Nov. 17, 1953 J. T. LATIMER 2,659,401

PRESSURE BAR SUPPORT FOR VENEER LATHES

Filed Aug. 24, 1950 3 Sheets-Sheet 1

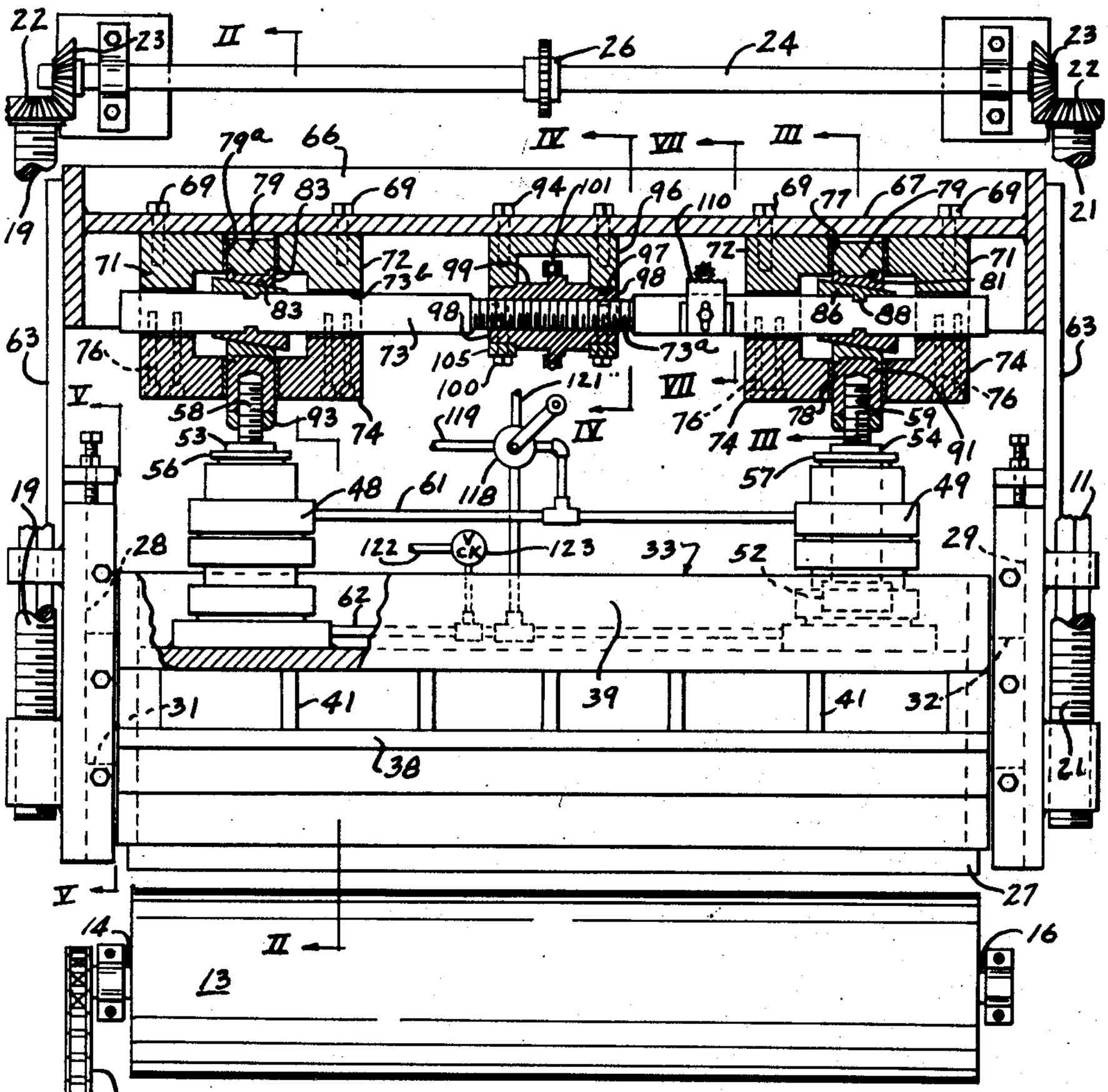

Fig. 1

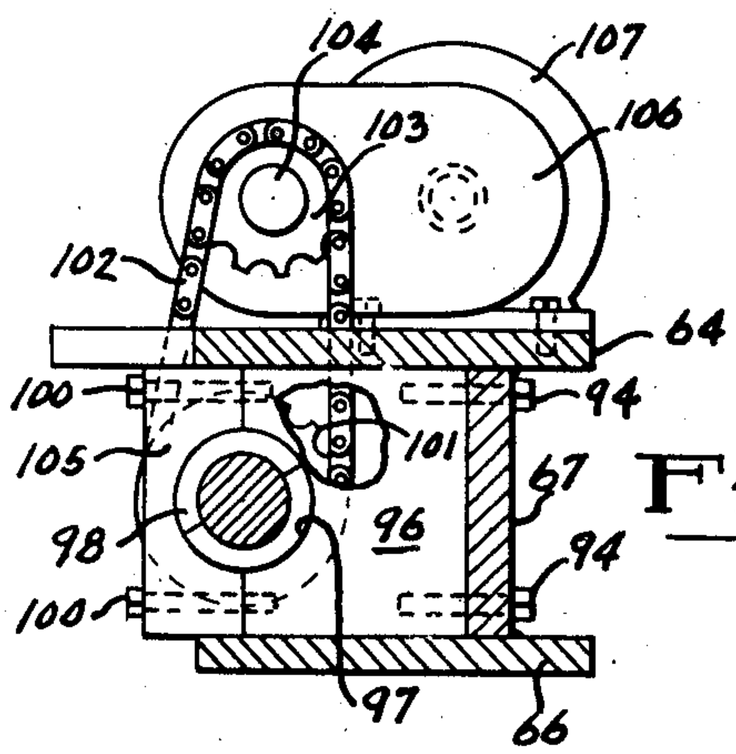

Fig. 4

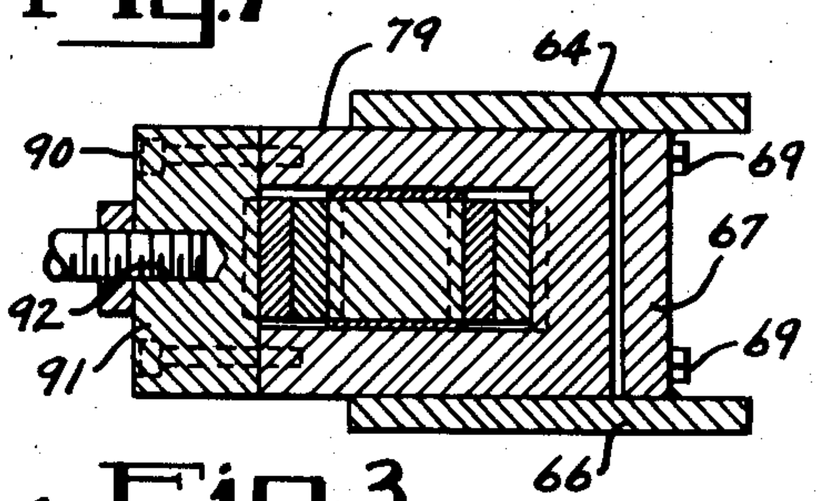

Fig. 3

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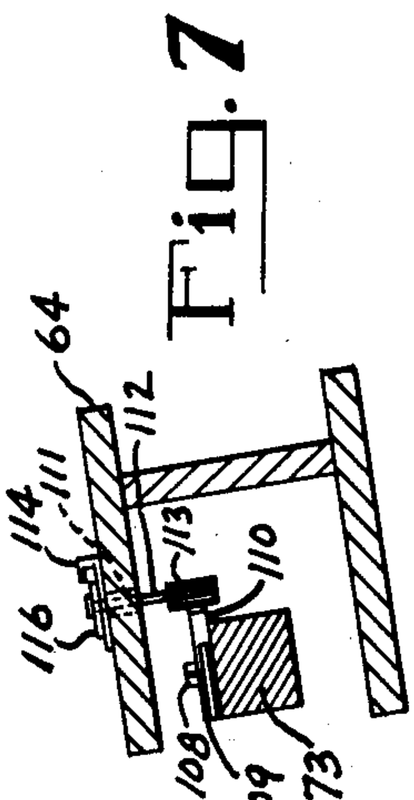

Fig. 6

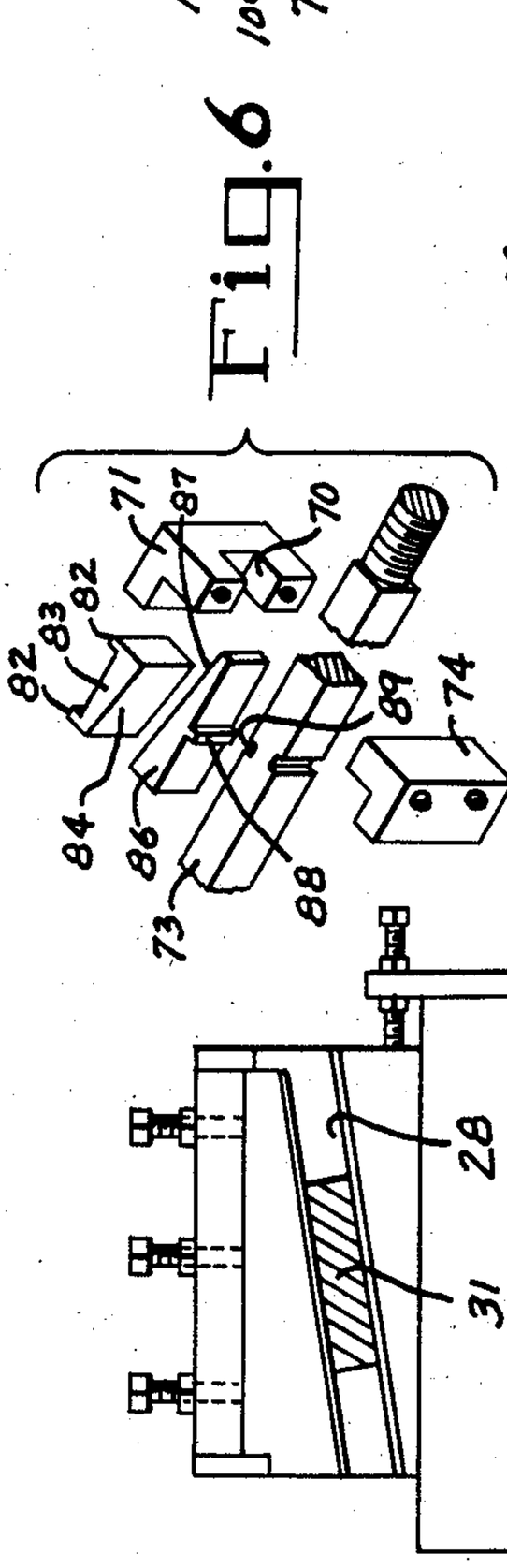

Fig. 5

Fig. 7

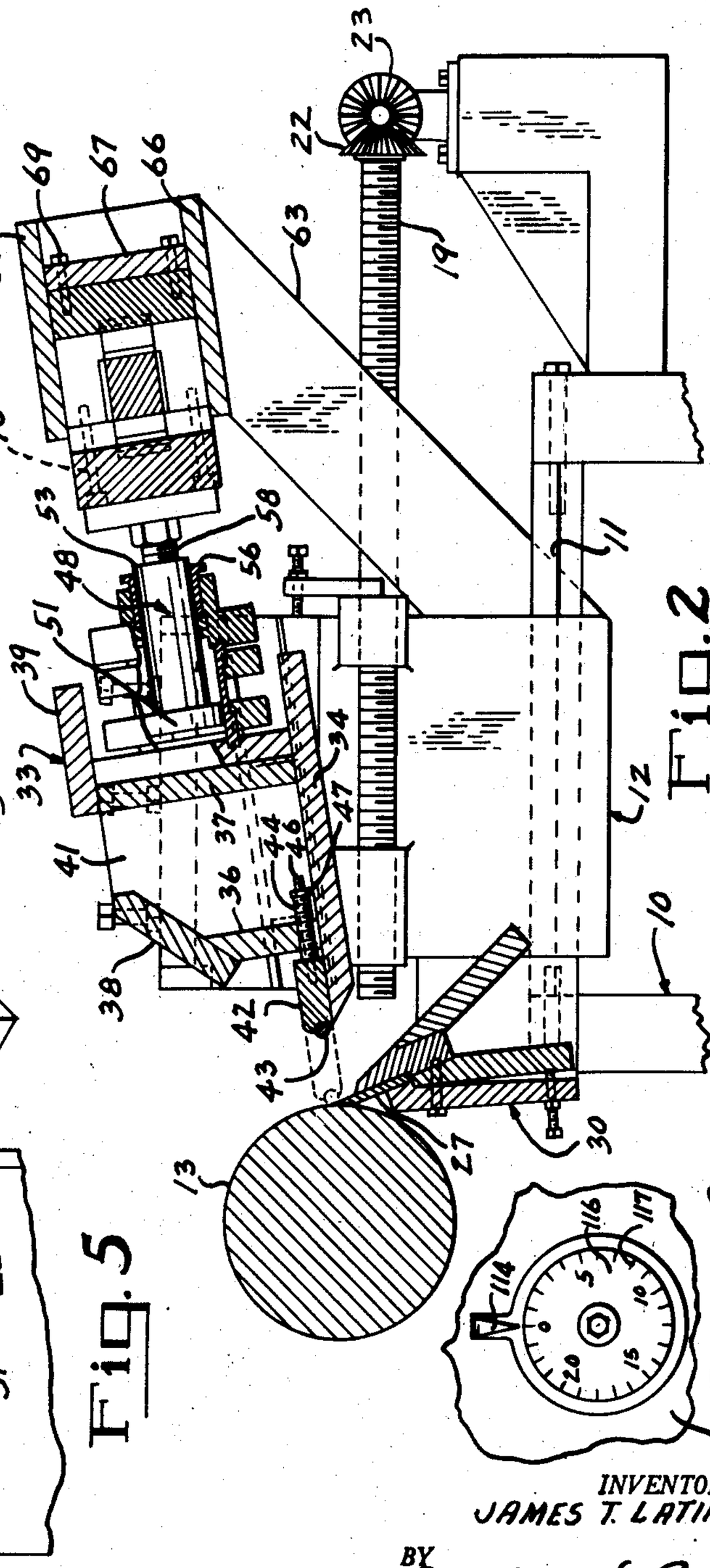

Fig. 4

Fig. 8

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PRESSURE BAR SUPPORT FOR VENEER LATHES

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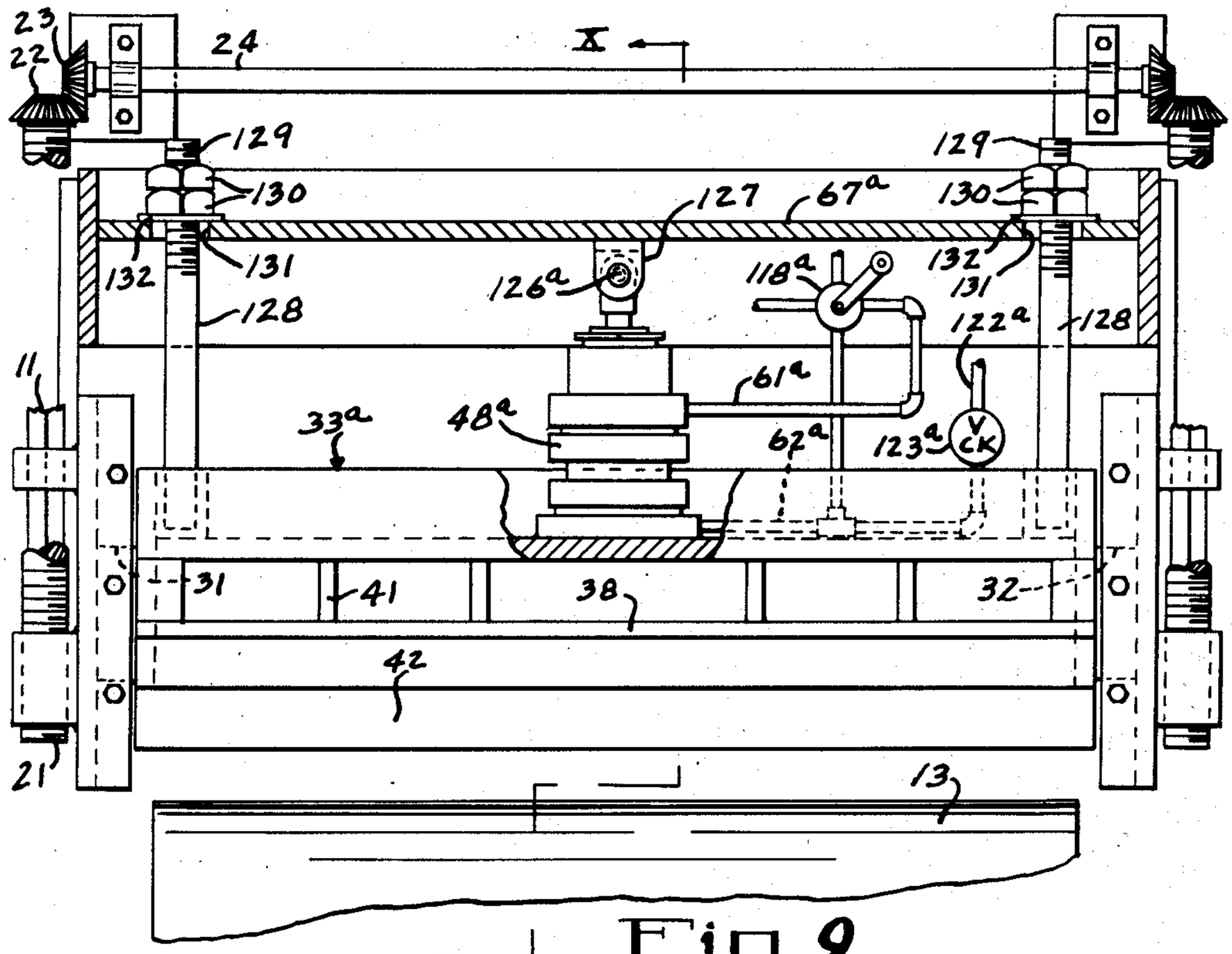

Fig. 9

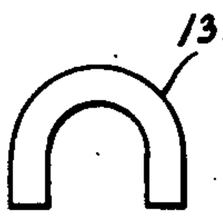

Fig. 11

Fig. 10

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2,659,401

PRESSURE BAR SUPPORT FOR VENEER LATHES

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Application August 24, 1950, Serial No. 181,295

6 Claims. (Cl. 144—213)

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My present invention relates to an adjustable support for the pressure bar of veneer lathes and the like and has for an object the provision of apparatus of the character designated by means of which the pressure bar may be withdrawn from the log, permitting the knife of the lathe to true up the log prior to commencing the cutting of veneer therefrom, and which may also be provided with mechanism affording micrometric adjustment of the pressure bar relative to the log.

Another object is to provide a quick and positively acting means for moving the pressure bar toward and away from the log in combination with the above mentioned micrometric adjusting means, permitting the pressure bar to be quickly and accurately set to its work, the apparatus being so arranged that withdrawing of the pressure bar does not disturb the setting of the pressure bar when the carriage is again moved toward the log.

A more specific object is to provide a fluid pressure cylinder for moving the pressure bar supporting means and hence the bar itself toward and from the log, and to operatively mount the micrometric bar adjusting means on the support, simplifying the apparatus and assuring positiveness of operation.

Another object is to provide, in a veneer lathe or the like having a pressure bar supporting carriage, rugged, accurate and simple means to move and hold the carriage with the pressure bar thereof in engagement with the log, such means being in the form of oppositely disposed wedge blocks secured to a common axially movable member and cooperating with complementary stationary wedge blocks, together with means to move said member axially, whereby the pressure bar is engaged with a log in the lathe with very high, accurately determinable pressures which are equal throughout its length.

In the art to which this invention relates it is well known that the quality of veneer cut in a lathe depends in great measure upon the degree of pressure with which the pressure bar engages the log. While so far as I am aware, the exact values of these pressures are not known it is known that they are exceedingly high in the cutting of certain thicknesses of veneer from certain kinds of logs. In all instances the engaging pressure should be equally applied to the log at the correct point relative to the knife, and as stated, these pressures are for the most part very high. Heretofore, many forms of adjusting means for the pressure bar have been tried. Those with

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which I am familiar have embodied threaded rods with gears for rotating them in synchronism, rotatable eccentrics and the like. Such apparatus has the disadvantages, among others, of inaccuracy, uneven application of pressure, excessive wear, high cost and susceptibility to mechanical failure due to the high stresses on the parts. Further, in the prior art apparatus the mechanism for retracting the pressure bar has been generally unsatisfactory for some of the reasons above mentioned.

Briefly, in my invention I mount the pressure bar carriage for sliding movement on ways in very much the normal manner. To the rear side of the carriage I fixedly mounted one or more heavy, double acting fluid pressure cylinders. The piston rod or rods of the cylinders carry members reciprocably mounted in supporting housings, the members having a tapered side. Cooperating with the tapered sides of the members are complementarily tapered wedges, keyed to an axially movable shaft. The shaft is provided with a threaded portion, preferably, though not necessarily near its longitudinal center and carrying an operating nut held against axial movement by a suitable mounting. When pressure is admitted to the forward side of the piston, the cylinder and hence the pressure bar support move toward the log until the piston comes chock-a-block in the cylinder. By moving the shaft axially I am enabled to move the pressure bar toward or from the log an infinitely small or an appreciable amount depending solely upon the taper of the wedges and the total axial movement of the shaft. The pressure bar carriage may be moved away from the log by admitting pressure to the other ends of the cylinders, this being accomplished without in any way interfering with the micrometric adjustment of the pressure bar mechanism.

Apparatus embodying the features of my invention is shown in the accompanying drawing forming a part of this application in which:

Fig. 1 is a sectional plan view, somewhat diagrammatic and with certain parts broken away and showing a veneer lathe embodying my invention;

Fig. 2 is a sectional view taken generally along line II—II of Fig. 1;

Fig. 3 is a detail sectional view taken generally along line III—III of Fig. 1;

Fig. 4 is a sectional view taken along line IV—IV of Fig. 1;

Fig. 5 is a sectional view taken along line V—V of Fig. 1;

Fig. 6 is a fragmental sectional exploded perspective view showing the axially movable shaft, certain of the supporting bearing blocks therefor and one of the wedges and cooperating blocks;

Fig. 7 is an enlarged detailed sectional view taken generally along line VII—VII of Fig. 1;

Fig. 8 is a fragmental plan view of the pressure bar indicator dial and pointer;

Fig. 9 is a view corresponding generally to Fig. 1 and showing a modified form of my invention;

Fig. 10 is a sectional view taken generally along line X—X of Fig. 9; and,

Fig. 11 is an elevational view of one of the adjusting shims which may be employed with the invention shown in Figs. 9 and 10.

Referring now to the drawings for a better understanding of my invention and more particularly to Figs. 1 to 8 inclusive, I show my invention associated with a lathe embodying a supporting framework indicated generally by the numeral 10. As is understood in the art the supporting framework for veneer lathes of larger size is very heavy, and may be cast or fabricated. Mounted to slide on ways 11 is a main carriage 12. In the manner understood, the carriage 12 slides toward and from a log 13 mounted in the lathe centers indicated at 14 and 16 in Fig. 1. The log is driven by means of a chain 17 or the like from a suitable motor or the like, not shown.

The main carriage is moved toward and from the log by means of feed screws 19 and 21, each carrying a bevel gear 22 on one end. The gears 22 mesh with similar gears 23 carried on a shaft 24 which may be driven through a sprocket or the like 26 from any suitable source of power, not shown. As is customary, the main carriage carries at its front the veneer cutting knife 27 which is supported in the knife supporting mechanism indicated generally by the numeral 30. The depth of cut for the lathe is determined by the infeed motion produced by the feed screws 19 and 21.

Slidably mounted in guides 28 and 29 in the main carriage 12 are projections 31 and 32 in the form of heavy plates. The plates 31 and 32 form a part of the pressure bar carriage indicated generally by the numeral 33, and the apparatus is so arranged that the pressure bar carriage is movable toward and from the log 13.

The carriage 33 comprises a main base plate 34 having welded or otherwise secured thereto upstanding vertically disposed plates 36 and 37. The plate 36 may carry a rearwardly sloping reinforcing and strengthening plate 38, while the plate 37 may carry a reinforcing plate 39 generally parallel to the plate 34. The plates 36—38 are connected to the plate 37 at intervals by vertically disposed plates 41.

Mounted at the front of the carriage 33, namely at the side thereof adjacent the log 13, is the pressure bar 42. The pressure bar 42 may be in any of the several forms known in the art, including the plain, rounded edge solid type. However, for the purpose of illustration I show the same as embodying the bar 42 with the engaging roller 43 suitably mounted for rotation in elongated bearings carried in the bar 42. The bar 42 may be held in adjusted position by means of a plurality of sleeves 44 screwed through the plate 36. Studs 46 pass through the sleeves 44, and a lock nut 47 serves to lock the sleeves against rotation. The bar 42 and hence the roller 43 are adjusted outwardly of the plate 36, hence to correctly align the same relative to the axis of the log. It will be understood that there are a large number of the sleeves 44 and studs 46 provided so that the thrust is adequately transmitted to the carriage 33. These sleeves are accessible for adjustment through the resulting openings between the plates 41.

Mounted on the rear side of the plate member 37 of the carriage 33 and with their axes parallel to the direction of movement of the carriage 33 are two heavy duty, double acting fluid pressure cylinders 48 and 49. The cylinders embody the usual pistons 51 and 52, heavy piston rods 53 and 54, and the usual seal means in the form of glands 56 and 57. For a reason later to appear the outer ends of the piston rods are reduced and threaded as indicated at 58 and 59. Fluid may be admitted to either end of the pistons through lines 61 and 62.

Carried on heavy brackets 63 upstanding from the rear side of the main carriage 12 and forming parts of the main carriage is a cross frame comprising parallel plates 64 and 66 connected by a base plate 67. Mounted adjacent each end of the frame just mentioned, and secured to the plate 67 thereof by means of bolts 69 are bearing blocks 71 and 72 for supporting the end of a longitudinally movable wedge carrying member 73. In view of the fact that the mechanisms now to be described and which supports each end of the member 73 are duplicates, a description of one will suffice for both. As best shown in Fig. 6, the blocks 71 are provided with a U-shaped opening 70 for receiving the end of the member 73, which preferably is a square shaft. The blocks 71 are held to the base plate 67 by means of the bolts 69.

Disposed to cooperate with the blocks 71 in holding the member 73 therein are L-shaped blocks or caps 74 which fit against the slotted outstanding legs of the blocks 71, and are held thereto by means of countersunk bolts 76. The members 71 and their respective caps 74 are spaced apart to provide aligned openings 77 and 78. Slidably fitting in the openings 77 is a U-shaped block 79 having vertically elongated notches 81 in the edges of the base section and with the legs thereof parallel to the plates 64 and 66. Keyed to the base of the block 79 by means of projections 82 fitting in the notches 81 is a block 83 having a tapering front face 84. Fitting next adjacent the face 84 is a wedge block 86 having a complementarily tapered face 87. The block 86 is keyed to the square shaft 73 by means of a projection 88 disposed to fit in a slot 89 in the shaft. The U-shaped block 79 and the shaft may slide against wear plates 79*a* and 73*b*.

On the opposite side of the shaft 73 are provided identical wedge blocks 86, similarly keyed to the opposite face of the shaft 73 and another of the taper blocks 83. The forwardmost taper block 83 is keyed to a cap 91 joining the forward ends of the legs of block 79, and secured thereto by screws 90. The U-shaped blocks 79 together with the caps 91 thus form housings surrounding the ends of the shaft 73. The cap 91 is provided with a threaded hole 92 for receiving the threaded reduced end of the piston rod. Lock nuts 93 secure the caps 91 in adjusted position on the piston rods.

It will be noted that the taper blocks and wedge blocks at each end of the shaft 73 slope in the same direction. Thus, when the shaft 73 is moved axially to the right, the U-shaped blocks 79 and their caps 81 constituting housings, move outwardly, thus moving the entire pressure bar carriage 33 through the piston rods 53 and 54,

all as will more fully appear. The mechanism for shifting the shaft 73 axially will now be described.

Mounted to the forward face of the plate 67 by means of bolts 94 is a U-shaped nut housing member 96. The ends of the forward legs of the housing 96 are provided with aligned semi-circular openings 97 for receiving the reduced end 98 of a split nut 99. The nut 99 fits on a threaded centrally disposed section 73*a* of the shaft 73 and the halves thereof are secured together by countersunk bolts, not shown. The nut 99 is also provided with a sprocket 101, driven by a chain 102, in turn driven by a sprocket 103. The sprocket 103 is carried on the end of an output shaft 104 of a gear box 106 to which is connected a reversible electric motor 107. The motor and gear box may conveniently be mounted on the plate member 64 as shown more clearly in Fig. 4. It will be noted that the reduced ends 98 of the nut are shouldered. Nut retaining caps 105 fit about the reduced ends of the nut, and are held to the member 96 by bolts 100.

For convenience in determining the setting or axial position of the shaft 73 I may provide the indicator mechanism therefor shown in Figs. 7 and 8. To the top of the shaft 73 I secure, by means of a bolt 108, a plate 109 having gear teeth 110 cut in one edge. Mounted in a suitable bearing 111 in the frame plate member 64 is a shaft 112. A small gear 113 is fixed to the shaft 112 and meshes with the teeth 110.

Mounted on top of the plate 64 is a pointer 114. Fixed to the projecting upper end of the shaft is a rotatable disc 116 which is laid off on its upper face by means of the lines 117 from a zero point as indicated in Fig. 8. By reference to the disc 116 and the pointer 114 the axial position of the shaft 73 may be determined.

Fluid under pressure may be admitted by a four-way valve 118 selectively to the lines 61 and 62. In the manner understood for such valves, when pressure is admitted from a source, not shown, through the line 119 to the cylinders through line 61, fluid drains back to the reservoir, not shown, through a line 121, and vice versa when pressure is admitted to the line 62. In order to assure that there are no fluctuations in the pressure within the cylinders 48 and 49 when the lathe is in operation I may provide a pressure line 122 leading from a source of fluid under pressure not shown, to the line 62. Also, I may insert a check valve 123 in the line 122.

From the foregoing the method of constructing and using my improved apparatus as so far described may now be explained and understood. When a log 13 is first placed in the lathe it is necessary to trim off the projecting limbs, knots and the like preparatory to commencing the veneer cutting operation. In order for the knife to properly act upon the log to true it up, it is necessary to withdraw the pressure bar 42. I accomplish this by admitting fluid under pressure through the valve 118 to the pistons 48 and 49 through the line 61. This causes the pressure bar carriage 33 to move to the right to the position shown in Fig. 2 of the drawing. The pressure bar in this position is retracted away from the log. After the knife trues up the log, fluid is admitted to the cylinders 48 and 49 through the line 62, moving the pressure bar carriage 33 to the left. The pressure is maintained in the line 62 during the veneer cutting operation. The pressure bar is now adjusted to the correct pressure against the log by energizing the motor 107,

rotating the nut 99, which as will be remembered is held against axial movement in the member 96. Rotation of the nut in a given direction moves the shaft 73 axially. If it is desired to increase the pressure on the pressure bar against the log the shaft 73 is moved to the left as viewed in Fig. 1 by energizing the motor 107 to drive the nut in the direction desired. It will be apparent that tremendous pressures between the pressure bar and log can be developed because of the wedge arrangement shown. Further, when the pressure is set, the entire main carriage 12 moves inwardly, thus cutting a continuous sheet of veneer from the log, and in nowise disturbs the amount of pressure initially set. If for any reason it is necessary to back off the carriage 33 and again engage the pressure bar with the log this may be accomplished without disturbing the micrometric pressure bar adjustment since the hydraulic cylinder acts independently of the micrometric adjusting means.

It will also be seen that the nuts 93 and threaded ends of the piston rods afford means for adjusting and truing up the entire pressure bar carriage so that the pressure bar is parallel to the axis of the log, namely, parallel to the lathe centers. By means of the threaded sleeves 44 and lock nuts 47 together with the studs 46 I effectively eliminate bowing of the pressure bar by supporting the same at a number of points throughout its length, thus to transmit the pressure back to the pressure bar carriage.

Referring now particularly to Figs. 9, 10 and 11, I show a modified form of my invention in which the wedge mechanism may be eliminated. The modification shown is particularly advantageous for use in smaller veneer lathes, and is somewhat less expensive to build.

As shown, the pressure bar carriage 33*a* and main carriage 12*a* are substantially identical with the one already described as are the infeed screws therefor. Instead of using two of the cylinders 48 and 49, I use a single cylinder 48*a* having a piston 124 and a piston rod 126. The outer end of the piston rod is pivotally connected by a pin 126*a* to a clevis 127 carried by the base plate member 67*a*. Fluid under pressure may be admitted through the four-way valve 118*a* to either side of the piston through the lines 61*a* and 62*a*. Also, I may provide the auxiliary pressure line 122*a* and the check valve therefor 123*a*.

In order to limit the pressure with which the pressure bar 42*a* engages the log, I provide a pair of rearwardly extending bolts 128. The outer ends of the bolts are threaded as indicated at 129 and the bolts pass through enlarged holes 131 in the base plate member 67*a*. On the threaded ends of the rods I provide lock nuts 130 and a washer 132. If desired, I may insert shims 133 between the washers 132 and the frame member 67*a*. These shims may be U-shaped as illustrated in Fig. 11 and may be made accurately to desired thicknesses.

From the foregoing it will be seen that when pressure is applied to the cylinder 48*a* the carriage 33*a* moves forwardly until its forward motion is arrested by the bolts 128 reaching the limit of their travel as determined by the setting of the nuts 130. Since the piston rod 126 is pivotally mounted to the plate 67*a* there is no bending action on the piston rod during the motion of the carriage. The pressure of the pressure bar roller 43*a* thus may easily be determined by properly adjusting the nuts 130.

From the foregoing it will be apparent that I

have devised an improved adjustable pressure bar mechanism for veneer lathes. With either form of my invention it will be understood that the cylinders are of sufficient size and the pressures therein are sufficiently great to assure the holding of the pressure bar to its work within any normal range of setting either made by the wedge mechanism or permitted by adjusting the nuts 130. With either form of the invention it will be seen that the pressure bar may be retracted easily and quickly from its work when it is necessary to do so, especially when truing up a new log. It will further be apparent that both forms of the invention are entirely practical and simple of construction and that they lend themselves to installation on existing veneer lathes without major change in the lathe.

While I have shown my invention in but two forms, it will be obvious to those skilled in the art that it is not so limited, but is susceptible of various other changes and modifications without departing from the spirit thereof, and I desire, therefore, that only such limitations shall be placed thereupon as are specifically set forth in the appended claims.

What I claim is:

1. In a veneer lathe having a main frame and a pressure bar carriage slidably mounted for movement relative to the main frame toward and from the lathe centers, the improvement comprising an elongated member mounted for axial movement relative to the main frame rearwardly of the pressure bar carriage and held against lateral movement toward and from the pressure bar carriage, wedges carried by the member adjacent each end thereof, a housing for each of the wedges carrying complementarily tapered surfaces engaging said wedges, means mounting the housings for movement toward and from the pressure bar carriage and holding them against movement in other directions, connections between the housings and the pressure bar carriage, and means to shift the member axially in either direction whereby the wedges move the pressure bar carriage toward the lathe centers when the member moves in one direction and away from the centers when the member moves in the other direction.

2. Apparatus as defined in claim 1 in which the axially movable member is a square shaft, and in which the means to move the same comprises a rounded and threaded section on the shaft, a nut on the threaded section, means holding the nut against axial movement, and means to rotate the nut.

3. Apparatus as defined in claim 1 in which the connection between the housing and pressure bar carriage is in the form of elongatable and contractible mechanism.

4. In a veneer lathe of the type having a main frame with a main carriage slidably mounted thereon for movement toward and from the lathe centers and a pressure bar carriage slidably mounted on the main carriage for movement relative thereto toward and from the centers, the improvements comprising a shaft mounted for axial movement on the main carriage rearwardly of the pressure bar carriage and held against movement toward and from the pressure bar carriage, housings surrounding the shaft adjacent its ends, means mounting the housings for sliding movement toward and from the pressure bar carriage, wedge means interposed between the front and rear sides of the shaft and the housings effective upon axial movement of the shaft to slide the housings toward or from the pressure bar carriage, power driven means for moving the shaft axially, fluid pressure cylinders embodying pistons and piston rods operatively interposed between the housings and the rear of the pressure bar carriage, and means to admit fluid under pressure selectively to opposite ends of the cylinders.

5. Apparatus as defined in claim 4 in which there is provided indicator means for determining the relative outward positions of said housings from the portion of the main carriage with which said housings are associated.

6. Apparatus as defined in claim 5 in which said indicator mechanism comprises a rotatable shaft, a gear on one end of the shaft, a rack carried by the axially movable shaft and meshing with said gear, a dial adjacent the other end of the shaft, and a pointer adjacent the dial carried by the main frame of the lathe.

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