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DEVICE FOR PREVENTING BENDING OF LOGS IN VENEER LATHES

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FIG. 1

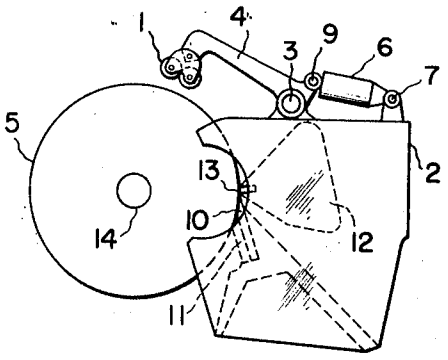


FIG. 2

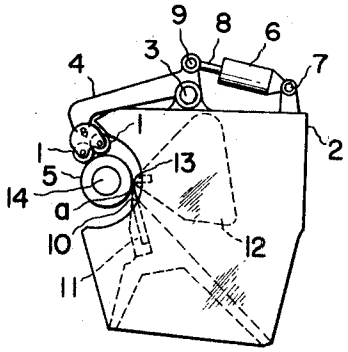
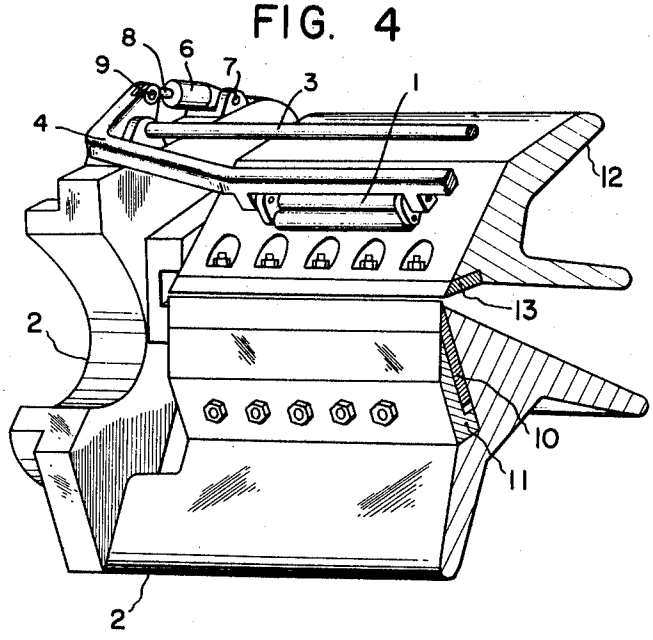


FIG. 4



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DEVICE FOR PREVENTING BENDING OF LOGS IN VENEER LATHES

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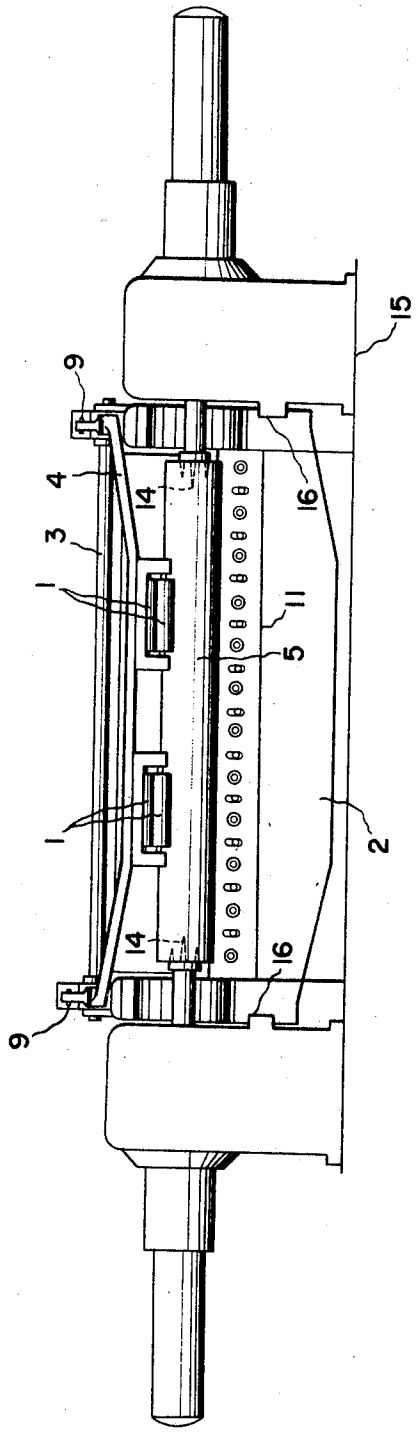


FIG. 3

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DEVICE FOR PREVENTING BENDING OF LOGS IN VENEER LATHES

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Int. Cl. B27l 5/04
U.S. Cl. 144—209 2 Claims

ABSTRACT OF THE DISCLOSURE

A promptly operatable device mounted on and moving with the feedable tool head frame of a veneer lathe instantly operates, when a log undergoing rotary cutting is reduced to a diameter tending to result in vibration deflection of the log, to press rollers against the log from the side thereof opposite the knife held by the tool head frame thereby to prevent vibration deflection of the log.

BACKGROUND OF THE INVENTION

This invention relates to veneer lathes (also known as rotary peeling machines, rotary lathes, and rotary cutters) of the type for tangentially cutting a rotating log or bolt and thereby peeling therefrom a continuous sheet of veneer. More particularly, the present invention concerns a new and improved device for preventing vibration and bending of logs being thus cut in veneer lathes.

As the peeling of a log in a veneer lathe proceeds, the log is progressively reduced in diameter and gradually develops a vibration of large amplitude and deflects in bending, whereby it becomes impossible to produce a veneer sheet of accurate uniformity.

As means for preventing this vibration bending phenomenon, a device which places pressing rollers against necessary parts of the log and another device which places an endless belt against the log surface have heretofore been used. Each of these devices, however, entails its mounting on the frame of the veneer lathe or its installation as an accessory device at the front of the veneer lathe with the result that the device tends to become an elaborate and large-scale structure.

Furthermore, the distance of movement of the device at the start of its operation is large, and the device cannot be caused to operate instantly when the vibration bending phenomenon occurs. Accordingly, the device is necessarily placed in the operational state beforehand with an ample time margin, whereby the power cost is increased. In addition, these known devices have been accompanied by several other inconveniences such as the complication of construction and the attendant increase in equipment cost due to the provision of mechanism capable of varying the position of the rollers or endless belt to follow up the reduction in diameter of the log.

SUMMARY OF THE INVENTION

It is an object of the present invention to provide a device of simple construction and operation for preventing vibration and bending of logs in veneer lathes which is not accompanied by the above described difficulties, and by which logs can be rotary cut with high accuracy to the minimum feasible diameter to produce veneer sheets of high uniformity, thereby increasing the production yield and efficiency and lowering the production costs of veneer lathes.

The present invention is based on the observation that the reduction in the diameter of the log is caused by the cutting action and accompanying advance of the knife,

that is, the advance of the tool head frame or carriage toward the log. Accordingly, by mounting the bending preventing device on the tool head frame, the device can be caused to advance together with the advance of the tool head and to operate promptly when necessary.

Therefore, in accordance with the present invention, briefly described, there is provided, in a veneer lathe comprising a feedable tool head frame holding a knife for rotary cutting a log rotated in the lathe and a device for preventing bending of the log, an improvement of the device characterized in that such device is mounted on and supported by the tool head frame without a guard edge head and includes at least one log pressing roller supported rotatably by an arm structure at the position which is approximately diametrically opposite to the part of contacting of a cutting knife with the log to be cut, an actuating means, and a pressing mechanism including the arm structure and operated by the actuating means when the log has been reduced in its diameter so as to press the roller against the log.

The nature and details of the invention will be more clearly apparent from the following detailed description with respect to a preferred embodiment of the invention when read in conjunction with the accompanying drawing, in which like parts are designated by like reference numerals.

BRIEF DESCRIPTION OF THE DRAWINGS

In the drawings:

FIG. 1 is a side elevational view showing the essential parts of an example of preferred embodiment of the device according to the invention, with the device being shown in inoperative state;

FIG. 2 is a similar side elevational view showing the device in an operative state;

FIG. 3 is an elevational view from the left-hand side of FIG. 2 showing the entire veneer lathe to which the device of the invention is applied; and

FIG. 4 is a perspective view for showing the knife holder, knife, and guard edge head for holding the guard edge.

DETAILED DESCRIPTION OF THE INVENTION

Referring to the drawing, the device constituting a preferred embodiment of the invention comprises, essentially, a plurality of log pressing rollers **1** arranged in pairs parallel to the axis of the centers **14** of a veneer lathe, a pressing arm structure **4** pivoted on a horizontal transverse shaft **3** and rotatably supporting the rollers **1** at its downwardly bent end, and a hydraulic cylinder **6** for actuating the arm structure **4** and causing the rollers **1** to contact the log **5** mounted on the centers **14**.

The transverse shaft **3** is supported on a tool head frame **2** of the veneer lathe, and the base of the hydraulic cylinder is pivoted on a pin joint **7** also supported on the tool head frame **2**. The outer end of a piston rod **8** is connected by a pin **9** to a crank arm integrally formed with the arm structure **4**. The extension of the piston rod **8** causes the arm structure **4** to swing downwardly (clockwise as viewed in FIGS. 1 and 2) thereby to bring the rollers **1** in contact with the log **5**. Conversely, the retraction of the piston rod **8** causes the rollers **1** to move away from the log **5**.

The supply of hydraulic fluid to the cylinder **6** is controlled by a control system (not shown) to cause the rollers **1**, during the operation of the device, to follow up and press against the log with a constant force. Each pair of rollers **1** is supported in a self-aligning manner so that its two rollers will contact the log **5** with substantially equal force. The dimensions and position of the device are so selected that the pairs of rollers **1** will contact the

log 5 at a part thereof which is approximately diametrically opposite position *a* of contact of a knife 10 of the veneer lathe with the log 5 when the log 5 has been reduced in diameter to a degree at which the vibration deflection phenomenon is expected to occur.

The tool head frame 2, which is of conventional design, is slidably supported at 16, 16 on a frame 15 of the veneer lathe and adjustably holds a knife holder 11 for holding the knife 10 and a guard edge head 12 for holding a guard edge 13.

The device of the above described construction and arrangement according to the invention operates in the following manner. While the log is of large diameter at the initial stage of its cutting operation, and there is no possibility of vibration deflection thereof, the arm structure 4 is maintained by the hydraulic cylinder 6 in its raised position whereby the rollers 1 are separated from the log 5 as shown in FIG. 1.

When the log 5 has been reduced in diameter, and there is a possibility of vibration deflection thereof, the hydraulic cylinder is operated to cause the arm structure 4 to descend instantly and place the rollers 1 in contact with the log 5 as shown in FIGS. 2 and 3.

Since the rollers 1 then apply a pressing force on the log 5 from the side thereof opposite the knife 10, the log 5 can be rotary cut to produce veneer sheet until the log diameter reaches the feasible minimum limit.

When this limit is reached, the arm structure is again lifted by means of the hydraulic cylinder 6 to retract the rollers 1 upwardly, and the succeeding cutting operation is carried out in the above described manner.

Since, as described above, the bending preventing device of the invention is mounted on the tool head frame of the veneer lathe and thereby follows up the receding surface of the log being cut, the pressing rollers can be caused, when necessary, to press instantly against the log. Furthermore, since the pressing rollers are operated by a hydraulic cylinder mounted on the tool head frame, control of the operation of the device can be accurately and reliably accomplished by the operation of a single system for controlling the hydraulic cylinder.

Accordingly, the construction and operation of the present device are extremely simple and inexpensive, and veneer sheets can be produced with high yield by a veneer lathe with high efficinecy and at low cost.

It should be understood, of course, that the foregoing disclosure relates to only a preferred embodiment of the invention and that it is intended to cover all changes and modifications of the example of the invention herein chosen for the purposes of the disclosure, which do not constitute departures from the spirit and scope of the invention as set forth in the appended claims.

What I claim is:

1. In a veneer lathe comprising a feedable tool head frame a knife held by said head frame for rotary cutting a log rotated in the lathe, a guard edge adjustably mounted in said head frame, and a device for preventing bending of the log, the improvement comprising means mounting and solely supporting said device on the tool head frame and including at least one log pressing roller, an arm structure rotatably supporting said at least one log pressing roller at a position located approximately diametrically opposite to the part of contacting of a cutting knife with the log to be cut, an actuating means, and a pressing mechanism including said arm structure and operated by said actuating means when said log has been reduced in its diameter so as to press the at least one log pressing roller against the log.

2. A veneer lathe comprising a frame having centers for supporting a log to be peeled, a tool head frame slidably supported by the frame for movement toward the log, a knife supported by said tool head frame for rotary cutting a log, a guard edge adjustably mounted in said tool head frame, and means for preventing the bending of the log during cutting, said bending preventing means including a plurality of pressing rollers arranged in pairs parallel to the axis of the centers, a horizontal transverse shaft supported by the tool head frame, an arm assembly pivoted on said transverse shaft and rotatably supporting said rollers at a position located approximately diametrically opposite to the part of contacting of the knife with the log, a cylinder pivotally attached to said tool head frame, a piston rod movable in said cylinder, and means operably connecting said piston rod to said arm assembly whereby extension of the piston rod swings said arm assembly and rollers downwardly to press said rollers against the log and retraction of the piston rod swings the arm assembly and rollers away from the log.

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DONALD R. SCHRAN, Primary Examiner