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R. H. PITTMAN

3,810,774

MULTI-COLOR, MULTI-PATTERNED PANELS

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FIG 1

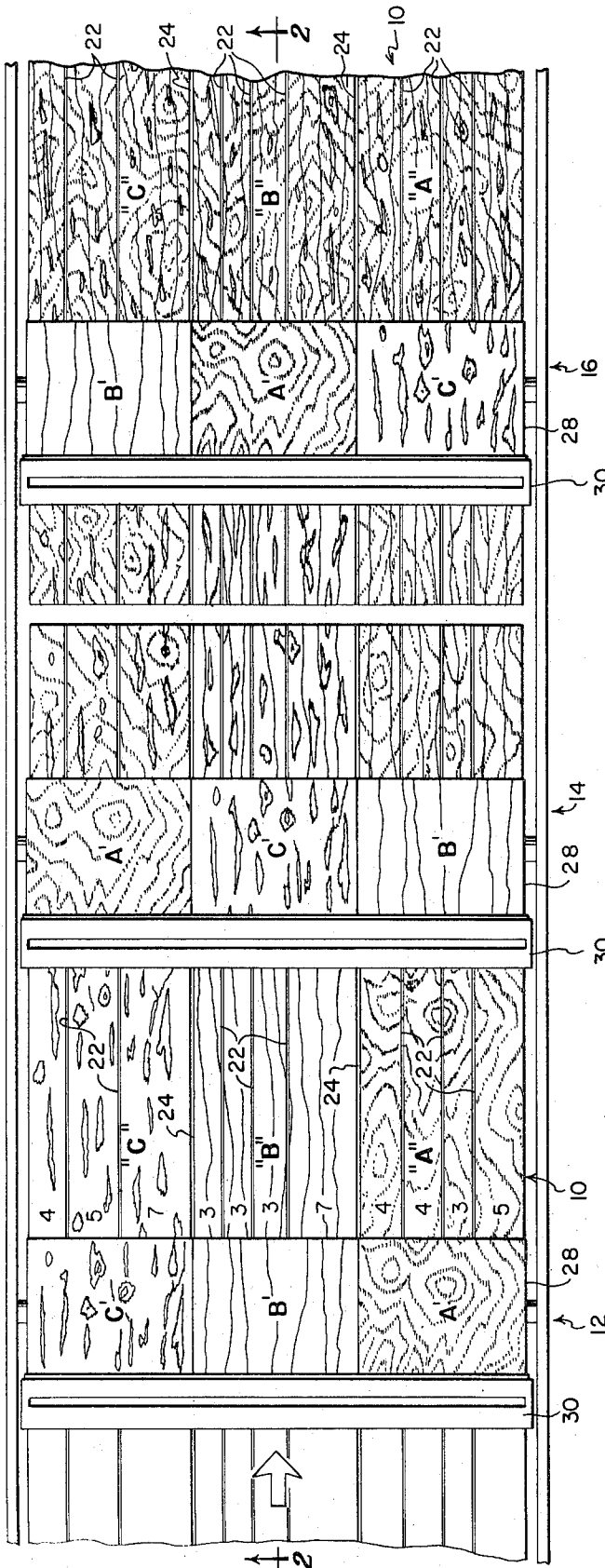
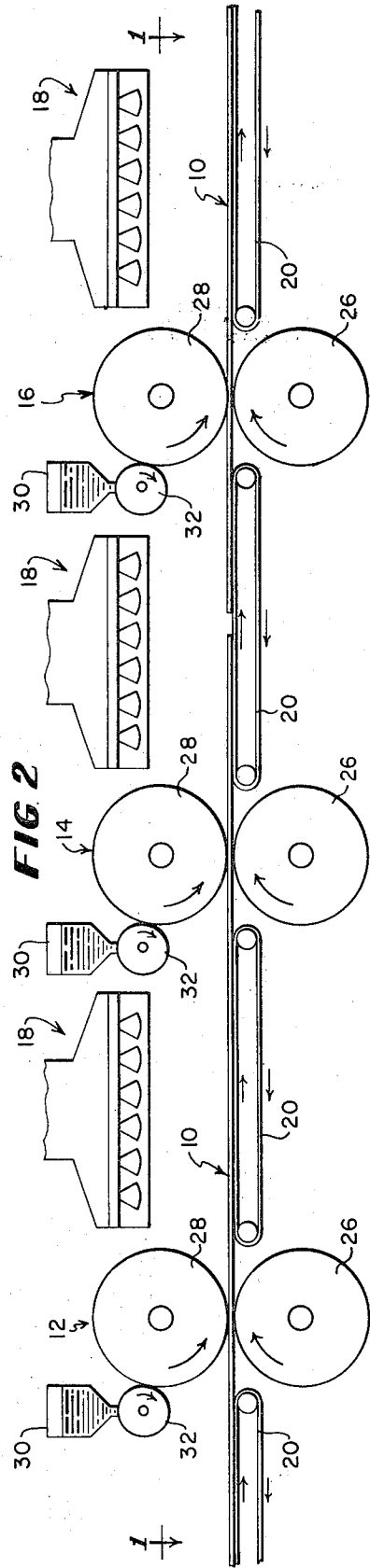


FIG 2



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**MULTI-COLOR, MULTI-PATTERNED PANELS**

Raymond H. Pittman, Batavia, Ill., assignor to

Masonite Corporation, Chicago, Ill.

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6 Claims

**ABSTRACT OF THE DISCLOSURE**

Wall panel and method of making the same of thin sheet material having a decorative outer surface resembling actual wood planks laid side by side comprising the steps of printing segments of said surface with first, second and third patterns in a first color; printing different segments of said surface with different portions of said first, second and third patterns in a second different color; and printing different segments of said surface with again different portions of said first second and third patterns in a third different color whereby planks of the whole pattern of said decorative outer surface are printed in successive layers with different patterns of different colors.

The present invention relates to a new and improved wall panel having an outer decorative surface resembling actual wood planks laid side by side and a method of making the same.

In the past great progress has been made in the production of wood panel sheets formed of pressed wood fibers, wood chips and the like having outer decorative surfaces which are printed and decorated to closely resemble actual wood planks laid side by side. These panels have afforded the home owner and commercial installations the appearance of rich wood grain paneling at a relatively low cost in comparison with the cost of actual wood plank paneling.

The present invention is directed towards wood paneling sheets of this character and a method of making the same which results in a finished panel sheet that more closely resembles in appearance an actual wood plank wall surface. Most panel sheets of the type and character described herein are made in relatively thin sheets, usually in standard sizes of 4' x 7', 4' x 8' or 4' x 10' and the panels are designed for application to vertical studs or other supporting members, which members are generally placed 16" between centers. In most cases the panel sheets are formed with longitudinal grooves in the decorative outer surface thereof which grooves are co-extensive with a patterned joint between adjacent planks. Normally, these grooves are also spaced apart at 16" centers longitudinally of the panel sheets in order to facilitate alignment of the nails or other fasteners used for mounting the panels in place on the support members of a wall, ceiling of a home or commercial building.

In the past, the exposed outer decorative surface of the panel has been formed by the application of several layers of ink or other colored tinting or coloring liquid which usually is applied in patterns made from photographs of actual wood planks laid in place.

The present invention comprises an improvement on the prior panels of the general character described and provides a panel sheet which is extremely realistic in appearance, pleasing to the eye, and yet the panels in accordance with the invention are extremely economical.

It is therefore an object of the present invention to provide a new and improved wall panel sheet having a decorative outer surface more closely resembling actual wood planks laid side by side than heretofore possible.

Another object of the present invention is to provide a new and improved method of making wall panel sheets of the character described.

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Another object of the invention is to provide new and improved wall panel sheets having a decorative outer surface which is formed by the application of several different color coatings or layers of ink or other coloring material on different segments or portions of the sheet and with different printed patterns on each segment.

Yet another object of the present invention is to provide new and improved wall panel sheets of the character described having a plurality of coloring applications on the decorative surface thereof with the colors of each application or coating different from one another with the patterns on any particular portion or segment of the surface different for each successive application of coloring.

Another object of the present invention is to provide a new and improved method of producing a decorative outer surface on wall panel sheets and the like, which method comprises printing or otherwise applying a plurality of different wood grain patterns on the surface in different colors and in a different order of application one on top of another. As an example, a first application of coloring may be chosen with a pattern resembling the subtle undertone of a wood plank and a second and different successive color application is patterned to represent the mineral streak commonly found in wood, while a final or third and different color application has a pattern representing the fine details of wood grain or ticking in yet a third color. When the patterns are applied in succession in different colors and different orders of application with respect to the different patterning and different surface segments the resulting appearance is very pleasing to the eye and more closely resembles the appearance of actual wood planks.

In accordance with the present invention, a new and improved method of making wall panel sheets with a decorative outer surface resembling actual wood planks laid side by side comprises the steps of applying or printing first, second and third different patterns onto respective segments of said outer surface in a first coloring medium. Different ones of the respective segments are then printed with different portions of said first, second and third patterns in a second and different color application. Thereafter, portions of the first, second and third patterns are again applied to yet again different individual planks of the decorative outer surface in a third and different color printing application, whereby each of the segments is provided with three color printing applications in a different order from that of other segments and this promotes an appearance highly pleasing and more closely resembling actual wood planking.

For a better understanding of the invention reference should be had to the following detailed description taken in conjunction with the drawings in which:

FIG. 1 is a top plan view showing in schematic fashion, a production line for making wall panels in accordance with the features of the present invention;

FIG. 2 is a side elevational view taken substantially along lines 2—2 of FIG. 1.

Referring now more particularly to the drawings, thin sheets of paneling 10, in accordance with the present invention, are passed in succession through successive printing stations 12, 14 and 16. After the sheets pass through a printing station the ink or color coating applied to the decorative outer surface thereon is set or dried by means of a suitable infrared or other type of oven or dryer unit so that the ink or color coating applied in successive printing stations does not run and bleed into the pattern preceding color coating application. As indicated, dryer units 18 of the infrared type may be provided after each of the printing stations 12, 14 and 16, and after the panel sheets or panels 10 have passed through the final printing station 16 and its associated drying unit 18, a finish

glaze or final sealing coating is applied to protect the decorative outer finish of the panels. The sealer applied is generally water and stain resistant and is transparent or semi-transparent in order to render visible and bring out the decorative patterns applied at the printing stations 12, 14 and 16.

The panel sheets 10 are moved through the process by means of successive belt conveyors 20 or other conveying means which support the panels for movement along a horizontal plane extending between the printing rolls at the respective printing stations. The panel sheets 10 are generally formed in standard widths of 4' and may have several standard lengths such as 7', 8', 10' or even 12'. The panel sheets are generally thin (approximately  $\frac{1}{8}$ " to  $\frac{3}{4}$ " in thickness) and may be formed of plywood, pressed wood fibers, wood chips, resinous materials or any economically suitable paneling material. The panels are provided with a smoothly finished outer surface which is designed to readily accept printing or coloring inks or paints for providing a decorative pattern.

In accordance with the present invention, the outer surface of the panels is decorated in a new and improved fashion in order to present an appearance similar to actual wood planks laid side by side. As illustrated in FIG. 1 the wood plank appearance is enhanced by means of longitudinally extending (plank defining) grooves 22 and the surface of each panel is divided into three separate longitudinal segments A, B, and C, which segments are separated by longitudinal nailing grooves 24 for facilitating the installation of the finished panels on stud walls or the like wherein the studs or other supports are spaced 16" on center. On each of the 16" wide segments A, B, and C of a panel, a plurality of the plank defining grooves 22 provide the outer surface of the particular segment into several planks which may be of standard equal widths or of random width as set forth by the numbers 3, 4, 5 and 7 in the illustrative example shown in FIG. 1. The segment A includes four planks having widths of 5, 3, 4 and 4 inches while the segment B has four planks with widths of 7, 3, 3 and 3 inches, and segment C has only three planks with widths of 7, 5 and 4 inches. The widths and number of planks and the order thereof in each of the segments A, B and C may be varied as desired to present a more random appearance of a finished wall structure having a number of panels 10 thereon. However it has been found that with pressed wood type panels a single mold for forming the grooves 22 and 24 will suffice for most applications and it should be understood that the panels 10 can be run through the process line by reversing the entry end so that the same patterns applied to the respective segments do not appear on the same width planks defined on the outer surface.

In accordance with the present invention, each of the printing stations 12, 14 and 16 includes a fixed support roll 26 for supporting and moving the panel sheets between the conveyors 20 and for supporting the sheet against the downward pressure of an upper, engraved pattern roll 28. The engraved pattern rolls 28 have a length substantially equal to the width of the panel sheets 10 passing thereunder and have an outer circumference of approximately four feet so that as each eight foot length panel passes therebeneath the pattern roll 28 makes two complete revolutions. Ink or other coloring or tinting medium for application to the decorative outer surface of the panels 10 is supplied from a liquid hopper 30 onto a small diameter transfer roll 32 which rotates in a clockwise direction and opposite to the rotation of the pattern roll 28 associated therewith. The ink or other coloring or tinting medium is applied onto the elevated or raised engraved patterns formed on the pattern rolls 28 and this pattern is then applied onto the surface of the panels 10 as the sheets pass between each pair of vertically spaced rolls 26 and 28 at a printing station. The pattern applicator roll 28 is adjustable vertically to pro-

vide the desired contact pressure against the decorative outer surface of the panels 10 so that a precise and clearly delineated pattern is applied.

As illustrated in FIG. 1 each of the pattern rolls 28 at the successive printing stations 12, 14 and 16 is divided longitudinally into separate segments A', B' and C' and the dividing lines between these pattern segments correspond with the nailing grooves 24 on the panels 10 passing therebeneath. The order or consecutive arrangement of the patterns A', B' and C' differs on the respective rolls 28 at the successive printing stations 12, 14 and 16 as shown, so that as each segment A, B and C on the surface of a panel 10 passes beneath the pattern rolls 28 of the three successive printing stations 12, 14 and 16, each panel surface segment is printed with all three of the patterns A', B' and C' but with the order of application of the patterns being changed or different for each of the three panel segments. The ink or coloring or tinting medium applied at the first printing station 12 is of a selected color, hue or tone and after the panels 10 pass under the pattern roll 28 of the first printing station 12, the patterns A', B', and C' are formed in the particular color selected on the respective segments A, B and C of the outer decorative surface of the panel as illustrated. The ink of these patterns is then dried or set as the panel passes below the first drying unit 18. The panel 10 then passes beneath the pattern roll 28 of the second printing station 14, wherein the panel segment A is printed with the pattern B' in another different color or hue than that applied at the first printing station 12. Similarly segment B of the panel is printed with the pattern C' and the panel segment C is printed with the pattern A'. As the panels leave the pattern roll 28 of the second printing station 14 the second printing or coating is dried or set by the second drying unit 18.

The panels then continue beneath the pattern rolls 28 at the third printing station 16 wherein a third printing takes place in yet another different color. At the third printing station 16 the panel segment A is printed with the pattern C', the segment B is printed with the pattern A' and the panel segment C is printed with the pattern B'.

From the foregoing it will be seen that each panel segment A, B and C is printed with three different patterns in successive coatings or printings which are of different color, tint or hue. In addition, the patterns applied to each segment are applied in different order as well as in different color.

The pattern A' on the rolls 28 may comprise a tick or small grain pattern in detail and the pattern B' may comprise a darkened, shaded mineral streak as commonly found in wood. The pattern C' may comprise a subtle undertone or basic wood color in grain patterns of the wood. In an example constructed in accordance with the present invention, a paneling system representing hickory planks was produced wherein the ink coloring applied at the first printing station 12 was of a reddish hue, the second printing application at the printing station 14 utilized a grey-black ink, while the final printing application at the printing station 16 utilized a brownish ink for color. The resultant panels were extremely true to life in appearance. The multicolor, multipattern, multi-order printing application provides great variety between the individual plank resembling portions of the panel surface segment. The process provides a multicolor printing application which achieves the subtle qualities of appearance found in real wood such as random color, graining and mineral streak patterns. Variations in the color and hue of ink supplied to the various patterns produce a wide variety of desirable appearance. The patterns are made from photographs of actual wood and when applied in accordance with the invention provide a panel of authentic appearance closely resembling the actual wood planks of the particular wood type and grain from which the original pattern was made. The panel sheets of

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course are much lower in cost than actual wood planks and are producible economically on a mass production basis as described herein.

Although the present invention has been described with reference to a single illustrative embodiment thereof, it should be understood that numerous other modifications and embodiments can be devised by those skilled in the art that will fall within the spirit and scope of the principles of this invention.

What is claimed as new and desired to be secured by Letters Patent of the United States is:

1. A method of making wall panels of thin sheet material with an outer surface grooved to resemble actual wood planks laid in side by side relation, said method comprising the steps of simultaneously applying a plurality of different patterns in a first color in a first ordered arrangement to said surface, each pattern defining a longitudinal segment of said surface and drying said first ordered arrangement of patterns; simultaneously applying the same plurality of patterns in a second color in a second ordered arrangement over said first applied patterns and drying said second ordered arrangement of patterns; simultaneously applying the same plurality of patterns in a third color and a third ordered arrangement over said second applied patterns and drying said third ordered arrangement of patterns; said second and third applied patterns arranged such that each longitudinal segment of said surface is coated with three different patterns in three different colors.

2. The method of claim 1 wherein one of said patterns comprises a wood undertone pattern resembling that of actual wood planks.

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3. The method of claim 2 wherein a second pattern comprises an intermediate tone resembling the mineral streaks found in actual wood planks.

4. The method of claim 1 wherein one of said patterns comprises a toptone resembling the tick and grain of actual wood planks.

5. The method of claim 1 wherein said first, second and third colors are applied with rolling contact with said surface.

6. The article made by the process as defined by claim 1.

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WILLIAM D. MARTIN, Primary Examiner

W. K. TRENOR, Assistant Examiner

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