a stripe alongside of said first-named stripe.

2. A method, of color striping wood strips, consisting in moving such a strip longitudinally, in applying to such strip, while thus being moved, color stripes which are spaced apart from each other, in drying such stripes, in again moving said strip longitudinally, and in applying to said strip, while thus being moved a second time, color stripes between those first applied.

3. A method, of color striping wood strips, consisting in moving such a strip longitudinally, in applying to both sides of such strip, while thus being moved, color stripes which are less width than the strip, in drying such stripes, in again moving said strip longitudinally, and in applying to both sides of said strip, while thus being moved a second time, color stripes alongside of said first-named stripes.

4. A method, of color striping wood

strips, consisting in moving such a strip longitudinally, in applying to both sides of such strip, while thus being moved, color stripes which are spaced apart from each other on each side of the strip, in drying such stripes, in again moving said strip longitudinally, and in applying to both sides of said strip, while thus being moved a second time, color stripes between those first applied.

5. A method, of color striping wood strips, consisting in applying to such a strip a color stripe which is of less width than the width of the strip, in drying such stripe, and in applying to said strip alongside of said first-named stripe a color stripe which slightly overlaps said first-named stripe.

6. A method, of color striping wood strips, consisting in applying to such a strip color stripes which are spaced apart from each other, in drying such stripes, in applying to said strip color stripes between and overlapping those first applied.

7. A method, of color striping wood strips, consisting in applying to both sides of such a strip color stripes which are of less width than the strip, in drying said stripes, and in applying to both sides of said strip color stripes alongside of and overlapping said first-named stripes.

8. A method, of color striping wood strips, consisting in applying to both sides of such a strip color stripes which are spaced apart from each other on each side of the strip, in drying such stripes, and in applying to both sides of said strip color stripes between and overlapping those first applied.

9. In means for color striping wood strips, two shafts and printing wheels mounted thereon and consisting in part of felt discs spaced apart on said shafts, and two other shafts and printing wheels mounted thereon, said last-named printing wheels also consisting in part of felt discs on said last-named shafts and of widths to correspond with the spaces between said felt discs in said first-named printing wheels.

10. In means for color striping wood strips, one pair of printing wheels adapted to receive a wood strip between them, said printing wheels comprising felt discs which are spaced apart, and another pair of printing wheels adapted to receive between them such strip, said last-named printing wheels comprising felt discs each of which is wider than the corresponding space between two of the discs in said first-named wheels.

AZEL C. HOUGH.