

(No Model.)

3 Sheets—Sheet 1.

W. H. AUSTIN.

MACHINE FOR FINISHING TREE LEGS FOR BOOT TREES FOR RUBBER BOOTS.

No. 494,834.

Patented Apr. 4, 1893.

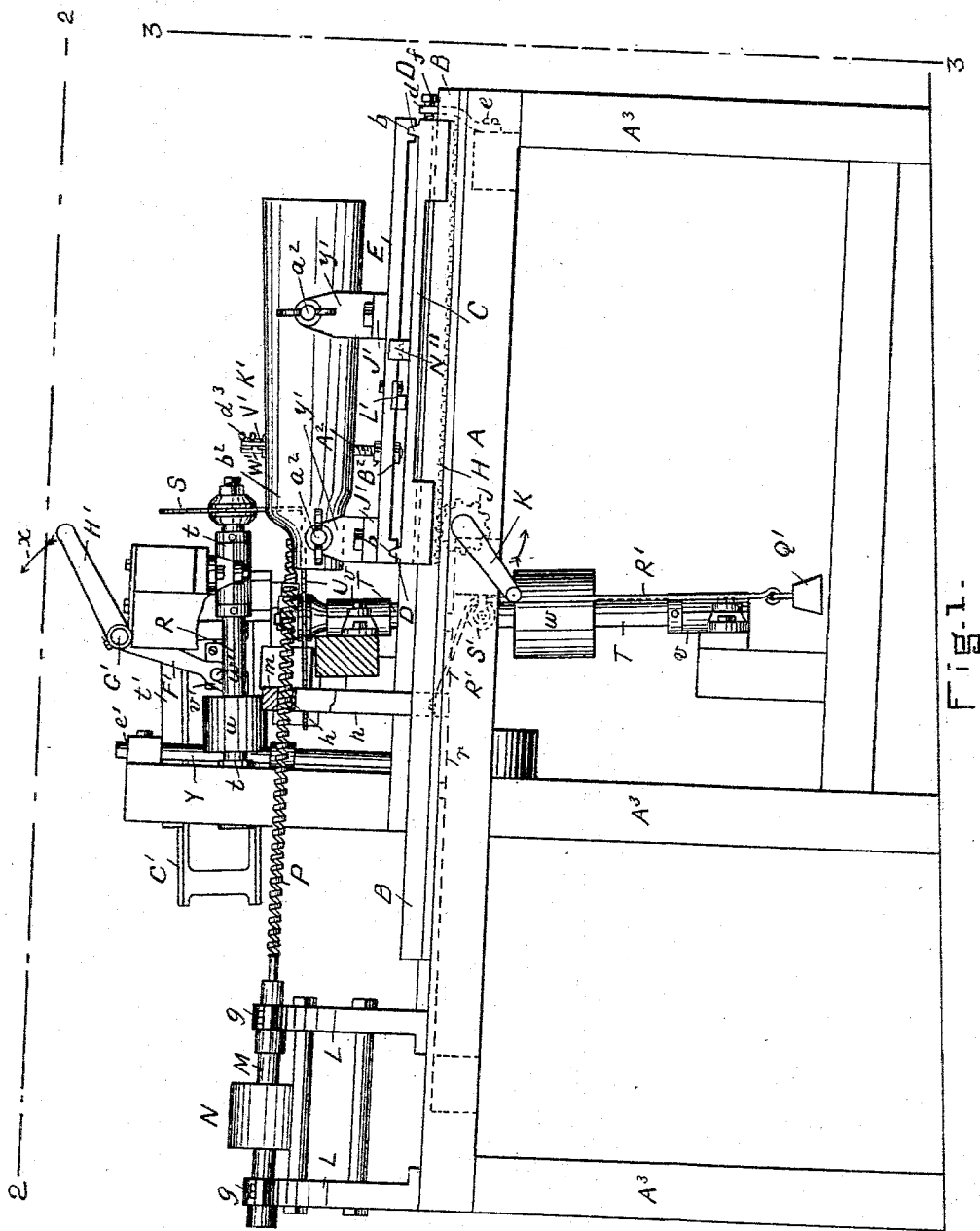


Fig. 1.

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(No Model.)

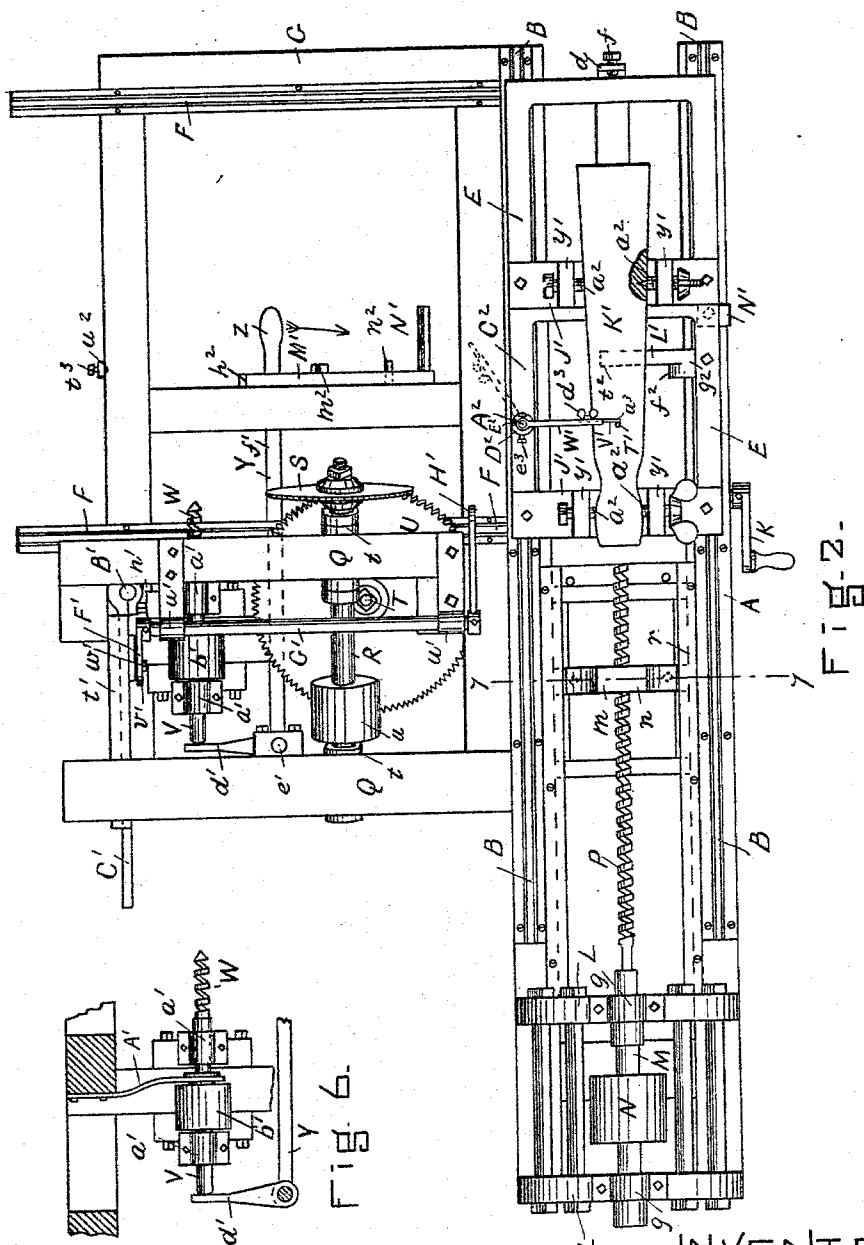
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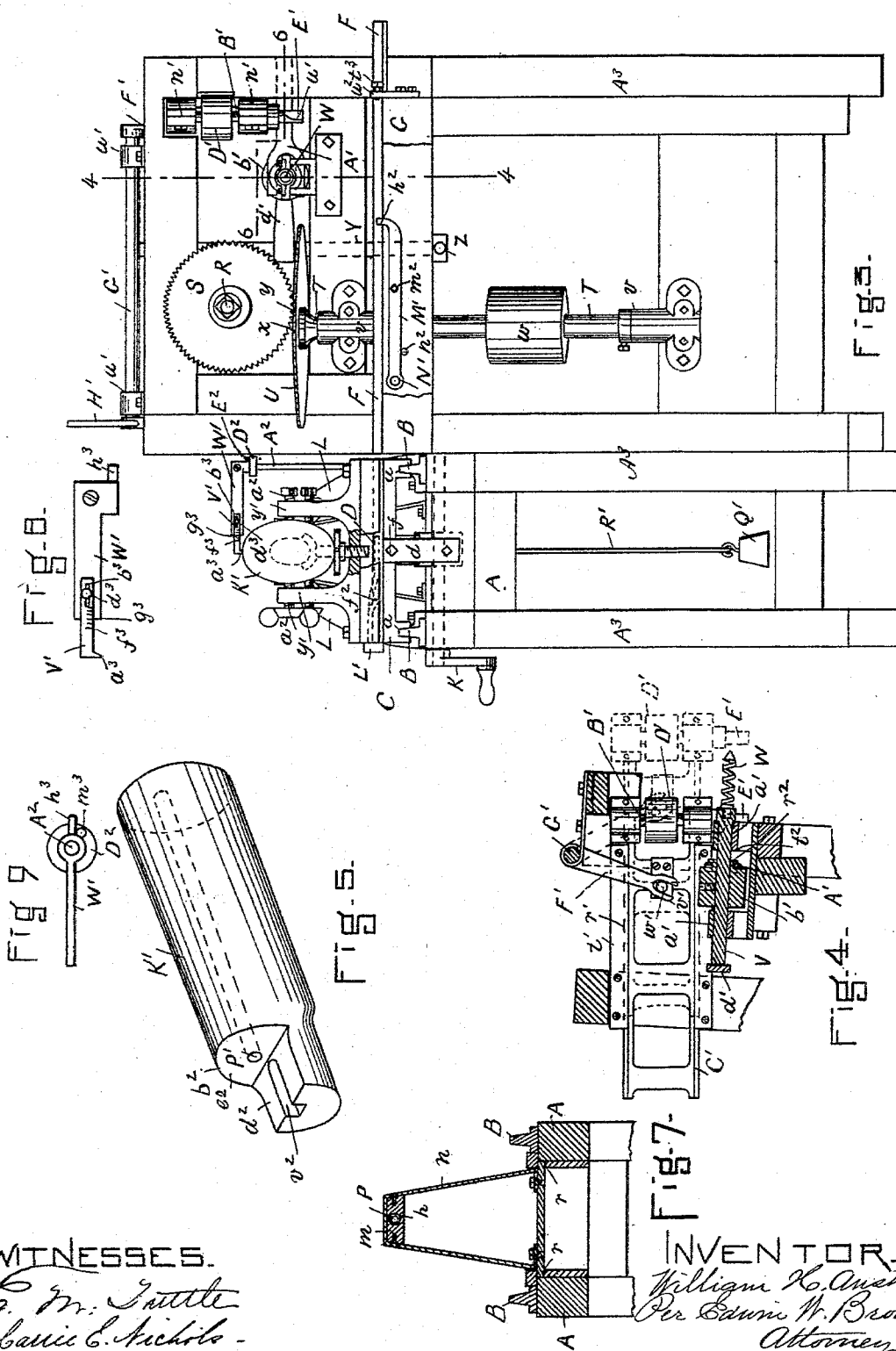
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3 Sheets—Sheet 3.

MACHINE FOR FINISHING TREE LEGS FOR BOOT TREES FOR RUBBER BOOTS.

Patented Apr. 4, 1893.



UNITED STATES PATENT OFFICE.

WILLIAM H. AUSTIN, OF BROCKTON, MASSACHUSETTS, ASSIGNOR TO HIMSELF,
WILLIAM H. CARY, WILLIAM THOMPSON, AND AUGUSTUS A. DELANO, OF
SAME PLACE.

MACHINE FOR FINISHING TREE-LEGS FOR BOOT-TREES FOR RUBBER BOOTS.

SPECIFICATION forming part of Letters Patent No. 494,834, dated April 4, 1893.

Application filed January 29, 1892. Serial No. 419,667. (No model.)

To all whom it may concern:

Be it known that I, WILLIAM H. AUSTIN, of Brockton, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in Machines for Finishing Tree-Legs for Boot-Trees for Rubber Boots, of which the following is a full, clear, and exact description.

This invention consists of a machine for preparing and fitting the tree leg of a boot tree more particularly for use in boot trees for the manufacture of boot trees for rubber boots, by which the tree leg has the necessary shoulder cut in its lower end for the attachment of the foot piece, a groove made in the center on one side of said shoulder for the rib or tenon of the foot piece to be disposed therein, and the boring of a hole or socket through its length for the insertion of the fastening rod or bolt all substantially as hereinafter fully described reference being made to the accompanying sheets of drawings in which,

Figure 1, is a front elevation. Fig. 2, is a plan view. Fig. 3, is an end elevation. Fig. 4, is a detail vertical section on line 4—4, Fig. 3. Fig. 5, is a perspective view of a boot tree operated upon by this machine. Fig. 6, is a detail plan view below line 6—6, Fig. 3. Fig. 7, is a detail vertical cross section on line 7—7, Fig. 2. Figs. 8 and 9 respectively detail side and plan views of one of the parts.

In the drawings A represents a bed frame on which the operating parts of the machine are supported. On this bed frame are two parallel rails B, B, substantially parallel with the front of the machine, on which is arranged to slide forward and backward by its under grooves *a*, a carriage frame C, and on the upper side of this frame C are two parallel rails D, D, at right angles to the longitudinal rails B on which rails D is adapted to slide back and forth by its under grooves *b*, which fit the cross rails D, an upper frame E. On the right hand end of the bed frame A, is a stud *d*, secured by a screw *e*, to the bed frame projecting above it, into the horizontal plane of the carriage frame C, having a screw *f*, in its upper end against the end of which the carriage frame is arranged to abut, to limit the movement of the carriage frame in one direction,

that is, to the right, see Figs. 1 and 2, more particularly and which can be adjusted and regulated by turning in or out the screw *f*.

F, F, are two rails back of the rails B, B, on a rear portion G, of the bed frame and the same distance apart as the rails D, D, and in the same plane, so that if the carriage frame is moved along its rails B, B, for its cross rails D, D, to be opposite to or in line with the rails F, F, the upper frame E, can then be moved along the rails D, D, on to and along the rear frame rails F, F, and to insure that the carriage frame shall be in proper position for its rails D, D, to be in line with the rails F, F, the screw *f*, is turned in or out until with the carriage frame abutting against it, the two sets of rails D, D, and F, F, will be in line with each other for the movement of the upper frame E, from the rails D, D, on to the rails F, F.

On the under side of the carriage frame C, is secured a longitudinal rack bar H, which is arranged to engage with a pinion gear J, turning in bearings in the front frame and having a crank handle K, attached to its shaft for operating it; so that turning the gear by its handle in the direction of the arrow, Fig. 1, the carriage frame C will be moved to the left along the rails B, B, and turning the gear in the reverse direction the carriage will be moved back to its resting place.

L are standards at the left end of the frame having bearings *g*, for a short horizontal shaft M, in which it can freely turn, and having a pulley M, secured to it, for driving the same. In the end of this shaft M, is a long twist bit or drill P, which extends freely through a socket or hole *h*, in a bar *m*, of a frame *n*, adapted to slide back and forth by its bottom portion in side grooves *r*, in the bed frame A, see Fig. 7. This sliding frame *n*, supports the bit or drill P, along its length when in operation as will be hereinafter described.

On the portion Q, of the framework is a horizontal shaft R, which is at a slight angle to the line of movement of the carriage frame C, and at right angles to the line of movement of the upper frame E, and it is arranged to turn in bearings *t*, on the frame and having a pulley *u*, secured thereto for opera-

tion of the same, the shaft having on its outer end a circular saw S, in a vertical line.

T is a vertical shaft adapted to turn in bearings v , below the horizontal shaft R, and at right angles thereto and having a pulley w , for operation of the same, and on the upper end of this shaft T, is a horizontal circular saw U, which saw is at right angles to the saw S, and its shaft and shaft bearings are so arranged in relation to the other saw S, and its shaft and bearings and the diameters of the saws, that its side edge at x , is a little in front of the lower edge y , of the saw S, the shaft R being just back of the vertical plane of the shaft T, as shown in Fig. 3, more particularly.

V is a short horizontal shaft adapted to turn in bearings in the frame a' which is parallel with the shaft R, having a pulley b' by which it is operated, and having a short bit or drill W, projecting therefrom as shown in Figs. 2 and 4, more particularly. The other end of the shaft V projects beyond its bearing and bearing against it is an arm d' of a lever Y, pivoted at e' to the frame, the other arm f' extending along the frame having a handle Z for operation of the same as shown in Fig. 2, more particularly.

A' is a flat spring which by its free and forked end g' straddles the shaft and bears against a shoulder h' on the shaft and is secured by its other end to the part m' of the framework, the tension of the spring holding the shaft in its normal position as shown in Figs. 2 and 6, more particularly, and returning it to such position if left free to move, after being moved forward.

B' is a vertical shaft turning in bearings n' of a frame C' adapted to move back and forth in grooves r' in the portion t' of the framework, having a pulley D' for the turning of the same, and having in its lower end a bit or burring tool E' having side cutting edges u' .

F' is an arm of rock shaft G' arranged to turn in bearings w' and extending to the front having a handle arm H' for operation of the same, the arm F' having a forked end v' which engages with a pin w' secured to the sliding frame C'. Moving the handle arm H' in the direction of the arrow x' Fig. 1, the frame C' is caused to move to the right, see dotted lines Fig. 4, and moved back again by swinging the handle in the opposite direction.

Secured to the upper side of the upper frame are two cross bars J' each having two upright lugs y' through each of which are thumb screws a^2 for operation of the same, their inner ends being pointed. Between the ends of these screws a^2 is placed and secured the boot tree leg K' as shown more particularly in Fig. 2, for operation thereon, and it is placed in position at the required height, as to its proper distance from the left hand for the operation of the machine upon the same, as well as horizontally and when so placed the screws a^2 are turned against the tree leg which by their pointed ends firmly

hold it in position thereon. When so placed and secured, power is applied to the pulleys of the several shafts which revolves the saws and bits the necessary speed.

The carriage frame C, is first moved back against its stop f which has been previously adjusted properly and then the upper frame E, moved along the rails D, D, onto the bed frame rails F, F, which carries the tree leg to, under and past the saws S, and U which saw a piece out of the smaller end b^2 of the tree leg on the lines d^2 and e^2 , Fig. 5; the frame E is then moved still farther back until it is stopped by the abutment of a shoulder f^2 of an arm I' secured to the frame at g^2 against the shoulder h^2 on an arm M' pivoted at m^2 to the frame, the weight of its other or handle end N' resting it on a pin n^2 of the frame for its shoulder h^2 to be in proper position therefor, and when in this position the shaft V carrying the short bit W is moved toward the boot tree leg by pulling the handle Z of the lever Y in the direction of the arrow, Fig. 2, which bores a hole lengthwise in the end or side e^2 of the shoulder of the tree leg, a short distance, say of about a half an inch, the distance being gaged by the abutting of its portion r^2 against its bearing at t^2 , the spring A' then being allowed to return the shaft to its normal position. The pivoted arm M' is then swung down for its shoulder h^2 to be below or out of the way of the frame E, by moving its handle end up and the frame is then moved back until the outer end t^2 of the arm I' abuts against a screw t^2 in a lug u^2 secured to the back side of the framework which brings the smaller end of the tree in position for operation thereon by the burring tool E' which is then moved toward and along the side d^2 of the tree leg by moving its handle H' in the direction of the arrow x Fig. 1, which burring tool then cuts a longitudinal groove v^2 in the side d^2 of the shoulder, see Fig. 5, which is to receive the back rib or tenon of the foot piece. This groove being cut the burring tool is then moved up out of the way by moving its handle H' down, then the upper frame E is moved forward and in to its position on the carriage frame C, which position is gaged by the abutment and stop of the frame E against a lug N'' secured to the front side of carriage frame, as shown in Figs. 1 and 3. This stop being secured and arranged so that the frame E, when bearing against it will be in proper position for the boot tree to be properly presented to the long drill for it to bore the hole P' in the tree leg in the right position. The carriage frame is then moved along the rails B, B, by turning the gear J, by its handle K, in the direction of the arrow Fig. 1, when the bit P, enters the hole made by the small or centering bit W and the carriage being pressed along the rails the bit bores the hole P' through the whole length of the tree leg and as the frame is so moved it pushes the guide support frame n , for the bit along with it, so that the bit

is supported along its length at or near the tree leg to keep and hold it in its true position. After the hole is bored the gear J, is turned in the reverse direction which moves the carriage back into its normal position, the guide support moving back with it by the pull upon it of a weight Q' at the end of a cord R' which is secured to the guide support and passes over a pulley S'. The screws a^2 holding the tree leg are then loosened and the tree removed and another carefully adjusted and secured in place thereon and the carriages moved as before to saw the end, center the hole, burr the groove, and bore the hole in the tree and so on, one after another. As the hole through the tree must be at an angle in order that its inner end shall be at one side of its center and the outer end near its center, as is well known, the angle being shown in dotted lines, see Fig. 5, to secure this angle the frame A supporting carriage frame C is arranged at such angle while the tree leg is supported on the frame having its central longitudinal axial line in a horizontal line by which the long bit P, will bore the hole through the same at the required angle, the saws and other tools being arranged parallel and at right angles or substantially so to the longitudinal axial line of the tree leg. The short bit W is for the purpose of centering the end e^2 of the tree where the socket in the leg is to be made, therefore it is parallel with the long boring bit or drill. To insure the placing of other tree legs of the same size and pattern to be operated upon and have them all alike each tree leg has a small headed pin or tack driven in to the point side of the tree leg as shown at T' Fig. 2, more particularly and when the tree leg is put in position it is placed so that the head of this pin or tack will be preferably under a downwardly projecting point c^3 of an arm V', but as shown in the drawings it is at one side, to more clearly show it. This arm V' is secured by slot b^3 and set screw d^3 to another arm W' pivoted to a vertical stationary rod A² secured by set nuts B² to the back arm C³ of the frame E. The arm rests upon a collar D² secured to the vertical rod A² by a set screw e^3 on which it can be moved up and down to adjust it to the desired height as different widths of tree legs are operated upon, and when properly adjusted secured by its set screw. The arm can be swung back out of the way when removing the tree leg as shown in dotted lines Fig. 2. The smaller arm V' has on its edge gage marks f^3 which can be arranged to a scale and numbered to set the arm at any desired point in relation to the end g^3 of the arm W' or any definite mark thereon, which then can be secured by the thumb screw, also when in position the arm can be made rigid by its set screw E². To prevent the arm W' swinging too far to the left, see Fig. 2, and to always bring it into the same position vertically a pin h^3 of the arm abuts against an upright pin m^3 of the collar, as shown in plan in Fig. 8.

Having thus described my invention, what I claim is—

1. In combination, a table or support provided with longitudinal guide rails, a frame adapted to move back and forth on said guide rails, transverse guide rails on the upper side of said frame at right angles to said guide rails, a frame adapted to move back and forth on said transverse rails, transverse guide rails on said table or support back of longitudinal rails and on the horizontal plane of the transverse rails on said frame and in position to form a continuation thereof, and means on said latter frame for supporting and securing a boot tree leg thereon, whereby said boot tree can be carried forward and backward and laterally for operation thereon by certain tools, one after the other.

2. In combination, a table or support provided with longitudinal guide rails, a frame adapted to move back and forth on said rails, transverse guide rails on the upper side of said frame at right angles to said table guide rails, a frame adapted to move back and forth on said transverse rails and provided with means for supporting and securing a boot tree leg thereon, a bit or drill secured to a revolving head on a suitable support parallel with said longitudinal guide rails, two shafts adapted to revolve in bearings on a suitable support at right angles to each other and a circular saw on each shaft, one of said shafts being parallel with said longitudinal guide rails and the other at right angles vertically thereto for the purpose specified.

3. In combination, a table or support provided with longitudinal guide rails, a frame adapted to move back and forth on said rails, transverse guide rails on the upper side of said frame at right angles to said table guide rails, a frame adapted to move back and forth on said transverse rails, transverse guide rails on said table or support back of, and in line with and forming a continuation of said transverse rails on said frame and provided with means for holding and securing a boot tree thereon, two shafts adapted to revolve on a suitable support at right angles to each other, a circular saw on each shaft, a short bit or drill secured to a revolving head or arbor and another bit or drill having side cutting edges secured to a revolving head or arbor for the purpose specified.

4. In combination, a table or support provided with longitudinal guide rails, a frame adapted to move back and forth on said guide rails, transverse guide rails on the upper side of said frame at right angles to said table guide rails, a frame adapted to move back and forth on said transverse rails, and provided with means for supporting and securing a boot tree leg thereon, a bit or drill secured to a revolving head or arbor on a suitable bearing parallel with said longitudinal guide rails, transverse guide rails on a suitable support, back of, in line with and forming a continuation of said transverse rails for said frame,

two shafts adapted to revolve in bearings of
a suitable support at right angles to each
other, a circular saw on each shaft, the two
saws so arranged as to have their adjacent
5 edges close together, one a little back of the
other and at right angles to each other, a hori-
zontal bit or drill secured to a revolving arbor
or head, and a vertical bit or drill having side
cutting edges, and adapted to revolve in suit-
10 able bearings, whereby the boot tree secured
to the frame, has first a shoulder cut in one
end, the centering of a longitudinal hole, the
burring of a groove one side of said shoulder
and a hole bored longitudinally through the
15 tree for the purpose specified.

5. In combination, a table or support pro-
vided with longitudinal guide rails, a frame
adapted to move back and forth on said guide
rails, and provided with means for support-

ing and securing a boot tree leg thereon, a bit 20
or drill secured to a revolving head or arbor
of said table or suitable support and parallel
with said guide rails, a vertical frame adapt-
ed to slide back and forth in suitable grooves
parallel with said longitudinal guide rails be- 25
tween said drill arbor and said frame, and
provided with a hole through which extends
said bit or drill and by which it is supported
and steadied in the operation of the drill and
having attached thereto a cord and weight 30
for the purpose specified.

In testimony whereof I have hereunto set
my hand in the presence of two subscribing
witnesses.

WILLIAM H. AUSTIN.

Witnesses:

WM. THOMPSON,

EDWIN W. BROWN.