Dec. 7, 1965 M. M. WHIPPLE 3,221,786

VENEER LATHE

Filed Oct. 1, 1962 2 Sheets-Sheet 1

FIG. 1

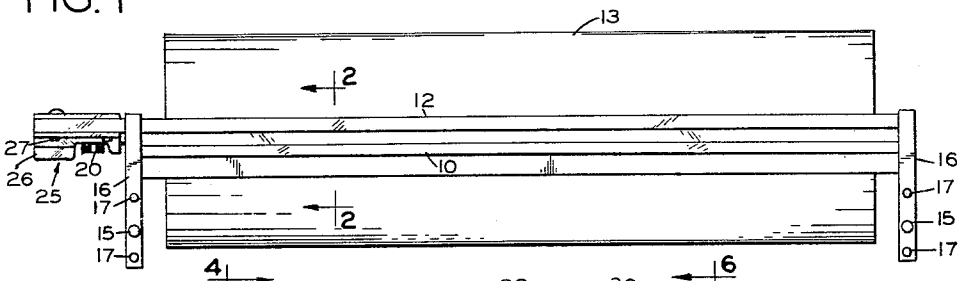


FIG. 3

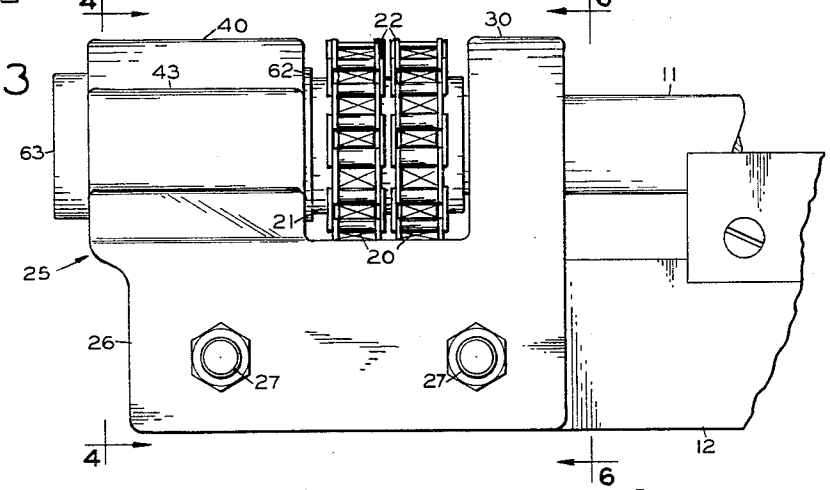


FIG. 4

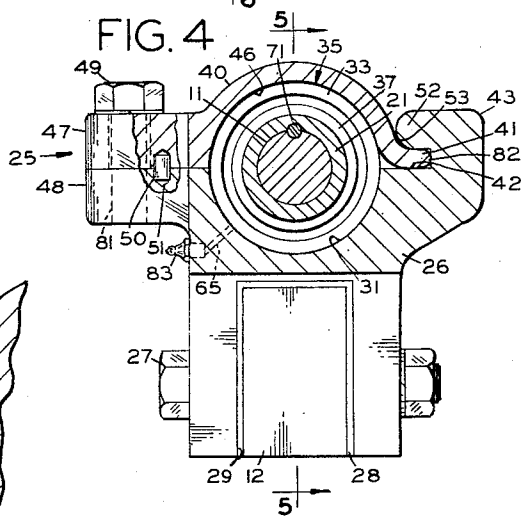
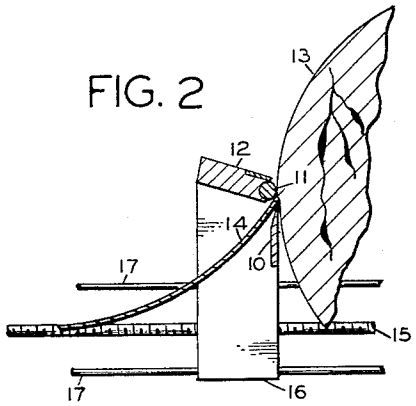


FIG. 2



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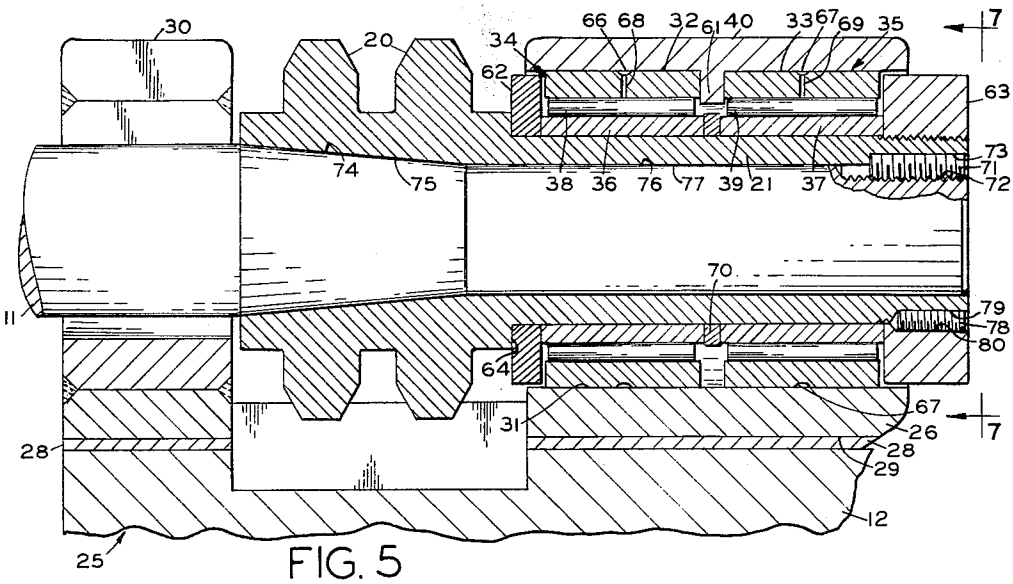


FIG. 5

FIG. 6

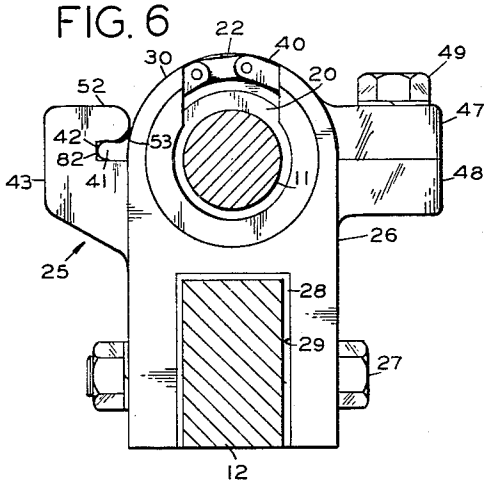


FIG. 7

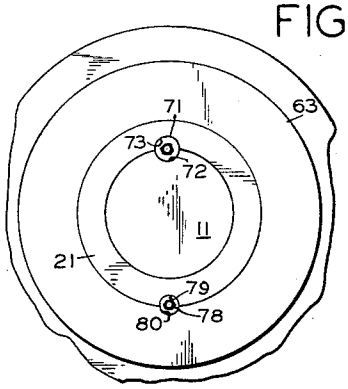
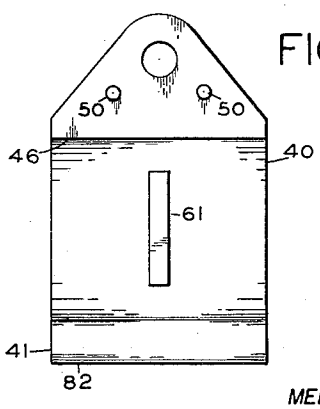


FIG. 8



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VENEER LATHE

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4 Claims. (Cl. 144—209)

This invention relates to a veneer lathe and more particularly to a pressure roll device of a veneer lathe.

In veneer lathes known hitherto of the type having a headstock and a tailstock holding a log and rotating the log together with a knife extending along the periphery of the log for cutting a veneer sheet from the log and a pressure roll supported by a strongback, the pressure roll has been mounted in a shaft at the tailstock end of the lathe with the shaft supported in a pair of longitudinally spaced bearings with sprockets keyed to the shaft positioned between the bearings and driven by a chain of the drive of the veneer lathe. The bearings of the shaft are sometimes struck and damaged by the tailstock when the knife and the bearings are moved in too close to the tailstock structure as the diameter of the logs being cut into veneer reaches the minimum. This is particularly true of the bearing nearer to the end of the log. When the bearing holders are so damaged, it is essential to replace the bearings and also, on occasion, the bearing holders. With the prior art structures this has been very difficult and time consuming, and downtime for a veneer lathe, which requires a large capital outlay, together with the labor wasted, make the repair and maintenance very expensive. Another problem encountered in the prior art veneer lathes is that the shaft driving the pressure roll has been provided with a rather complex collet structure for gripping the pressure roller and it has been almost impossible to tighten the collet structure sufficiently to prevent slippage of the pressure roll relative to the collet. Such slippage causes the pressure roll to wear into the shaft and freeze thereto, which makes it very difficult to separate the pressure roll from the drive shaft when this becomes necessary.

An object of the invention is to provide a new and improved veneer lathe.

A further object of the invention is to provide bearing structure of a pressure roll of a veneer lathe which may be quickly replaced.

Another object of the invention is to provide a bearing structure of a pressure roll of a veneer lathe which is less likely to be damaged during use thereof.

Another object of the invention is to provide a drive shaft and pressure roll of a veneer lathe in which the drive shaft and pressure roll do not slip and may be easily separated from each other.

A veneer lathe illustrating certain features of the invention may include a quick-releasable bearing holder holding a bearing for a shaft serving to drive a pressure roll with driving sprockets keyed to the driving shaft. The bearing holder may comprise a split clamp having a removable segment provided with a projecting portion designed to fit into a slot in the other segment of the bearing holder, and also is provided with a flange which may be bolted to the other part of the bearing holder. The drive shaft may be provided with a sharply tapered recess and the pressure roll may be of complementary configuration to fit closely in the drive shaft together with means for keying the drive shaft to the pressure roll.

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A complete understanding of the invention may be obtained from the following detailed description of a veneer lathe forming a specific embodiment thereof, when read in conjunction with the appended drawings, in which:

FIG. 1 is a fragmentary front elevation view of a veneer lathe forming one embodiment of the invention;

FIG. 2 is an enlarged vertical section taken along line 2—2 of FIG. 1 and illustrating a cutting knife, a pressure roll and a strongback in operative positions for cutting a veneer strip from a log;

FIG. 3 is an enlarged, fragmentary top plan view of a bearing and drive construction of the pressure roll of the lathe of FIG. 1;

FIG. 4 is an enlarged partial sectional view taken along line 4—4 of FIG. 3 and turned 90°;

FIG. 5 is an enlarged horizontal section of the bearing support and drive structure of the veneer lathe of FIG. 1 taken along line 5—5 of FIG. 4;

FIG. 6 is an enlarged vertical section taken along line 6—6 of FIG. 3 and turned 90°;

FIG. 7 is an end view of the bearing and drive structure of the lathe taken along line 7—7 of FIG. 5; and

FIG. 8 is an enlarged bottom plan view of a bearing retaining clamp of the bearing structure of the lathe of FIG. 1.

Referring now in detail to the drawings, the veneer lathe shown therein includes a knife **10** (FIG. 2), a pressure roll **11** and a strongback **12** supporting the pressure roll, which are all moved together inwardly relative to a log **13** as a strip or sheet of veneer **14** is cut from the log. The pressure roll **11** acts as a gauge, and facilitates cutting the strip **14** from the log. During the slicing operation, the strongback, pressure roll and knife are moved radially inwardly relative to the log by feed screws **15** (FIGS. 1 and 2) and carriage members **16** slidable on guides **17** as is well known in the veneer lathe art. The pressure roll **11** is driven by a tubular shaft **21** (FIGS. 3 and 5) keyed to the roll **11**, and chains **22** driven by well known driving structure (not shown) of the veneer lathe rotate the shaft through sprockets **20** integral with the shaft **21**. The log **13** is held by headstock and tailstock devices (not shown) of the lathe which are well known in the veneer lathe art, the tailstock device being located at the left-hand end of the log **13**, as viewed in FIG. 1.

A bearing holder **25** for the drive end of the pressure roll **11** includes a frame **26** mounted rigidly on one end of the strongback **12** by bolts **27** (FIGS. 3 and 4) and Babbitt metal **28** cast in a slot **29** in the frame and around the strongback **12**. The frame has a U-shaped guard **30** projecting toward the tailstock of the lathe to protect the sprockets **20** and the pressure roll **11** from damage. The frame **26** also has an elongated, bearing-mounting, semi-cylindrical groove or recess **31** (FIGS. 4 and 5) receiving outer races **32** and **33** of roller bearings **34** and **35**, respectively. The roller bearings **34** and **35** also have, respectively, inner races **36** and **37** and rollers **38** and **39**.

A clamp or holding segment **40** (FIGS. 4 and 8) has a mounting flange **41** designed to fit into a retaining slot **42** in retaining flange portion **43** of the frame **26**. The clamp has a generally semi-cylindrical groove or recess **46** and a clamping flange **47** adapted to be clamped against a flange **48** of the frame **26** by a cap screw **49**. Dowel pins **50** fixed to the clamp and projecting into bores **51** precisely locate the clamp **40** on the frame **26**.

Overhanging retaining lip 52 of the frame has a rounded portion 53 to permit the flange 41 to be easily inserted into the slot 42 and pivoted relative to the frame.

The bearings 34 and 35 (FIG. 5) are separated by an arcuate rib 61 on the clamp 40, and the rib together with a stop washer 62 and a nut or collar 63 limit end movement of outer races 32 and 33. The rib 61, the outer races, nut and washer 62 also limit endwise movement of the hollow shaft 21 relative to the frame 26, the washer 62 abutting shoulder 64 and the nut 63 being threaded on the end of the shaft 21. The inner races 36 and 37 are clamped between the nut 63 and the washer 62 with a spacer washer 70 therebetween. The bearings 34 and 35 are lubricated by lubricant forced through a fitting 83 (FIG. 4), a passage 65, annular grooves 66 and 67 (FIG. 5) and radial holes 68 and 69.

To positively key the pressure roll 11 to the shaft 21 and facilitate assembly and disassembly of the roll 11 and shaft 21, there is provided, as best shown in FIG. 7, a keying and pull-up screw 71 threaded into a tapped groove 72 in the roll and abutting the end of an untapped groove 73 in the shaft 21. The screw 71 is rotated to pull a sharply tapered portion 74 of the roll 11 snugly against a complementary tapered portion 75 of the hollow shaft 21, the grooves 72 and 73 extending parallel to the longitudinal axis of the roll and shaft. A reduced diameter portion 76 of the roll fits closely but slidably in a reduced diameter bore 77 in the shaft. A keying screw 78 is threaded into a tapped bore formed by tapped grooves 79 and 80 in the shaft 21 and nut 63, respectively, and keys the nut 63 to the shaft 21. The roll 11 may be easily removed from the shaft 21 merely by unscrewing the screw 71 out of the grooves 72 and 73 and tapping the right-hand end of the roll 11, as viewed in FIG. 5.

To remove the shaft 21 and bearings 34 and 35 from the bearing holder 25, it is only necessary to unscrew the screw 49 (FIG. 4) from tapped bore 81 in the flange 48 of the frame and swing the clamp 40 clockwise around the rounded edge portion 53 of the retaining lip 52, a rounded edge portion 82 of the flange 41 facilitating this swinging movement. The bearings 34 and 35 may then be moved laterally out of the frame 26. The bearings and shaft may be reassembled in the bearing holder by placing the bearings and shaft in the frame, swinging the clamp 40 closed and tightening the screw 49.

The above-described construction provides very fast assembly and disassembly of the pressure roll, shaft 21 and bearings 34 and 35 relative to each other and relative to the bearing holder 25. Consequently, there is a minimum of downtime of the lathe for repair and maintenance. Also, the guard 30 protects the bearing and drive structure. Further, the clamp 40 may be quickly and inexpensively replaced if it is ever smashed or bent by an accident. This is an important feature since the clamp 40 is closest to the tailstock and protects the other parts of the bearing device.

It is to be understood that the above-described arrangements are simply illustrative of the application of the principles of the invention. Numerous other arrangements may be readily devised by those skilled in the art which will embody the principles of the invention and fall within the spirit and scope thereof.

What is claimed is:

1. In a veneer lathe including a strongback, the improvement comprising,

a quick-releasable, split bearing holder mounted rigidly on one end of the strongback,

tubular radial-and-thrust bearing means removably mounted in the bearing holder,

a shaft having a shank portion fixed in the bearing means and a sprocket portion at one end thereof positioned beyond one end of the bearing means,

the shaft also being provided with an axial passage therethrough having a first end portion of a predetermined cross-sectional size at said one end thereof, a second portion at the other end thereof of less than said predetermined cross-sectional size and extending at least substantially coextensively with the bearing means, and a short tapered portion joining the first end portion and the second portion,

a pressure roll having a first portion fitting closely into the first end portion of the passage, a second end portion fitting closely into the second portion of the shaft, and a short tapered portion fitting closely in the tapered portion of the passage,

the second, end portion of the pressure roll being threaded and extending beyond the bearing means,

and nut means screwed onto the threaded end portion of the pressure roll and engaging an end of the shaft and pulling the pressure roll tightly into the shaft,

the pressure roll and the shaft being keyed together.

2. In a veneer lathe including a strongback having a groove therein facing in a predetermined direction and a pressure roll rotatably mounted in the groove,

a frame mounted on the strongback and having a groove therein facing in said predetermined direction and also having a slot positioned at one edge of the groove and having a rounded, overhanging retainer portion,

a clamp having a groove therein and having a flange at one side edge of the groove therein adapted to be received in and fitting closely in the slot,

releasable fastener means securing to the frame the portion of the clamp at the other side edge of the groove in the frame,

bearing means fitting into the grooves in the frame and the clamp,

shaft means supported by the bearing means and keyed to the pressure roll,

end thrust bearing structure holding the bearing means in the grooves in the frame and the clamp,

and end thrust means holding the shaft in the bearing means,

the retainer portion and the flange serving to permit the clamp to be pivoted to an open position relative to the frame sufficiently to permit the bearing means to be moved laterally out of the groove in the frame.

3. In a veneer lathe including a strongback having a groove facing in a predetermined direction, and a pressure roll in the groove in the strongback and extending along the strongback,

the improvement comprising a sprocket,

a sprocket shaft keyed to the sprocket,

means locking the pressure roll to the shaft,

radial-and-thrust bearing means journaling the portion of the shaft at one side of the sprocket,

a frame movable with the strongback having a groove therein receiving the bearing means and facing in said direction,

a quick-releasable clamp hinged to the frame for clamping the bearing means in the groove in the frame,

and a U-shaped guard positioned on the frame on the side of the sprocket opposite to that at which the bearing means is positioned and projecting beyond the periphery of the sprocket,

the U-shaped guard opening in the same direction as the grooves in the frame and the strongback and bracketing the pressure roll and permitting lateral movement of the pressure roll therefrom.

4. In a veneer lathe including a strongback having a groove facing in a predetermined direction and a pressure roll supported in the groove in the strongback,

a shaft having a sprocket thereon and detachably connected to one end of the pressure roll at one side of the sprocket and a mounting portion extending from the other side of the sprocket,

radial-and-thrust bearing means supporting the mounting portion of the shaft,

and frame means detachably mounted on the strongback at said end of the pressure roll and including quick-releasable split-bearing-holding means adapted to clamp the bearing means and opening in the same direction as the groove in the strongback and a U-shaped guard spaced axially from the bearing-holding means receiving and permitting lateral movement therefrom of the pressure roll,

the U-shaped guard being positioned on the opposite side of the sprocket from the bearing-holding means and opening in the same direction as the groove in the strongback,

the bearing-holding means and the U-shaped guard permitting lateral movement as a unit of the pressure roll, the shaft and the bearing means from the frame when the bearing-holding means is in a releasing condition thereof.

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