(No Model.)

2 Sheets—Sheet 1.

# J. E. LAWTON.

## BOOT OR SHOE TREE.

No. 589,731. Patented Sept. 7, 1897.

Fig. 5.

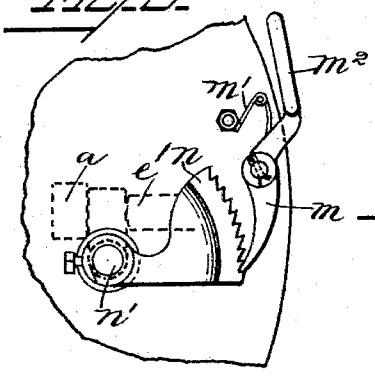



Fig. 6.

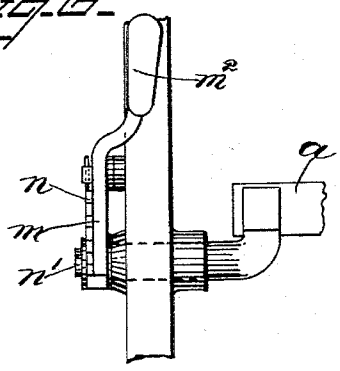



Fig. 1.

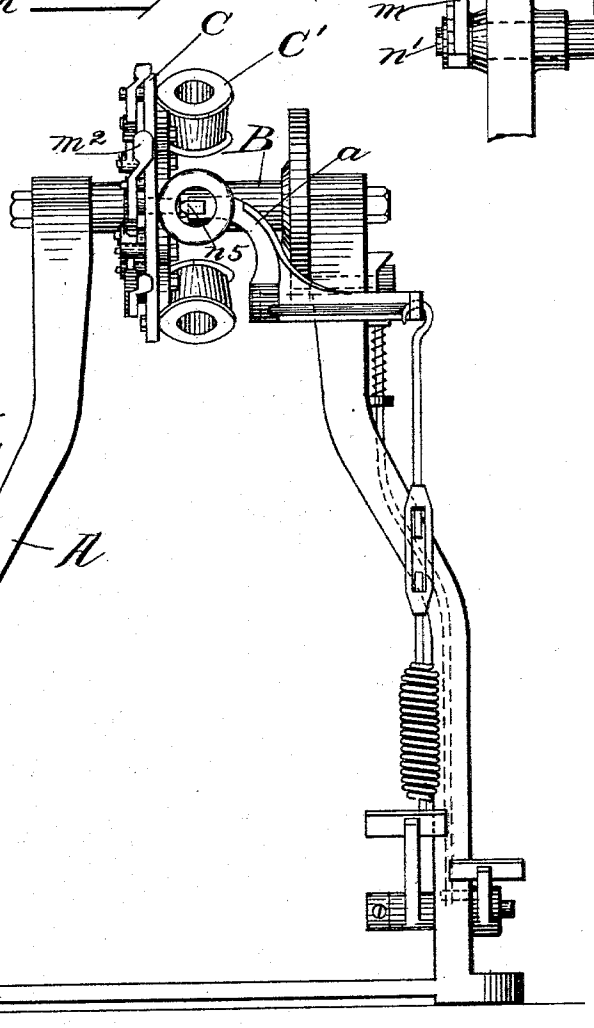
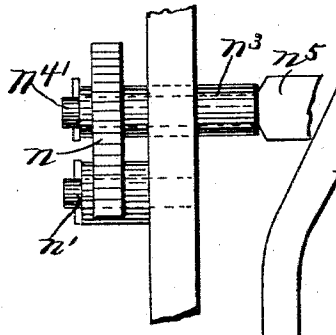



Fig. 4.




WITNESSES.

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F. H. Davis.

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THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

No Model.)

2 Sheets—Sheet 2.

# J. E. LAWTON.

## BOOT OR SHOE TREE.

No. 589,731. Patented Sept. 7, 1897.

Fig. 2.

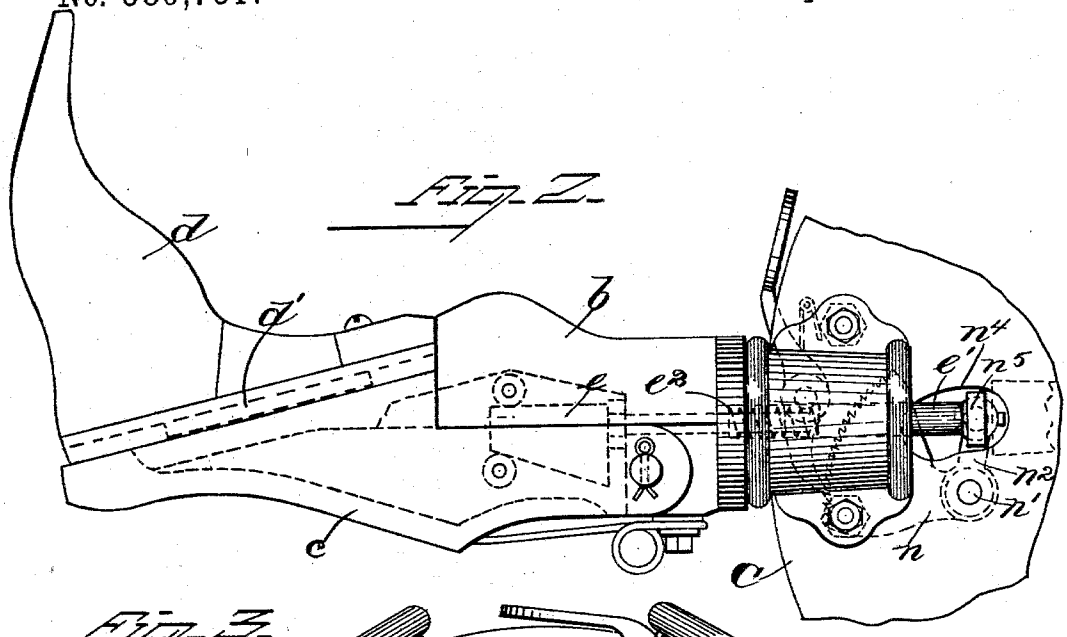
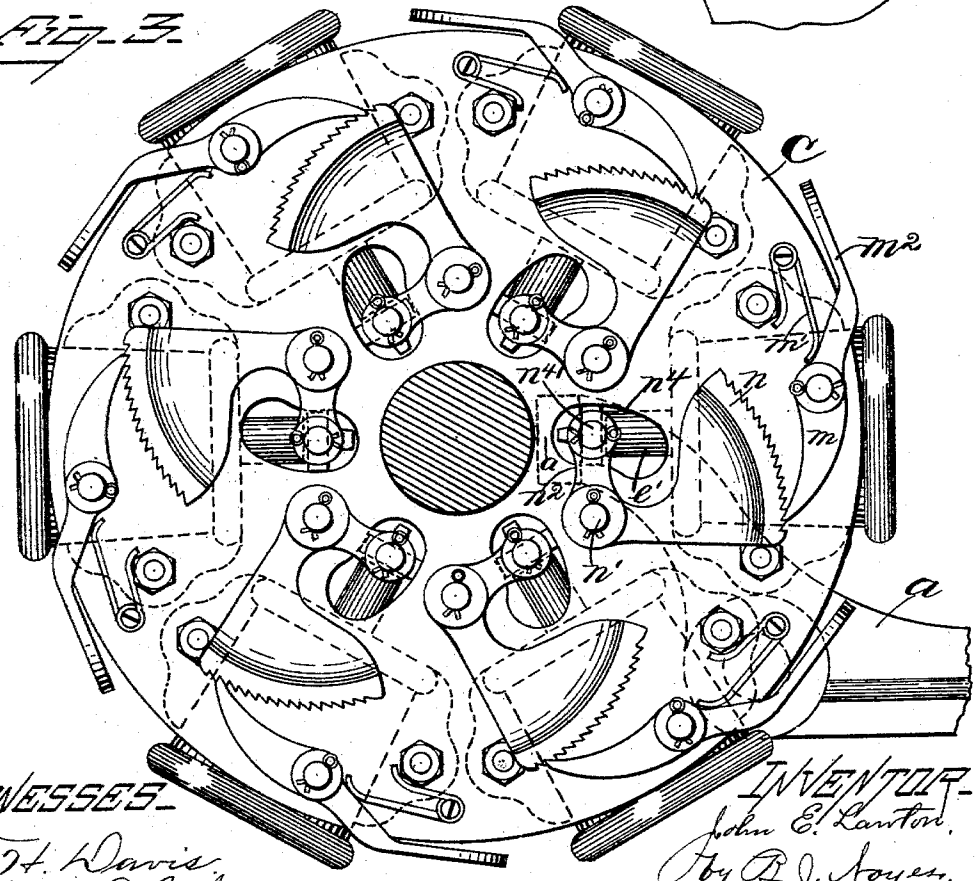



Fig. 3.




Witnesses—
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# UNITED STATES PATENT OFFICE.

JOHN E. LAWTON, OF SWAMPSCOTT, MASSACHUSETTS, ASSIGNOR, BY MESNE ASSIGNMENTS, TO THE MORLEY FINISHING MACHINE COMPANY, OF MAINE.

## BOOT OR SHOE TREE.

SPECIFICATION forming part of Letters Patent No. 589,731, dated September 7, 1897.

Application filed October 21, 1895. Serial No. 566,320. (No model.)

*To all whom it may concern:*

Be it known that I, JOHN E. LAWTON, of Swampscott, county of Essex, and State of Massachusetts, have invented an Improvement in Boot or Shoe Trees, of which the following description, in connection with the accompanying drawings, is a specification, like letters on the drawings representing like parts.

This invention relates to treeing or shaping machines for boots or shoes of that class such as shown and described in United States Patent No. 543,147, granted to G. H. Clark July 23, 1895, and has for its object to improve the construction of the independent locking devices for the expanding devices of the expansible forms; and the invention consists in details of construction to be hereinafter set forth and claimed.

Figure 1 shows in front elevation a treeing or shaping machine embodying this invention, the expansible forms being removed from their supports for clearness; Fig. 2, a side view of one of the expansible forms, its support and independent locking device for its expanding device; Fig. 3, a left-hand side view of the rotatable disk which supports the expansible forms, it being shown as adapted to carry six forms; Fig. 4, an edge view of one of the independent locking devices; Figs. 5 and 6, side and edge views of a modified form of locking device comprehending this invention.

The main frame A, rotatable shaft B, disk C, mounted thereon and having sockets C′, which receive the trees or expansible forms, the locking device for said shaft B, by means of which it is held in different positions to present the different forms to the operator, and bell-crank lever $a$, pivoted to the frame and adapted to operate the expanding device of any form that may be brought into proper position with relation thereto, and means for operating said bell-crank lever, the expansible trees, which consist of the separable parts $b$ $c$, with a detachable fore part $d$ and slide $d'$, carrying it, and the expanding device for the tree or form, composed, essentially, of the wedge $e$ and rearwardly-extended rod or pin $e'$, are all substantially as have heretofore been constructed.

To the rotatable disk C, which supports the forms or trees, the independent locking devices for the expanding devices of the trees are attached, they being herein represented as ratchet-toothed segments $n$, pivoted at $n'$ to the disk C, and each having a right-angular arm $n^3$ $n^3$ secured to it, the portion $n'$ of which projects radially from the pivot of the segment at substantially a right angle to the segment and the portion $n^3$ of which passes through a slot $n^4$ in said disk C, terminating near by the rod or pin $e'$ of the expanding device.

The arm $n^3$ has a hole bored through it longitudinally, which receives the stem or spindle $n^{4'}$ of a rocker-plate $n^5$, which projects beyond the end of the arm $n^3$ and also back of the end of the rod $e'$ of the expanding device. This rocker-plate is not a necessity, however, and may be omitted.

Pawls $m$, one for each ratchet-toothed segment $n$, are pivoted to the disk C, each being acted upon by a spring $m'$ to normally hold it in engagement with its ratchet-toothed segment, and said pawls have hand engaging portions $m^2$, which lie within easy reach of the operator of the machine, to be pressed, when desired, to disengage the pawl from its ratchet-toothed segment.

When one of the trees is brought into position to be expanded, the actuating-arm of the locking device of said tree stops in front of one end of the bell-crank lever $a$, so that as said bell-crank lever is operated its end strikes the rocker-plate $n^5$, and the latter in turn strikes the pin $e'$ of the expanding device, forcing its wedge $e$ forward to expand the tree and at the same time moving or turning the ratchet-toothed segment $n$, the teeth of which slip beneath the pawl $m$.

The bell-crank lever may then resume its normal position, but the expanding device still holds the tree expanded by reason of the ratchet-toothed segment $n$ being held by the pawl $m$, and the expanding device will remain so held until its locking device is released by disengaging the pawl from the ratchet-toothed

segment. When the pawl is thus operated and the segment disengaged, the expanding device is restored by a spring $e^2$ on the rod $e'$, and said rod $e'$, acting upon the actuating-arm of the locking device, restores the segment $n$. There will be as many of these independent locking devices as there are trees or forms, and as the machine is herein arranged for six trees the disk C is shown as having six independent locking devices.

In case of a single-leg machine the support for the expansible form will be a fixed frame instead of a rotatable disk, but the locking device and operating device for the expanding device will be the same.

It will be observed that the toothed engaging portion of the locking device is a much greater distance from the pivot than the end portion $n^5$ of the actuating-arm and consequently travels proportionately a greater distance, and hence large teeth may be cut or formed on the segment for strength and durability, and for each tooth of the ratchet the wedge of the expanding device will be moved but a very short distance. This construction therefore provides a very durable locking device for very fine variations of the expanding device. This locking device may be used in connection with an expanding device of any construction of expansible form.

Referring to Figs. 5 and 6, the ratchet-toothed segment $n$ is secured to a short shaft, the inner or opposite end of which is upturned and forms the actuating-arm for the ratchet, the end of said arm lying just back of the rod $e'$ of the expanding device and adapted to be brought in position in front of the bell-crank lever.

I claim—

1. In a machine for treeing or shaping boots and shoes, a rotatable disk, two or more expansible forms on one side of it, a spring-controlled expanding device for each form having a pin $e'$, a locking device for each expanding device on the opposite side of said disk, consisting of the pivoted ratchet-toothed member $n$, and pawl in engagement therewith, and an arm at the other side of said disk attached to and movable with said member $n$, which terminates just back of said pin $e'$, and an operating-lever common to all of the expanding devices which engages said arm and thereby moves both the expanding and locking devices, substantially as described.

2. In a machine for treeing or shaping boots and shoes, an expansible form, an expanding device therefor, a locking device for said expanding device, consisting of a ratchet-toothed segment, an actuating-arm connected therewith having a rocker-plate which engages the expanding device, and means for moving said arm to turn the segment and also operate the expanding device, and a pawl for said segment, substantially as described.

3. In a machine for treeing or shaping boots and shoes, the rotatable disk C, two or more expansible forms supported thereby, expanding devices therefor having pins $e'$, a treadle-operated bell-crank lever common to all said expanding devices, an independent locking device for each expanding device, consisting of a ratchet-toothed segment $n$, pivoted to the disk C, having secured to and movable with it a right-angular arm $n^2\,n^3$, which works in a slot in said disk and terminates just back of said pin $e'$, and in position to be acted upon by said bell-crank lever, and a pawl $m$ for each ratchet-toothed segment having a hand engaging portion, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

JOHN E. LAWTON.

Witnesses:

WALTER E. COLLINS,

B. J. NOYES.