Aug. 20, 1968 D. E. HERVEY 3,397,723

METHOD OF PREPARING FLITCHES FOR VENEER CUTTING MACHINES

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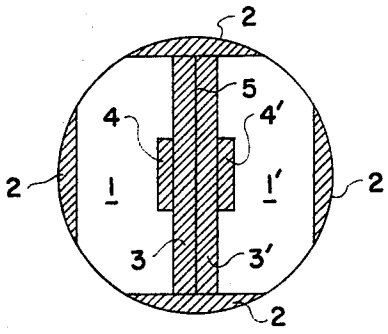


FIG. 1

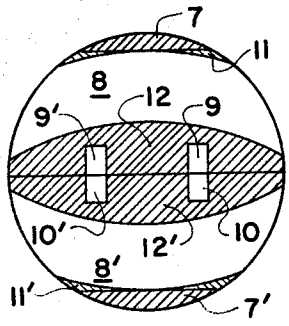


FIG. 2

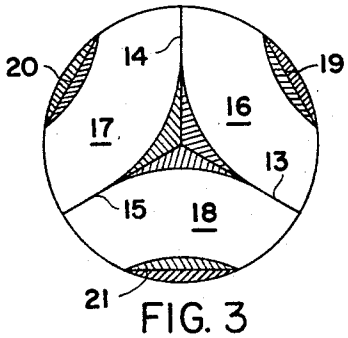


FIG. 3

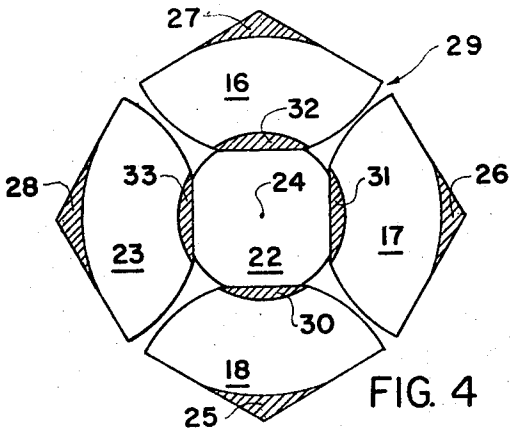


FIG. 4

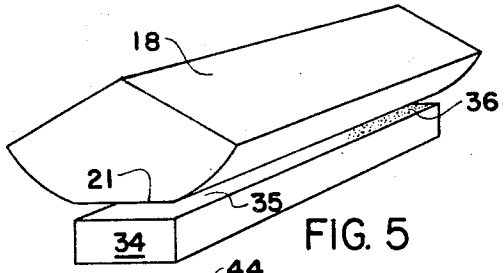


FIG. 5

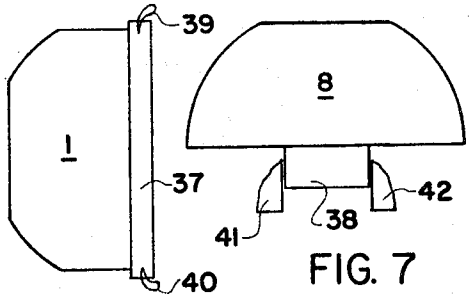


FIG. 7

FIG. 6

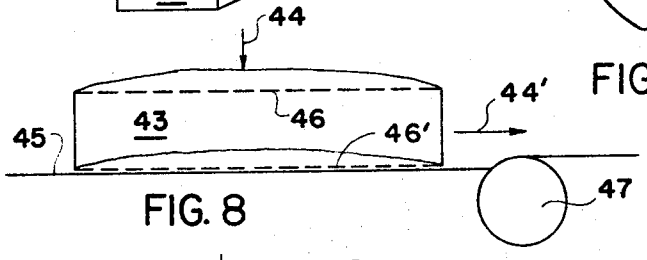


FIG. 8

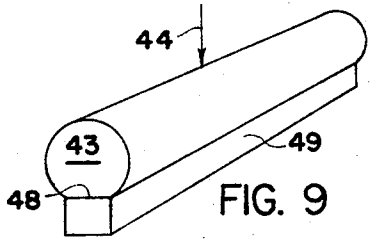


FIG. 9

DAVID E. HERVEY
INVENTOR.

BY John J. Wills

ATTORNEY

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METHOD OF PREPARING FLITCHES FOR VENEER CUTTING MACHINES

David E. Hervey, Elm City, N.C.
(1806 High St., Logansport, Ind. 46947)

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This invention relates to cutting of veneers from logs and more particularly to a means of improving the quality, the amount of yield of veneers produced, and a reduction in the time required by the process.

Heretofore the methods of producing facewood veneer incorporated as a by-product or waste, a dog board which is the portion of the flitch being cut which is left in the machine when the cutting is terminated. When the veneer is cut on a slicer, the dog board represents a loss of at least 20% of the flitch (which is usually the best part of the wood).

In the half-round process where a lathe is used, the dog board usually amounts to 40% or more of the flitch. The dog board loss represents more than just basic log cost since the flitch mounted in the machine represents all of the costs of production in the mill except for the actual veneer peeling. It is generally calculated that the wood at this stage represents approximately double the basic log cost.

The present invention, on the other hand, converts virtually all of the log flitch into high-quality veneers with very small portions of waste which usually lie in areas of useless or low value wood. This conversion is accomplished by cutting the flitch in a shape which has been discovered to give the least amount of waste in proportion to usable veneers. Further, the dog board has virtually been eliminated by the substitution therefor of low-grade, inexpensive lumber to accomplish the same job e.g., to act as a mounting means for the flitch being cut.

It is, therefore, an object of the present invention to provide a means for producing a larger amount of high-quality veneer in less time than has been heretofore possible.

Another object of the present invention is to provide a method of cutting veneers from the inside of the log out so as to reveal, in advance, stains of included iron thereby preventing damage to the veneer knife and bar.

Another object of the present invention is the provision of a means for cutting of a plurality of flitches by the same machine at the same time.

Another object of the present invention is the provision of a means for converting heretofore useless dog boards into high-quality salable veneer.

A further object of the present invention is the provision of a means for straightening curved or warped flitches or logs.

Other objects and advantages of the present invention will become apparent and obvious from a study of the following description and the accompanying drawings which are merely illustrative of the present invention.

In the drawings:

FIG. 1 is a diagrammatic end view of the prior art method of obtaining slicer flitches from a log;

FIG. 2 is a diagrammatic end view of the prior art method of obtaining half round flitches from a log;

FIG. 3 is a diagrammatic end view of a log showing applicant's improved method of obtaining flitches therefrom;

FIG. 4 is a diagrammatic end view showing multiple flitches mounted on a lathe type veneer machine;

FIG. 5 is an exploded view of the method of mounting applicant's tri-section flitch;

FIG. 6 is a diagrammatic end view of applicant's improved mounting for a slicer flitch;

FIG. 7 discloses a diagrammatic end view of applicant's improved method of mounting a lathed flitch;

FIG. 8 is a diagrammatic side view of a curved log being straightened; and

FIG. 9 discloses the log of FIG. 8 mounted on a log stay.

With further reference to the drawings, FIG. 1 is a diagrammatic end view of a log typically cut by conventional methods in two flitches **1** and **1'** before equalizing slabs **2** are removed by a sawing process and discarded as waste material. The two flitches are then separated by sawing along line **5**. The areas **3** and **3'** indiciate the dog boards which are residual material when the veneering process is ceased. Defective center areas **4** and **4'** are clipped out and removed by a clipping operation. If the veneers are not perfectly matched and perfectly clipped, which rarely happens, the loss in this area alone may run 20 to 30% of the material so clipped.

FIG. 2 is a diagrammatic end view of a log typically manufactured into half round flitches. By this method the log is first sawn along line **6**. Next slabs **7** and **7'** are removed thereby producing flitches **8** and **8'**. Into flitch **8** are cut grooves **9** and **9'** and into flitch **8'** are cut grooves **10** and **10'**. The purpose of these grooves are to allow steel dogs (not shown) to engage and secure the flitch during the veneer cutting process. When these types of flitches are turned into half round veneers by conventional methods, scrap veneers **11** and **11'**, as well as dog boards **12** and **12'**, are unusable.

In cutting flitches into half round veneers, it has been found that the cutting cannot approach the grooves too closely because of the danger of striking one of the dogs and thereby breaking the knife and also any weakening of the flitch at the corners of the grooves by thinness produces inaccurately cut veneers which are worthless and can be ruinous to the producer's reputation.

FIG. 3 discloses an example of applicant's invention wherein a log is tri-sected by cutting along lines **13**, **14** and **15** to produce flitches **16**, **17** and **18**. Flat surfaces **19**, **20** and **21** are planed from flitches **16**, **17** and **18** respectively. In one version of the present invention, these flitches are glued to flat surfaces on a core **22** which has a center point **24**. A fourth flitch, **23** may be added to the core **22** as shown in FIG. 4.

Once the four flitches have been mounted on core **22**, said core may be chucked into a conventional rotary lathe to rotate about center point **24**. By using this method, the log centers which are usually pithy and defective are removed by the veneering process as shown in areas **25**, **26**, **27**, and **28**.

When the overall assembly **29** is turned on the lathe (not shown) one sheet of veneer is produced from each flitch on each revolution until portions **30**, **31**, **32** and **33** are all that remain on core **22**. These areas may be reduced even smaller if narrow sapwood veneers are desired. As can readily be seen, larger veneers of heartwood are produced than by the two previously known prior art methods.

The size of the core **22** should vary with the size of the flitches attached thereto and should be slightly larger than half the diameter of the log from which the flitches are cut. To reduce the cost of producing the veneers even further, the core **22** may be reused repeatedly by replaning the flat surfaces thereof.

As a comparsion between the two prior art methods of producing flitches and applicant's method, if the log disclosed in FIG. 1 is assumed to be 20 inches in diameter, then each flitch sliced will produce 89 square inches of veneer in cross section or a total of 178 square inches for both flitches. From the same 20-inch log, but using the half round method, each flitch will produce 82

inches in cross section, or a total of 164 square inches of veneers per log. By comparsion, applicant's teaching of the use of a tri-section log would produce 92 square inches of cross section veneer for each flitch or a total of 276 square inches from a 20-inch log.

Using the above figures, a comparative analysis of the percentage of increase of applicant's method over the prior art may be set forth as follows:

Conventional slicing flitches (FIG. 1) compared to applicant's tri-section flitches equals 178/276 or 155% increase.

Half round flitches (FIG. 2) compared to applicant's tri-section flitches equals 164/276 or 170% increase.

A further example of the increased yield of applicant's tri-section flitches is by mounting them as multiple units on a lathed veneer machine, compared to the prior art's half round flitches singly mounted on the same divide. This gives a comparsion of 82/368 or a 450% increase per operating cycle. Aside from the large increase in the quantity as well as the quality of the veneers produced, the savings in labor per operating cycle of the lathed slicer will more than justify its adoption.

A further advantage of applicant's tri-section method of producing flitches is that wider veneers may be obtained from each of the three flitches than from either of the two prior art methods of preparing the same.

FIG. 5 shows a tri-section flitch **18** with a flattened portion **21** in exploded relationship to flitch stay **34**. An adhesive **36** is shown applied to surface **35**. When the surface **21** of flitch **18** is placed in contact with surface **35** of flitch stay **34**, the adhesive **36** will bond the two together. In this manner, the flitch stay **34** replaces the dog cord which has heretofore been necessary. Additionally, much greater stiffness and straightening effect is achieved by the bonding process.

If a flitch is badly curved by natural springing due to tensions in the wood or is sawn and planned in a curve, it may be straightened by applying pressure to the flitch **18** when bonding it to the flitch stay **34** thereby greatly increasing the yield and quality of veneer obtained therefrom. This process of straightening greatly reduces the labor required in trimming oddly shaped flitches (which has been necessary heretofore).

A modification of the present invention is disclosed in FIG. 6 wherein a plank flitch stay is used in place of flitch stay **34** and onto which is bonded a conventional slicer flitcher such as that disclosed in FIG. 1. Dogs **39** and **40** are shown in holding relationship to the flitch stay. By this process the dog board, which has heretofore been required, is eliminated by manufacturing it into high quality heartwood veneer. Of course, the straightening and stablizing effect of the flitch stay **37** would be similar to that of flitch stay **34** hereinbefore described.

A further modification of the present invention is disclosed in FIG. 7 wherein a half round flitch **8** is bonded to flitch stay **38** with conventional dogs **41** and **42** being showed in gripping relation thereto. In the prior art, dogs **41** and **42** would grip the dog board **12** by way of grooves **9** and **9'**. By the elimination of the dog boards and the grooves placed therein, applicant obtained more veneers, of a high heartwood quality, than has before been possible.

When it is desired to cut veneer from a small curved log such as that disclosed at **43** in FIG. 8, pressure is applied as indicated at point **44** as the log travels in a direction indicated at **44'**. As the pressure **44** is applied, the log is straightened as represented by dotted lines **46** and **46'**. As the thus straightened log **43** moves across the jointer **45** a flattened surface is produced by jointer head **47**. The surface **48** thus produced will act as the bonding area between the log **43** and the log stay **49**, particularly as disclosed in FIG. 9. It will be noted that pressure **44** is applied to the log **43** during the bonding process in the same manner as it was during the flattening process. The small log thusly mounted on a log stay may be manufactured into veneer on either a veneer slicer, a half round machine or on a rotary lathe similar to that disclosed in FIG. 4. In either case, more and better veneers are produced in that the dog board hereinbefore required has been virtually eliminated.

In the above described bonding processes, various types of adhesives are adequate to secure the flitch or log to the flitch stay or log stay. The choice of bonding material used will depend on whether the log or flitch is cut cold, as, for example, in the case of butternut, or whether it is cut at, say, 140 degrees Fahrenheit, as, for example, in the case of walnut. One good bonding agent is phenolic resin, which is produced by several manufacturers under their brand names. Another bonding agent, which although not as good, is still considered fully adequate, is urea resin. The catalyst used with any of the bonding agents, will, of course, be governed by the temperature of the glue line which is determined by the temperature of the wood to be bonded. A very quick time setting is best economically and is enhanced by the heat within a heated flitch. Since veneers are cut from green wood of very high moisture content, better bonding results are obtained by drying the surface of the wood to be bonded. This may be accomplished by very rapidly skin drying the surface area at temperatures greater than boiling. A hot metal plate, a flame or radiant heat may be used in this process of drying the bonding area without affecting the moisture content or heat in the inner portion of the flitch or log.

It is obvious that the present invention has the advantage over the prior art of allowing a much greater yield of a high quality veneer than has heretofore been possible at a savings in cost of production due to the additional veneer produced for the same labor involved in mounting and de-mounting the flitch stays (or the dog boards as in the prior art).

The present invention of course may be carried out in other specific ways than those set forth without departing from the spirit and essential characteristics of the invention. The present embodiments are, therefore, to be considered in all respects as illustrative and not restrictive and all changes coming within the meaning and equivalency range of the appended claims are intended to be embraced therein.

What is claimed is:

1. A method of preparing flitches for veneer cutting machines comprising the steps of tri-secting a log into equal proportions, producing a longitudinally extending flattened area lengthwise each of the portions, each of said areas being located in such a position that in a cross section equal arcs are provided on either side of such area, bonding of flitch stay means to each of said flitches and cutting veneers from said flitches whereby a high quality and quantity of veneer may be produced.

2. The method of claim **1** in which multiple flitches are bonded to a single core and said core mounted in a rotary type veneer machine whereby several flitches may be consecutively cut thereby increasing the amount of veneer produced per operating cycle of said machine.

3. A method of producing wood veneer comprising the step of tri-secting a log to produce multiple flitches, bonding said flitches to a flitch stay, mounting said stay in a rotating veneer cutting machine, and cutting said flitches into veneer whereby several flitches may be consecutively cut thereby greatly increasing the output of said machine per operating cycle.

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DONALD R. SCHRAN, *Primary Examiner.*