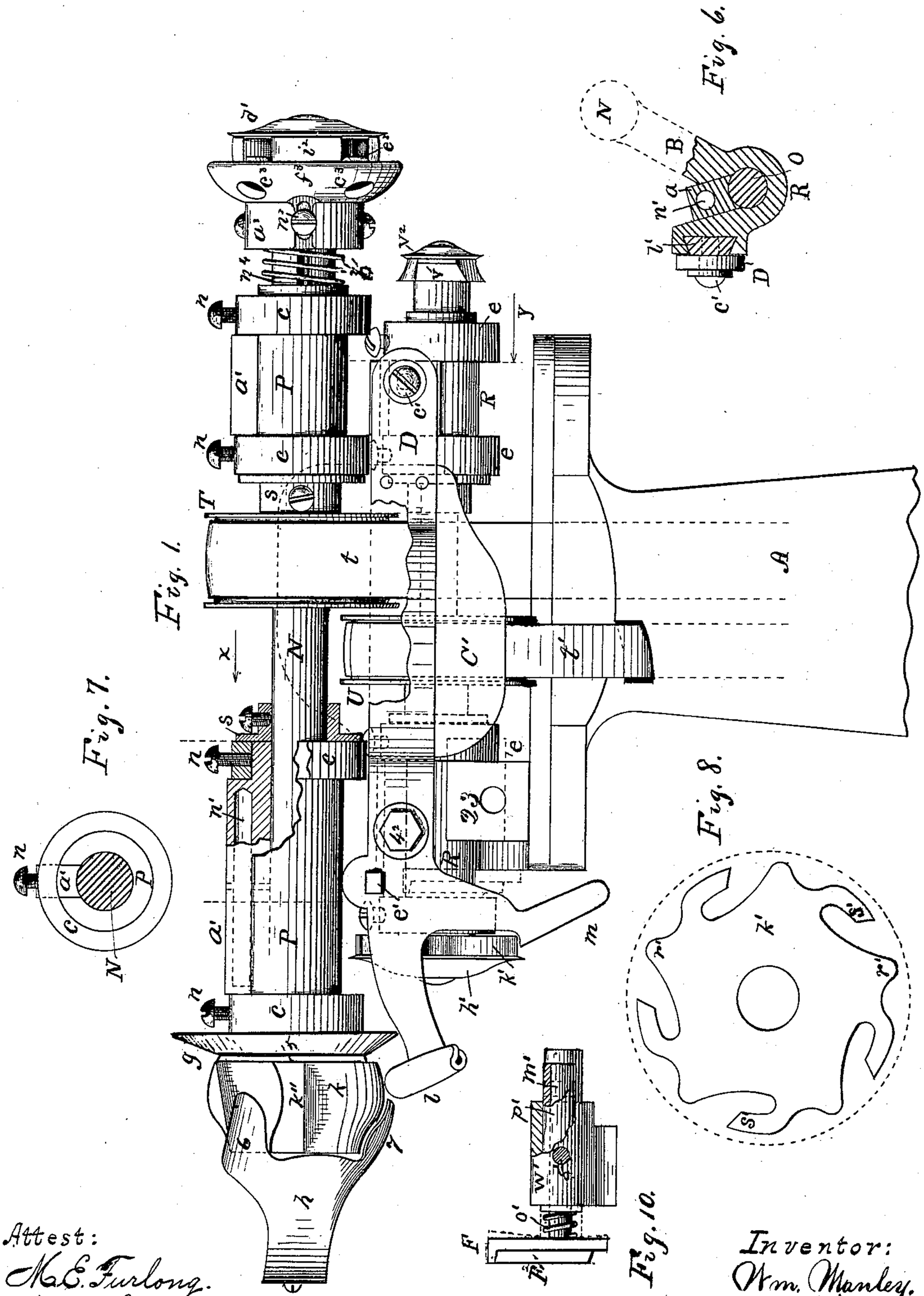
(No Model.) 5 Sheets—Sheet 1.

# W. MANLEY.

## HEEL AND SOLE EDGE TRIMMING MACHINE.

No. 322,945. Patented July 28, 1885.

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W. V. Lockwood

Inventor:
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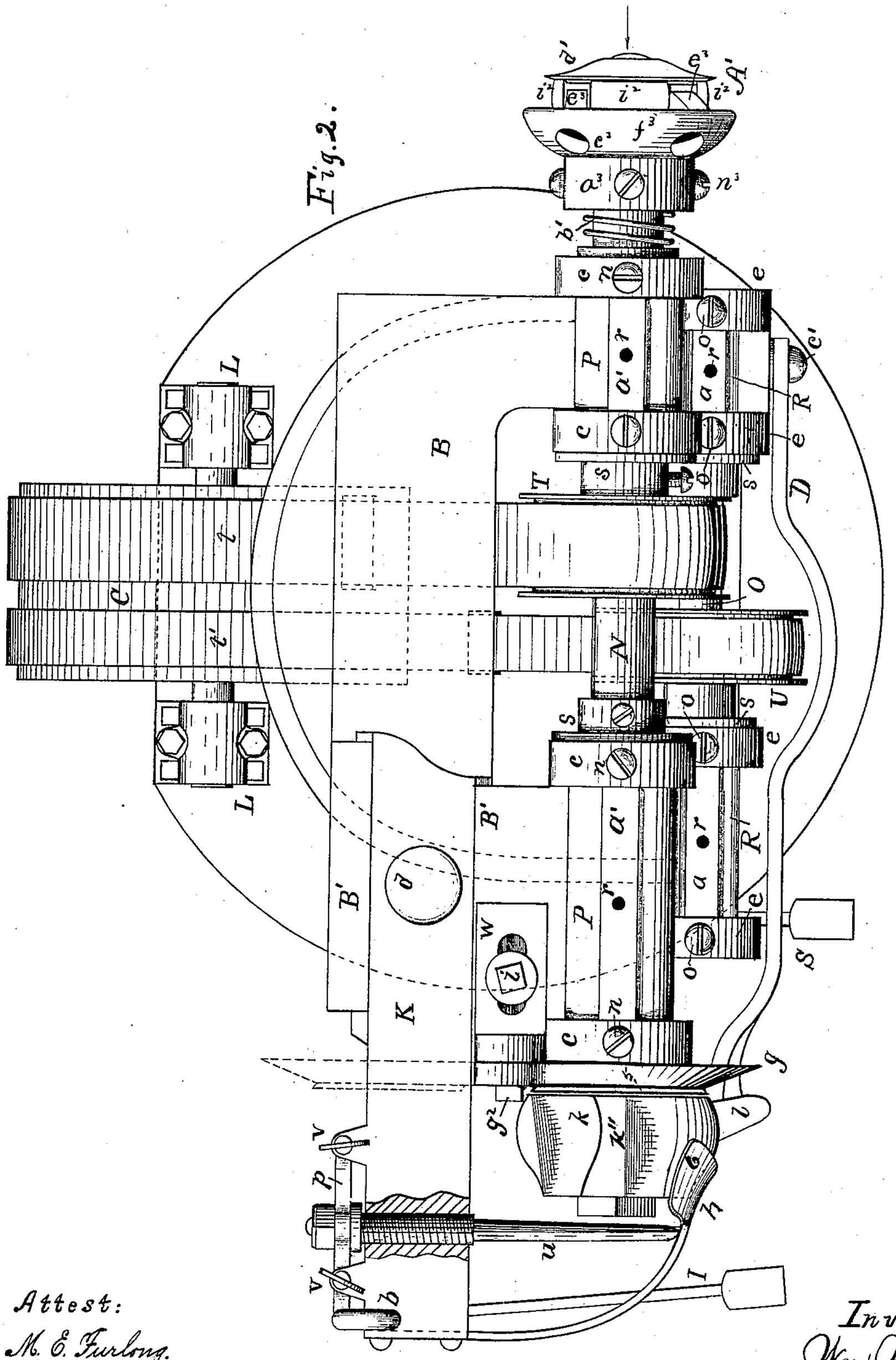
(No Model.) 5 Sheets—Sheet 2.

# W. MANLEY.

## HEEL AND SOLE EDGE TRIMMING MACHINE.

No. 322,945. Patented July 28, 1885.

Fig. 2.

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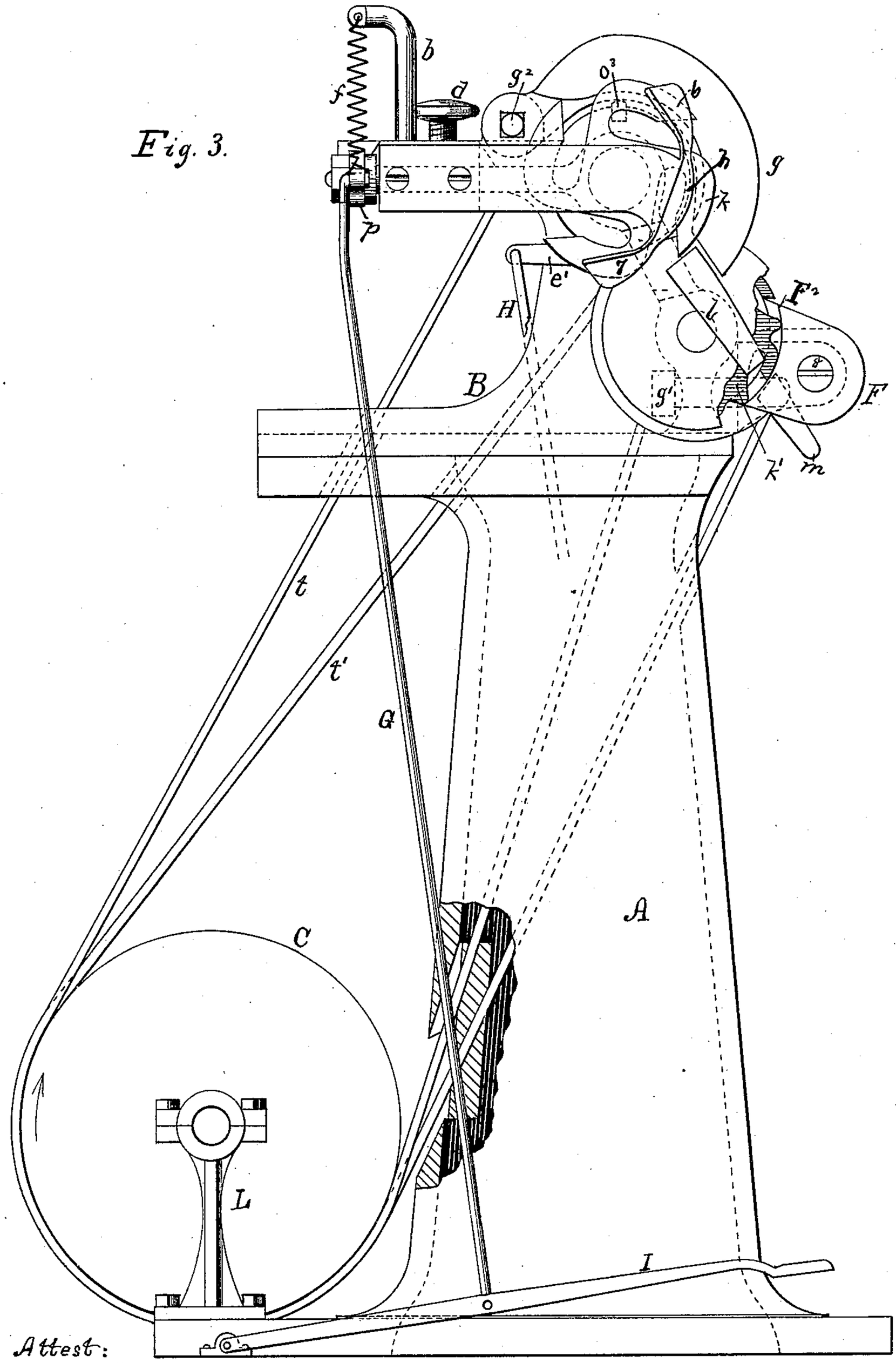
(No Model.) 5 Sheets—Sheet 3.

# W. MANLEY.

## HEEL AND SOLE EDGE TRIMMING MACHINE.

No. 322,945. Patented July 28, 1885.

*Fig. 3.*

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(No Model.) 5 Sheets—Sheet 4.

# W. MANLEY.

## HEEL AND SOLE EDGE TRIMMING MACHINE.

No. 322,945. Patented July 28, 1885.

Fig. 4.

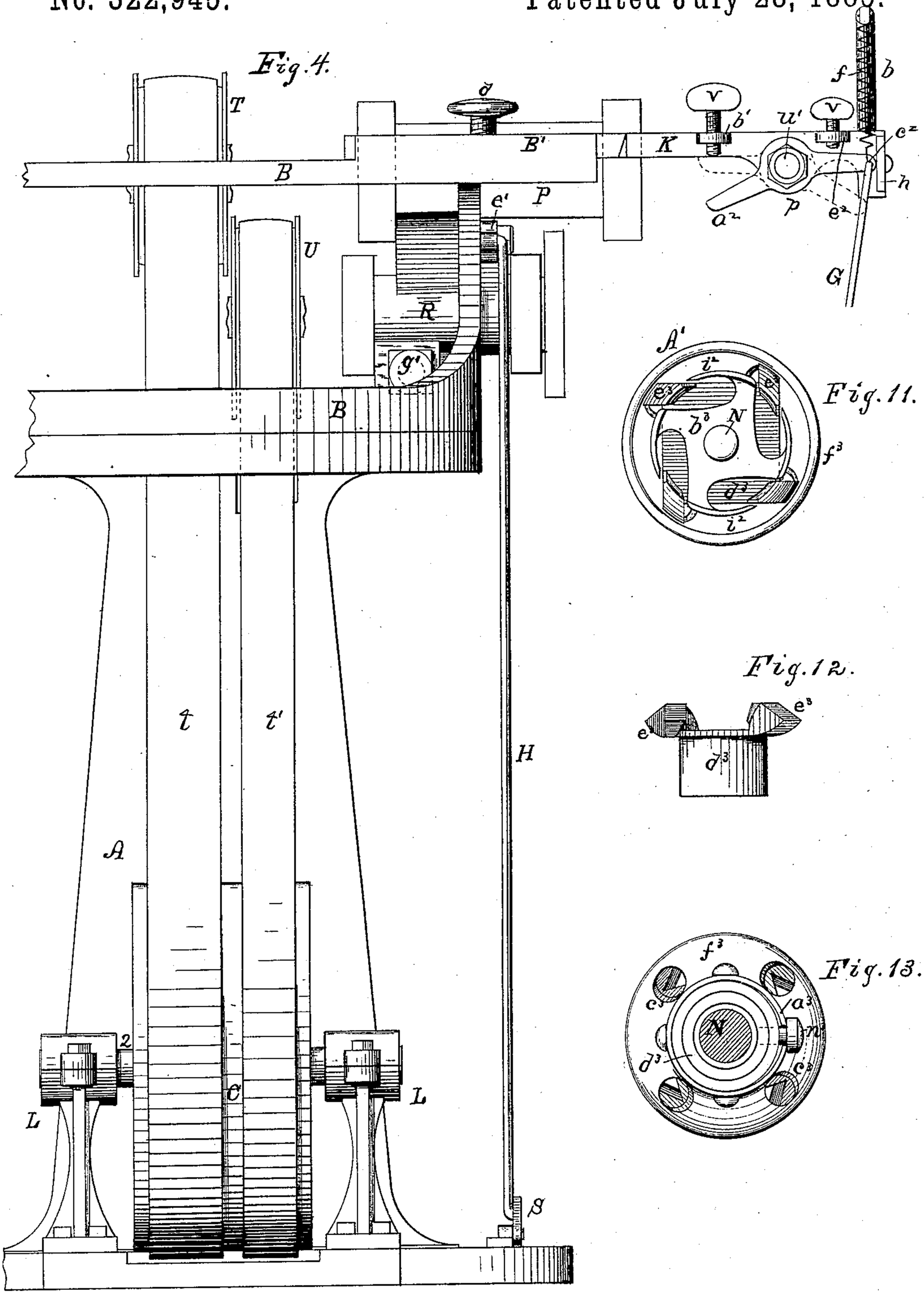


Fig. 11.




Fig. 12.




Fig. 13.




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(No Model.)

5 Sheets—Sheet 5.

# W. MANLEY.

## HEEL AND SOLE EDGE TRIMMING MACHINE.

No. 322,945. Patented July 28, 1885.

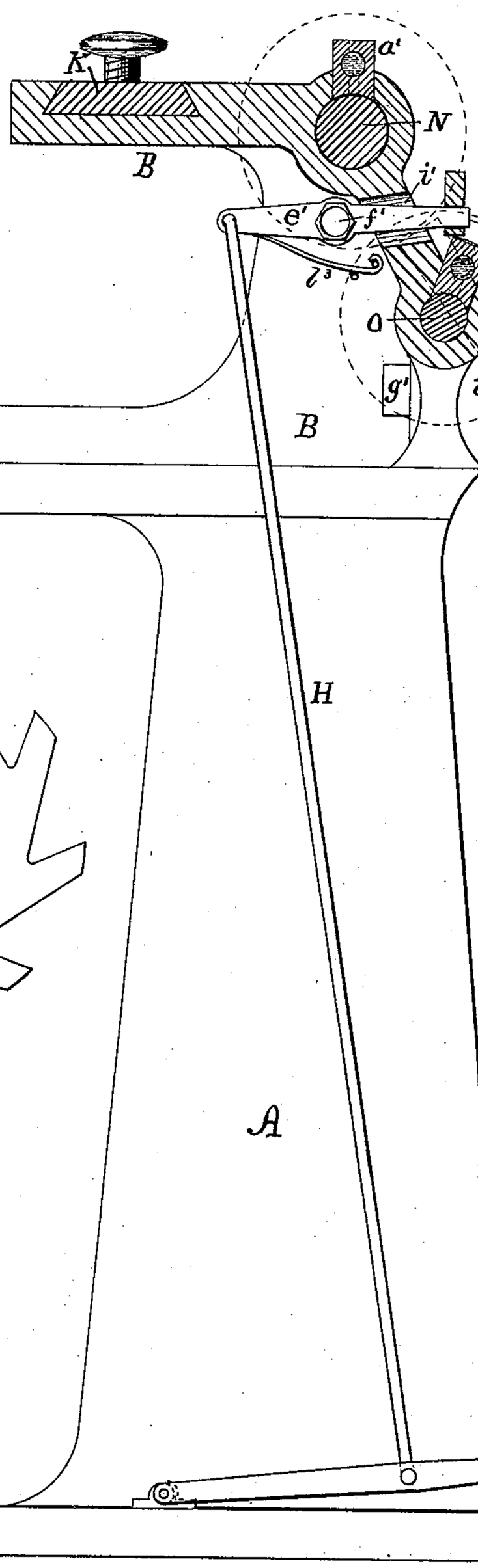


Fig. 5.

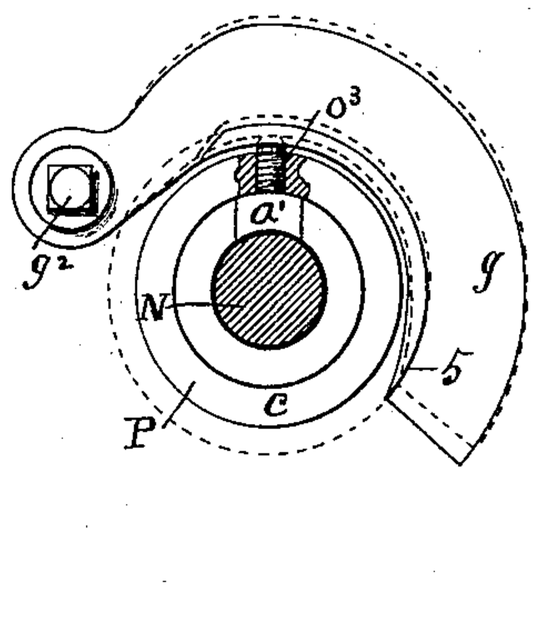


Fig. 14.

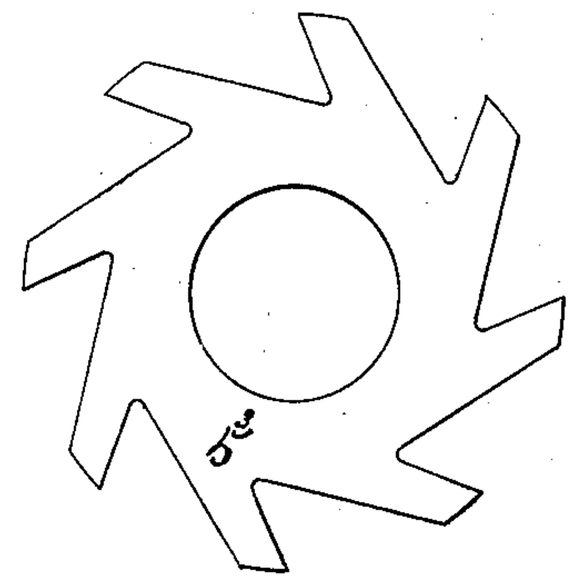


Fig. 9.

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# UNITED STATES PATENT OFFICE.

WILLIAM MANLEY, OF ROCHESTER, NEW YORK.

## HEEL AND SOLE EDGE TRIMMING MACHINE.

SPECIFICATION forming part of Letters Patent No. 322,945, dated July 28, 1885.

Application filed February 19, 1885. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM MANLEY, of Rochester, in the county of Monroe and State of New York, have invented certain new and useful Improvements in Heel and Sole Edge Trimming Machines; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawings, making part of this specification.

In this machine the heel and the sole edge and the shank of the sole are trimmed without jacking, the boot or shoe being simply held in the hands of the operator, and requiring no more than the ordinary skill of an operator to trim a boot or shoe, from the coarsest to the finest grades of work made, equal to the best hand-trimmed.

My improvements relate to all the various operations of the machine, including the means for driving the operative parts thereof, and they will herein be successively described and claimed.

I will first briefly describe all the figures of the drawings, referring to the subsequent specification for a full delineation of the features represented thereby.

Figure 1 represents a front view of the entire machine; Fig. 2, a top view thereof; Fig. 3, an elevation of the left-hand end of the same, showing the pedestal and the manner of driving the spindles, and the treadle connections in relation to the counter-guard, the heel-trimming cutters, and their accompanying mechanisms; Fig. 4, a rear elevation, including the pedestal or base on which the machine rests, showing the driving-pulley and belts, the treadle-rod of the heel-rests, and the mechanism in relation to the counter-guard; Fig. 5, an elevation of the left-hand end of the machine, including the pedestal, showing the means to raise and lower the heel-rests by treadle mechanism, and the position of the frame, and the lost-motion spindle-boxes therein; Fig. 6, a sectional end view of the frame B, showing how the right-hand end of the heel-rests is held to the frame; Fig. 7, a sectional end view of the spindle-bearing, showing a lost-motion spindle-box held to the spindle; Fig. 8, a view of the rand and heel-seat trimming and peening wheel; Fig. 9, a view of the rand-trimmer; Fig. 10, a view of the universal-moving heel and top piece support and rest; Fig. 11, a front view of the sole-edge trimming mechanism and shell-guard; Fig. 12, a sectional view of the bevel-edge trimmer; Fig. 13, a rear view of the sole-edge trimming mechanism, showing their respective parts. Fig. 14 shows the vertical adjustment of the stationary top piece edge rest and guard.

In the drawings, A represents the pedestal or base on which the machine rests, and B the frame of the machine.

All the trimming-cutters here employed by me are mounted upon two revolving spindles, N O, and in the improved organization of the machine, these two spindles are rotated by a driving-shaft, 2, mounted in bearings L L on the pedestal or base below, and with a single driving-pulley, C. To effect this simple and compact arrangement the two spindles are located one partially above the other, as best shown in end sectional views in Figs. 3, 5, and 6. A belt, *t*, passes from the driving-pulley C to the speed-pulley T on the upper spindle, and another belt, *t'*, passes from the same driving-pulley to the speed-pulley U on the lower spindle, in advance, to the left of the upper speed-pulley, as shown in Figs. 1, 2, and 4. On the upper spindle, N, are mounted the heel-trimming cutter *k* on the left and the edge-trimming mechanism on the right hand side, as shown in Figs. 1 and 2, and in sectional views in Figs. 11, 12, 13. On the lower spindle, O, are mounted the rand and heel-seat trimming and rand and heel-seat peening or hammering-up wheel K', with its accompanying mechanism on the left; on the right-hand side the shank-beveling trimmer V', as shown in Fig. 1. The wheel K' is best shown in Fig. 8 and in a sectional end view in Fig. 3; also showing a novel heel and top piece support, F $F^2$, working in combination therewith.

On the main frame B is secured an adjustable extension sliding bar, K, for holding the curved spring counter-guard *h*, provided with wings or shields, and the adjusting cross-head screw *u* P, as shown in Figs. 1, 2, 3, and 4. The non-rotating top piece tread-surface guard *g*, provided with the edge-rest 5, is also held on the top of the frame B on one of the ways B'

by means of the plate W by the screw $g^2$, as shown in Figs. 1, 2, and 3.

To the frame B is held vertically an adjustable double heel-rest, M *l* D, provided with a belt-shield, C′, as shown in Figs. 1, 2, and 6.

A universal and longitudinally-movable heel and top piece supporting-rest, F and $F^2$, is shown in Figs. 3 and 10.

A series of lost-motion spindle-bearing boxes, *a a′*, provided with oil-reservoirs *n′*, are shown in Figs. 1, 2, 5, 6, and 7.

Having given a general enumeration of the prime operative parts of the machine and the manner of mounting and organizing them, I will now proceed to fully describe the improvements therein as conducing to the purposes of this invention, and in the various associated devices operating or arranged respectively in combination therewith, referring first to the novel construction of the frame and the position of the spindles in their journals or bearings as important in relation to the entire working of the operative parts of the machine as allowing the operator, first, to trim the entire edge of the heel in the rough and then instantly, without loss of time in moving from one part of the machine to another part, as is the case in other machines, proceed to trim and peen or hammer up the rand and heel-seat at one operation, and then again instantly raise the heel from the lower cutter, *k′*, to the upper cutter, *k*, or heel-trimmer, for the finishing process of the trimming of the heel. These three distinct operations could not be successfully performed if the spindle-bearings of the machine or frame B were perpendicular, one above the other, without certain inconvenience, for the reason that the heel could not be moved in its partial rotation without the ball or waist of the boot or shoe striking against the upper journal of the spindle N before the heel could be trimmed from breast-edge to breast-edge. I have therefore arranged the spindle bearings or journals, as best shown in Figs. 3, 5, and 6, one above and beyond the other, for the purpose above stated.

I wish it to be herein distinctly understood that I could employ other cutters in place of the edge-trimming cutters, as shown in the drawings, on the right-hand end of the machine, if desirable; also, that a device (not shown in the drawings) can be secured in the ways of the frame B, on the right-hand end of the frame, for the purpose of sharpening the cutters.

Referring next to the heel-trimming cutter *k*, the following features of construction are to be noted, special reference being had to Figs. 1, 2, and 3 of the drawings. I prefer to make the knives of this cutter all in one solid piece of steel, as shown, though each knife could be made separate and detachable. The first feature to be noted is that the outer surface or face of each knife is circumferential or concentric with the cutter's axis of rotation from the cutting-edge nearly to the rear thereof, where it is cut away to give the requisite clearance, substantially as shown. I may use a gradual clearance from the cutting-edge to the rear, as heretofore in common use. Another point to be noted is that the clearance of the knives is the greatest in the middle, as shown at K″, and the least at the two side edges, as indicated in Figs. 1, 2, so that deeper shavings can be cut in the middle of the heel than the sides, requiring corresponding amplitude of clearance.

A third point to be noted is that the inner surface of each knife is also circumferential, or nearly so, giving uniformity to the thickness thereof and allowing the knives to be more readily sharpened.

In all first-class heel trimming the top piece of the heel must be trimmed uniformly to the shape cut by dies or otherwise. To effect this and to prevent the top piece from being burned by rotary friction during the trimming of the heel, the means I employ and have invented to accomplish this result consist of two parts or elements—namely, a stationary or non-rotating top piece tread-surface guard, *g*, provided with the top piece edge-rest, 5, as shown in position in Figs. 1 and 2. This guard and rest is formed in one solid piece of metal, the rest 5 being a narrow bead on which the edge of the top piece bears and is moved thereon during the trimming of the heel, the said rest only forming a part of a circle and working concentric with the inner edge of the heel-trimmer and nearly close up to the same, so as to prevent friction with the inner edge of the cutter, as best shown in Fig. 2. By this simple and effectual device the edge and the tread-surface of the top piece cannot be burned during the trimming of the heel, as is the case with other machines now in use, using rotary top piece rests. This device is adjustably secured on the top of the frame B by the slotted plate W by means of the clamping-screw *i*, the rear end of the guard *g* being held to the plate W by the screw $g^2$. The said plate is held subject to any required adjustment by means of the slot in the said plate. This device has also an adjustable vertical swinging movement, as shown in Fig. 2. When the vertical adjustment is required, the guard *g* is thrown back on the way B′. The screw $o^3$, working in the collar *c*, can then be adjusted as the rest 5 of the guard *g* is required to be held flush or concentric with the inner edge of the cutter *k*. In operation the guard *g* hangs over the collar *c* and rests on the screw $o^3$.

One of the most important features of this invention is the improved stationary or non-rotating curved spring counter-guard *h*, which, with its accompanying mechanism, I shall now proceed to describe. I show this counter-guard in position in Figs. 1, 2, 3. It is secured to the outer end of the sliding bar K, and is gradually curved from the said bar end in its

shank to the body of the guard. The body of the guard is provided with wings or shields extending from the body to the right in front of the cutter, one at the upper extremity of the guard *h*, partially over the cutter, and the other at the lower extremity of the guard, partially under the cutter *k*, to prevent the counter of the boot or shoe from coming in contact with the cutter either at the beginning or ending of the said movement, and also for the purpose of staying the movement of the boot or shoe when the heel is trimmed from breast-edge to breast-edge. During the movement of the boot or shoe in front of the cutter, the body of the counter-guard between the wings protects the counter moved along in contact therewith from injury to the cutter. The curve in the shank of this spring-guard is one of its main features of improvement, as without the curve the guard would be impracticable, for the reason that if the guard was straight in the shank it would be in the way of the left hand of the operator during the trimming of the heel. Although flexible and elastic, the said guard is sufficiently rigid to keep it in position as the shoe is held and moved in contact with the guard. The rigidity is produced by means of the forward end of the cross-head adjusting-screw *u*, bearing against the inner surface of the guard *h*, as shown in Fig. 2. The rear end of this screw works in a threaded boss or hub of the bar K, as shown cut open to show its construction in Fig. 2. The said adjusting-screw *u*, is provided with a cross-head, P, as a means, with its accompanying mechanism, to cause the said screw to raise and lower the counter-guard *h* to and from the cutter *k*, so as to produce a fine, medium, or heavy trimmed rand and heel-seat at the will of the operator. By this movement high or low heels can be trimmed by one cutter by moving the bar K, with the guard *h*, toward and from the swell of the heel-trimmer. The said bar is held in position rigidly and adjustably in the ways B′ B′ of the frame B by the clamping-screw *d*, as shown in Figs. 2, 3, 4, and 5.

When the trimmer *k* has to be removed or replaced, the bar K is released and moved outward a sufficient distance. The cutter is then removed from the main spindle N.

The adjustment of the counter-guard to cause a fine or heavy rand and heel-seat to be trimmed, either with or without the treadle movement, is produced by means of the screws V V working vertically in and through the lugs *b′ e²* of the bar K, the ends of which limit the action of the cross-head P, as represented in the rear elevated view in Fig. 4. When the cross-head ends *a² c²* strike alternately against the ends of the said screws V V, a fine or heavy rand and heel-seat would be produced, according to adjustment of the said screws. When the cross-head strikes the screw end at V *c²*, a fine rand and heel-seat would be produced, according to adjustment of the screw. When the treadle-rod G is drawn down, with the cross-head end *c²*, by foot-leverage, the spring *f*, secured to the said rod and to the elevated end of the rod *b*, forces back the cross-head automatically to its position against the screw end, whereby the counter-guard *h* is held a safe distance from the cutter, for the trimming of a fine rand and heel-seat; but I wish it to be understood that either end of the cross-head will produce a fine or heavy rand and heel-seat, in combination with the parts described.

Another feature of this invention consists of a double heel-rest, M *l* D, provided with a belt-shield, C′. The body of these rests is secured to the frame B by the clamping-screw 42, the rear end of which is adjustably held to the sliding plate *l′* by the screw *c′*, as shown in Fig. 6, and is held to the right-hand end of the frame, having a longitudinal adjustment thereto, the screw *c′* holding the slide *l′* in its adjusted position. This double heel-rest has also a vertical movement operated by treadle-leverage and actuated by the lever *e′*, which raises and lowers the rests to and from the cutters *k k′*. The lowering is produced automatically by the spring *e³*. The raising is done at the will of the operator by treadle mechanism in combination with the lever *e*.

My object in having the heel-rests raised and lowered to and from the cutters is to cause the heel of the boot or shoe to be lowered when a portion of the front part of the heel is trimmed, so as to cause the movement of the heel as it bears on the rest *l* to be held and moved nearly at right angles to the axis of the cutter as the eccentric shape of the heel is presented to the cutter until the first curve of the rear of the heel is reached. The said rest, with the heel bearing thereon, is then raised by the front end of the lever *e′* until the entire rear curve of the heel is trimmed; otherwise the heel must have a very eccentric movement to the axis of the cutter.

In certain kinds of work the vertical movement of the rests would not be necessary. I have therefore arranged these rests, in combination with the machine, to be held adjustably rigid by clamping the body of the rests to the frame B by means of the screw 42, as shown in Fig. 1.

I wish it to be herein distinctly understood that I do not desire to confine myself to any particular part of the frame B where I may locate the above-described double heel-rest, as I could secure it to operate at the right-hand end of the frame B. By this double heel-rest three separate operations are performed—namely, the trimming of the heel in the rough, and the finishing-trimming of the heel, and the trimming and peening of the rand and heel-seat—one adjustment of the device answering for the three distinct operations.

Another feature of my invention, new in itself as far as I know, is the rand and heel-seat trimming and rand and heel-seat peening

wheel K′. (Shown in position in Fig. 1, and on a large scale in Fig. 8.) This device is formed in one solid piece of steel, one knife, S, being followed in succession by a peening or hammering-up tooth, $r'$, as shown.

To trim a heel equal to hand-trimmed work, the rand and heel-seat must be close up to the upper leather of the counter of the heel. To effect this, the rand and heel-seat must be hammered up so as to bear against the upper, otherwise the trimming of the heel, though good in every other part, is imperfect or defective; but by this rapid and improved method of trimming the rand and the heel-seat the work done is equal to the best hand-trimmed work. In combination with this wheel K′, I use a common rand-trimmer, $5^3$. (Shown in Fig. 9.) This rand-trimmer is placed between the peening-wheel and heel-seat trimmer $k'$ and the disk $h'$, as shown in position on the lower spindle, O, in Fig. 1. The said disk or guard is threaded in its core, as is also the spindle end, whereon the said disk is held as a means for holding and clamping the said disk and rand-trimmer to the wheel K′, and then holding the entire mechanism in its operative position on the end of the said spindle.

In co-operation with the rand and heel-seat trimming and peening-wheel mechanism, I use a novel heel and top piece support, F, and rest $F^2$, as shown in an end elevation in position in Fig. 3, parts essential to this figure being omitted, and in all its parts as represented in Fig. 10. In this view, W represents the hub and body of the sleeve P′, wherein the spindle M′ is held, and moves longitudinally therein at the will of the operator during the trimming of the heel. One movement of the spindle M′ is produced by the spring $o'$, the other at the will of the operator as the pitch of the rand and the eccentric shape of the heel determines. By this movement the rand can be trimmed with greater precision than by the means heretofore in common use, for the reason that the operator can always bear a certain pressure of the tread-surface of the top piece against the plate F during the trimming of the heel, so that the trimming of the rand is gaged or guided, as it were, during the trimming of the same and of the heel-seat.

The heel and top piece support F $F^2$, as shown in Fig. 10, has a universal movement as the heel is being trimmed, as the tread-surface of the top piece bears against the plate F.

The line indicated by $F^2$ shows the support on which the top piece edge rests during the trimming of the heel-seat, the said rest being concentric with the inner edge of the wheel K′, in section, as shown in the end elevation in Fig. 3. In this view $g'$ shows a screw in dotted lines, which holds the body of the hub W of this device rigidly to the frame B, as indicated by the Figs. 2,3. In Fig. 1 the plate F is held on the spindle M′ by the screw 8, the head of which is formed to allow a universal movement of the said plate, as shown in dotted lines in Fig. 10, the said plate and spindle being held from revolving by means not shown in the drawings.

Another feature in the improved organization of this machine is a series of lost-motion spindle-boxes and oil-reservoirs, as shown in position in Figs. 1 and 2, and in sectional views in Figs. 5, 6, 7, and 14. Fig. 1 shows the boxes in position and held in the spindle-bearings, from end to end thereof, by collars $c$ $c$, encircling the ends of the spindle-bearing P and the ends of the said boxes $a'$ of the upper spindle-bearing. These boxes are held adjustably in their spindle-bearings by adjusting-screws $n$ $n$, as shown in section in Fig. 1. In this view $n'$ indicates the oil-reservoir, $s$ the collar revolving with the spindle N, as indicated by the arrow $x$.

In Fig. 2 $a$ represents the lost-motion spindles and reservoirs on the lower spindle, O, R the spindle-bearing, $e$ the lost-motion boxes, $o$ the adjusting-screws, $r$ the holes in the reservoirs to receive the oil. In Figs. 5, 6, 7, and 14 the adjustable lost-motion boxes are shown to bear against the spindle and to be held thereto, as shown in Fig. 7.

In Fig. 6 a drilled hole, indicated in the end of the box $n'$, extending nearly to the other end, and when drilled plugged up, serves as an oil-reservoir. All the boxes are formed in like manner. These boxes can be applied to counter-shafts.

To small manufacturers the trimming of the heel and the sole edge by one machine is an object, financially, of great importance, as they have neither shop-room, means, nor work sufficient to keep two machines and two operators to do the work of one machine and one operator. I have therefore arranged and organized this machine to supply a want much needed in this simple, compact, improved machine.

In Fig. 1, on the right-hand end of the upper spindle, N, is located the square-edge trimmer $i^2$ and bevel-edge trimmer $e^2$. These two trimmers are provided with guards, one at the outside $d'$, and the other on the inside $f^3$. The guard or disk $d'$ is held rigid on the threaded end of the spindle, indicated by the arrow in Fig. 2. The said guard or disk is threaded—that is, threaded in its core—and serves to clamp the periphery $n^4$ or hub of the square or plain edge trimmer to the shoulder of the spindle on the spindle end, the shoulders on each end of the spindles being flush with collars $c$.

The guard $f^3$ is a shell-guard to receive the bevel-edge trimmer, as shown in position in Fig. 1, when square or plain edges are being trimmed, so as to trim off the feather-edge of the tread-surface of the sole-edge. In this operation the said shell-guard is held adjustably on the hub or sleeve of the bevel-edge trimmer by the band-spring $a^3$ and the adjusting-screw $n^2$, as indicated in Fig. 1. In

this operation the shell-guard and the bevel-edge trimmer move on the periphery or hub of the plain-edge trimmer, on which the spiral spring is held at the will of the operator, so as to cause a broad or a narrow edge to be trimmed by the means here described and the mode of adjustment. The sectional views of this mechanism are shown in Figs. 11, 12, and 13.

In Fig. 11 the bevel-edge trimming-knives $e^3$ and the square-edge trimming-knives $i^2$ and the shell-guard $A' f^3$ are shown in a sectional front view, the bevel-edge trimming-knives $e^3$ entering in the spaces between the square-edge trimming-knives $i^2$. In this view $b^3$ shows the body or front side of the square-edge trimmer. $d^3$ represents the body of the bevel-edge trimmer in the rear of the plain-edge trimmer.

When beveled edges are to be trimmed, as shown in Fig. 2, the bevel-trimmer $e^3$ is moved out from the shell-guard to whatever width or size of edge is required, and held in that position by the adjusting-screw $n^2$, which screw end enters in a groove formed in the periphery or hub $n^4$, as shown, under the spiral spring $b'$, Fig. 1. This spring abuts against the end of the sleeve of the bevel-edge trimmer and a collar on the end of the said hub, and serves to move the guard forward, the spring movement not being required in this operation.

In Fig. 13 the hub of the shell $f^3$ shows the band-spring $a^3$, the adjusting-screw $n^3$, the beveled holes $c^3$, and the sleeve or hub $d^3$ of the bevel-edge trimmer, and the grooved periphery, as shown. The band-spring $a^3$ holds the screw $n^3$ from flying out of position when eased in the groove, but still retaining its position in the groove of the said periphery as a means of keeping the bevel-edge trimmer away back in the shell-guard, as represented in Fig. 1, when plain or square edges are being trimmed, and also for holding the bevel-edge trimming-knives from coming in contact with the plain-edge trimming-knives, the said screw having its bearing in sleeve $d^3$, Fig. 12. The holes $c^3$ in this shell-guard for the discharge of the shavings are formed partially in front of the bevel-edge trimming-knives, as shown in Fig. 11, the beveling of the holes being made on the inner edges of the holes in front of the knives and on the outer in the rear of the knives, by which means the shavings are discharged from the guard without obstruction.

On the lower spindle, O, I locate the shank-beveling trimmer V′ on the right-hand side, away from the edge-trimming mechanism. The improvements in this trimmer are the bead and the clamping-disk $V^2$. The core of this disk is threaded, as is also the end of the spindle on which it is held. The bead, as shown, is the smallest diameter of the trimmer to which the disk is clamped, and is square to the line from which the inclination is made.

I am aware of the patents provided with heel-rests issued to J. H. Busell, No. 308,058, November 18, 1884; A. J. Johnson, No. 261,094, July 11, 1882, and Benj. Tayman, No. 9,073, February 10, 1880, are rigidly held for the heel to rest on during the trimming of the same, and are but modifications of rests in common use—such as emery-wheel rests, lathe-rests, &c.—while my heel-rest is novel in construction and in operation and is a double heel-rest, having a vertical or up-and-down movement during the trimming of the heel, as already fully described.

I am also aware of the Patent No. 270,632, January 16, 1883, issued to the said Busell, where a non-rotating counter-guard is shown adjustable in various ways; but in this machine my counter-guard is a curved spring counter-guard and entirely differently constructed and adjusted, and is a positive improvement over the Busell guard, as the said Busell guard is not now used.

In my heel-finishing machine, No. 284,556, September 4, 1883, an inflexible and straight-shanked heel-seat guard with projecting arms is shown; but its operation, construction, and adjustment are different to the present guard, which is also a positive improvement over the said heel-finishing-machine guard, the curved spring of the present guard being the main feature of its improvement. I therefore disclaim any and all of the devices in the patents referred to.

What I do claim as novel devices and improved features of this my invention is—

1. In a boot and shoe trimming machine, the journals or spindle-bearings arranged one above and partially beyond the other, in combination with the series of lost-motion spindle-bearing boxes $a'$, substantially as described, having the oil-reservoirs $n'$, as shown, and the bands or collars $c$, provided with adjusting-screws $n$, for holding the boxes to the spindles, substantially as and for the purpose herein specified.

2. In combination with a rotary heel-trimmer, the stationary or non-rotating top piece guard $g$, provided with the top piece edge-rest 5, as a means to preserve or retain the original shape of the top piece during the trimming of the heel, substantially as herein specified, for the purpose set forth.

3. In combination with a rotary heel-trimmer, the stationary or non-rotating top-piece guard $g$, provided with the rest 5, the slotted plate W, screw $g^2$, frame B, and the screw $i$, all arranged and adapted to operate substantially as and for the purpose herein specified.

4. In combination with a rotary heel-trimmer, the stationary or non-rotating tread-surface top piece guard, $g$, provided with the top piece edge-rest, 5, clamping-screw $g^2$, screw $o^3$, and the collar $c$, all arranged and adapted to operate substantially as and for the purpose herein specified.

5. In combination with a rotary heel-trimmer, the curved spring counter-guard $h$, and the adjusting-screw $u$ P, and means to support

the same, substantially as shown, and for the purpose set forth.

6. The flexible curved spring counter-guard *h*, in combination with the adjusting screw *u* P, the double heel-rest M *l* D, the bar K, and the rotary heel-trimmer, substantially as herein specified, for the purpose set forth.

7. The curved spring counter-guard *h*, in combination with the cross-head screw *u* P, the bar K, held rigidly and adjustably in the ways B′ B′ of the frame B, the rotary heel-trimmer, and the double heel-rest M *l* D, and the treadle-rod G, with its connecting mechanism, substantially as herein set forth.

8. The cutter *k*, having knives with inner surfaces substantially circumferential with the outer surfaces, and rear end clearance of the knives, as shown, in combination with the double heel-rest M *l* D, sliding plate *l′*, screw 42, and the treadle mechanism and lever *e′*, substantially as shown, and for the purpose set forth.

9. The rand and heel-seat trimming and peening or hammering-up wheel *k′*, provided with trimming-knives S, and peening or hammering-up teeth *r′*, in combination with the cutter $5^3$ for trimming the feather of the rand, and the disk *h′*, substantially as herein stated.

10. The rand and heel-seat trimming and hammering-up wheel K′, provided with trimming-knives S, and peening or hammering-up teeth *r′*, in combination with the rand-trimmer $5^3$, rand-disk *h′*, double heel-rest M *l* D, and the heel and top piece supporting device F $F^2$, and means, substantially as described, for supporting the device F $F^2$, for the purpose set forth.

11. The universal and longitudinally movable heel and top piece support, F $F^2$, in combination with the trimming and peening or hammering-up device K′, and means, as shown, to support both, substantially for the purpose herein stated.

12. The universal and longitudinally movable heel and top piece support, F, provided with the rest $F^2$, in combination with the double heel-rest M *l* D, substantially as set forth.

13. In a boot and shoe trimming machine, the series of lost-motion spindle-bearing boxes *a′*, provided with oil-reservoirs *n′*, as shown, in combination with the bands or collars *c* for holding the boxes in their bearings, and provided with adjusting-screws *n* for holding the boxes to the spindles to prevent lost motion, substantially as herein set forth.

14. In a boot and shoe trimming machine, the combination of the plain-edge trimmer and the bevel-edge trimmer, as shown, provided with the shell-guard $f^3$, screw $n^3$, and the spring-band $a^2$, with the shank-beveling trimmer V′, all arranged and adapted to operate substantially as herein stated.

15. The combination of the plain and bevel edge trimming-knives, provided with the shell-guard $f^3$, having holes, substantially as shown, beveled on their inner edges in front of the bevel-edge trimming-knives and on their outer edges in the rear of the knives, as and for the purpose herein stated.

WILLIAM MANLEY.

Witnesses:
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