Dec. 29, 1953 M. E. ALLEN, SR 2,664,122

PATTERN LATHE

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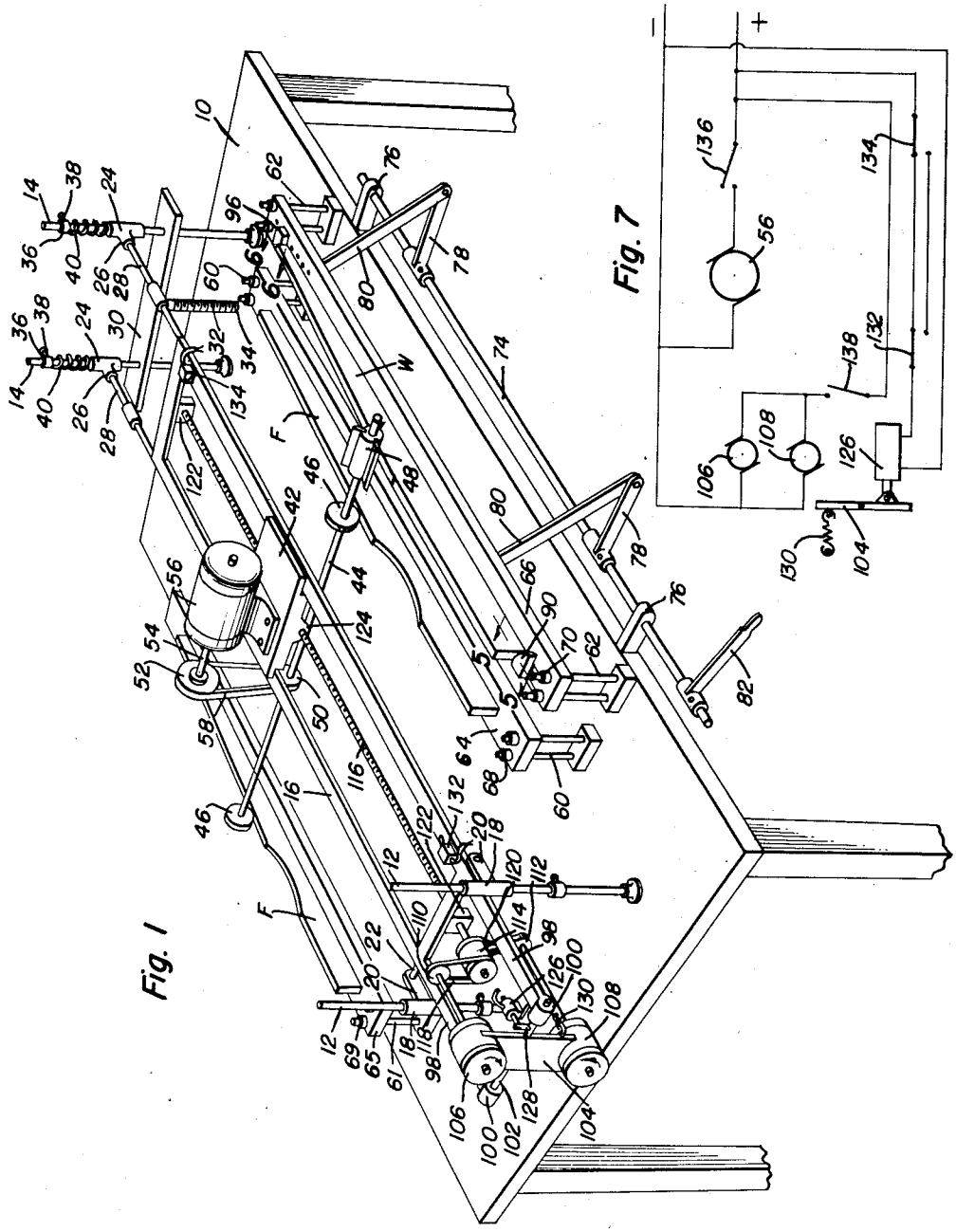


Fig. 1

Fig. 7

Matthew E. Allen, Sr.
INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

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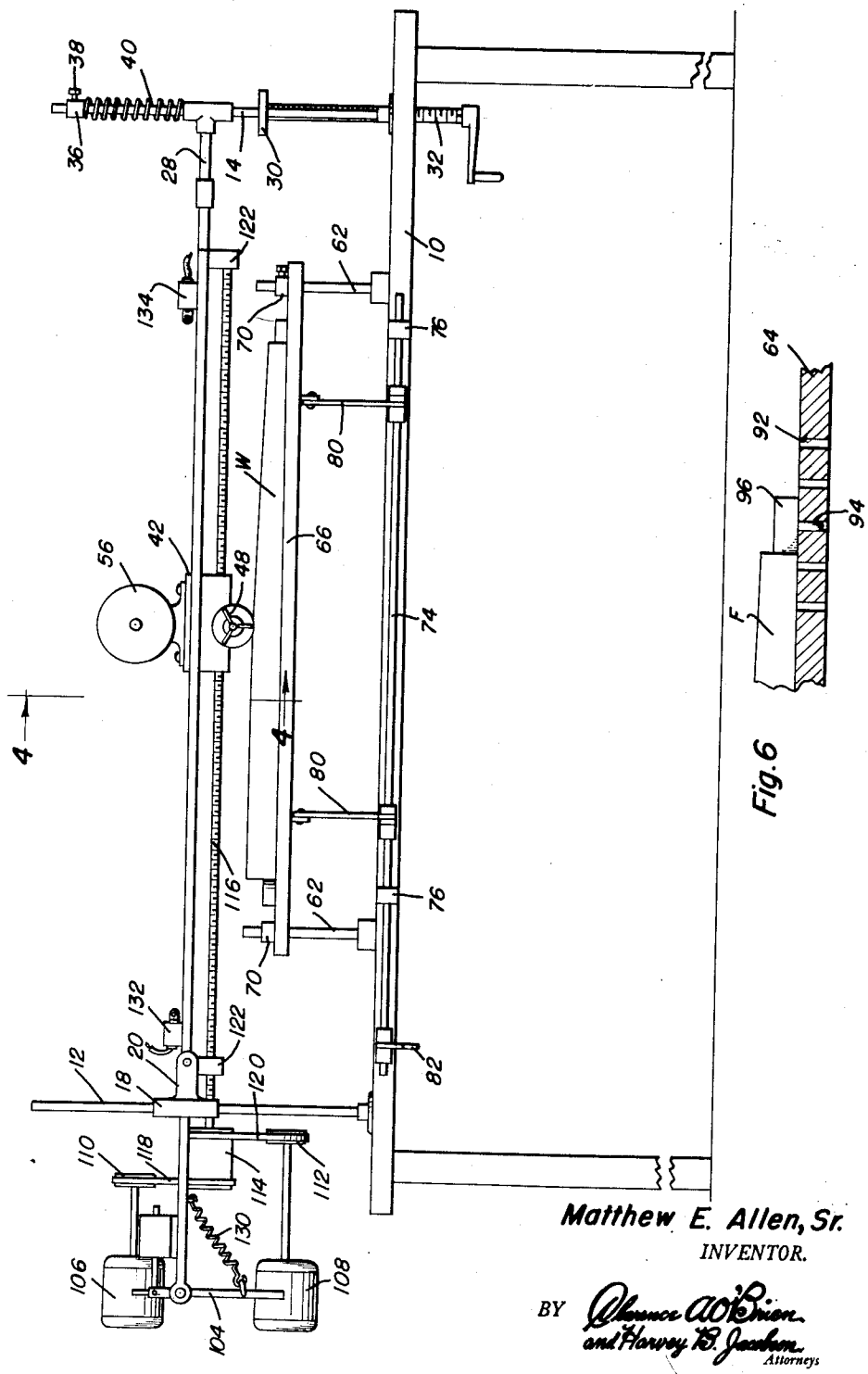


Fig. 2

Fig. 6

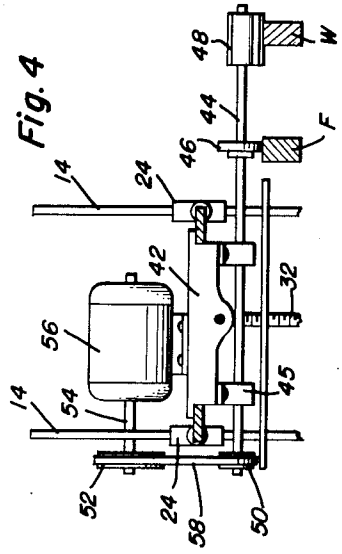
Matthew E. Allen, Sr.
INVENTOR.

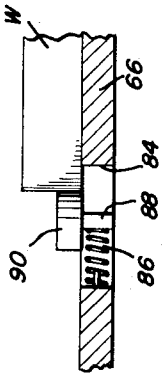
BY Clarence A. O'Brien and Harvey B. Jacobson
Attorneys

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PATTERN LATHE

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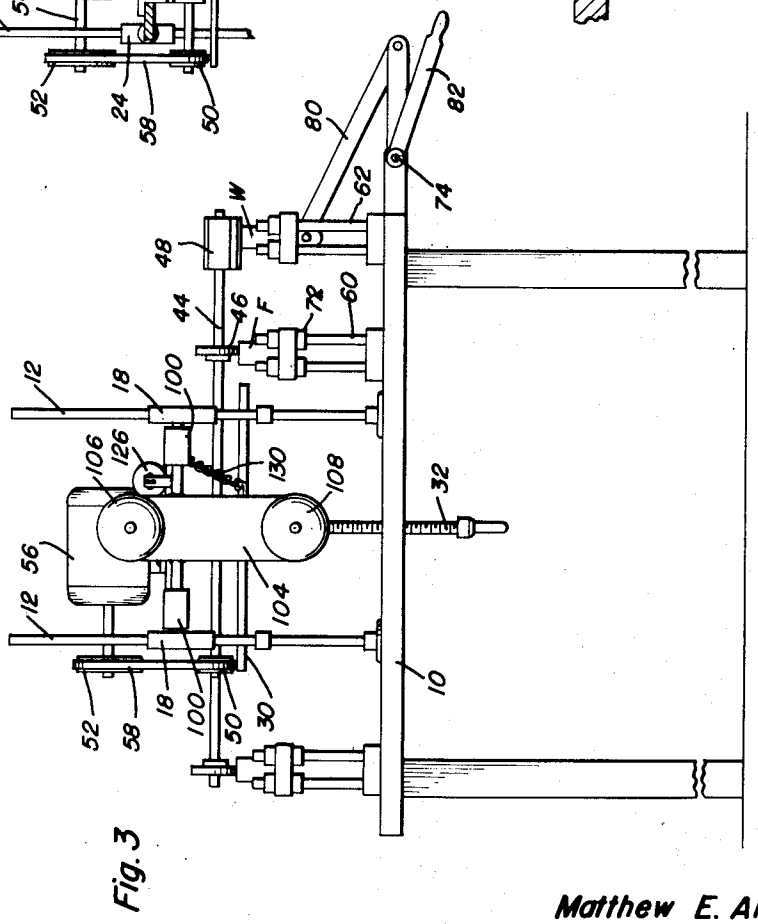


Fig. 3

Matthew E. Allen, Sr.

INVENTOR.

BY Clarence A. O'Brien and Harvey B. Jacobson

Attorneys

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PATTERN LATHE

Matthew E. Allen, Sr., Asheville, N. C.

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4 Claims. (Cl. 144—144)

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This invention relates to new and useful improvements in pattern lathes and the primary object of the present invention is to provide a pattern lathe including a horizontally and vertically movable carriage supporting a power driven shaft having a guide element and a cutter element secured thereto that will respectively engage a form and a piece of work to cut the work to the contour of the form upon which the guide element rides.

Another important object of the present invention is to provide a pattern lathe of the aforementioned character involving a power driven shaft connected to the carriage and novel and improved means actuated by the carriage for reversing the rotation of the shaft.

A further object of the present invention is to provide a pattern lathe wherein the carriage is supported upon a vertically slidable frame that will move upwardly and downwardly as the guide element rides upon the irregular upper edge of a form so that a cutter element supported adjacent the guide will cut a work piece similar to the form upon which the guide element rides.

A still further aim of the present invention is to provide a patern lathe of the aforementioned character that is simple and practical in construction, strong and reliable in use, efficient and durable in operation, small and compact in structure, convenient to initiate the cutting operation, inexpensive to manufacture, and otherwise well adapted for the purposes for which the same in intended.

Other objects and advantages reside in the details of construction and operation as more fully hereinafter described and claimed, reference being had to the accompanying drawings forming part hereof, wherein like numerals refer to like parts throughout, and in which:

Figure 1 is a perspective view of the present invention;

Figure 2 is a front elevational view of Figure 1;

Figure 3 is an end view of Figure 2;

Figure 4 is a vertical sectional view taken substantially on the plane of section line 4—4 of Figure 2;

Figure 5 is an enlarged detail sectional view taken substantially on the plane of section line 5—5 of Figure 1;

Figure 6 is an enlarged detail sectional view taken substantially on the plane of section line 6—6 of Figure 1; and

Figure 7 is a view of the circuit diagram used in the present invention.

Referring now to the drawings in detail, where-

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in for the purpose of illustration, there is disclosed a preferred embodiment of the present invention, the numeral 10 represents an elongated support or table structure having pairs of uprights or posts 12 and 14 suitably secured thereto.

An elongated, open, substantially rectangular guide frame 16 extends horizontally over the support 10. Sleeves 18 are slidably received on the uprights 12 and fixedly support horizontal arms 20 that are formed with apertures accommodating the ends of a transverse shaft 22 fixed under one end portion of the frame 16.

A pair of sleeves 24 are also slidably received on the uprights 14. The sleeves 24 are provided with horizontally extending socket portions 26 that receive a pair of arms 28 extending longitudinally from the end of frame 16 remote from uprights 12. A plate 30 is slidably received on the uprights 14 below the sleeves 24 and is centrally swiveled to the upper end of a vertical screw 32 that is receivably engaged in an aperture 34 in the support, whereby the plate 30 may be selectively raised and lowered to limit downward vertical sliding movement of sleeves 24 on the uprights 14. The frame 16 is mounted in this manner to allow free vertical movement of the frame 16 with respect to the support 10.

Collars 36 having self-contained set screws 38 are vertically adjustably received on the uprights 14 and constitute abutments for coil springs 40 disposed about the uprights and biased against the upper ends of sleeves 24 to cushion and yieldingly restrict upward movement of sleeves 24 on the uprights.

The undercut forward and rear edges of a carriage 42 are slidably received upon the upper face of the frame 16 and the depending vertical walls of the undercut forward and rear edges ride against the longitudinal edges of the opening in the frame to guide the longitudinal sliding movement of the carriage on the frame.

A horizontally disposed power driven shaft 44 is rotatably supported in suitable bearings 45 on the undersurface of the carriage 42. Shaft 44 extends transversely and forwardly and rearwardly of the frame 16 and its end portions carry guide elements or rollers 46 and a cutter element 48. The rear end of shaft 44 supports a pulley 50 that is connected to a pulley 52 on the armature shaft 54 of a motor 56 supported on the carriage 42 by an endless belt 58.

Pairs of vertical guides 60, 61 and 62 are secured to and extend upwardly from the support 10. Holding members or horizontal boards 64,

65 and 66 are vertically slidably received on the guides 60, 61 and 62, respectively. Upper collars 68, 69 and 70 having self-contained set screws are slidably adjustably received on the guides 60, 61 and 62 and limit upward movement of the members 64, 65 and 66. Lower collars 72 having self-contained set screws are slidably adjustably received on the guides 60 and 61 and retain the members 64 and 65 raised, and in conjunction with the collars 68 and 69 retain the members 64 and 65 vertically adjusted and hold members 64 and 65 against accidental sliding movement. The holding members 64 and 65 are mounted for adjustment in a vertical direction so as to be capable of receiving patterns of various depths. The member 66 is vertically adjustable so as to receive work of various depths corresponding to the patterns received on members 64 and 65.

A horizontal rock shaft 74 is supported in bearings 76 projecting forwardly from support 10. Arms 78 are suitably removably secured to the shaft 74 and these arms, 78 are connected to member 66 by pitmans 80. A hand lever 82 secured to the shaft 74 permits manual rotation of shaft 74 for selectively raising or lowering the member 66. Thus, member 66 can be raised or lowered in order to position the work into or out of engagement with the cutter. When the work is applied to member 66, the member 66 is in a lowered position and then the member 66 is raised to place the work into engagement with the cutter. After the work has been shaped, then the member 66 is lowered so that the work may be removed from the member 66.

One end of member 66 is formed with an opening 84 in which a coil spring 86 is retained. Spring 86 is biased against the shank 88 of a movable retainer block or abutment 90 slidable upon the upper face of member 66 (Figure 5). The other end of member 66 is provided with a plurality of longitudinally spaced apertures 92 for selectively receiving the depending pin 94 of an upper retainer block or abutment 96 that coacts with block 90 in gripping the ends of a work piece W.

Similar forms F are suitably removably secured to the members 64 and 65 in parallel relation to the work piece W and underlie the roller 46. Cutter element 48 underlies the work piece W and is spaced forwardly of the guide roller 46.

A pair of horizontally disposed spaced parallel arms 98 extend longitudinally from the end of the frame engaged with sleeves 18 and terminate in transverse registering eyes 100 that receive trunnions 102 projecting laterally from the central portion of a vertically swingable member or mounting plate 104. Motors 106 and 108, preferably of the electric type, are supported on the ends of member 104 and their drive shafts carry pulleys 110 and 112 that are connected to spaced grooves in a pulley member 114 on one end of a screw threaded rod 116 by belts 118 and 120.

Rod 116 extends longitudinally of the frame 16 and its smooth surfaced end portions are journaled in bearings 122 on the undersurface of frame 10. Rod 116 extends through threaded apertures in ears 124 formed on the carriage 42, so that as the rod 116 is rotated in one direction the carriage will move from left to right, whereas rotation of the rod 116 in an opposite direction will move the carriage from right to left.

A solenoid 126 is held on one of the arms 98 and its operating core is pivotally attached to a lug 128 fixed to one of the trunnions 102. A spring 130 terminally attached to the member 104 and the arm 98 supporting the solenoid and the spring 130 normally retains the member 104 vertical when the solenoid 126 is not energized.

A single through switch 132 is supported on one end of frame 16 and a second single throw switch 134 is also supported on the other end of the frame 16. The switches 132 and 134 are operatively connected to the solenoid to selectively make and break an electric circuit to the solenoid. Additional switches 136 and 138 are connected to the circuits for the motors 56 and 106, 108, whereby the motor may be actuated or deactuated.

The drive shafts of motors 106 and 108 rotate in relatively opposite directions as indicated by arrows in Figure 1 and the belt 118 of motor 106 is tensioned against pulley member 114 and belt 120 is loose on pulley member 114 when the member 104 is vertically disposed. However, when solenoid 126 is energized, the member 104 will be moved to a vertically inclined position tensioning belt 120 and loosening belt 118 in order to reverse the direction of rotation of rod 116.

In practical use of the present invention, the carriage 42 is disposed at the right end of the frame 16 and the member 104 is vertically disposed to move the carriage leftward by rotating rod 116. As the carriage moves leftward, rollers 46 ride upon the shaped upper edges of forms F and raise and lower the frame 16 and carriage 42 so that cutter element 48 will cut the work W to the same contour as form F.

When carriage 42 engages switch 132, the solenoid 114 will be actuated to swing support 104 to a vertically inclined position, thereby reversing shaft 116 in the manner previously described.

Work piece W may be lowered and removed by rotating shaft 74 and a new work piece placed on member 66 and raised to permit cutting of the same as the carriage is moved to the right.

Having described the invention, what is claimed as new is:

1. A pattern lathe comprising a support, uprights carried by the support, an elongated horizontally disposed vertically slidable frame on the uprights, a carriage slidably carried by and movable longitudinally of the frame, a power driven shaft rotatably supported on the carriage and projecting laterally from the frame, a form engaging element on the shaft, a cutter also on the shaft, a vertically swingable member centrally pivotally attached to one end of the frame, oppositely rotating upper and lower shafts on the ends of the member, belts connecting said upper and lower shafts to said power driven shaft, one of said belts being tensioned when the member is vertically disposed to rotate the power driven shaft in one direction, and means connected to the member for moving the same to a vertically inclined position to loosen said one of said belts and tension the other of said belts in order to rotate the power driven shaft in an opposite direction.

2. A pattern lathe comprising a support, uprights carried by the support, an elongated horizontally disposed vertically slidable frame on the uprights, a carriage slidably carried by and movable longitudinally of the frame, a power driven

shaft rotatably supported on the carriage and projecting laterally from the frame, a form engaging element on the shaft, a cutter also on the shaft, a vertically swingable member centrally pivotally attached to one end of the frame, oppositely rotating upper and lower shafts on the ends of the member, belts connecting said upper and lower shafts to said power driven shaft, one of said belts being tensioned when the member is vertically disposed to rotate the power driven shaft in one direction, a solenoid connected to the member for moving the member to a vertically inclined position to loosen said one of said belts and tension the other of said belts in order to rotate the power driven shaft in an opposite direction, and limiting switches at the ends of the frame and connected to said solenoid and a source of electric current for engagement by the frame in order to acutate the solenoid.

3. A pattern lathe comprising a support, pairs of posts secured to and extending upwardly from the support, a horizontally disposed vertically slidable guide frame carried by the posts, a carriage longitudinally slidably carried by the frame, a power driven horizontal shaft rotatably supported by the carriage and projecting laterally from the frame, a guide element secured to the shaft, a cutter element also fixed to the shaft, a pair of side by side holding members on the support and paralleling the same, one of said holding members adapted to hold a form that will underlie the guide element and the other of said holding members adapted to hold a piece of work under the cutter element, said frame moving upwardly and downwardly on the posts in response to engagement of the guide element with high and low points on the form, means operatively connected to the carriage for moving the carriage back and forth on the frame, said other of said holding members comprising a vertically movable horizontal board, and means on the support connected to the board for selectively raising and lowering the board relative to the cutter element.

4. The combination of claim 3 wherein said board raising and lowering means comprises a horizontal rod rotatably supported on the support and paralleling the holding members, a pair of arms fixed to and projecting laterally from said rod, and pitmans connecting said arms to said board.

MATTHEW E. ALLEN, SR.

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