J. M. BARTON & P. J. LANDRY.

LASTING MACHINE.

APPLICATION FILED JUNE 11, 1908.

1,030,048.

Patented June 18, 1912.

2 SHEETS—SHEET 1.

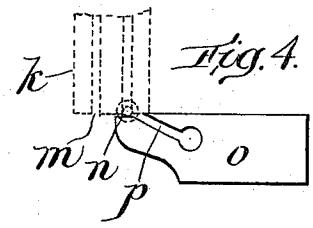

Fig. 4.

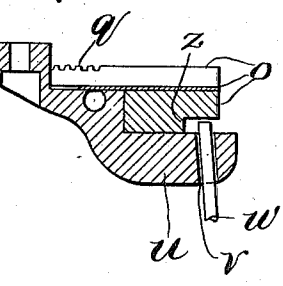

Fig. 3.

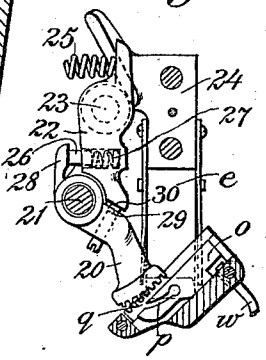

Fig. 5.

Fig. 1.

Witnesses:

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Inventors:

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by James Hamilton

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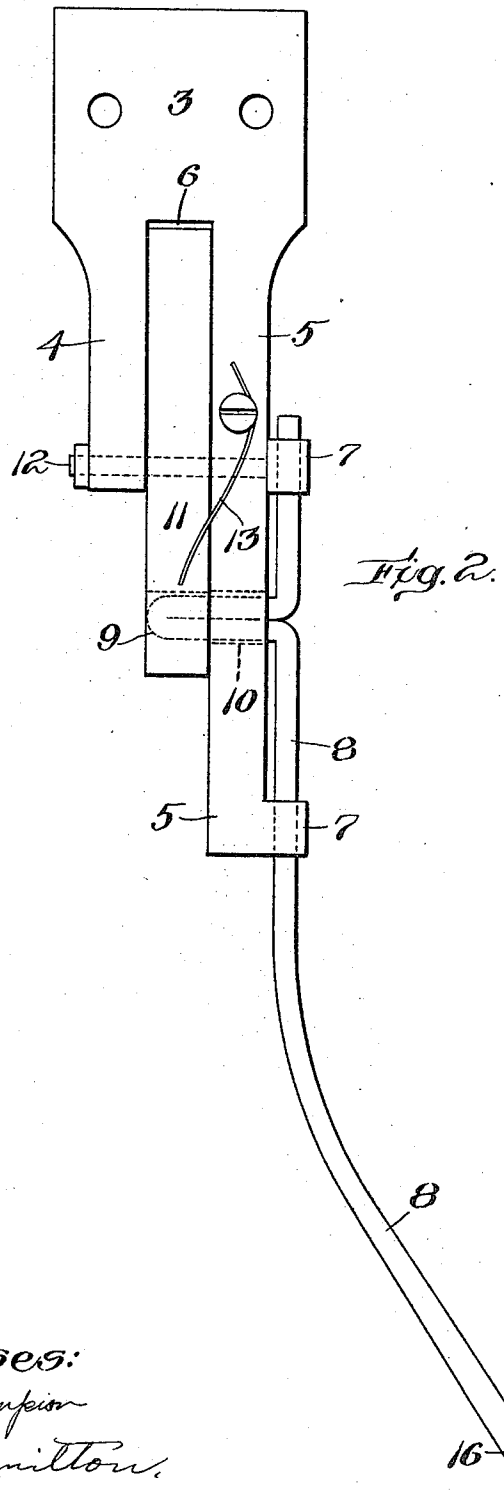

Fig. 2.

Witnesses:
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UNITED STATES PATENT OFFICE.

JOSEPH M. BARTON AND PETER J. LANDRY, OF DANVERS, MASSACHUSETTS, ASSIGNORS TO UNITED SHOE MACHINERY COMPANY, OF PATERSON, NEW JERSEY, A CORPORATION OF NEW JERSEY.

LASTING-MACHINE.

1,030,048. Specification of Letters Patent. Patented June 18, 1912.

Application filed June 11, 1908. Serial No. 437,867.

To all whom it may concern:

Be it known that we, JOSEPH M. BARTON and PETER J. LANDRY, citizens of the United States, residing at Danvers, in the county of Essex and State of Massachusetts, have invented certain new and useful Improvements in Lasting-Machines, of which the following is a specification, reference being had to the accompanying drawings.

Our invention relates to improvements in lasting machines and particularly to that portion of a lasting machine which controls the feeding and driving of the tacks.

An object of our invention is to provide means for automatically controlling the feeding of the tacks and the driving of the tacks, whereby the tacks will not be wasted and the shoes in process of manufacture will be kept in better condition.

Lasting machines in which the shoe operated upon is held and controlled manually by the operative, waste, as heretofore constructed and operated, about a pound of tacks per machine per day on the average. The tacks are fed inadvertently and are thrown about upon the floor and upon the operative's bench, so that shoes in process of manufacture are ruined practically through being scratched by the waste tacks lying around upon the bench and upon the floor. To prevent this wastage of the tacks and the marring, mutilation and practical destruction of the shoes, we have provided a movable shoe-rest so connected with the tack-feeding mechanism as to stop automatically the operation of the latter by the removal of the shoe from the rest, and to start the tack-feeding mechanism automatically by putting a shoe in position against the rest. Further, mechanism is also provided connecting the shoe-rest with the tack-driving mechanism, whereby the latter is locked against operation when the shoe is removed from the rest and is released when the shoe is pressed against the rest.

In the drawings illustrating the principle of our invention and the best mode now known to us of applying that principle, Figure 1 is a side elevation of so much of a lasting machine as is necessary to illustrate our invention; Fig. 2 is a detail illustrating the mechanism for controlling the tack-driver; Fig. 3 is a section on the line 3—3 of Fig. 1; Fig. 4 is a detail of the tack-feeding slide hereinafter referred to; and Fig. 5 is a detail of the actuator for the tack-feeding slide.

The type of lasting machine to which we have herein shown our invention applied is widely known and used and will be readily recognized by those familiar with this art.

a is a work-rest or shoe-rest which is carried by the frame *b* and against which the operator presses the last with the inner sole and upper fitted upon it. By depressing the treadle the pincers or gripping jaws *d* are caused to grip the upper and pull it and stretch it tightly over the last. The tack-carrier *e* then moves outwardly toward the last, to carry the tack into position to be driven by the hammer or tack-driver *f*. The latter now descends and drives the tack out of the carrier *e* into the work. The tacks are fed from a tack-feeding device *g* to the tack-carrier *e* which is mounted upon the slide *h*. The latter is reciprocated by mechanism not necessary to be shown herein. As the slide *h* moves outwardly to position the tack-carrier *e* over the work, it strikes against the hammer-carrying frame *i* which is mounted free to swing on the trunnions *j* journaled in the frame of the machine. By the engagement of the slide *h* with the frame *i*, the hammer or tack-driver *f* is carried into position to drive the tack; and being in that position, the hammer *f* is by suitable mechanism (not shown herein) moved downwardly to force the tack into the work.

As shown in Figs. 1 and 4, the tack-feeding device *g* is provided with an adjustable race-way *k* having two slots or guide-ways *m*, *n*. One of these slots is for long tacks used at the toe and heel parts of a McKay shoe, while the other is for the short tacks used along the sides of the shoe. By suitable mechanism (not shown herein) the race-way *k* is shifted back and forth to

bring alternatively into position the slots *m*, *n*. The tacks are taken from the slots in the race-way *k* one by one by a slide *o* formed with a slot *p* and provided with a rack *q* by which it is moved back and forth in a manner well known to those skilled in this art. It frequently happens in the operation of the machine, which it is an object of our invention to improve, that when the machine is stopped, the lowermost tack will be found partly out of the race-way and partly in the slot *p* of the feeding device, thereby constituting a lock which prevents the race-way *k* from being shifted to change from one size of tack to the other. By mechanism hereinafter described, we prevent this locking of the race-way and the latter is kept always free to be shifted from one position to another.

The actuator for the tack-feed slide *o* is illustrated in Fig. 5. This actuator is shown in Fig. 4 of the patent granted James Cavanagh, Jr., December 10, 1907, No. 873,018, and is fully described in the specification thereof. The tack-feed slide *o* is moved back and forth in opposite directions to feed the tacks one at a time from the tack race-way *k* to the tack-holder *l* by a lever 20 formed at one end with a toothed segment and pivoted near its other end on a stud 21. The toothed end of the actuating lever 20 engages the rack *q* on the tack-feed slide *o*. Pivotally mounted on the same stud 21 is a swinging arm 22 which carries a cam-roll 23. The latter coöperates with a cam-slide 24. The arm 22 is swung in one direction by the cam-slide 24 and in the opposite direction by a coil-spring 25; and it carries a plunger-pin 26 which is forced outwardly by a coil-spring 27 against a nose 28 formed on the upper end of the actuating-lever 20. If the latter and the tack-feed slide *o* are held against movement the only effect of the vibrations imparted to the swinging arm 22 is to compress and expand the spring 27; but when the last is placed in lasting position and the tack-feed slide *o* and actuating lever 20 are thereby freed as will be described, the oscillations of the lever 22 act through the coil-spring 27, plunger-pin 26 and shoulders 29, 30 (formed, respectively, on the actuating-lever 20 and on the swinging arm 22, opposite each other) to oscillate the toothed segment on the end of the actuating lever 20 and thereby to reciprocate the tack-separator *o*. The latter and the actuating-lever 20 constitute a tack-separator and the cam-slide 24 is an operating device therefor.

Having described hereinbefore the machine as heretofore constructed and operated, we shall now proceed to describe the changes which we have made in the construction in order to accomplish the objects of our invention.

The work-rest *a* is pivoted at *r* upon the frame *b* and is provided with an integral bracket-arm *s* between which and the frame *b* is interposed a leaf-spring *t*. The latter tends to force the work-rest *a* into a position in which the tack-feeding mechanism and tack-driving mechanism will be thrown out of operation. In the casing *u* of the tack-feeding mechanism *g* is bored a hole *v* in which works the free end of a spring-controlled detent *w* the other end of which is carried by a finger *x* in which it is yieldingly pressed toward the casing *u* by the coil-spring *y*. The finger *x* is mounted free to swing upon the upper end of the bracket-arm *s*. When the bolt or detent *w* is pressed inwardly through the hole *v* and is thereby interposed in the path of the feed-slide *o*, the latter is locked against operation, as will be readily understood from an inspection of Fig. 3.

The hammer or tack-driver *f* is carried at the lower end of the hammer-bar or hammer-slide 2 which is mounted in the hammer-carrier or frame *i*; and to one face of the latter is fastened a face-plate 3 the lower end of which is forked (Fig. 2), the two arms 4, 5 being separated by a recess 6. The arm 5 is longer than the arm 4 and carries at its outer edge the bearings 7 in which is rotatably mounted a rock-shaft 8 formed with a lug or trip-finger 9. The latter projects through an opening 10 in the arm 5 and lies beneath the lower end of a pawl 11 pivoted at 12 in the face-plate 3. The lower end of the pawl 11 is pressed inwardly upon the finger 9 by a leaf-spring 13 and thereby the nose 14 formed upon the upper end of the pawl 11 is normally held out of engagement with the ratchet teeth 15 formed upon the upper end of the hammer-bar or slide 2 (Fig. 1). But when the shaft 8 is rocked to swing outwardly the trip-finger 9 against the tension of the spring 13, the nose 14 of the pawl 11 engages the ratchet 15 and holds the hammer-carrying slide 2 against downward movement.

The lower end of the rock-shaft 8 is formed with a hole 16 adapted to receive the free outer end of a bar 17 upon which is mounted an adjustable collar 18 and which is mounted on the bracket-arm *s* of the work-rest *a*. Further, the lower end of the rock-shaft 8 is curved outwardly, as is shown in Fig. 2. When the tack-carrier slide *h* moves outwardly and by pressing against the carrier-frame *i* moves the latter toward the work, the rock-shaft 8 will move outwardly on the bar 17 which projects through the hole 18 in the bar. If no work is in position against the rest *a* to receive a tack then the spring *t* holds the bar 17 toward the machine in position for the rock-shaft to encounter the collar 18 and be turned in the direction to force the pawl

11 into engagement with the ratchet 15 and so prevent the descent of the driver and the tack which is in the tack block *u* is therefore not driven. If the work has been presented to the machine the sole rest *a* will have been rocked upwardly against the tension of the spring *t* and will thereby have retracted the rod 17 to a position where the collar 18 will not be encountered by rock-shaft 8 and that shaft will therefore not be turned to set the pawl against the driver ratchet and the driver will do its work.

In Fig. 4, the tack is shown part way in the slot *n* of the race-way *k* and part way in the slot *p* of the tack-feeding slide *o*. If attempt is made to shift the raceway with a tack in this position, the tack constitutes a lock which holds the race-way *k* against being shifted to pass from the use of long tacks to the use of short tacks, or vice versa. When the work-rest is in its inactive position (or lowered position, as illustrated in Fig. 1), the spring-controlled detent *w* engages the shoulder *z* of the feed-slide *o* and prevents movement of the latter. The shoulder *z* is so positioned that the feed-slide *o* will not be brought to rest in the position illustrated in Fig. 4 and, therefore, the untoward locking referred to cannot take place. That is, when the slide *o* is locked by the detent *w*, the slots *m*, *n* in the race-way *k* will be out of register with the open end of the slot *p* in the slide *o*, whereby it is made impossible for a tack to lie partly in the slot of the slide *o* and partly in a slot of the race-way *k*. The detent *w* and the shoulder *z* do not completely arrest the movement of the separator *q* but restrict its reciprocatory stroke so that it cannot move far enough toward the right in Figs. 3 and 5 to reach tack receiving relation with the raceway. When the separator is so arrested the spring 27 yields to allow lever member 22 to complete the stroke which said member receives from the cam plate 24 on the carrier *h*.

We claim:

1. In combination, a race-way formed with a slot for the tacks; a device for feeding the tacks, said device being formed with a slot adapted to register with the slot in said race-way; and mechanism for locking said device against movement when said slots are out of register with each other.

2. In combination, a movable work-rest; a race-way formed with a slot for the tacks; a device for feeding the tacks, said device being formed with a slot adapted to register with the slot in said race-way; and mechanism controlled by said work-rest for locking said device when said slots are out of register with each other.

3. In combination, a movable work-rest; a tack-feed slide; and a detent for locking said slide, said detent having one end connected with said work-rest and its other end free to be thrown into and out of the path of said slide by the movements of said work-rest.

4. In combination, a movable work-rest; a hammer-carrying bar; a pawl which by its engagement with the said bar locks the same against movement; and movable mechanism actuated by said work-rest and controlling said pawl, said mechanism forcing said pawl into engagement with said bar to hold the latter against movement.

5. In combination, a movable work-rest; a hammer-carrying frame movable to and from the same; a hammer-carrying bar movably mounted in said frame; a locking device carried by said frame and adapted to be thrown into locking engagement with said bar to lock the latter against movement; and movable mechanism carried by said frame into engagement with said work-rest, said mechanism forcing said device into locking engagement with said bar by its said engagement with said work-rest.

6. In a lasting machine, the combination of a driver, a tack holder, and tack feeding devices comprising a tack race-way and tack separator, said separator being movable in opposite directions to feed the tacks separately from the race-way to the tack-holder, an operating device movable back and forth to operate said separator, a spring located between the latter and said operating-device, a locking device having an abutment and means for normally holding said abutment in the path of movement of said separator to prevent movement thereof upon compression of said spring; and an arm connected to said locking device and disposed to be engaged by the shoe when placed in position in the machine to move said abutment out of engaging position.

7. In a machine of the class described, the combination with tack-delivering devices, a spring, and means acting through said spring for actuating said devices, of means, controlled by the position of the work, for locking and unlocking the said delivering-devices.

8. In a machine of the class described, the combination with tack-delivering devices including a tack separator, a spring, and means acting through said spring for actuating said devices, of means controlled by the position of the work and directly engaging the separator for rendering ineffective for actuating said devices the said means which normally acts through the spring for that purpose.

9. A machine of the class described having, in combination, a tack driver, a reciprocating tack carrier, a tack raceway, a tack separator, a two-part lever the members of which are yieldingly connected and one of which members has operative connection

with the separator to reciprocate it, a cam on the carrier to engage the other member of the lever to move the lever in one direction, a spring to return the lever and means arranged to be controlled by the shoe as the shoe is moved out of tack receiving position to engage the separator and prevent it from moving into tack receiving relation to the raceway.

10. A machine of the class described having, in combination, a tack driver, a reciprocating tack carrier, a tack raceway, a tack separator, a two-part lever the members of which are yieldingly connected and one of which members has operative connection with the separator to reciprocate it, a cam on the carrier to engage the other member of the lever to move the lever in one direction, a spring to return the lever and means arranged to be controlled by the shoe as the shoe is moved out of tack receiving position to clutch the driver at each operation of the machine and prevent it from making the tack inserting movement.

11. A machine of the class described having, in combination with devices for working on a shoe, a shoe rest support located in front of said devices and a shoe bottom rest extending from said support toward said devices and pivoted on the support to turn on a transverse horizontal axis from a depressed shoe receiving position upwardly to position for the shoe to receive the operation of said devices, and means to limit such turning movement.

12. A machine of the class described having, in combination with devices for working on a shoe, a shoe rest support located in front of said devices, and a shoe bottom rest *a* pivoted at its outer end to said support and having the upwardly directed arm *s* operated by the pivotal movement of the rest, substantially as described.

13. A machine of the class described having, in combination with devices for working on a shoe, a shoe rest support located in front of said devices, a shoe bottom rest *a* pivoted at its outer end to said support and having the upwardly directed arm *s* operated by the pivotal movement of the rest, and a spring to hold the rest normally rocked downwardly, substantially as described.

14. A machine of the class described having, in combination with devices for working on a shoe, a shoe rest support located in front of said devices, a shoe bottom rest *a* pivoted at its outer end to said support and having the upwardly directed arm *s*, and means arranged to be actuated by said arm upon pivotal movement of the rest to govern the operation of said devices.

15. A machine of the class described having, in combination with devices for working on a shoe, a shoe rest support located in front of said devices, a shoe bottom rest *a* pivoted at its outer end to said support and having the upwardly directed arm *s*, said devices including a tack separator, and means controlled by movement of said arm by the rest to govern the operation of the separator.

16. A machine of the class described having, in combination with devices for working on a shoe, a shoe rest support located in front of said devices, a shoe bottom rest *a* pivoted at its outer end to said support and having the upwardly directed arm *s*, said devices including a tack driver and means controlled by movement of said arm by the rest to govern the operation of the driver.

17. A machine of the class described having, in combination, tack supplying and driving mechanism, a shoe bottom rest which can turn upwardly under pressure of the work against it, said supplying mechanism comprising a separator casing and a tack separator reciprocable therein, operating means for the separator including a yielding element through which movement in one direction is effected, and a stop rod arranged to be actuated by said rest through the casing and into position to arrest the movement of the separator.

18. A machine of the class described having, in combination, tack supplying and driving mechanism, a shoe bottom rest which can turn upwardly under pressure of the work against it, said mechanism including a tack driver and means for yieldingly impelling it downwardly to insert tacks, and a pawl arranged to be rendered operative by movement of the rest about its pivot, and ratchet teeth connected with the driver to be engaged by the operative pawl to prevent the tack inserting movement of the driver.

19. A machine of the class described having, in combination, tack supplying and driving mechanism, a shoe bottom rest which can turn upwardly under pressure of the work against it, said mechanism including a tack driver and means for yieldingly impelling it downwardly to insert tacks, a guide relatively to which the driver reciprocates, a pawl carried by the guide, ratchet teeth connected with the driver, a pawl controlling rock-shaft extending along said guide substantially parallel with the driver and having one arm arranged to actuate the pawl into engagement with the ratchet, and a connection from the shoe bottom rest to another arm of the rock-shaft.

20. A machine of the class described having, in combination, a tack driver, a driver guide, a face plate, a pawl parallel with the driver pivoted in the face plate, a rock-shaft parallel with the driver pivoted in the face

plate and having an arm arranged to operate the pawl, a shoe bottom rest movable as the shoe is removed from tack receiving position, and connections through which movement of the rest is communicated to the rock-shaft.

In testimony whereof we have hereunto set our hands at Boston, Mass., this 8th day of June, A. D., 1908, in the presence of the two undersigned witnesses.

JOSEPH M. BARTON.
PETER J. LANDRY.

Witnesses:
JOHN W. MURPHY,
J. FRANK PORTER.