

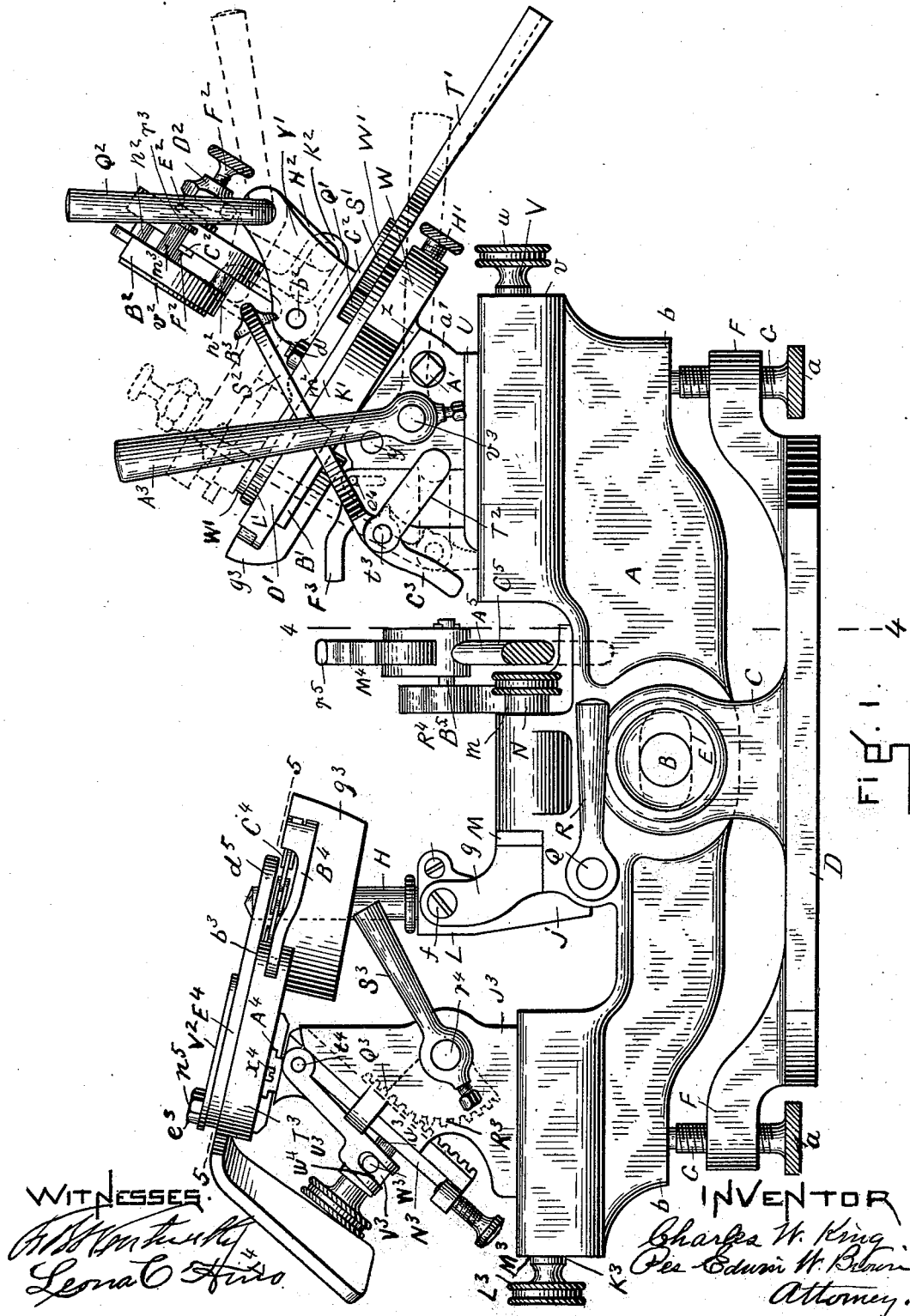
(No Model.)

6 Sheets—Sheet 1.

C. W. KING.
LASTING MACHINE.

No. 523,402.

Patented July 24, 1894.



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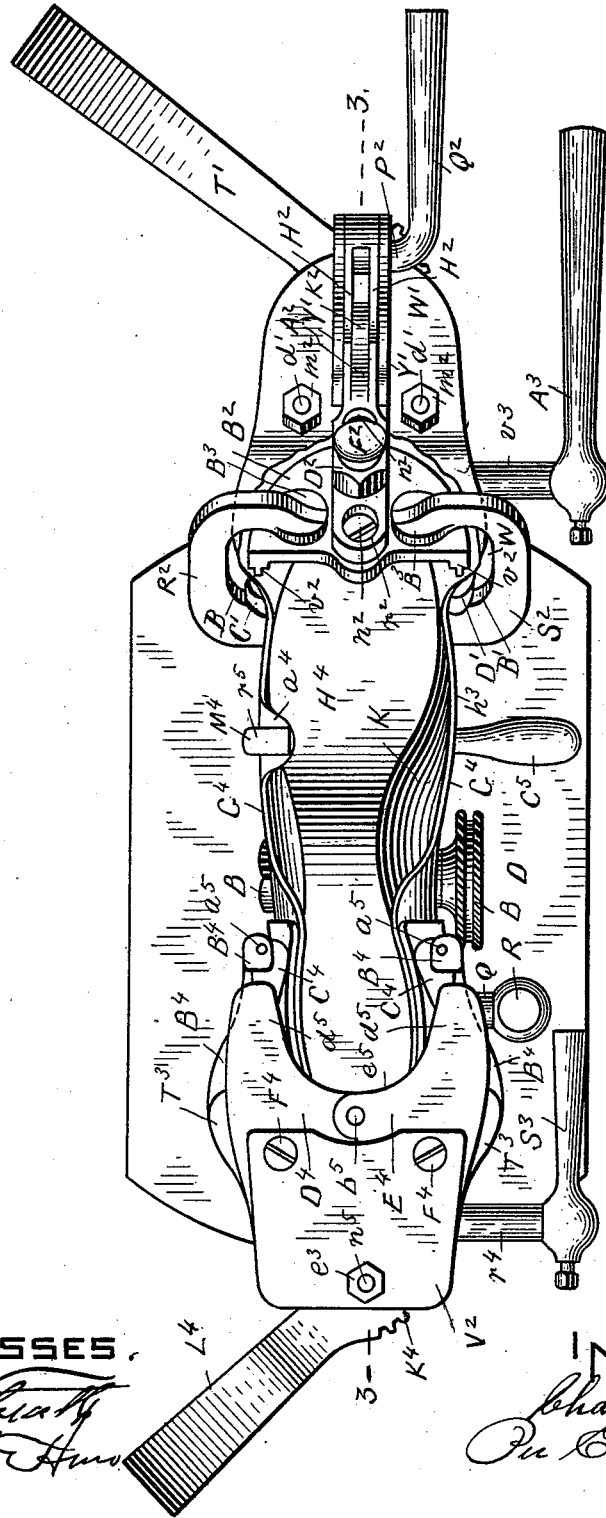


FIG. 2.

WITNESSES.

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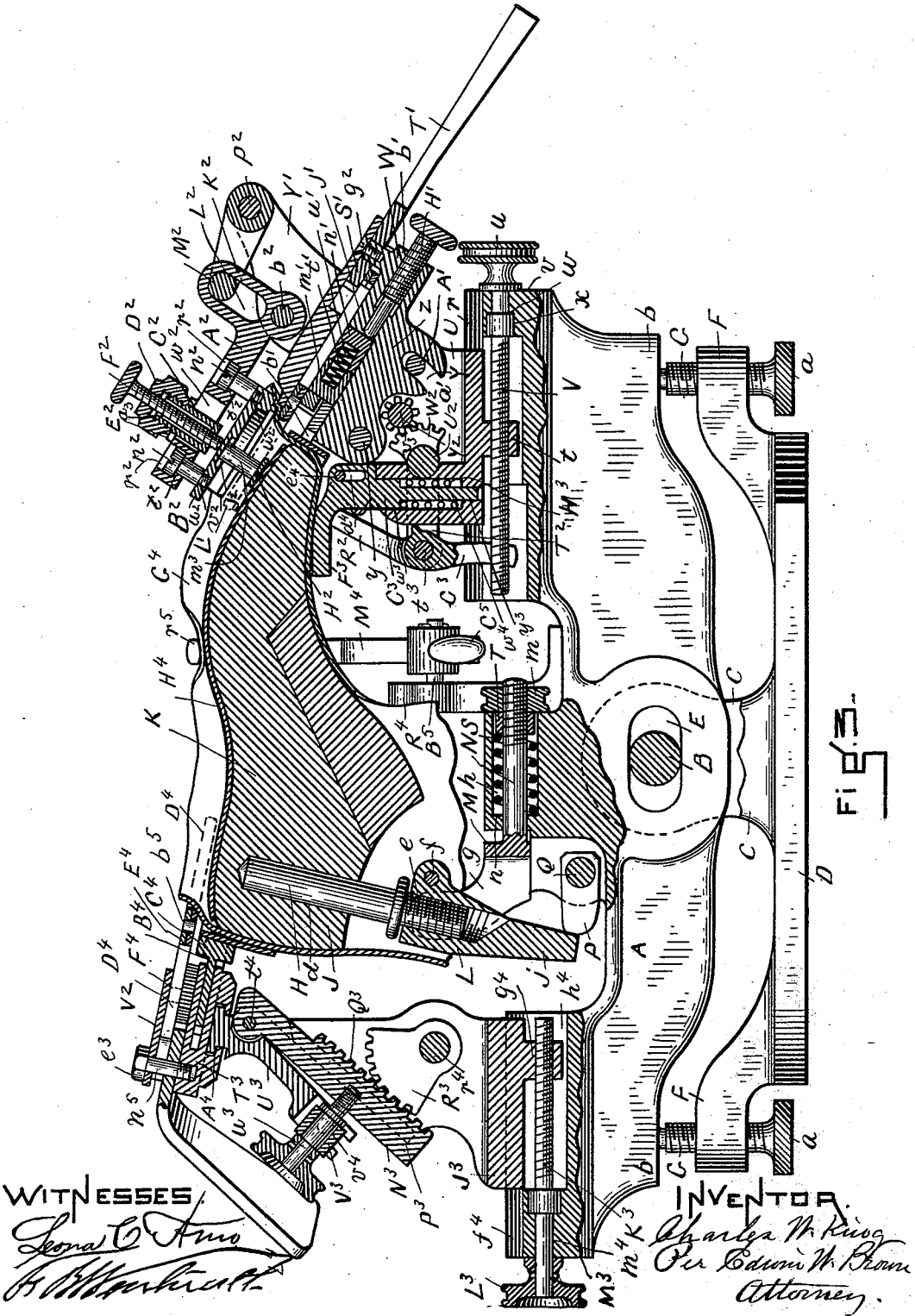


FIG. 3.

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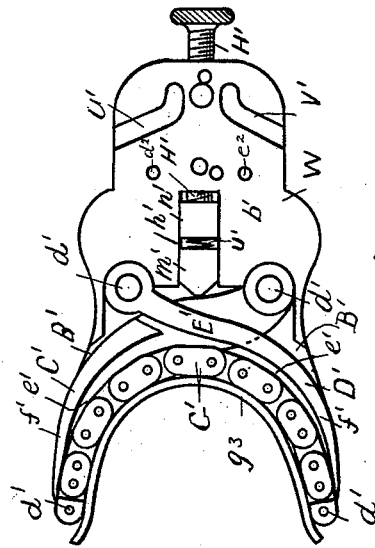


FIG. 7.

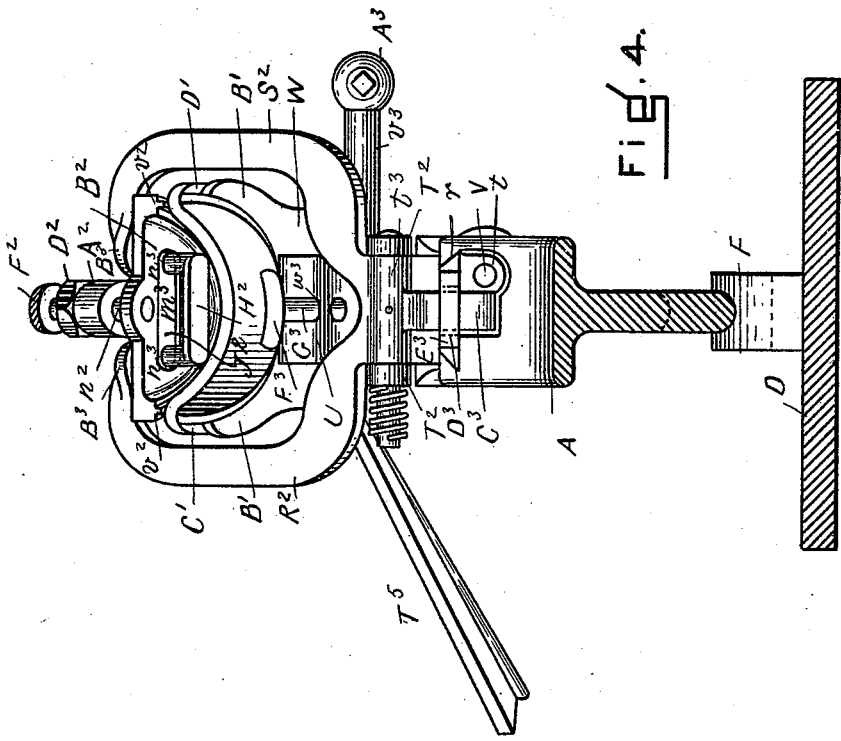


FIG. 4.

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(No Model.)

6 Sheets—Sheet 5.

C. W. KING.
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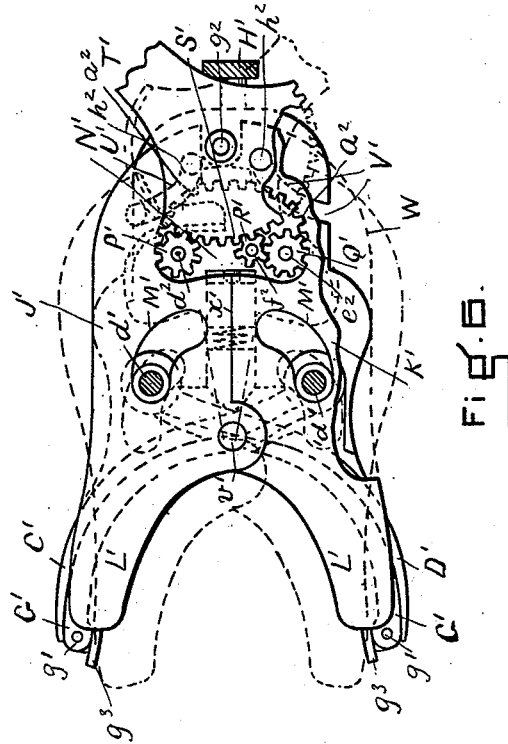


FIG. 6.

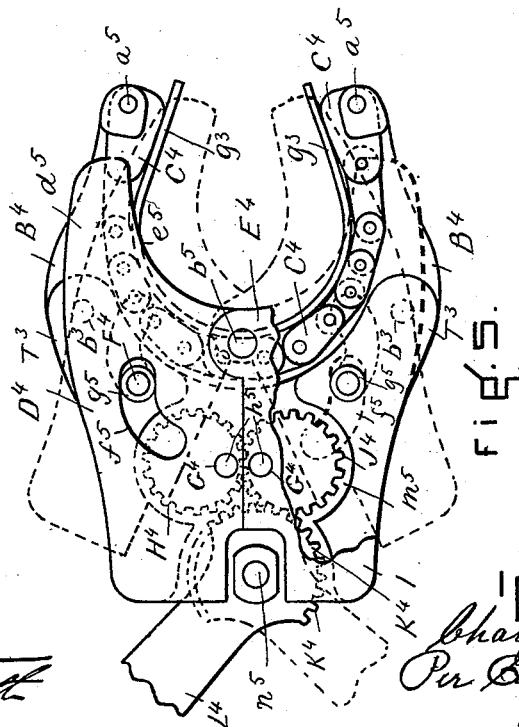


FIG. 5.

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(No Model.)

6 Sheets—Sheet 6.

C. W. KING.
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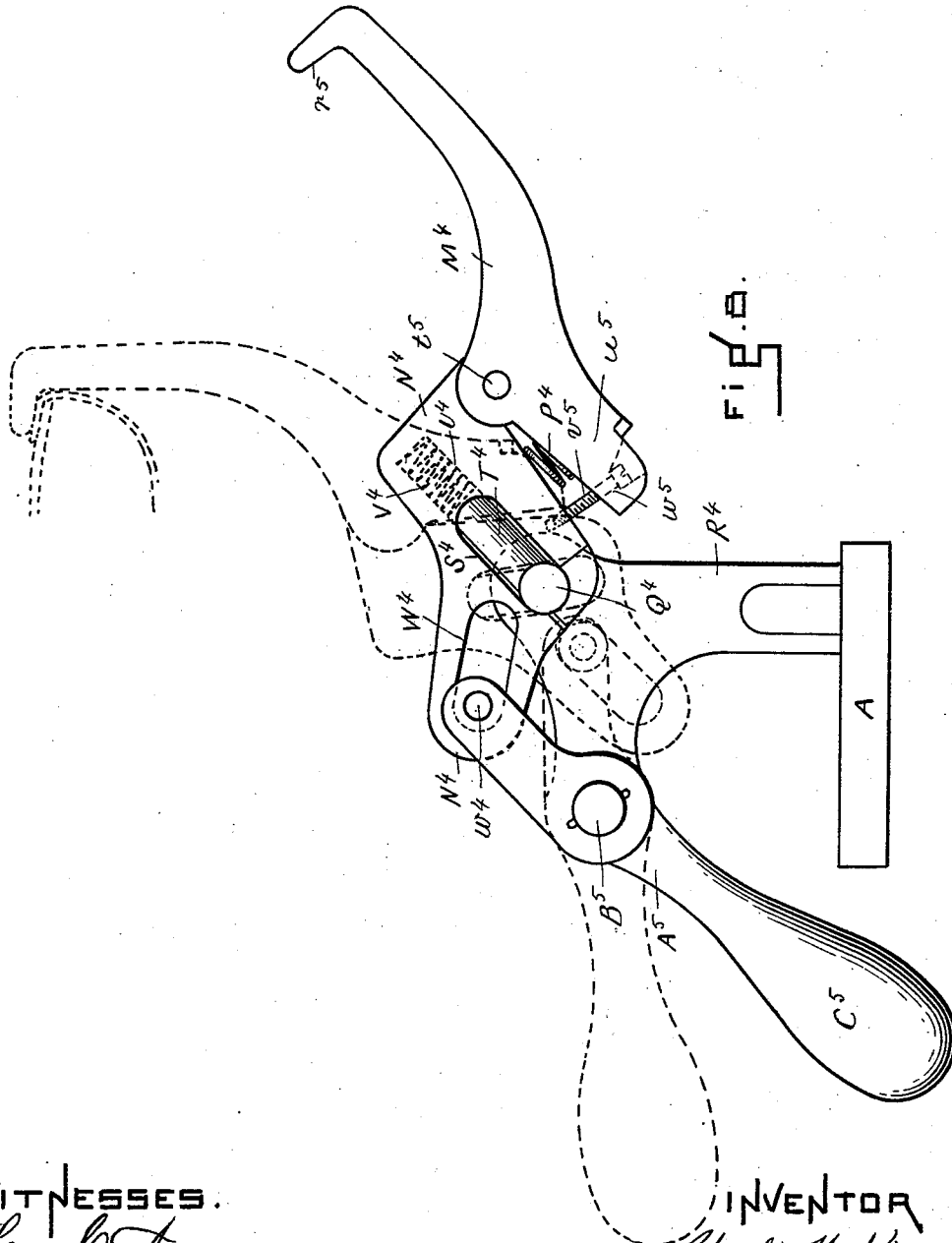


FIG. 6.

WITNESSES.

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UNITED STATES PATENT OFFICE.

CHARLES W. KING, OF NEWTON, MASSACHUSETTS, ASSIGNOR TO CLARENCE S. LUITWIELER, OF SAME PLACE.

LASTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 523,402, dated July 24, 1894.

Application filed April 1, 1893. Serial No. 468,695. (No model.)

To all whom it may concern:

Be it known that I, CHARLES W. KING, of Newton, in the county of Middlesex and State of Massachusetts, have invented certain new and useful Improvements in Lasting-Jacks, of which the following is a full, clear, and exact description.

This invention consists of a jack for lasting boots and shoes, constructed and arranged for operation all substantially as hereinafter fully described reference being had to the accompanying sheets of drawings, in which—

Figure 1 is a front view. Fig. 2 is a plan view, with a last and upper of a boot or shoe in position to be lasted. Fig. 3 is a longitudinal vertical central section on line 3—3 Fig. 2. Fig. 4 is a cross section on line 4—4 Fig. 1 looking to the right. Fig. 5 is a detail plan view of one end below line 5—5 Fig. 1. Fig. 6 is a detail plan view to be hereinafter referred to. Fig. 7 is a plan view below the parts shown in plan view in Fig. 6. Fig. 8 is a detail elevation of some of the operating parts enlarged.

In the drawings A represents a body or frame supported by a central cross pivot or screw bolt B between two vertical arms C of the base plate D which can be secured on any suitable support, the bolt passing through a longitudinal slot E in the body as shown in Fig. 3, by which the body can be moved forward and backward, and by tightening the bolt hold it at such place. At each end of the base plate Figs. 1 and 3 is a projection F up through which extends a screw G, having a head *a* for turning it, on which screws the ends *b* of the body A rest and bear for it to be adjusted as to its angle of elevation on its pivot, and when adjusted by turning up the screws accordingly be held firm in such adjusted position.

H is a pin on which the heel J of the last K is placed by its socket *d* as shown in Fig. 3, which pin is screwed at *e* into a block L pivoted at *f* between two arms *g* of a bracket M having a spindle or rod N adapted to move horizontally in a socket *h* of the body, the block extending down a short distance below its pivot as at *j* against the inner side of the lower end of which is arranged to abut an arm P on a horizontal pivot Q in the body,

and having secured to a forward extension of the pivot a handle R for swinging the same. This spindle or rod N extends beyond the opening or socket *h* in the body and has on its outer end a screw nut *m* and around this spindle in the socket *h* is a spiral spring S which abuts against a shoulder *n* of the socket and against an inner screw nut T on the end of the spindle in the socket, the screwing on or off of which nut T increases or reduces the tension of the spiral spring S.

After the last is placed on the pin by swinging the handle R up, its arm P will be moved against the lower arm *j* of the pin block L and cause it and the heel pin H to swing and the last to move forward for the purpose hereinafter described.

U is a block arranged to slide toward and from the last pin in a dove-tail groove *r* in the body having a downwardly projecting central lug *t* through which screws horizontally a screw V having a head *u* which abuts against the end *v* of the body and an inner shoulder *w* in a socket *x* in the end which allows the free turning of the screw, but prevents its longitudinal movement, so that in turning the screw in either direction the block U will be moved forward or backward along its grooved bearing.

W is a plate pivoted at *y* by a central downward extension *z* between arms *a'* of the block U so it can swing up and down thereon within certain limits, an open slot Y engaging with a cross screw bolt A' limiting its downward movement, but allowing it to be swung upward a short distance as shown in Fig. 3, and to be secured in its adjusted position by tightening up the screw bolt A'.

The forward or left hand end of the plate W is much thinner than the rear portion *b'* which thinner portion is in the form of two flat arms B' having inner curved edges making a U shaped space between them, and pivoted at *d'* respectively on this plate W in front of the thick portion *b'* and resting on the forward extending arms B' of the plate are two curved arms C' D' which cross each other as at E' being cut away at such place to pass by each other and then extend forward over the plate arms B' as shown in Fig. 7. These arms C' D' beyond their junction are angular in

cross section having a horizontal portion e' and a vertical wall f' and disposed upon the horizontal portions and within the vertical walls of these arms $C' D'$ is a chain or flexible band G' pivoted by its ends at g' to each end of the curved arms $C' D'$ as shown in Fig. 7.

In the thicker portion b' of the plate W is a horizontal central slot or groove h' in which is arranged to slide two blocks $m' n'$ each having an open longitudinal central socket t' open toward each other, in which is a spiral spring u' its tension acting to separate the blocks from each other and the inner one m' being arranged to bear by its end against the back of the curved pivoted arms $C' D'$ at their juncture as shown more particularly in Fig. 7. A horizontal screw H' screws through the portion b' of the plate and bears against the outer end of the outer block n' and serves to force the two blocks forward and as an adjustable bearing against which the block can rest. Disposed on this plate W are two plates $J' K'$ pivoted together at v' each having an arm L' projecting forward substantially over the curved pivoted arms $C' D'$, each curved on its inner side and having a curved slot M' , which fits respectively over and engages with pins or pivots d' of the plate W below it, the two plates abutting together at their meeting edges x' , and each having an opening N' in its inner side, on the edges of which are teeth making an internal gear a^2 , the two plates overlapping each other through their thicknesses at their rear ends, the internal gear a^2 continuing across such opening beyond the central longitudinal line of the two plates. With the plate J' engages a gear P' turning on a journal d^2 of the plate W and another gear Q' turning on another pivot e^2 of the plate W engages with the internal gear a^2 of the other plate K' , and engaging with this gear Q' is a small gear R' turning on a pin f^2 of the plate W and engaging with this small gear R' and the gear P' is a segment of a gear S' turning on a pin g^2 of the plate and which gear has a handle T' for operation of the same. Taking hold of the handle T' and swinging this segmental gear on its pivot g^2 causes the gears $Q' P'$ to revolve, which in turn act upon their respectively pivoted plates $J' K'$ by their internal gears a^2 and cause the plates to move from and to each other as desired swinging on their pivot v' .

In the rear end of the plate W in its upper side are two curved slots or grooves $U' V'$ curving outward from the segment gear pivot g^2 as shown in Fig. 7 in which fits respectively a pin h^2 on the under side of the pivoted plates $J' K'$ so that the two plates when swung on their pivot v' by the swinging of segmental gear S' the pins h^2 travel up and along their respective groove $U' V'$ in the plate W and the curved slots M' over the pivot d' of the plates first move forward, and then their arms L' move toward each other as shown in dotted lines in Fig. 6 and in the backward

swing of the segmental gear the arms will be moved from each other and then back to their original position. The smallest gear R' is to turn the gear Q' in a reverse direction from that of the gear P' for it to move the arm K' in the proper direction. Above these curved plates $J' K'$ is a plate W' which fits over the two pins h^2 resting on shoulders thereon, and bearing on the top of the segmental gear pivot or pin g^2 , so that when this plate W' is secured in place by screw nuts m^2 on the two pins d' there will be room enough between it and the block plate W for the pivoted plates $J' K'$ and gears to freely move.

Pivoted at b^2 between two upright arms Y' of the upper plate W' is an arm A^2 which extends forward and to the under side of this arm is attached a horizontal segmental plate, B^2 the plate being secured by two screws n^2 each of which passes freely down through an opening r^2 in the arm A^2 screwing into the segment plate B^2 their heads resting on shoulders t^2 of their respective holes in the arm A^2 which limit the height of the plate in relation to its supporting arm, but yet allow of some movement upward of the segment plate shoulders n^2 on the screw abutting against the segmental plate. The under side of this segment plate B^2 is hollowed out and has near its curved edge a narrow rib or edge v^2 which extends around the plate substantially in the arc of a circle.

The arm A^2 has a longitudinal slot w^2 through it in which is a square block C^2 arranged to move thereon having a shoulder on its lower end to bear against the under side of the arm and a screw nut D^2 which screws upon the upper end of the block C^2 against a washer E^2 over the upper end of the block and bearing upon the arm, and holding the block C^2 firmly in its position in the arm A^2 . The block has a vertical central opening a^3 in it through which freely passes a screw F^2 screwing through the screw nut E^2 and extending freely through the lower end of the block bears upon the upper side of the segment plate B^2 . The screw presses the segment plate down for the heads of its screws n^2 to bear firmly in the seats in the arm A^2 .

H^2 is a narrow flat bar having at each end a vertical pin m^3 each of which projects up through a separate hole n^3 in the plate B^2 and having a cross pin through its end to prevent detachment of the bar H^2 the pins m^3 having free movement through their respective holes, so the bar can be moved back and forth or up and down, and when close up to the segmental plate, it lies freely in a recess J^2 in the under side of the plate so that the bar can be disposed in the recess and not project beyond the plate but be flush with the same.

An upward angular portion K^2 of the arm A^2 has a slot L^2 through it sidewise in which is disposed a cross pin M^2 of two arms N^2 between which the angular portion is disposed and which as one at their other end is secured over and to a pin or journal P^2 which is

adapted to turn in bearings in the upright arms Y' of the plate W' the journal extending forward at one end beyond the bearing arm and bent upward to form a handle Q² as shown in Fig. 1 so that swinging the handle up through the cross pin engagement with the arm A² the arm and segmental plate B² will be swung up from its position shown in section lines in Fig. 3 and dotted lines in Fig. 1 into the upright position shown in Fig. 1.

R², S², are two arms joined together and pivoted as one at t² between two arms T² of a rock shaft U² adapted to rock in a bearing in the block U and from the central portion of the shaft U² projects a segment gear W² which is arranged to engage with a small pinion Y² on a pin v² turning in a bearing in the block U one end extending out beyond the block and having on its end a handle A³ for operation of the same. These arms extend transversely each way from the central line of the machine then upward, then toward each other, over and above the plates for their free ends B² which are somewhat enlarged (when the arms are substantially in an upright position) to be over the pins m² of the bar H² in the under side of the segmental plate B² which position is as shown in Figs. 2 and 4. Swinging the handle A³ up into the position shown in Fig. 1 by its gear Y² connection with pin or arbor of the two arms they will be raised a little and then swung back into position shown in Fig. 1, which will move them back out of the way of the segmental plate, so that if desired the plate can be swung up from its position shown in Fig. 3 in section and dotted lines Fig. 1 into position shown in full lines in Fig. 1.

The arms R², S² have a central downward extension piece C² below their pivot which when the arms are in the position shown in Fig. 3 projects down through a hole or opening D² in a projection E² of the sliding block U and in the operation of the machine this serves as a guide and a hold to the arms for their proper work as will be described later. As the arms are raised to be swung back, the extension piece moves up and out of its opening leaving the arms free to swing back into the position shown in Fig. 1.

F² is a rest for the toe of the last and consists of a plate hollow or concave on its upper surface having a centrally downwardly extending arm G² which fits in a vertical socket w² in the block U its lower portion w² being reduced in diameter and fitting in a corresponding socket y², a spiral spring H² encircling the smaller portion and bearing against the shoulder of the arm and the bottom of the socket w² as shown in Fig. 3 in section, which serves to hold the rest in its upper position, its movements up and down being limited by a slot d² in the arm through which projects a pin e² of the block U as shown in Fig. 3.

All the parts above described relate to the mechanism for operation on the toe of the

boot or shoe while the mechanism at the left relates to operation upon the heel of the boot or shoe.

At the opposite end of the body A is an upright or standard J³ which is arranged to slide forward and backward or to and from the toe end of the machine, in a dove-tail groove f⁴ in the body. A lug g⁴ projects down from the bottom of the standard into a longitudinal slot h⁴ in the body, which receives a screw K³ adapted to turn in a bearing m⁴ and prevented from longitudinal movement by the abutment of its milled head L³ against the portion M³ of the standard and a shoulder n⁴ of the screw abutting against the other side of the portion m³ as shown in Fig. 3 in section. The upper end or surface of this standard inclines upward or at an angle of about forty-five degrees toward the last, and is divided into two parts, with a space or groove between them and in dove-tail grooves P³ in the upper ends of these parts is arranged to slide up and down, or to and from the last, a bar N³, it having on its under side a rib which projects freely down into the space or groove between the two parts of the standard, its under edge having gear teeth or a rack Q³, with which engages a segment of a gear R³ freely disposed in said groove and secured to a cross pin or shaft r⁴ adapted to turn in bearings of the standard uprights, which pin at the front end extends beyond the upright and has a handle S³, secured thereto for operation thereof, so that swinging the handle down to the right, Fig. 1, the bar N³ is caused to move up the incline in its guideways, and to be moved downward or lowered in swinging the handle up, and in both ways in line with the central longitudinal line of the last or machine. Above this upright J³ is a plate T³ which is connected to a downwardly extending arm U³ pivoted at t⁴ to the upper end of the bar N³ which arm U³ at its lower end straddles a block V³ having a pin W³ projecting from each side and extending respectively in slots u⁴ in the end of each part. A screw w³ passes freely through a socket v⁴ in this block screwing into the bar N³. By means of this screw the plate T³ can be swung on its pivot to have it lie at more or less an angle in relation to the last, within certain limits it being held firmly in position by the screw w³. The plate T³ is attached to the pivoted arm U³ by a transverse groove joint A⁴ as shown in Fig. 3 in cross section, so that the plate can move back and forth along such groove of itself within certain limits being stopped by a screw pin x⁴ on the under side of the plate at each side.

The front end of the plate T³ is concave or hollowed out vertically making two short arms B⁴ one each side to the outer ends of which is pivoted at a⁵ the end of a chain or flexible band C⁴ the main portion extending back between the arms B⁴ in a curved line.

On top of the plate T³ are two plates D⁴,

E⁴, pivoted together at b⁵ and each having a projecting arm or narrow portion c⁵ having an inner curved flange e⁵ which extends out over the flexible band and its supporting arms. The plates D⁴, E⁴, are on the same horizontal plane and each has a curved groove f⁵ disposed over a ring washer g⁵ on a screw pivot F⁴ screwing into the plate T³ which fits in the groove and the rear end of each plate has a hole G⁴ through its thickness, which fits over pins h⁵ on gears H⁴, J⁴, respectively, the two gears being side by side, and engaging with each other and disposed in a recess or depression m⁵ in the plate T³, the gear J⁴ engaging with a segmental gear K⁴ turning on a pivot n⁵ of the plate T³, and extending out from its opposite side in an extension L⁴ which forms a handle for operating the same. Swinging the segmental gear K⁴ on its pivot operates to move forward through the gear connection the plates a short distance and then the curved grooves f⁵ traveling over the pins F⁴ cause the arms d⁵ to move toward each other.

M⁴ is a lever having a hook end r⁵ pivoted at t⁵ to a block n⁴ having a spring P⁴ between its arm w⁵ and the block N⁴ which acts to force the arm w⁵ outward, its movement being limited by a set screw v⁵ screwing through a socket w⁵ in the arm into the block N⁴. This block is pivoted to a pin Q⁴ of an arm R⁴ of the body in a slot S⁴ against which pin Q⁴ is arranged to bear a pin T⁴ extending up into a socket U⁴ in the block N⁴ and having a spiral spring V⁴ in the socket bearing against the pin T⁴ to hold it against the pivot Q⁴. The block N⁴ has another slot W⁴ in its end opposite to the hook lever in which is disposed a cross pin w⁴ of a lever A⁵ pivoted at B⁵ to the arm R⁴ having a handle C⁵ for operation of the same.

As the lever A⁵ is swung up, by its connection with the hook lever M⁴, it is swung up and forward so that its hook r⁵ will be brought over and bear upon the upper on that side of the last, and then pressing firmly down the lever A⁵ the lever hook r⁵ will hold firmly down the edge of the upper on the last, but by a yielding pressure. Moving down against its socket pin spring V⁴ and from the changed position of the block N⁴ and the lever M⁴ in its slot in the block as shown in dotted lines in Fig. 8, the lever M⁴ will be locked in position, and can be easily unlocked and returned to its normal position Fig. 8 by swinging down the handle lever A⁵. A plate V² secured by the screws F⁴ above the plate D⁴ and E⁴ and screw nut e³ over the pin n⁵ holds the plates and other parts in place but so as to leave them free for their operation.

In front of and secured to each flexible band G' and C⁴ is secured a piece g³ of suitable soft material such as leather to prevent injury to the upper of the boot or shoe being lasted.

The operation of the machine is substantially as follows: The machine with all its parts when in its normal position is as shown

in Fig. 1 ready to receive the last and upper of the boot or shoe to be lasted. The upper G⁴ of the boot being placed on the last K the last is placed in the machine by placing its heel socket d over the heel pin H as shown in section in Fig. 3. The toe of the last is then pressed down on the toe rest F³ between the two arms or ends of the flexible band G' and curved arms C' D', and then the upper G⁴ at the toe smoothed by hand back or away from the last over and upon the two arms C', D', the segment ribbed plate B² is then swung over and pressed down firmly upon the edge of the upper on the arms C', D' at the toe by swinging down its handle Q²; the handle A³ of the arms R², S², is then swung down to the right, which brings the two arms R² S² forward and their ends B³, over the pins n³ of the bar H² in the ribbed plate B² and continuing the movement of the arm, the two arms R², S², are pressed firmly down on the bar pins n³ which press the bar H² firmly down against the inner sole H⁴ on the last and pressing it and the last firmly down into the upper upon its spring yielding seat F³ which stretches and tightens the upper at the toe upon the last, its edges at the toe being held firmly between the ribbed plate B², and the arms C' D' at such time; when so held the handle R is raised which through its arms P swings the last pin H forward and presses and forces the last toe firmly and strongly against the flexible band G', and thus firmly holds the toe of the upper between it and the flexible band, and when so held the ribbed plate B² is swung up out of the way into the position shown in Fig. 1, and then the arm T' is swung forward or to the left Figs. 2 and 6, which moves forward or toward the last the two curved arms L' of the plates J' K', and then toward each other over the toe of the last which firmly wipes and rubs the upper over the inner sole at the toe. The arm S³ is then swung down which through its segmental gear R³ moves the block N³ up until its flexible band C⁴ connected thereto closes and bears against the upper at the end of the heel of the last; the arm L⁴ is then swung forward which causes the two plates D⁴, E⁴, to move forward over the edges of the upper at the heel, and then their arms d⁵ swung toward each other which firmly wipe and rub the edges of the upper at the heel over and holds them firmly on to the heel of the last. The lever A⁵ is then swung down which swings the curved arm M⁴ up and its bearing end r⁵ over and upon the edge of the upper at a' as shown in Fig. 2 which presses and holds it firmly upon the last at such place. With the last and the upper secured as described and as is shown in plan view in Fig. 2 the side h³ of the upper is ready to be lasted, which is done by hand or in any suitable lasting machine, and then this side of the boot is secured by tacks and also around the toe and heel. The hooked lever M⁴ is then swung down and out of the way and the opposite side of the boot lasted like the first side, and secured by

tacks as before, when the last and the upper are removed from the jack, and another last and upper placed therein and operated upon as before.

5 The spring S of the last pin H holds the pin and thus the last forward firmly but with a yielding pressure, to relieve the rigidity of the same, so that the upper at the toe is held firmly against the flexible band G' after being released from its hold by the segmental
10 ribbed plate B².

The segmental plate B² is held firmly down and securely holds the upper over and down upon the arms C', D', by its supporting arm
15 A² being locked by the cross pin M² of the lever Q² then being at the outer end of the slot L², as shown in Fig. 3, in cross section, for from the relative positions of the slot L², the pivot b² of the arm A² and the lever pin
20 M² and its pivot P², the arm A² is locked and held from swinging up and consequently the plate B² is prevented from movement.

The bar N³ carrying the lasting plates, &c., is arranged on the inclined guideways and
25 surface, for it and the parts carried by it when not in use to be moved down out of the way of the last and upper so the operator can have free access to the upper when otherwise handling and operating. As shown in Fig. 1,
30 it is in its lowest position and out of the way and when in use it is moved up to the position shown in Fig. 3 in section.

Having thus described my invention, what I claim is—

35 1. In a lasting machine, in combination, a pin for insertion in the heel of a last, an arm or rod to which said pin is pivoted, a socket or bearing for said arm in which it is adapted to
40 move back and forth, a spring arranged to act upon said arm, an extension of said pin beyond its pivot and means for acting on said extension to swing the pin on its pivot against
said spring.

2. In a lasting machine, in combination, a
45 pin for insertion in the heel of the last, an arm or rod to which said pin is pivoted, a socket or bearing for said arm in a support, a spring adapted to bear and act upon said arm, an arm independent of said pin pivoted to a support
50 and adapted to bear and act upon said pin.

3. In a lasting machine, in combination, two curved arms pivoted by their ends to a suitable support, projecting forward therefrom and crossing each other, a chain or flexible
55 band disposed freely in between said arms and secured by its ends to the other ends of the curved arms.

4. In a lasting machine, in combination, a
60 block pivoted to a suitable support, two curved arms pivoted thereto by their ends, projecting forward therefrom, and crossing each other, a chain or flexible band disposed freely in between said arms and secured by its end to the other ends of the curved arms.

65 5. In a lasting machine, in combination, a base or support having a groove in its upper side, a block arranged to slide back and forth

therein, a block pivoted to said sliding block, two curved arms pivoted thereto by their ends, projecting forward therefrom and crossing
70 each other, a chain or flexible band disposed freely in between said arms, and secured by its ends to the other ends of the curved arms.

6. In a lasting machine, in combination, a base or support having a groove in its upper
75 side, a block arranged to slide back and forth therein, a block pivoted to said sliding block, two curved arms pivoted thereto by their ends, projecting forward therefrom and crossing each other, a chain or flexible band disposed
80 freely in between said arms and secured by its ends to the other ends of the curved arms, a block adapted to move back and forth in a seat or socket arranged to bear upon said curved arms at or near their crossed portions,
85 a spring to said last block and a screw arranged to bear against said block.

7. In a lasting machine a last for the upper on a suitable support, a plate arranged to bear upon and hold said upper against and on a
90 support, a pivoted arm on which said plate is carried and supported, a slot in said arm, and a lever engaging with said slot for the purpose specified.

8. In a lasting machine, in combination, two
95 plates pivoted together having forward extending arms, their inner edges curved, each plate having a curved slot through it, a support on which said plates rest and are arranged to move, two pins or pivots on said support,
100 over which said curved slots are disposed respectively, each plate having an internal gear at its opposite end, a gear to engage with each plate internal gear, and a segment of a gear having a handle to engage with said gears.
105

9. In a lasting machine, in combination, a plate having an under curved rib or rim, a support to which said plate is pivoted, a transverse oblong plate on the under side of said former plate, an arm to each end of said transverse plate passing up through an opening or
110 hole through said former plate, connected together at their upper ends above said former plate and means for pressing upon said connection.
115

10. In a lasting machine, in combination, a plate having an under curved rib or rim, and hollowed out between said rib or rim, a support to which said plate is pivoted, a transverse oblong plate on the under side of said
120 former plate, an arm to each end of said transverse plate passing up through an opening or hole through said former plate, connected together at their upper ends above said former plate and means for pressing upon said connection.
125

11. In a lasting machine, in combination, a plate having an under curved rib or rim, a transverse oblong plate on the under side of said former plate, an arm to each end of said
130 transverse plate passing up through said former plate, connected together at their upper ends above said former plate, a lever pivoted to a suitable support and extending upward

in two arms straddling the former plate, and bent over toward each other and then downward and arranged to bear in the operation of the lever upon said transverse plate arms.

5 12. In a lasting machine, in combination, a body or support for the various parts of the machine pivoted to a suitable base or support by a horizontal slot, and a screw at each end of said base, screwing up through a projection of said base for the machine body to rest thereon.

13. In a lasting machine, in combination, a block or standard on a support, its upper side or surface being inclined upward toward the last, a longitudinal groove in its upper side, a bar or plate arranged to slide back and forth in inclined guideways on such incline from and to the last, two plates pivoted together having forward extending arms and supported on said bar or plate, an under rib to said bar or plate extending down into said groove, gear teeth on its under edge, a segmental gear engaging with said rib gear, and a pivoted lever to which said segmental gear is secured for operation thereof.

14. In a lasting machine, in combination, a block or standard on a support, adapted to move back and forth in suitable guideways having a downwardly projecting lug, a screw engaging with said lug and the block support, the upper side or surface of said block being inclined upward toward the last, a longitudinal

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nal groove in its upper side, a bar or plate arranged to slide back and forth in inclined guideways on such incline from and to the last, two plates pivoted together having forward extending arms and supported on said bar or plate, an under rib to said bar or plate extending down into said groove, gear teeth on its under edge, a segmental gear engaging with said rib gear, and a pivoted lever to which said segmental gear is secured for operation thereof.

15. In a lasting machine, a lever having an angular or hook end, pivoted by a slot to a pivot on a suitable support, a socket in said lever, a pin in said socket bearing on said pivot, a spring in said socket bearing on said pin and a lever connected to said first lever for operation thereof.

16. In a lasting machine, a lever having an angular or hook end pivoted by a slot to a pivot in a suitable support, a socket in said lever, a pin in said socket bearing on said pivot, a spring in said socket bearing on said pin, a slot in one arm of said lever and a lever connected by a pin disposed in said slot.

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

CHARLES W. KING.

Witnesses:

EDWIN W. BROWN,
LEONA C. ARNO.