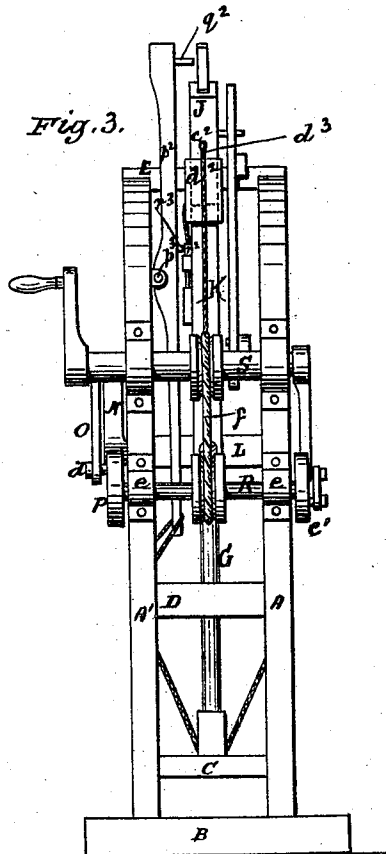
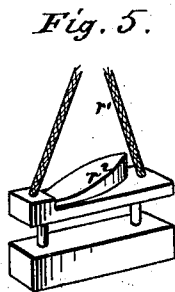
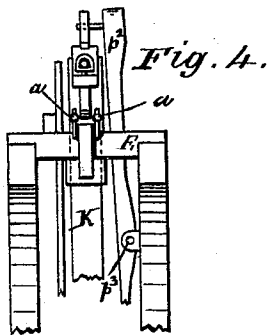
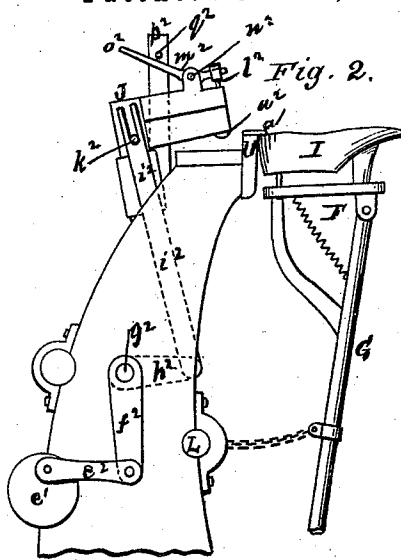
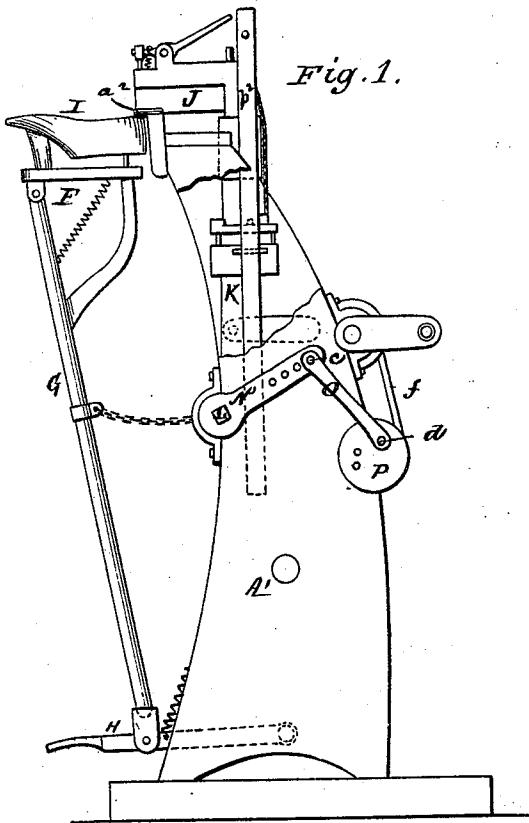


LASTING-MACHINE.

No. 171,810.

Patented Jan. 4, 1876.



Witnesses:

Jas. D. Patton
 A. Moore
 "

Inventor:

Frederic S. Hunt
by attys Pollock & Wiley.

UNITED STATES PATENT OFFICE.

FREDERIC S. HUNT, OF LYNN, MASSACHUSETTS.

IMPROVEMENT IN LASTING-MACHINES.

Specification forming part of Letters Patent No. **171,810**, dated January 4, 1876; application filed December 21, 1875.

To all whom it may concern:

Be it known that I, FREDERIC S. HUNT, of Lynn, Massachusetts, have invented certain Improvements in Machines for Lasting Boots and Shoes, of which the following is a specification:

The purpose of this machine is to supersede hand labor in the lasting of boots and shoes, not by stretching the entire upper over the boot, as is customary in most lasting machinery, but by stretching such upper at one point at a time only, practically as is now accomplished by hand labor; a second object of this machine being to tack the upper to the last at the point where, and the time when, the said upper is stretched.

To this end I employ, first, a last-supporting jack, mounted upon the top of an adjustable post, and adapted to carry a last, over which the upper is to be stretched and tacked or "lasted;" secondly, of a vibratory or swinging beam or carriage, carrying at top a head, which is provided with an elastic adhesive pad or cushion, and so disposed with respect to the lasting-jack, or the gage or stop which determines the position of such jack, that, with each forward swinging motion of the beam and head, the pad wipes against the upper at one point and stretches it over the edge of the last; thirdly, in the combination, with the swinging beam and its head, of a reciprocating bolt or tack-driver, operated by suitable mechanism, in such manner that, as the stretching-head of the machine reaches its extreme outward position, the driver descends and drives the tack through the upper and into the last.

The drawing accompanying this specification represents, in Figure 1, a side elevation of my machine. Fig. 2 is an elevation of the upper part of the same from the other side. Fig. 3 is a rear elevation. Fig. 4 is a front elevation of the upper part of the machine. Fig. 5 is a perspective view of the cam which controls the bar that operates the hammer-lever.

In these drawings, A A' represent two upright housings or standards, erected upon a suitable base, B, united by cross-bars C D, and at the top by a cross-beam, E. The last-supporting jack is shown at F as mounted upon

the upper end of an upright swinging rod or bar, G, which is stepped at bottom in a pedal, H, suitably pivoted to the lower cross-bar O of the machine-frame, while the last is shown at I as applied to the jack, the construction of such jack being similar to many now in use, and being retained in an upright position when not in use by a chain attached to it and the machine-frame.

The upper which is to be lasted is placed about the last I, and the adjustable or variable support of the jack enables the position of the last and upper to be varied at pleasure; but, as it is desirable that a uniform height of the bottom of the last with respect to the stretching-head shall be maintained, I affix to the front of the cross-beam E a gage or stop composed of a furcated or channelled abutment, U. The horizontal horns *aa* of the latter, which determine the height of the last, overhang the said last, and permit the stretching-head to pass between them in the act of turning and rubbing the edge of the upper over upon the last.

The stretching-head before alluded to is shown at J as a rectangular block mounted horizontally upon the upper end of a swinging or vibratory beam, K, erected upon a horizontal rock-shaft, L, which is journaled within the standards A A' at the front of the latter, and at about midway of their height; the lower front edge of the head J being covered with a shoe or pad, *a*², of india-rubber or other elastic or tenacious material, in order to adhere with considerable friction to the edge of the upper. The front of the head J, as it reaches its extreme forward position, extends between the horns *aa* of the gage, and the height of the said head is such that as it swings forward its elastic pad shall wipe against the edge of the upper and turn it down upon the last.

To effect the requisite vibratory motion of the beam K and head J, I connect one of the journals of the rock-shaft L, outside of the standard A', to one end of a crank, N, to the opposite end or wrist-pin *c* of which I pivot one end of a pitman, O, the opposite end of such pitman being, in turn, pivoted to the wrist-pin *d* of a crank-wheel, P, which is

mounted upon the journal of a horizontal counter-shaft, R, such shaft being mounted in boxes *ee*, affixed to the rear of the standards A A', and driven by a belt, *f*, from a super-disposed driving-shaft, S. Each revolution of the shaft R effects a vibratory motion of the beam K and head J.

To raise the head J from off the last, or the upper upon the latter, as such head completes its forward stroke, I apply the head to the vibratory bar K in an adjustable manner, which, in the present instance, consists in inclosing the shank *c* of the head and the upper part of the bar K in a tubular sleeve, *d*, and applying a spring, *d*³, in a suitable manner to draw the head down; and I next affix to one end of the shaft R a crank or crank-wheel, *e*¹, to the wrist-pin of which I pivot one end of a pitman, *e*², the opposite end of such pitman being, in turn, pivoted to the lower end of an arm or crank, *f*², whose upper end is affixed to the outer extremity of a horizontal rock-shaft, *g*², while to the inner end of such shaft I affix the rear end of a crank, *h*², to the front end of which crank I pivot the lower end of an upright rod or bar, *i*², whose upper end is forked, and embraces a lateral stud, *k*², projecting from the side of the head J; the arrangement of the sleeve *d*, crank *e*¹, *f*², and *h*², and rods *e*² and *i*² being such that each rotation of the shaft R produces a rocking of the shaft *g*², and such rocking of the latter shaft is transmitted to the head J to raise the latter from off the last or the upper upon it, the mechanism being so timed that the rod or bar *i*² lifts the head at the moment the latter reaches its extreme forward position, and immediately prior to its return.

I propose to combine with this machine a device for tacking the upper to the last simultaneously with the turning over of the upper upon the latter; and to this end I employ a vertical bolt, *l*², which plays within an orifice in the front of the head J, and to and fro thereof with respect to the last-jack below; this bolt being depressed by a proper spring, and actuated by a lever, *m*², which is fulcrumed to the top of said head by a pivot, *n*², and engages the bolt, as shown in the drawings, the rear end of the handle *o*² of this lever being operated in such manner that, as the head moves forward, the bolt is held at its highest point, and restrained from falling until such head has completed its forward movement and stroked the edge of the upper of the boot over upon the last, when the handle *o*² is released, and the bolt immediately descends and drives the tack.

To actuate the hammer-lever I employ an upright oscillating bar, *p*², pivoted at *p*³ to the inside of the frame, and arranged to vibrate to and from the stoker J. It is provided at its upper end with a stud or projecting pin, *q*², which wipes or operates at proper times the hammer-lever. The bar *p*² is operated by a double wedge or cam, *r*², attached to the side

of bar K, said cam being depressible, but normally upheld by a spring, *r*¹. Opposite the cam, on the bar *p*², is a pin, *r*³, adapted to operate in conjunction with the cam, in such manner that when the head J moves forward the pin *r*³ will ride over the inclined top of the cam, and the bar *p*², by its spring *p*¹, will be held toward the head J, with its pin *q*² in position to wipe over and depress the part *o*² of the hammer-lever. This continues until the stroking-head J reaches its forward position, and has pushed forward, stretched, and folded the upper over the last, at which time the hammer-lever clears the pin, and the hammer or bolt *l*² descends and drives the tack.

When the head J moves back, the cam *r*² (depressed during the forward movement by the overriding pin *r*³, but now released and returned to its normal position) wipes, with its side incline, against the pin *r*³, and so forces back the bar *p*² far enough to cause the upper pin *q*² to clear the hammer-lever.

I propose adding to my machine a device for feeding and presenting the tacks to the action of the driving bolt or hammer; but the combination of a tack feeding and driving device with my system of lasting will be the subject of a separate application for a patent.

The movement and action of the stroking-head are designed to imitate, as far as possible, hand-work.

The head has a wiping or stroking action, which tends to properly draw and stretch the leather—a result which is furthered by making the acting face of the head of rubber or other material that will take hold of the leather.

As soon as the head has performed its work and the tack has been driven, the head is then raised by the lifting-bar far enough to clear the leather, and is then retracted.

The mode of connecting the head with its stock also enables me to exert a powerful but yielding pressure on the work.

I am aware that, in machinery for lasting boots and shoes, a horizontally-moving slide has been employed to fold over the edge of the leather into position to receive the tack or nail. I am also aware that a nail-driving mechanism has been combined with such a slide. I claim neither of these features.

Having described my invention, what I claim, and desire to secure by Letters Patent, is—

1. In a machine for lasting boots and shoes, the combination, substantially as shown and described, with a jack movable in required directions, of a vibratory stroking-head, which moves to and from the work in the arc of a circle, at the times and in the manner stated.

2. The vibrating stroking-head, provided on its acting face with rubber or analogous material, in combination with the jack or work-support, said parts being for operation as shown and set forth.

3. The combination, with an adjustable jack

or work-support, of a stroking-head having an up-and-down and to-and-fro movement, substantially as shown and set forth.

4. The stroking-head, vibrating upon an axis, so as to move to and from the work in the arc of a circle, as herein shown and described, in combination with the tack or nail

driving mechanism and jack or work-support, substantially as set forth.

FREDERIC S. HUNT.

Witnesses:

C. M. HINCKLEY,
W. E. BOARDMAN.