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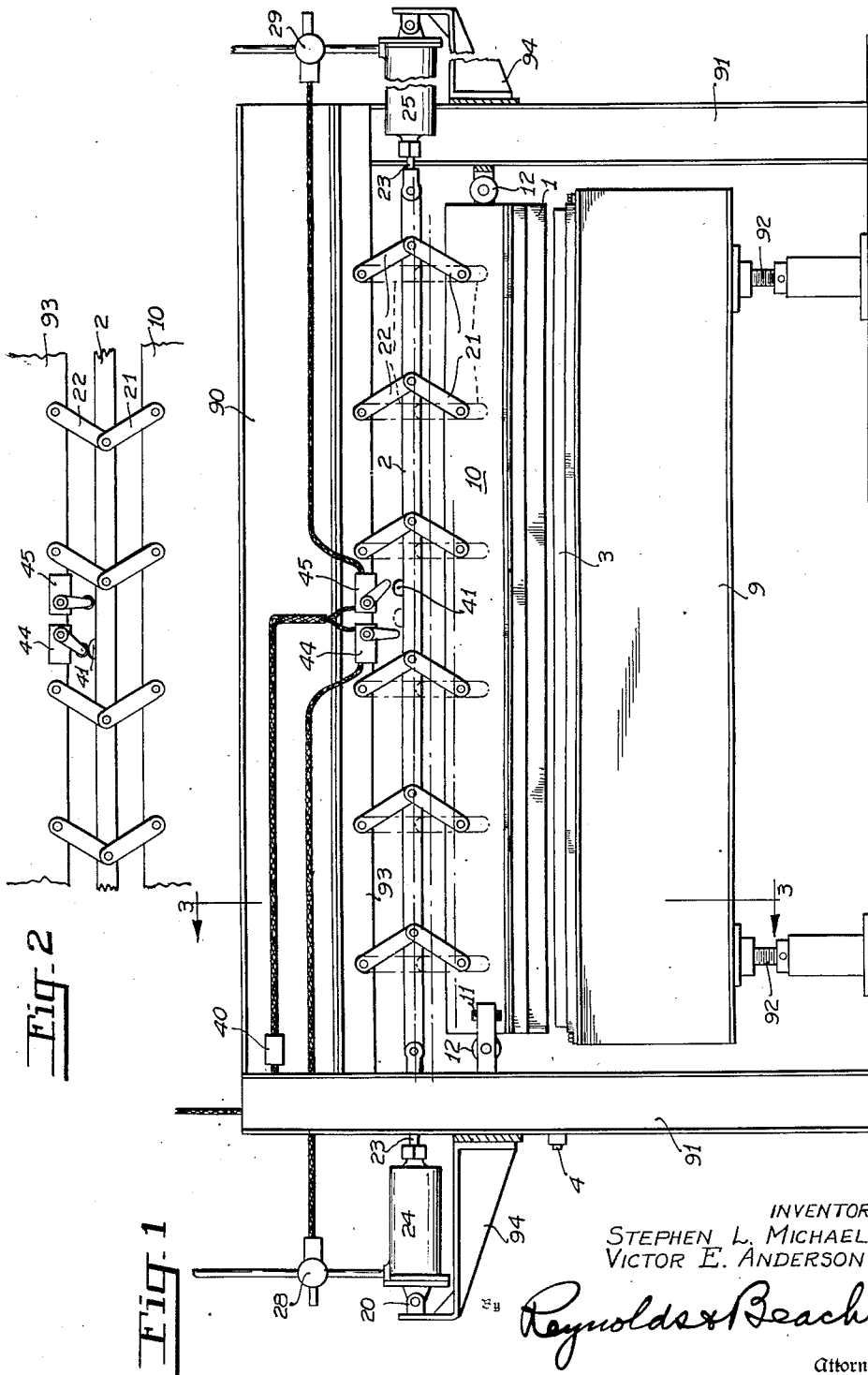
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2,532,672

VENEER CLIPPERS

Filed Dec. 18, 1946

2 Sheets-Sheet 1



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2 Sheets-Sheet 2

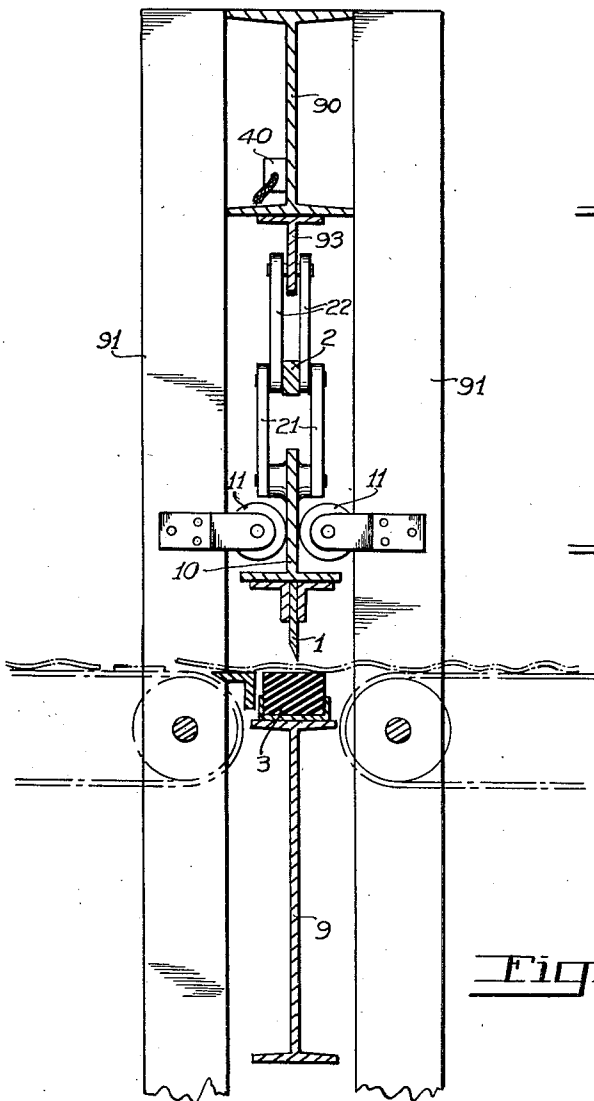


Fig. 3

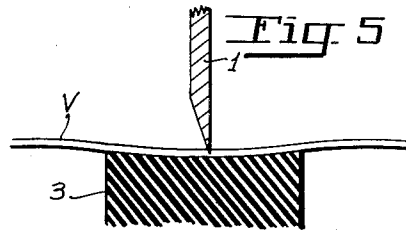


Fig. 5

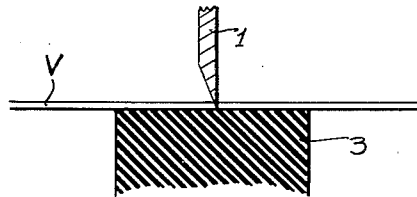


Fig. 6

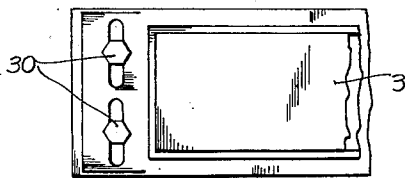


Fig. 4

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VENEER CLIPPERS

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2 Claims. (Cl. 164—47)

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The present invention relates to a veneer clipper. It is intended primarily for clipping a wood veneer sheet, while it is traveling, either to cut out defects or to clip out panel sizes from a continuous sheet. When used for cutting out defects, it will normally be manually operable, whereas for cutting panel size strips it may be automatically operable. However, the present invention is not concerned with the manner of its control, but rather with the arrangement for effecting a clean severance or clipping of the veneer while traveling, and in particular to accomplish such clipping without crushing of or injury to the fibers of the wood veneer, so that a clean, sharp cut results.

The provision of mechanism and a method to the end just mentioned is a primary object of the present invention.

The invention, however, regardless of the manner of cut which it produces, is valuable in the mechanical arrangement which permits a rapid cutting action followed by immediate retraction of the clipper knife. It is important that this contact of the knife with the traveling and relatively stiff wood veneer sheet be as brief as is possible, yet positive, in order to effect a proper cut and then retraction, and furthermore, it is important that the mechanism be always ready to clip again with a minimum of delay, so that the clipped-out portion of a defect need require only minimum wastage of material. The provision of mechanism to such ends is a further and important object of the present invention.

It is also an object of the invention to provide such mechanism which is dependable and reliable, and which, by adjustments for such wear or deformation as is likely to occur, will perform long continuous service under conditions prevailing in the normal wood veneer plant.

With these objects in mind, and others such as will appear more fully hereinafter, the invention comprises the novel machine, and the novel method, as shown in the accompanying drawings, described in this specification, and as will be more particularly pointed out by the claims which terminate the same.

In the accompanying drawings the invention is shown embodied in a typical form, such as is presently preferred by us, but it will be understood that various changes may be made in the form, character, and arrangement of the parts, within the scope of the appended claims, without departing from the spirit of this invention.

Figure 1 is a general elevation of the clipper, with the knife retracted, the point of view being

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generally in the plane of the traveling wood veneer sheet, and in the direction of its travel, and Figure 2 is a detail view showing parts in the opposite position of adjustment following a clipping operation.

Figure 3 is a general transverse section, somewhat enlarged, through the clipping machine, the line of section being indicated at 3—3 of Figure 1.

Figure 4 is a detail plan view of the support and mounting of the resilient cushion, showing the manner of its adjustment transversely of the plane of the knife.

Figures 5 and 6 are diagrams, illustrating immediately successive stages in the clipping of a sheet of wood veneer, and illustrating the manner in which the resilient resistance of the cushion effects the reaction of the cushion's upper surface against the impingement of the knife, and thereby cooperates with the knife in effecting the clipping cut.

There are various types of veneer, broadly speaking, but the present invention concerns wood veneer, and a clipper and clipping method peculiarly suited to wood veneer, hence wherever herein the term "veneer" is used without qualification, it shall be understood to mean "wood veneer," both in the specification and in the claims, and the shorter term shall be understood as a short name for the specific product "wood veneer." It is not intended to restrict the meaning further, however, for this invention is applicable to wood veneer formed of various species of wood, or manufactured from logs or cants according to different processes.

The machine generally comprises a stiff, rigid frame element 9, supported transversely of and beneath the path of advance of a wood veneer sheet. A similar frame element 93 is supported parallel to the element 9, but above the path of the veneer sheet. These elements are suitably supported, the element 90 by the end frames 91 from the floor, and the element 9 by means of jacks 92, whereby its elevation with relation to the plane of the veneer sheet is adjustable to a fine degree. By relative movement of these jacks the frame element 9 may be leveled, if required.

A knife 1 is supported, for rigidity, from a transverse bar 10, and may or may not be adjustable vertically with relation to the bar 10. This vertical adjustment of the knife or its leveling is relatively unimportant if the frame 9 be thus adjustable, or vice versa. The knife, through its supporting bar 10, is guided for movement in a vertical direction, as by the guide rollers 11 and 12, the former engaging its sides, and the latter

its ends. These guides may themselves be adjustable, although adjustment is not herein shown for these guides, but by making them adjustable the bar 10 and its supported knife 1 may be permitted very free vertical movement, yet without any appreciable play.

The knife and its bar 10 are supported from the overhead frame member 90 by means of pairs of toggle links 21, 22, of which the links 21 are pivotally mounted along the bar 10, and the links 22 are pivotally supported beneath the frame member 90, as from a T-bar 93, the web of which depends from the frame member 90 (see Figure 3). The common pivots of all the toggle links are joined by an operating rod 2 connected at its ends to the piston rods 23 of the respective single-action compressed air cylinders 24 and 25, respectively, or similar single-acting motor means. Each cylinder is pivotally mounted at 20 in a bracket 94, and each is energizable under control of its valve 28 or 29, respectively. The manner of operating these valves will be made clear hereinafter.

The blade 1 preferably has a sharp edge, as is best seen in Figures 5 and 6. This edge cooperates for clipping with a resiliently resistant member or cushion 3, which is mounted upon the upper edge of the frame member 9. This member is adjustable horizontally, transversely of the plane of the knife, by means indicated at 30 in Figure 4, for reasons which will shortly appear. The cooperative relationship between the blade 1 and the resistant member 3 is such that when the blade is brought downward to the limit of the links 21, 22—that is, when the latter are fully extended as in their dot-dash line positions of Figure 1—its sharp edge will just nicely contact the resiliently resistant upper surface of the member 3, but will not appreciably indent nor cut into the latter, when no veneer sheet is under the knife. If, however, a wood veneer sheet V is interposed between them, as would normally be the case, any downward movement of the knife's edge, impinging upon the upper surface of the veneer, will meet the resilient resistance of the member 3, of rubber or the like, and as in Figure 5, will depress and straighten out the veneer strip along the entire length of the potential cut, and will compress the surface of the resiliently resistant member, both immediately beneath the knife's edge and in parallel zones at either side thereof. The greatest depression will be in the vicinity of the knife's edge, of course.

Immediately such depression occurs, a reaction begins at the resiliently resisting surface of the member 3, and the action and reaction are in effect substantially simultaneous. By virtue of this reaction the stiff wood veneer is pressed upwardly against the knife's edge, before the latter can be withdrawn upwardly, and the effect is a quick, clean severance of the wood veneer sheet at the opposite sides of the knife's edge, with the impelling force at least partly constituted by the reaction of the resiliently resistant member, in conjunction with the downward pressure of the knife itself. Since the resilient reaction of the member 3 is general, and in proportion to the degree by which it has been depressed, which is greatest beneath the knife edge and immediately at either side thereof, the sharp, prompt reaction of the member 3 is an appreciable factor in effecting the clipping, and the resultant reaction of the wood veneer against the sharp edge of the knife makes for a clean, sharp cut, without any

crushing of the fibers of the veneer in the vicinity of this cut.

The operation just described is under control of a push button 4, placed conveniently to the clipper operator. This push button, through normally closed switches 44 and 45, alternately operable by a striker or cam 41 upon the rod 2, controls the respective solenoid valves 28 and 29, to admit air alternatively to the cylinders 24 and 25. The switches 44 and 45 are included in the circuit so that with the movement of the knife downwardly from a normal retracted, full-line position of the toggle links, into fully extended position, and then back to retracted position at the opposite side, only one cylinder will be energized, and so that that just-energized cylinder will then be cut out, and the other cylinder will be conditioned for energization. Time delay mechanism of known type may be incorporated at 40 in the system, to insure the completion of a movement in one direction, even though the switch 44 or 45 may have been deenergized prior to completion of that movement.

Briefly, then, each pressure upon the control button 4 will energize one cylinder 24 or 25 once to cause movement of the operating rod 2 and the toggle links from one retracted position through the fully extended position to the opposite retracted position, whereupon, if pressure upon the button 4 has meanwhile been relieved, the mechanism stops, but is placed in condition for reverse operation to the opposite or initial retracted position, upon subsequent pressure upon the button. Each movement of the toggle links into their extended position moves the knife 1 downwardly until its edge, if there were no veneer interposed, would just contact but not appreciably indent the member 3, and if the wood veneer sheet is interposed between the knife edge and the cushion, as in Figures 5 and 6, the veneer sheet is clipped by this rapid downward and upward movement of the knife edge and the resultant reaction of the resilient cushion 3. The movement is so rapid that there is only minute interruption to the forward advance of the veneer strip. Moreover, the operation can be repeated so promptly that even a narrow defect may be cut out from the veneer strip with minimum wastage.

The contact between the knife edge and the resiliently resistant member is so slight, even considering the rebound upwardly of the member after its depression, that the member is not deeply grooved. If after long use the groove should become troublesome, by the adjustment at 30 the member 3 can be shifted slightly to present a fresh surface beneath the knife edge.

We claim as our invention:

1. A wood veneer clipper comprising an upper and a lower rigid frame element spaced apart for passage of a wood veneer sheet therebetween, a resistance member carried by the lower frame member in position to contact and support the passing veneer sheet, a sharp-edged knife disposed above said resistance member, and guided for downward movement into contact with the resistance member, and then upward movement to clear the veneer sheet, multiple toggle links for said knife supporting the latter from the upper frame element, the links being of such length as, when fully extended, to bring the knife's edge into contact with the resistance member, an operating rod connected to the joint between all the toggle links, in common, single-acting motor means connected to the opposite ends of the operating rod to shift the links be-

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tween a retracted position at one side of their fully extended position to a similar retracted position at the opposite side, and means to energize said motor means alternatively as required.

2. A wood veneer clipper comprising an upper and a lower rigid frame element spaced apart for passage of a wood veneer sheet therebetween, a resistance member carried by the lower frame member in position to contact and support the passing veneer sheet, a sharp-edged knife disposed above said resistance member, and guided for downward movement into contact with the cushion, and then upward movement to clear the veneer sheet, multiple toggle links for said knife supporting the latter from the upper frame element, the links being of such length as, when fully extended, to bring the knife's edge into contact with the resistance member, an operating rod connected to the joint between all the toggle links, in common, single-acting motor means connected to the opposite ends of the operating rod to shift the links between a retracted position at one side of their fully extended position to a

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similar retracted position at the opposite side, a common means to energize said motor means, and means positioned to be operated by the shifting of the operating mechanism, arranged to deenergize the just-energized motor means, and to condition for operation the other motor means upon reactivation of said common energizing means.

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