Aug. 9, 1966 D. E. HERVEY 3,265,103

WOOD VENEER SLICING ELEMENTS TEMPERATURE MAINTENANCE MEANS

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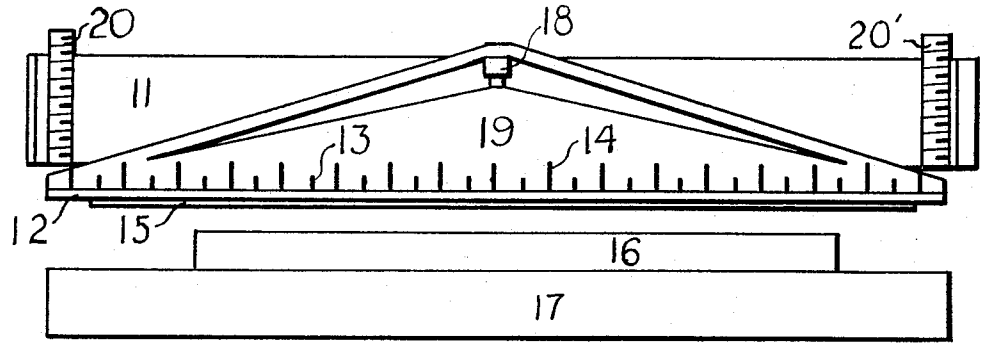


FIG. 1

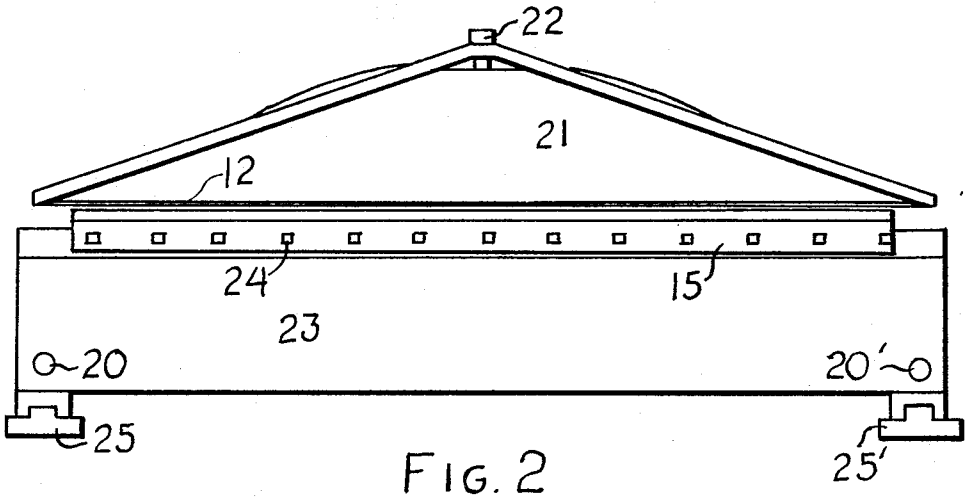


FIG. 2

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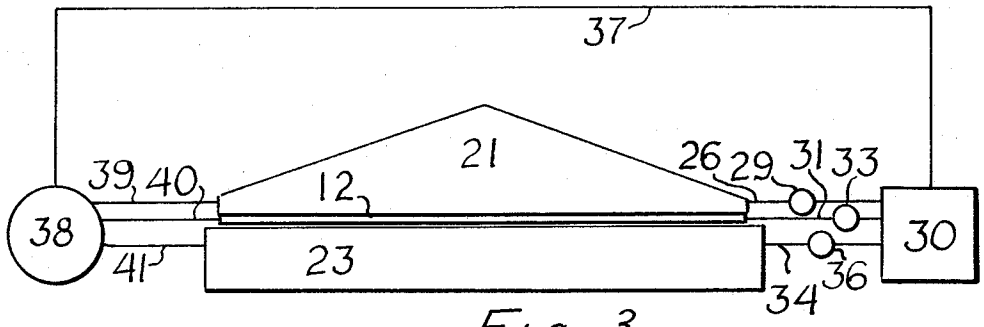


Fig. 3

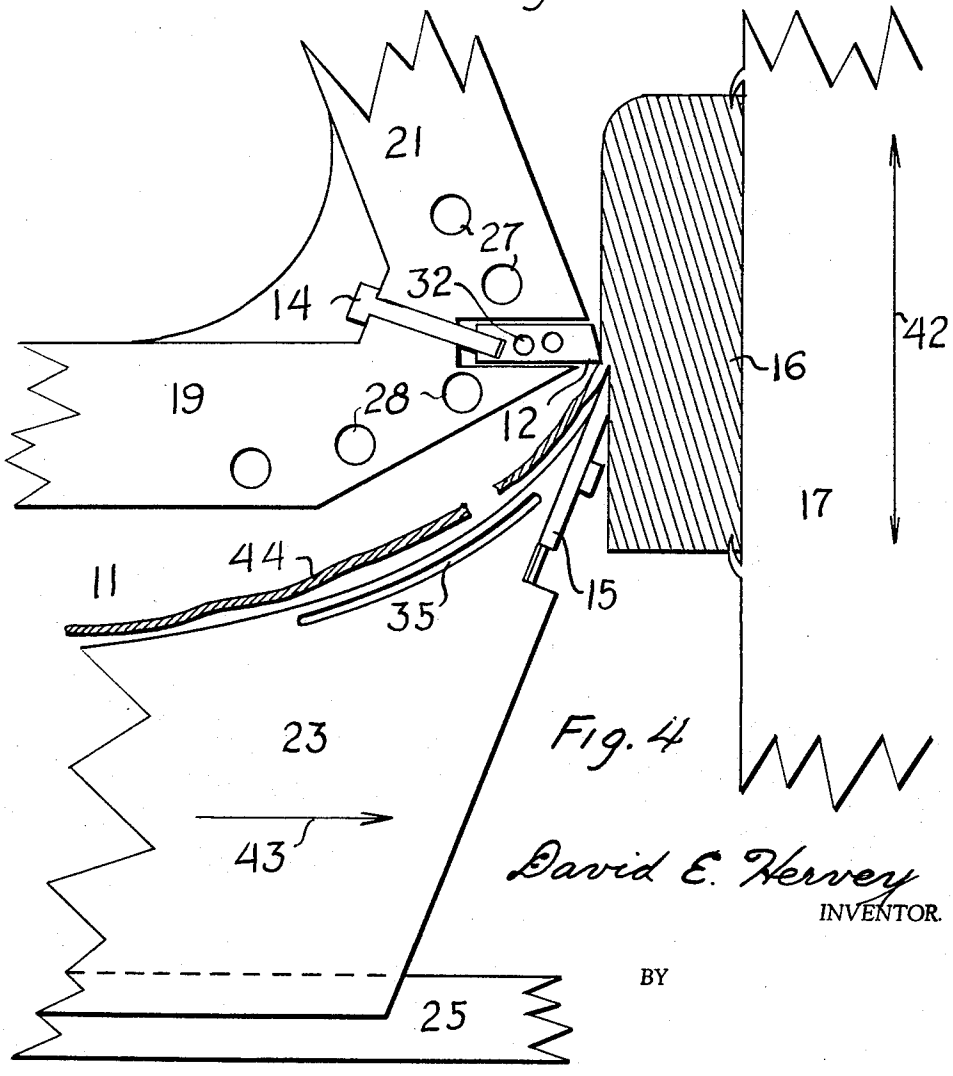


Fig. 4

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WOOD VENEER SLICING ELEMENTS TEMPERATURE MAINTENANCE MEANS

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This invention relates to the cutting of veneers or thin slices from a large body differing in temperature from ambient temperatures.

Heretofore the control mechanisms for determining the thickness and uniformity of a slice of veneer has been subject to temperature variations during the process of cutting due to several factors such as the degree of heat or cold of the body to be cut, the size of said body, the position of said body in the machine, down time in removing dog boards and mounting flitches, the rate of cutting, the variations in ambient temperatures and the proximity of the body to various machine control parts. These temperature variations working in different degree on each machine part and on different portions of each part cause uneven cutting and great loss and destruction if not controlled.

In a veneer cutting machine this has long been recognized as one of the greatest problems in the industry. Various stress and strain tension and compression devices have been incorporated in the machines to afford some means of continuously adjusting these parts during the process of cutting, with push and pull screws. It now takes the most highly skilled man available to continually make these adjustments to prevent the production of highly defective or waste veneers. At best all present cutting of veneer is controlled by balanced compromise of plus and minus pressures constantly changing with the exact cutting requirements never obtainable at any given time. The cutting of wood veneer for example requires that the logs or flitches be cooked for days at say 180° and then placed on the machine and cut to say 140°. Whether the logs are cut on a rotary lathe or flitches are cut on a slicer, the principle is the same. As the wood passes the pressure bar, its nose must bury itself evenly into the surface of the wood for its entire length to afford the proper tensioning of the wood for the cutting by the knife which is parallel to the pressure bar. The knife engages the wood slightly after the pressure bar, and enters the wood in front of the pressure bar, at a spaced relationship according to the desired thickness of the veneers to be cut. This spaced relationship between the pressure bar and the knife edge must be constantly very accurate in order to produce acceptable veneer for the trade and this has always been one of the greatest problems and sources of trouble and losses in the business.

This invention eliminates the necessity of constantly adjusting machine parts to produce very accurate cutting and thus produces a much finer product at greatly reduced expense and difficulty. This is accomplished by heating the machine parts contiguous to the veneer flitch to approximately its temperature to maintain that temperature whether the machine is in actual operation or not.

For a more specific description of the problem and the solution as afforded by this invention, reference is made to the drawing in which FIG. 1 is a plan view of a veneer slicer, FIG. 2 is an elevation of a veneer slicer carriage, FIG. 3 is a schematic drawing showing the temperature modifying means of the invention and FIG. 4 is a partial cross section of a veneer slicer cutting veneer.

With continued reference to the drawing slicer carriage **11** holding pressure bar **12** adjustable by push screws **13** and pull screws **14** in predetermined spaced relationship to knife **15** advances in steps to and into hot log

flitch **16**. Hot log flitch **16** held by stay log **17** raises and lowers at each advancing step aforementioned of carriage **11** holding pressure bar **12** and knife **15** thus engaging said flitch **16** and slicing veneer therefrom. While push and pull screws **13** and **14** are adjusted to maintain a semblance of straightness in pressure bar **12** as it is heated by flitch **16** or cooled by ambient temperatures by idle periods such as during the period of charging the machine or honing the knife, compression screw **18** of horizontal cap flange **19** is used to increase or decrease compression on cap flange **19** to overcome the overall bending of cap flange **19** due to changes in heat of the same. Screws **20** and **20'** advance the carriage in steps.

FIG. 2 is an elevation of carriage **11** as shown in FIG. 1 showing vertical cap flange **21** with tensioning screw **22** to adjust the cap flange **21** by exerting varying tension on the same according to its temperature to maintain a straight line horizontal relationship between pressure bar **12** and the cutting edge of knife **15**. The veneer passes in front of pressure bar **12** and behind knife **15** and over skirt **23** (see FIG. 4). Bolts **24** hold the knife in place while the carriage **11** advances on slides **25** and **25'**.

FIG. 3 is a schematic drawing showing the temperature conditioning mechanism and its relationship to various parts of a veneer slicer carriage. In elevation the carriage of the veneer slicer as shown in FIG. 2 is outlined showing vertical flange **21**, pressure bar **12** and skirt **23** which have their temperature modified by having heat conducting fluid passed therethrough.

Fluid exit line **26** passing from fluid passages **27** (FIG. 4) in flange **21**, and **28** in flange **19**, enters water circulator **29** and from thence to water cooler **30**. In a like manner fluid exit line **31** passing from fluid passages **32** (FIG. 4) in pressure bar **12** enters fluid circulator **33** and from thence to water cooler **30**. Also in like manner fluid exit line **34** passing from fluid passage **35** (FIG. 4) in skirt **23** enters fluid circulator **36** and thence into water cooler **30**. In the present example of the invention the fluid is cooled by water cooler **30** from whence it passes through line **37** to temperature warming regulator **38** to precondition said fluid to exact specifications predetermined for the optimum operation of the slicer and from said regulator **30** said fluid enters said cap flanges **21** and **19** by means of fluid line **39** and enters pressure bar **12** by means of fluid line **40** and enters skirt **23** by means of fluid line **41**. Water circulators **29**, **33** and **36** induce the flow of heat conducting fluid to, through and from cap parts **21** and **19**, pressure bar **12**, and skirt **23** respectively.

In FIGURE 4 a more detailed picture of the veneer cutting and operation is shown as well as the means of carrying unwanted heat away from the machine parts. Heated wood flitch **16** secured to stay log **17** travels up and down as indicated by arrow **42**. While it is in the up position carriage **11** moves forward as indicated by arrow **43** on slide **25** a distance equal to the thickness of the veneer **44** to be cut. The wood of flitch **16** is then forced downward between the point of pressure bar **12** and the point of veneer knife **15** and thus produces a slice of veneer **44**.

Unwanted heat such as might come from an overheated flitch is transferred from wood flitch **16** and veneer sheet **44** to cap flange **21** and **19**, nose bar **12**, and skirt **23** by conduction, convection and radiation.

Temperature regulated heat carrying fluid is forced through passages **27**, **28** by water circulator **29**, FIG. 3, through passages **32** by water circulator **33** in FIG. 3, and through passage **35** by water circulator **36**, thus carrying away excess heat (if the veneer flitch is too hot) which is dissipated in water cooler **30**, transferred to

water warmer **38** through line **37** where it is regulated to predetermined temperature before entering flanges **21** and **19** by means of line **39**, nose bar **12** by means of line **40** and skirt **23** by means of line **41** thus forming a closed circuit for repeat or continuous performance.

With this invention it is possible to place in position a knife and pressure bar in the exact desired relationship and cut veneers continuously without adjustments (except for wear) thus saving much time and work and producing considerably more veneer and of a much higher grade and more consistent quality than was formerly possible.

What is claimed is:

1. A veneer cutting machine comprising a knife, a pressure bar in spaced relation to said knife, a fluid passage in said pressure bar, a temperature regulating fluid, and means for causing said temperature regulating fluid to flow through said pressure bar whereby said pressure bar is maintained at a temperature approximately conforming to that of a heated veneer flitch to be cut.

2. A veneer cutting machine comprising a cutting knife, a pressure bar in spaced relation to said knife, a cap in spaced relation to and supporting said pressure bar, a fluid passage within said pressure bar, a fluid passage within said cap, a heated fluid means for causing flow of said fluid within said passage of said pressure bar, and means for causing flow of fluid within said passage in said cap whereby said pressure bar and said cap may be

maintained at approximately the same temperature as a heated flitch to be cut.

3. A veneer cutting machine comprising a veneer cutting knife, a skirt supporting said knife, a fluid passage within said skirt, a pressure bar, a cap supporting said pressure bar, a fluid passage within said cap, fluid heat transferring medium, means for causing flow of said fluid heat transferring medium into and out from said skirt, said pressure bar and said cap whereby said skirt, said pressure bar, and said cap may be maintained at approximately the same temperature as a heated flitch to be cut.

4. A veneer slicing machine comprising a cutting edge, a mechanism supporting said cutting edge, a control mechanism to gauge the depth of said cut, a fluid passage within said depth control mechanism heat conducting fluid flowing within said passage and means for controlling the temperature of said fluid whereby said mechanism may be maintained at approximately the same temperature as the material being sliced.

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