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METHOD OF TREATING WOOD

Kermeth L. Owens and George K. Owens,
Payson, Ariz.

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This invention relates to a process of treating logs so as to produce a wood with bright and contrasting colors in order to make a rather plain wood such as the western yellow pine highly suitable for furniture, panels, and other uses where the appearance of woodwork is as important as its strength.

The art of heating wood in order to make it stronger or to prevent attack by insects is quite old and there are many processes for the so-called vulcanizing of wood to obtain a better quality of lumber and to make it more durable. As far as we know, however, no attempt to change a rather plain wood to a beautiful wood has been successful, although there are many schemes for impregnating the wood with color as well as processes for adding a touch of color to the surface of the finished wood. With such processes we are not concerned; our invention being limited to one in which all color is produced by compounds already existing within the tree itself before it is felled.

The principal object of our invention is to so treat a freshly cut sap wood log that when it is finally sawed into panels, blocks, or other forms its surface will be attractive and the wood may successfully compete with the far more expensive varieties. By means of the present invention it is possible for example to produce beautiful panels which are sufficiently inexpensive as to permit their use in cases where quartered oak and more expensive woods would be of prohibitive cost.

Our process is based upon the changes which occur slowly in sap wood which has been highly heated when freshly felled and then is allowed to increase in color for a suitable time; depending upon the age of the tree, the degree of heat to which the logs have been subjected, and other factors such as the purpose to which the finished wood is intended.

Although the invention is not so limited it will be described in connection with western yellow pine, which wood seems to respond most strikingly to the present treatment. We prefer fairly young trees because we have found that the greater the amount of sap wood the brighter and more vividly contrasting will be the colors. Older trees, however, also respond to the treatment and the wood thus produced while not quite so beautiful as obtained from the younger trees is still remarkably improved in ornamental value.

Soon after the trees have been cut the logs are subjected in an open pit to direct flame, for such a length of time as to burn off the entire bark on the logs and to char the wood beneath the bark, sometimes merely a fraction of an inch and sometimes as much as three inches; less than an inch usually giving about the best results, consistent with utilization of the greatest amount of wood. Naturally the length of heating will depend to some extent upon the size of the log, the age of the tree, and thickness of bark, but in each case it has been our practice to expose the freshly cut green logs directly to the open flame of whatever may be the fuel in the open pit, usually the smaller branches cut from the logs although any other fuel could be used.

It is quite essential to burn off all of the bark, thus removing the eggs of insects and if a brilliant contrasting color is desired and the log is from a tree somewhat older than preferred, a deep charring is indicated.

After the roasting of the logs in the previously mentioned manner, the charred logs are stored for a number of months. Apparently a period shorter than three months of simple storage gives entirely too little color, whereas if the period of storage extends beyond twelve months the logs will season-crack quite badly with attendant unnecessary waste of lumber. Inasmuch as the ends of the log first dry out in storage they will crack and lose color unless same means is provided for rendering more uniform the drying out of the log. Any method of protecting the ends may be used, for example, a mere coating of the two ends of each log with a sufficient film of creosote to make uniform drying thus saving a material portion of the length of the log. We much prefer to burn the whole tree and then cut into lengths just before sawing into lumber, so as to prevent waste occurring in the ends of the logs.

The younger timbers which are mostly sap wood will color soon and will tend to acquire a much darker shade than older logs and hence require somewhat less storage time. Our preference, although we do not wish to be limited by this narrow statement, is to store young timber for about seven months and to store reasonably old logs containing less sap and moisture for a length of time approximating the maximum of twelve months, say ten months. These older logs, no matter how long stored, will not color as intensely as the younger wood. While the charred logs will best color and dry in the open air, we find it best to avoid exposure to the full bright sunshine which would increase the amount of season cracking. Excess moisture also should be avoided because of the tendency to decay and we have found that too much moisture prevents

the desired formation of color patches or at least fails to give the most desired effects. Burying the logs or barring all light has not been found satisfactory but a filtered sunshine is excellent. Since the woods where the logs have been stacked for burning provides for the desired semi-sunshine and also the free circulation of air it is convenient to store the logs close to the place of treating.

If the log has been subjected to a fairly low heat and is sawed at an early period, the areas of color will be fairly large in size, usually three or four inches wide and the colors, while contrasting, will all be reasonably light, brown and blue-grays predominating often with rather sharply defined borders of color and sometimes having at each wood ring margin a patch of pale yellow.

A somewhat higher heat, that is by burning more deeply into the log and by waiting a month or so later to saw, makes the color areas decrease in size, now ranging one or two inches in width, and the yellows are much more vivid and the browns quite darker in color. Blue tints are frequently much more marked and the grays are tinged with green making an ideal appearance for large panels.

A still higher heat produces the appearance most desired for furniture, contrasting being sharp and the areas reasonably small. With this treatment, preferred for chairs and other articles of furniture, the color formations are small, their width being in fractions of inches rather than in inches and the contrast being much strengthened as there will be portions of the wood, almost without color, directly against other streaks of a dark cocoa color or pale chocolate. The yellows are now less vivid but much more in evidence and the wood presents a highly mottled appearance, most attractive for many kinds of articles usually made from the far more expensive woods. Shades of red also add to the color effect. As the heat is increased the markings will decrease in size. The boards next to the surface of the log will be more mottled than next the center because the logs will get hotter on the surface than near the center. Boards do not have to be cut from choice logs as this treatment is very effective on knots which are sound, their red appearance standing out boldly against the mottled background.

In experimenting with the process we have sawed logs somewhat earlier than preferred in order to determine the changes that take place. The burned logs appear to begin to color at about three months of storage, when the shade is predominantly a light yellowish green, often having quite noticeable spots or streaks of blue. Somewhat later small spots of brown and red appear which with lengthened storage grow larger, apparently displacing the yellow-green shade which formerly formed the background. If the period of storage in their charred log condition runs as much as twelve months the beauty of the wood will be lost as the brown gradually overspreads all other colors and hides the attractive contrast that is had with much shorter storage. The most beautiful contrast for large woodwork wherein the amount of exposed width is six inches or less, is approximately nine months with rather high heat whereas in large pieces where the exposed width would be a foot or more, a storage of about six months with lower heat gives the desired contrast in larger patches which then would be desired.

Inasmuch as the desired color extends completely through the wood when the logs are treated as has just been described, we prefer the method described but do not wish to be understood as limiting our invention to specific details other than as required by the claims, as it seems obvious that a flameless coal could serve as the fuel for charring the logs. We prefer to store the charred logs in the open air and to use the time stated. The time may be greatly shortened by artificial aging of the charred logs in a well known manner.

What we claim is:

1. The method of enhancing the beauty of lumber obtained from Western Yellow Pine, which consists in exposing freshly cut logs mainly of sap wood to the charring action of an open flame for a sufficient amount of time to burn away the bark and a portion of the surface beneath the bark, storing the charred timber for a period of from three to twelve months depending on the age of the logs and the depth of coloring desired, and then severing the charred logs into pieces suitable for ornamental woodwork.

2. The method of enhancing the beauty of lumber obtained from sap wood trees which consists in exposing freshly cut pine wood logs to a heat sufficient to burn away the bark and to char the surface of the wood fiber beneath, aging the charred log until the desired contrast of color is reached and then severing the logs into pieces of chosen size.

3. The method of enhancing the beauty of woodwork obtainable from freshly cut sap wood timber which consists in subjecting freshly cut pine wood logs to a vulcanizing heat, storing the charred logs for from three to twelve months and then severing the logs into pieces suitable for ornamental use.

4. The method of enhancing the beauty of woodwork obtainable from sap wood timber which consists in subjecting freshly cut pine wood logs to a vulcanizing heat, storing the heated logs to set the color thus produced and then severing the logs into pieces suitable for ornamental use.

5. Western yellow pine lumber having therein sharply contrasting streaks of light and dark color, including brown, red-brown, grey-blue and yellow, formed from the natural constituents of the wood.

6. Pine lumber from normally colorless timber, the lumber being free from added dye and having therein deep streaks of sharply contrasting light and dark color formed from the natural constituents of the wood.

7. A pine wood panel having therethru elongated color areas formed from natural constituents of the wood free from added color and including dark browns touching light blue-grays together with smaller areas of light yellow and substantially uncolored portions.

8. The method of producing an ornamental panel which consists in exposing freshly cut logs from fairly young trees to the charring action of an open flame for a sufficient time to burn away the bark and a portion of the surface beneath the bark, storing the charred timber in filtered sunshine for a period of from 3 to 12 months depending on the age of the logs and the depth of coloring desired and then severing the charred logs into pieces suitable for ornamental woodwork.

9. The method of enhancing the beauty of woodwork obtainable from sap wood timber which consists in subjecting freshly cut pine

wood logs to a vulcanizing heat, burying the heated log for a period of not less than three nor more than twelve months to set the color thus produced, and then severing the logs after such storage into pieces suitable for ornamental use.

10. The method of enhancing the beauty of lumber obtained from sap wood trees which consists in exposing freshly cut logs to a heat sufficient to burn away the bark and to char the surface of the wood fiber beneath, aging the charred log for a sufficient time to complete to the desired degree the changes in the natural constituents of the wood brought about by the heating and then severing the logs into pieces of chosen size; the aging time required with ordinary storage in the open air being between six and ten months, depending upon the age of the tree, the degree of heat to which the log was subjected, and the size of the areas of color desired.

11. The method of enhancing the beauty of woodwork obtainable from freshly cut sap wood timber by producing from the natural constituents thereof contrasting areas of bright color, which consists in subjecting freshly cut Western pine logs to a vulcanizing heat for a sufficient time to burn off all of the bark and to char the surface of the wood beneath the bark, storing the treated logs not less than three and not more than twelve months and then severing the logs into pieces suitable for ornamental use.

12. The method of enhancing the beauty of woodwork obtainable from sap wood timber which consists in subjecting freshly cut Western pine logs to a vulcanizing heat for a sufficient time to burn off all of the bark, burying the heated log for a period of not less than three nor more than twelve months to set the color thus produced, and then severing the logs after such storage into pieces suitable for ornamental use.

KERMETH L. OWENS.
GEORGE K. OWENS.