

(No Model.)

3 Sheets—Sheet 1.

S. W. LADD.
LASTING MACHINE.

No. 523,939.

Patented July 31, 1894.

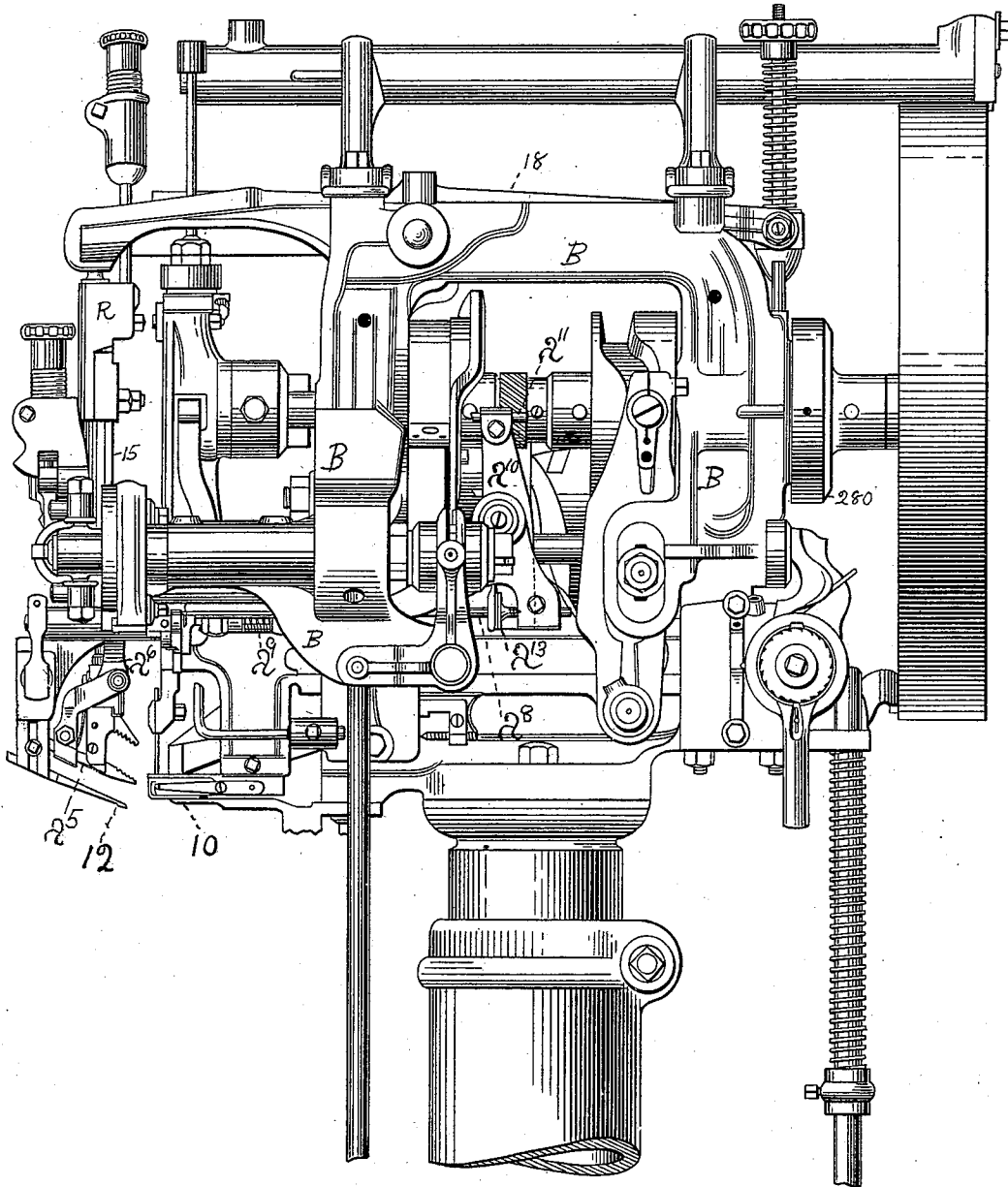


Fig. 1

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Attorney.

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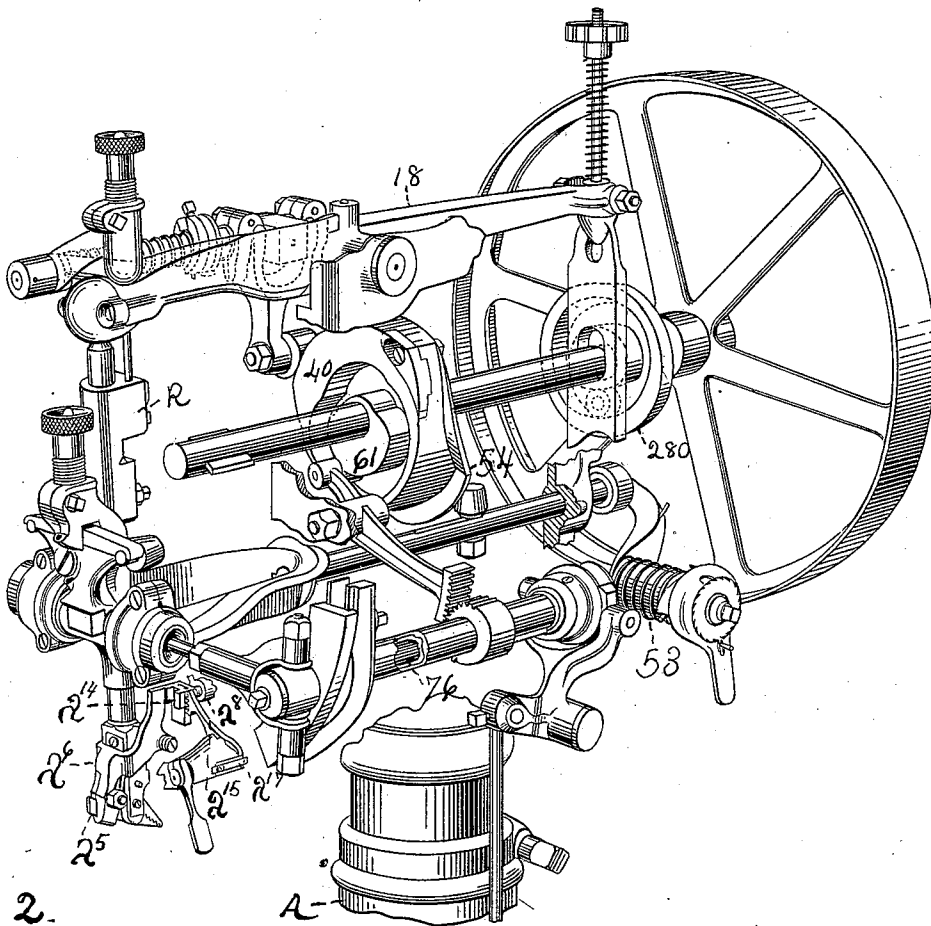
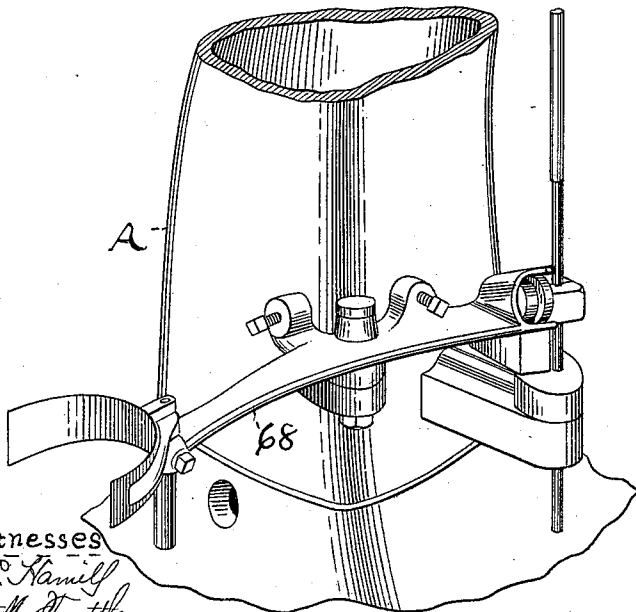


Fig. 2.



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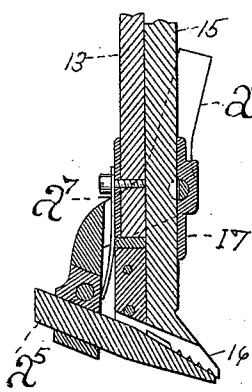


Fig. 5

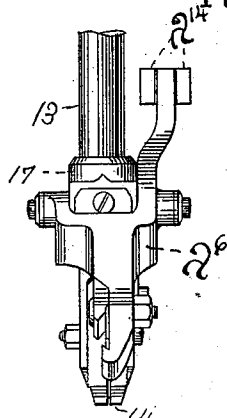


Fig. 4

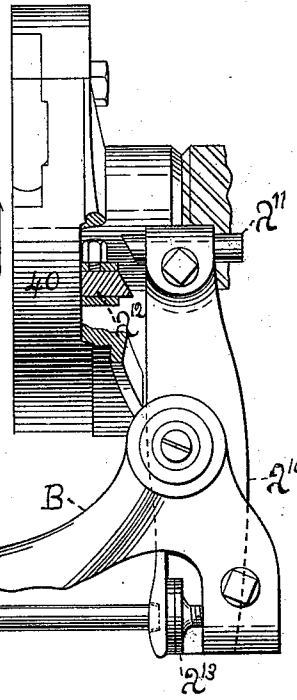


Fig. 3

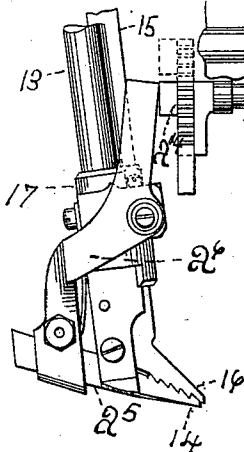


Fig. 6

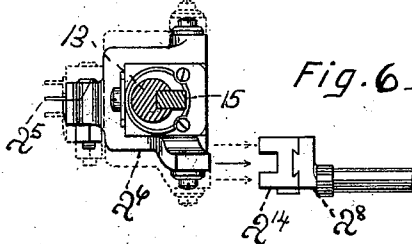


Fig. 8

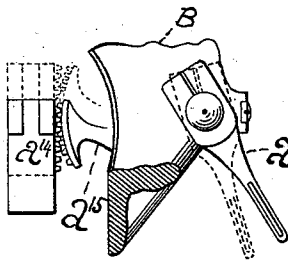


Fig. 7

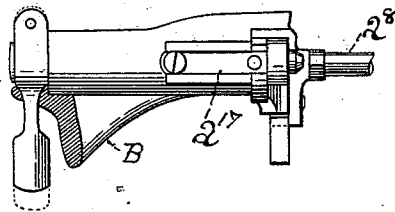


Fig. 9

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UNITED STATES PATENT OFFICE.

SHERMAN W. LADD, OF SOMERVILLE, MASSACHUSETTS.

LASTING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 523,939, dated July 31, 1894.

Application filed February 17, 1894. Serial No. 500,455. (No model.)

To all whom it may concern:

Be it known that I, SHERMAN W. LADD, of Somerville, in the county of Middlesex and Commonwealth of Massachusetts, have invented certain Improvements in Lasting-Machines, of which the following, taken in connection with the accompanying drawings, is a specification.

This invention relates to mechanism for lasting boots and shoes and particularly to that class of lasting machines by the operation of which the boot or shoe upper is worked over the last, progressively, different parts of the upper being acted upon at different times.

In the accompanying drawings, Figure 1 is a side elevation, representing a lasting machine embodying this invention. Fig. 2 is a perspective view representing the upper-working mechanisms detached from the machine proper and further shows parts of this, my present invention, and the mode of combination with the upper-working devices. Fig. 3 is a side elevation of a mechanism more fully comprising this, my present invention, it being also detached. Fig. 4 is a front elevation. Fig. 5 is an elevation of a central section of Fig. 4. Fig. 6 is a plan of Fig. 4. Fig. 7 is a front elevation of the shifting devices, to be referred to hereinafter. Figs. 8 and 9 are opposite end elevations of Fig. 7.

In the process of lasting boot or shoe uppers, it is customary to plait or crimp the material at the toe and sometimes at other parts thereof and it becomes desirable, at times necessary, particularly if the material is thick, hard, or otherwise difficult to manipulate, to cut or slit the marginal edge, where said plaits or crimps are formed in the upper, and superimpose the slitted portions, one above the other, whereby the material is held more closely to the inner sole and presents a surface for receiving the outer sole.

It is to a mechanism having for its object to perform this cutting or slitting of the upper during the lasting operation, that my present invention relates.

Said invention further relates to matters of construction, whereby such mechanism is combined with an operative lasting machine, as hereinafter more fully described.

The machine represented in the present in-

stance comprises a single pair of gripping devices, whereby a section only of the upper is acted upon at one time and to complete the lasting process, the last, with the inner sole and upper thereupon, is supported in the hands of the workman, held up to and moved about for presenting such portions of the upper to the grippers, successively, as the lasting process may require.

Said mechanism comprises the gripper jaws, 14, 16, and their respective supporting bars or shanks, 13, 15. A collar, 17, secured to the shank, 15, operates to hold the shanks in sliding contact. The gripper jaws are opened and closed by reciprocating shank, 15, longitudinally. Shank, 15, is supported by its top end in one end of the rocking lever, 18. The opening and closing of the pinchers jaws are effected by a cam, 40, operating through a mechanism supported in connection with the lever, 18, and movable therewith, it being also connected with the pinchers shank, 15, by a collar R, (Fig. 2.)

The pinchers mechanism, it will be understood, is lifted and depressed by rocking movements of the lever, 18. Said rocking movements are effected by a cam, 280, and connections, arranged as represented in Fig. 2 and for a detailed description of which reference is had to United States Letters Patent No. 510,977 and for a further understanding of the pinchers opening and closing devices, reference is had to United States Letters Patent No. 510,973.

In addition to the opening and closing movements of the pinchers jaws and the reciprocation of the pinchers mechanism as a whole, allowed for seizing and straining the upper vertically, said pinchers mechanism has provision for movements forwardly and backwardly to carry the upper over the last and movements sidewise, for laying the upper in plaits. Said movements forwardly and backwardly over the last are effected in one direction by a cam, 54, and in the opposite direction by a spring, 53, through mechanism arranged as shown in Fig. 2 and specifically described in United States Letters Patent No. 423,922, to which reference is had. Said plaiting or sidewise movements of the pinchers mechanism are effected by a cam, 61, through

a mechanism arranged as represented in Fig. 2 and specifically described in United States Letters Patent No. 423,922, and further modified as described in United States Letters Patent No. 510,975, to which reference is had. Said plaiting or sidewise movements of the pinchers mechanism is governed by a mechanism under control of the workman, including the knee lever, 68, (Fig. 3,) and connections between said lever and the shaft, as shown in Fig. 2 and more specifically described in United States Letters Patent No. 500,141, to which reference is had.

A description of the machine parts not herein described, will be found in said Letters Patent No. 423,922, due regard being had to modifications thereof, as described in the other Letters Patent hereinbefore referred to.

In order to facilitate the further understanding of this, my present invention, it may be here stated that the end shoe is prepared for lasting by first putting the upper on to the last, drawing it over at the toe and preferably at the sides also and securing it with tacks, or other fastening devices, in each of said places. The last, with the upper and inner sole thereupon, is then taken in hand and held up to the rest, 12, and pressed laterally against the edge-guide, 10, (Fig. 1,) to the end that it may be in position for the pinchers jaws to seize upon the upper. The pinchers, it will be understood, move downwardly and forwardly to grip the edge of the upper and then move upwardly for straining the upper to the last, then backwardly and downwardly to place the upper over upon the inner sole.

The pinchers are at times caused to make a further movement laterally for folding the upper and laying it upon the inner sole in plaits. This additional movement of the pinchers is required at the toe and occasionally at other parts of the upper and to that end this movement is governed by the operator through the mechanism above referred to, the arrangement being such that a movement of the lever, 68, to one side of its central or normal position, operates to position the devices for causing the pinchers to make this further lateral or plaiting movement, in one direction, while a movement of the lever, 68, in the opposite direction past its central or normal line, positions the devices for causing the pinchers to make this lateral or plaiting movement, in the opposite direction, said lateral or plaiting movements being repeated with each complete operation of the pinchers mechanism, so long as the lever, 68, remains in either of said lateral positions. Said lateral movements are omitted and the pinchers moved over the last in a substantially straight line, without plaiting the upper, so long as the lever, 68, remains in a position intermediate said lateral positions.

Slitting of the upper, it will be understood, is required mainly at the toe and other parts at times, preparatory for the superimposing

of the slitted parts in the plaiting operation. A single cut or slit is made corresponding with each of the several plaits or folds made in the upper. The slits are formed progressively, as the different plaiting operations take place.

As represented in the present instance, the cutter mechanism includes a cutter blade, a^5 , and cutter blade support a^6 , which parts are combined with the upper-working devices to move about therewith. To that end the support, a^6 , is pivotally connected with the collar, 17. Its bottom end, projecting downwardly, supports the blade, a^5 , normally in a recess suitably formed in the pinchers jaws, (Fig. 5.) Said bottom end of the support, a^6 , is pressed rearwardly of the pinchers jaws, by the spring, a^7 , which spring yields to permit a movement of the cutter forwardly to effect the cutting or slitting of the upper. Said forward movement of the cutter is produced by a suitable operation of the support, a^6 , whereby its bottom end is moved forwardly and whereby the cutter knife is carried forwardly and upwardly past the gripping plane of the pinchers jaws, a slit being thereby made in the material of the upper interposed therebetween.

The cutter blade, a^5 , instead of operating in a recess of the pinchers jaws may be located at the side of the jaws, adjacent thereto, without departing from the spirit of my invention. A mechanically-operating driver mechanism for moving the support, a^6 , is arranged as follows:—A rod, a^8 , is suitably supported in the machine frame, (Fig. 4,) to permit endwise reciprocations. A spring, a^9 , operates to hold the rod pressed yieldingly against the lever, a^{10} . Said lever being pivotally connected with the frame, B, carries a cam-stud, a^{11} , to engage with the cam-block, a^{12} . Said cam-block, a^{12} , is located in and carried by the pinchers operating cam, 40, the arrangement being such that during the revolution of cam, 40, the cam block is made to engage the lever, a^{10} , to move it, thereby causing a forward movement of the rod, a^8 . When released by the cam block, said rod is returned by spring a^9 .

In the frame is a buffer, a^{13} , for stopping said backward movement of the rod, a^8 . By this arrangement, the rod, a^8 , is operated continuously during the operation of the machine by being reciprocated backwardly and forwardly, during each complete operation of the pinchers mechanism. On the front end of the rod, a^8 , is a fork, a^{14} . Said fork is supported to permit vertical, sliding movements on the rod, a^8 . Its branches project forwardly to engage the support, a^6 , the arrangement being such that while the pinchers mechanism is positioned to move forwardly and backwardly over the last in a substantially straight line, *i. e.*, without lateral movements for plaiting the upper, the lever, 68, being then in its central or normal position, the support, a^6 , stands in position between the branches

of fork, a^{14} , so that as the rod, a^8 , moves forward, the branches of fork, a^{14} , pass on either side, without engaging the support, a^6 , during which there is no movement of the cutter blade. By a movement of the lever, 68, to one side, causing the pinchers to move laterally for plaiting the upper, the support, a^6 , is carried to one side, in alignment with one branch of fork, a^{14} , and is moved by each forward reciprocation of the rod, a^8 , to advance the cutter blade for slitting the upper. By a movement of the lever, 68, to the opposite side of its normal position, the pinchers are moved for plaiting the upper in the opposite direction and the support, a^6 , is thereby carried to be in position for engagement by the opposite branch of fork, a^{14} , where it is in like manner moved by each forward movement of the rod, a^8 , to advance the cutter blade for the cutting operation. By a return movement of the lever, 68, to its normal position, for discontinuing the plaiting operations, the support, a^6 , is again positioned intermediate the branches of fork, a^{14} , where it is out of position for engagement with the rod, a^8 , and the cutting operations are consequently discontinued, (Fig. 6.)

Supposing it is desirable to slit the upper at some point where it is to be plaited. This may be done by a movement of lever, 68, setting the mechanism to operate with the plaiting movements of the pinchers, allowing the slit to be made in this manner, but causing the upper to be removed before it is allowed to receive the fastening tack. The pinchers, having let go their grip, the upper returns. The pinchers being then suitably adjusted, may be allowed to take a new hold and move over the inner sole as desired and the upper suitably tacked.

Certain uses of the machine make it desirable to have provision made whereby to discontinue the cutting operations, even during the plaiting operations of the upper-working devices. To this end it is that fork, a^{14} , is supported to slide vertically on rod, a^8 , from a position in alignment with cutter blade support, a^6 , to an altitude above the support, in which position the support permits movement freely under the fork, without being engaged by the branches thereof. Connected with the fork, a^{14} , is a mechanism whereby the operator may lift and depress the fork. Said lever comprises a lever, a^{15} , having teeth to engage the rack on said fork, a^{14} . Said lever is supported on a shaft, a^{16} , which shaft is supported to turn in the machine frame and carries on its opposite end a handle to be grasped by the operator in moving the same. A spring, a^{17} , operates to hold the lever in position as set by the workman. Said mechanism is fully represented in Figs. 7, 8, and 9.

I would not have it understood that this, my invention, is limited in its usefulness to the particular machine with which it is herein represented and described. Obviously, mechanical skill of an ordinary quality is suffi-

cient to modify and suitably combine the invention with other lasting machines.

I claim, and desire to secure by Letters Patent, the following:

1. In a lasting machine, in combination,—upper-working devices for working the upper over the last, a cutter blade, supported to permit an independent movement, with relation to the upper-working devices, for cutting or slitting the edge of the upper and mechanically-operated driving connections for actuating the cutter blade in the operations of cutting the upper, said driving connections having independent movement, with relation to the upper-working devices, for moving the cutter blade in time relations independently thereof, substantially as described.

2. In a lasting machine, in combination, upper-working devices for working the upper over the last, a cutter blade arranged for independent movement, with relation to the upper-working devices, for cutting or slitting the edge of the upper, and mechanically-operated driving connections for actuating the cutter blade, in the operations of cutting the upper, said driving connections operating by described or equivalent means, to move the cutter blade intermittently, substantially as described.

3. In a lasting machine, in combination, upper-working devices, actuating mechanism for moving said devices in working the upper over the last and plaiting or crimping the upper at times a cutter blade, arranged for an independent movement, with relation to the upper-working devices, for cutting or slitting the edge of the upper, and mechanically-operated driving connections, for actuating the cutter blade in the operations of cutting the upper, the mechanisms being timed for completing the operation of the cutter blade before the operations of the upper-working devices for plaiting the upper, whereby is allowed opportunity for superimposing the marginal edges of the slitted upper, one upon the other, by the upper-working devices completing the operation of plaiting the upper over the last, substantially as described.

4. In a lasting machine, in combination, upper-working devices for working the upper over the last, a cutter blade, movable independently of the upper-working devices, for cutting or slitting the edge of the upper, a movable driver and actuating means to move the driver and repeat the movements thereof automatically, connections between the driver and cutter blade, actuated by the driver to move the cutter blade in the operations of cutting the upper, substantially as described.

5. In a lasting machine, in combination, upper-working devices for working the upper over the last, a cutter blade for cutting or slitting the edge of the upper, a revoluble shaft and actuating means to revolve the same, a cam on said shaft and connections between the cam and cutter blade, actuated by the cam, to move the cutter blade in the opera-

tions of cutting the upper, substantially as described.

6. In a lasting machine, in combination, upper-working devices for working the upper over the last, a cutter blade and a cutter blade support, the support being arranged to permit an independent movement of the cutter blade, with relation to the upper-working devices, for cutting or slitting the edge of the upper, and actuating mechanism to be put in working relation therewith by a movement of the cutter blade support, for actuating the cutter blade in the operation of cutting the upper, substantially as described.

7. In a lasting machine, in combination, upper-working devices, actuating mechanism for moving said devices in working the upper over the last and plaiting or crimping the upper, at times, a cutter blade permitting independent movement, with relation to the upper-working devices, for cutting or slitting the edge of the upper, mechanically operated driving connections for actuating the cutter blade in the operations of cutting the upper, said driving connections having provision, by described or equivalent means, for repeating the operations of the cutter blade automatically, in time relation relatively to the plaiting operations of the upper-working devices, whereby the operations of the cutter blade are automatically limited to take place in conjunction with the operations of the upper-working devices, for plaiting or crimping the upper, substantially as described.

8. In a lasting machine, in combination, upper-working devices, actuating mechanism for moving said devices in working the upper over the last and plaiting or crimping the upper at times, a cutter blade for cutting or slitting the edge of the upper, mechanically operated driving connections for actuating the cutter blade in the operations of cutting the upper, said driving connections having provision, by described or equivalent means, for repeating the operations of the cutter blade automatically and in time relation relatively to the plaiting operations of the upper-working devices whereby the operations of the cutter blade are limited to take place in conjunction with the operations of the upper-working devices for plaiting or crimping the upper and mechanism, controllable by the workman, to start and stop the plaiting operations at will, substantially as described.

9. In a lasting machine, in combination, upper-working devices, actuating mechanism for moving said devices in working the upper over the last and plaiting or crimping the upper at times, a cutter blade for cutting or slitting the edge of the upper, mechanically operated driving connections for actuating the cutter blade in the operations of cutting the upper, said driving connections having provision, by described or equivalent means, for repeating the operations of the cutter blade automatically and in time relation relatively to the plaiting operations of the upper-work-

ing devices, whereby the operations of the cutter blade are limited to take place in conjunction with the operations of the upper-working devices for plaiting or crimping the upper and mechanism, controllable by the workman, to start and stop the plaiting operations at will, an independent mechanism to be actuated by the workman, during the continuous operation of the machine for starting and stopping the cutting operations of the cutter blade, substantially as described.

10. In a lasting machine, in combination, upper-working devices for working the upper over the last, a cutter blade for cutting or slitting the edge of the upper, mechanically-operated driving connections for actuating the cutter blade in the operations of cutting the upper and a part or section, movable by the workman during the continuous operation of the machine, to start and stop the cutting operations of the cutter blade, substantially as described.

11. In a lasting machine, in combination, upper-working devices for working the upper over the last, a cutter blade adapted for independent movement, with relation to the upper working devices, for cutting or slitting the edge of the upper, mechanically-operated driving connections for actuating the cutter blade in the operations of cutting the upper and means to start and stop the cutting operations of the cutter blade independently, with relation to the upper-working devices, substantially as described.

12. A lasting machine having in combination a single set of upper-working devices adapted for working a part or section only of a boot or shoe upper over the last at one operation, actuating mechanism arranged for moving the upper-working devices in working the upper over the last and plaiting or crimping the upper at times, said mechanism having provision by described or suitable means for repeating the operations of the upper-working devices, at intervals, the lasting operation as a whole being completed by a plurality of operations of the upper-working devices applied to different parts of the upper at different times, a movable cutter-blade having local relation with the upper-working devices for cutting or slitting the section of the upper engaged thereby or closely adjacent thereto, mechanically-operated driving connections for actuating the cutter blade in the operations of cutting the upper, having provision by described or equivalent means for repeating the operations of the cutter blade automatically and mechanism arranged to be actuated during continuous operation of the machine for starting the operations of the cutter blade, where cutting of the upper is to be introduced and stopping the operations thereof, at intervals of one or more operations of the upper-working devices, where cutting of the upper is to be omitted, substantially as described.

13. In a lasting machine, in combination,

upper-working devices for working the upper
over the last, a cutter blade for cutting or
slitting the edge of the upper, mechanically-
operated driving connections for actuating
5 the cutter blade in the operations of cutting
the upper, a part or section movable by the
workman during the continuous operation of
the machine to start and stop the operations
of the cutter blade and shifting devices for
10 moving the said movable part, substantially
as described.

14. In combination with the upper-stretch-
ing devices having jaw member, 16, movable,
and jaw member, 14, fixed, in relation to the

movable jaw member of the cutter blade sup- 15
port, α^6 , supported movably in connection with
the fixed jaw member and a cutter blade,
said cutter blade being adapted for cutting
or slitting the edge of the upper by a suit-
able movement of the support, substantially 20
as described.

Signed at Lynn, Massachusetts, this 5th
day of February, A. D. 1894.

SHERMAN W. LADD.

Witnesses:

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C. B. TUTTLE.