Sept. 6, 1927. 1,641,452

G. H. OSGOOD

DRIVEN PRESSURE BAR FOR VENEER MACHINES

Filed Aug. 11, 1926

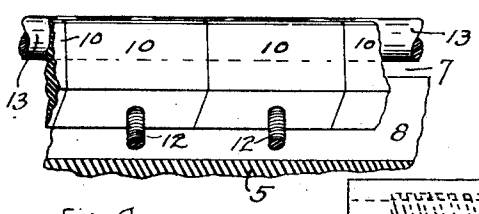


Fig. 4.

Fig. 1.

Fig. 2.

Fig. 3.

Inventor

George H. Osgood

By

Attorney

Patented Sept. 6, 1927. 1,641,452

UNITED STATES PATENT OFFICE.

GEORGE H. OSGOOD, OF TACOMA, WASHINGTON.

DRIVEN PRESSURE BAR FOR VENEER MACHINES.

Application filed August 11, 1926. Serial No. 128,628.

This invention relates to machines for cutting a sheet of veneer from a block of wood, or a log, and has special reference to the pressure bear thereof, which engages the wood at a point adjacent to but spaced from the cutting edge of the knife to prevent the splitting or breaking of the wood. The object of my invention is to improve the action of the pressure bar on the wood by causing the contact member of the bar to rotate therein, while being pressed on the block as it passes the bar, at a speed greater than a certain predetermined speed, thereby reducing the breaking of the wood fibers by the pressure bar and eliminating the delays and losses due to the accumulation of slivers and soft wood which become wedged in the space between the log and the pressure bar when a punky, soft, or rotten spot in the log is cut, and which prevent the free rotation of the said rotary contact member, unless such member is independently rotated to pass the said accumulated material away. A further object is to permit the veneer to be cut from a cold dry log, thereby preventing the spreading of the heart checks of the log to the circumference thereof and therefore producing a greater area of acceptable veneer per log-foot than can be done when the log must be steamed, the saving in this respect alone amounting in practice to a considerable amount as hereinafter shown. A further object is to provide a plurality of sets of bearing blocks which together hold the rotary contact member from falling out between them and which firmly hold it in the pressure bar and apply its pressure thereto uniformly from end to end of the log, independent of the wear of the contact member or of the said bearing blocks.

I attain these and other objects by the devices, mechanisms, and arrangements illustrated in the accompanying drawings, in which—

Fig. 1 is a cross section of my improved pressure bar mounted in a veneer lathe and showing the cooperating parts whereby the veneer is cut from the log; Fig. 2 is an elevation of the end of the rotary contact member and its auxiliary driving mechanism, showing a part broken away to reveal the construction thereof; Fig. 3 is a cross-section thereof; and Fig. 4 is a plan view of a portion of the series of bearing blocks.

Similar numerals of reference refer to similar parts throughout the several views.

Referring to the drawings, it is understood that the log 1 is rotated by suitable means and that the knife 2, mounted on a suitable carrier 3, engages the said log and is fed inwards towards the center of rotation of the log 1 by suitable mechanism in constant relation to the rotation of the log in the lathe, thereby turning a sheet of veneer 4 from the log; also, that the pressure bar 5, and all is apparatus, is also fed inward at the same rate and in constant relation to the said knife 2 and carrier 3 by suitable mechanism. The rotating and feeding means being common in the art are not illustrated herein.

One of the important characteristics of a veneer lathe to be remembered in the consideration of this invention is that the feed of the knife 2 and pressure bar 5 must be radial from the center of rotation of the log 1, and that the cutting edge of the knife 2 must lie substantially on the same radial line, else the angle that the circumference of the log makes with the knife would change with the change in the diameter of the log as it was reduced by the action of the lathe; and also it is necessary that the surface with which the pressure bar bears on the wood shall lie substantially on the same radial line and be in close and fixed relation to the cutting edge of the knife.

The pressure bar comprises a very heavy and stiff carrier 5, of general triangular shape, having one of its angles adjacent the log 1, and with two enlargements 6, one on each side of said angle, to form its nose. A cavity 7 is formed in the nose of the pressure bar and extends from end to end thereof and is adapted to receive the hereinafter described roller or contact member, which does not however touch its walls. A plurality of wide channels 8 and 9 are cut inward from the outer edge of the nose of the pressure bar 5 and extend from end to end thereof, each channel having parallel sides. When two such channels are used, as shown in the drawings, their inner or adjacent sides are made radial from the center of the rotating contact member and are substantially parallel with the corresponding sides of the triangular pressure bar 5.

A plurality of bearing blocks 10 are mounted, side by side, in the channel 8, and a plurality of bearing blocks 11 are similarly mounted in the channel 9. The

bearing blocks 10 and 11 fit snugly in their respective channels and are pressed outward therein by means of the adjusting screws 12, passing through the said enlargements 6 and entering the said channels 8 and 9. The upper corner of the front or outer end of each of the said bearing blocks 10 is cut away to form a surface substantially parallel with the front surface of the upper enlargement 6 and at a small receding angle with the adjacent surface of the log 1, while the lower corner thereof is grooved to fit the surface of the cylindical rotary contact member held thereby. Also the lower corner of the front or outer end of each of the bearing blocks 11 is cut away to form a surface substantially parallel with the lower front surface of the lower enlargement 6 while the upper corner thereof is grooved to fit the surface of the cylindrical rolling contact member held thereby. The two said blocks 10 and 11 envelop a large portion of the circumference of the rolling contact member, their outer edges being separated about one right-angle apart and their inner edges being about forty-five degrees apart. Thus it will be seen that the said contact member cannot fall out through the space between the outer edges of the respective bearing blocks, when disengaged from the log, and that the pressure derived from the carrier 5 by means of the adjusting screws 12 is transmitted through the several blocks 10 and 11 to the rolling contact member.

The above-mentioned contact member comprises a cylindrical roller bar 13, extending from end to end of the pressure bar and supported throughout its length by means of the plurality of series of bearing blocks 10 and 11, within the cavity 7 in the nose of the carrier 5 but out of contact with the walls of said cavity. The diameter of this roller bar 13 is comparatively small, being preferably less than one inch. The cutting edge of the knife 2 is positioned, relatively to the center and circumference of the bar 13, such that the rear surface of the cutting edge is substantially tangential to the radial line drawn thereto from the center of the said roller 13, and therefore, since the diameter of the roller bar is small, the sheet of veneer 4, which is being peeled off the log 1, is permitted to leave the back surface of the knife 2 almost at once and yet permits the said knife 2 to be of substantial thickness. This small diameter of the roller bar 13 is very important in the practical working out of such a machine as it is found that if the diameter is increased but slightly either the knife must be made too thin in order to bring its cutting edge in line with the pressure and its rear surface tangential to the roller, or, the roller must be moved upward and would press the log too far away from the cutting edge of the knife to produce satisfactory veneer. Also since the roller bar 13 is of small diameter and the pressure comes in proper relation to the knife, the wood is not overstrained by the cutting action and it is thus possible to cut cold logs therewith. This fact results in a large saving in that is eliminates the necessity of steaming or boiling the logs for many hours, thus saving the time and expense incident thereto and improving the conditions of labor, but it also results in a greater production of satisfactory veneer because the "heart check", usually present in the core of the log, spreads to the circumference of the log under the action of the steam or hot water, and this results in a considerable loss in trimming the edges of the checked veneer, in fact where it was possible to produce 1.52 square feet of three-ply 3/8" paneling per log-foot from a steamed log, it is now possible to produce 2.05 square feet from a cold log, an increase of output of about 35% with a decrease in expense of production.

The roller bar 13 is rotated by means of the friction between it and the surface of the log against which it is pressed and therefore rotates with a substantially equal peripheral speed as that of the log. However, as above described, it is backed by means of bearing blocks 10 and 11, which extend along its entire length, and the friction thereof tends to retard the rotation of the said bar. Under ordinary conditions, that is to say when the portion of the log being cut is good, the driving friction is greater than the retarding friction, especially if said blocks are made of a metal whose coefficient of friction with the roller bar is low, and the bar 13 is therefore rotated. But unfortunately ideal conditions are not found in every log and, if a portion of the log contains soft, punky, or rotten spots, then the driving friction thereof is greatly reduced and becomes less than the retarding friction of the bearing blocks, with the result that the bar 13 no longer rotates. This causes some of the said soft wood to pile up and become wedged between the log and the block 10 or the enlargement 6 of the pressure bar itself and this in turn necessitates a stoppage of the lathe and the clearing of the said accumulated matter from in front of the pressure bar. A similar condition is present when a sliver accidently breaks away and is wedged between the log and the pressure bar. In order to overcome this condition I have provided an auxiliary driving means for the said roller bar 13 whereby, when conditions are normal said auxiliary drive is ineffective but, as soon as the speed of rotation of the bar 13 due to the log friction, falls below a certain predetermined amount, then the said auxiliary ap-

paratus drives the roller bar at such minimum speed and thus forces all the slivers and other accumulated matter to pass the roller. This action therefore largely reduces the number of times that the lathe must be stopped for clearing the wood from the pressure bar and greatly increases the efficiency of the plant as it permits a more nearly continuous operation of the lathe than could formerly be attained. This apparatus comprises a suitable driving means, which may be the lathe itself or, as illustrated, an additional motor 14 mounted on the end of the pressure bar 5 and actuating a suitable gear 15, over which a chain or belt 16 passes, said chain 16 driving a similar gear 17 loosely mounted on the said roller bar 13. A ratchet mechanism is interposed (Figs. 2 and 3) either between the roller bar 13 and the gear 17, as shown, or between the motor 14 and the gear 15, in which latter case the gear 17 would be fixedly mounted on the roller bar 13. This ratchet mechanism, as illustrated, comprises a series of ratchet teeth 18 cut in the bar 13 and a ratchet dog 19 mounted in the loose driven gear 17 and thrown into contact with the teeth 18 by the spring 20. It is evident that if the roller bar 13 is rotated by the friction of the log faster than the gear 17 rotates the ratchet dog 19 simply slides relatively backward over the teeth 18, but as soon as the gear 17 turns faster than the roller bar 13, then the dog 19 engages one of the teeth 18 and turns the said roller bar 13 at the same rate. Thus this mechanism therefore prevents stoppage of the roller bar 13 so long as the driving means is operated, and prevents the formation of a wedge of wood between the log and the pressure bar. If the speed of the gear 17 is adjusted to be about equal to that of the roller bar 13 when the diameter of the log is reduced to the limit at which the lathe can cut, then the speed of the roller bar 13 will normally be greater than that of the gear 17 for all diameters of the log greater than such minimum diameter, and such auxiliary driving mechanism will be ineffective except when bad spots are reached in the log as above outlined.

Having, therefore, described my invention, what I claim is:—

1. A veneer lathe pressure bar comprising a strain-carrying member fed in fixed relation to the surface of the log in the lathe; a cylindrical roller bar mounted in said strain-carrying member and adapted to apply pressure on the log at a point adjacent the cutting edge of the lathe knife, said roller bar being adapted to turn freely on its axis under the action of the friction between it and the log; and means adapted to rotate said roller bar when its speed of rotation falls below a predetermined rate.

2. A veneer lathe pressure bar comprising a strain-carrying member fed in fixed relation to the surface of the log in the lathe; bearing blocks mounted in said strain-carrying member and each having a cylindrically concave groove at its outer end; a cylindrical roller bar mounted between said bearing blocks and held thereby in said grooves and adapted to apply pressure on the log at a point adjacent the cutting edge of the lathe knife, said roller bar being adapted to turn freely on its axis in said bearing blocks under the action of the friction between it and the log; and means adapted to rotate said roller bar when its speed of rotation falls below a predetermined rate.

3. A veneer lathe pressure bar as set forth in claim 2, wherein said bearing blocks are movable in said strain-carrying member, together with adjustable means interposed between each of said bearing blocks and said strain-carrying member whereby the position of each said block may be adjusted.

4. A veneer lathe pressure bar as set forth in claim 2, wherein each said bearing block subtends an arc of less than two right-angles of said roller bar, and wherein the outer edges of said bearing blocks are separated by less than two right-angles whereby the said roller bar is held in the blocks when disengaged from the log.

5. A veneer lathe pressure bar as set forth in claim 2, wherein said roller bar rotating means comprises a wheel driven at a predetermined minimum rate of rotation, together with ratchet means interposed between said wheel and said roller bar whereby, when the roller bar turns faster than said wheel, said rotating means is ineffective, and whereby, when said roller bar tends to turn at a slower rate than said wheel, said ratchet means becomes engaged and turns the roller bar at the same rate as said wheel.

GEORGE H. OSGOOD.