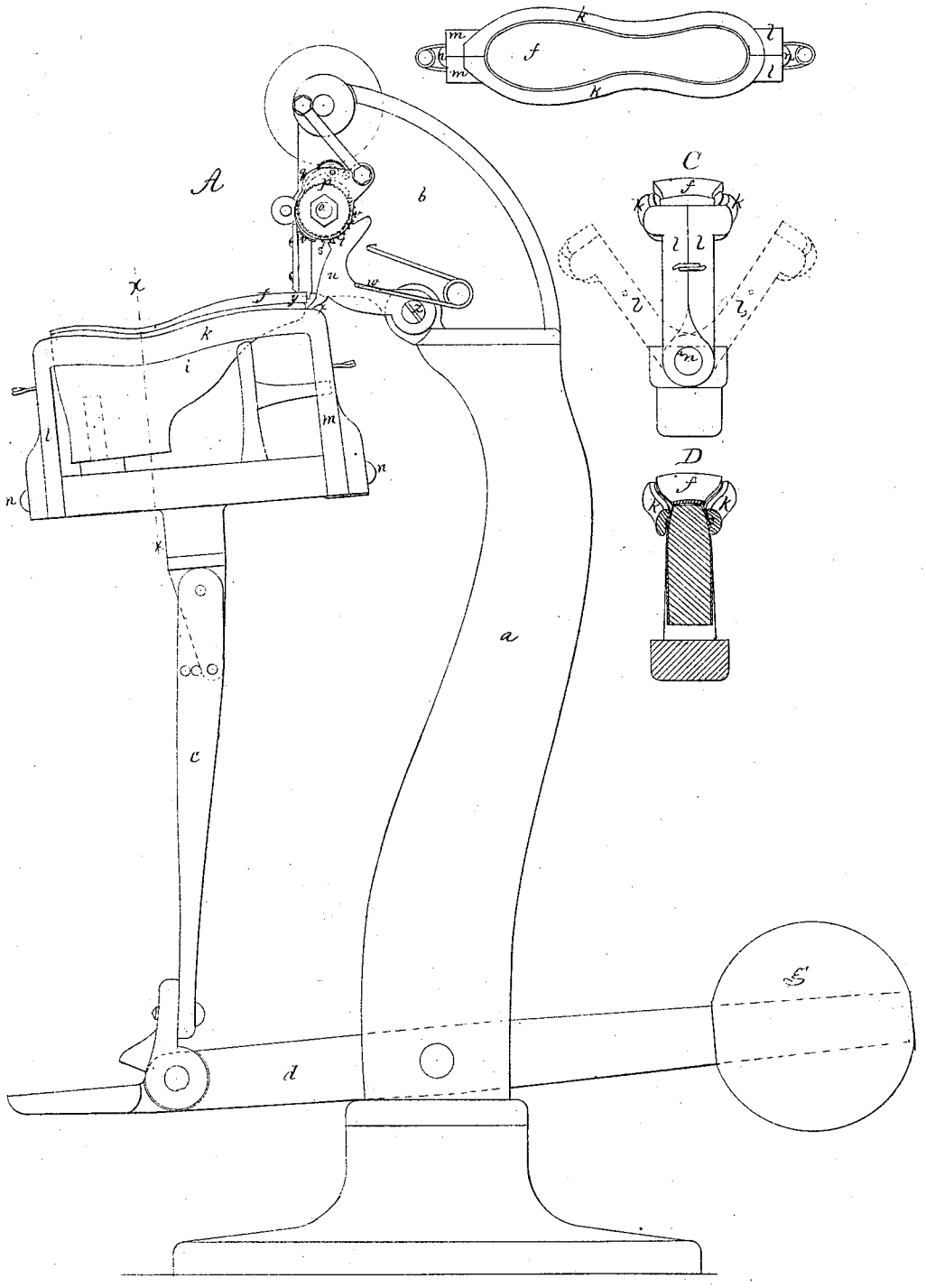
T. K. Reed,

Pegging Machine.

No. 102,155. Patented Apr. 19. 1870.



Witnesses.
M. W. Frothingham.
C. Warren Brown.

T. K. Reed
by his Attys
Crosby, Halsted & Gould

United States Patent Office.

T. K. REED, OF EAST BRIDGEWATER, ASSIGNOR, BY MESNE ASSIGNMENT, TO GORDON McKAY, TRUSTEE OF THE McKAY SEWING-MACHINE ASSOCIATION, OF BOSTON, MASSACHUSETTS.

Letters Patent No. 102,155, *dated April* 19, 1870.

IMPROVEMENT IN MACHINE FOR UNITING BOOT AND SHOE-SOLES TO THE UPPERS

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, T. K. REED, of East Bridgewater, in the county of Plymouth and State of Massachusetts, have invented a new and useful Improvement in Uniting the Soles and Uppers of Boots and Shoes; and do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of my invention sufficient to enable those skilled in the art to practice it.

In that part of the manufacture of boots and shoes which relates to uniting the soles and vamps by mechanism operating automatically to insert the fastening devices, various means have been devised and employed for automatically proportioning the length of the fastenings, to and in accordance with the varying thickness, from toe to heel, of the parts united, the boot or shoe being mounted upon a suitable supporting mechanism, by which mechanism it is presented to the action of the mechanism, which, in connection with such support, effects the union of the parts.

So far as I know, the first device that existed for thus automatically operating to vary the length of the fastening material, in accordance with the varying thickness of the parts being united, is shown in the United States Patent granted to Gordon McKay and R. H. Mathies, (No. 36,163, dated August 12, 1862, machine for sewing soles to boots and shoes,) in which machine the shoe is supported upon the top of an inclined salient arm called a "horn," the inner surface of the sole resting directly upon the horizontal top of this arm or work-supporting bed, and the inner sole, upper, and outer sole, being callipered between the presser-foot, the top of the bed or horn remaining in the same horizontal plane, and the presser-foot rising or falling in accordance with the thickness of the parts griped between it and the horn, and, by this rise or fall, controlling, through an intervening mechanism, the length of thread drawn from the spool to form the stitch.

Another device for controlling the length of the fastening, in accordance with the thickness of the main sole and the parts united thereto, is shown in the United States Letters Patent No. 76,150, granted March 31, 1863, to Lyman R. Blake and Asa S. Libby, for machine for nailing boots and shoes.

In such machine a work-supporting horn is used, and a feeding mechanism similar in many respects to that shown in the McKay & Mathies patent; and in the Blake & Libby machine, as in the McKay & Mathies machine, the work is callipered between the top of the horn and the presser-foot, but the top of the Blake & Libby horn constitutes an anvil, against which the nail is driven through the shoe, (as described in the specification of the Blake & Libby patent,) "the thickness of the parts of the boot or shoe is measured or callipered between the upper surface of the point of the horn and the under surface of the presser-foot, which bears on the outer surface of the sole, the invention consisting in the use of a mechanism which is operated primarily from the presser-foot, or an instrument bearing on the surface of the sole, and which, by the position of said foot or instrument, determines automatically the length to which the nails or pins shall be cut, so that the nails or pins shall in all and variable thicknesses, be just long enough to reach through the stock, with a little extra length for clinching or heading, if desirable;" the Blake & Libby claim being "the combination with the presser-foot of mechanism which operates, by reason of any change in height at which the presser-foot rests on the stock, to automatically cut nails or pins from material supplied for that purpose, to a length proportioned to the thickness of the work at the place where the presser-foot operates."

Another device for automatically determining the length of each nail, in accordance with the thickness of the parts to be united thereby, is shown in the United States Patent No. 87,473, granted to J. B. Crosby, March 2, 1869, for an "improved nailing or pegging-machine."

In the Crosby patent, the length of each nail cut from the wire-like material is determined by the thickness of the parts to be united thereby, through the agency of the work-supporting arm or horn, the work being callipered between the feed and presser foot mechanism, and the horn being made capable of vertical movement, through which movement the feed of the nail-forming wire is so regulated, (by connections between the horn and the wire-feeding mechanism,) that a length of wire equal to the thickness to be united is presented to the cutters for each nail to be driven.

These three devices for automatically determining the length of the fastening material, constitute (in principle) all of the means known to me up to the date of my invention, the McKay & Mathies sole-sewing machine, drawing from the spool the particular length required for forming each successive stitch, (such length, of course, varying as the thickness of the parts vary,) the Blake & Libby nailing-machine automatically varying the length of the wire-like material fed to the action of the cutters by the vertical movement of the presser-foot, (produced by the variation in the thickness of the parts to be united,) and the Crosby machine, varying the length of wire-like material fed to the action of the cutters, (in accordance with the varying thickness of the sole,) through the vertical movements of the horn or work-supporting bed.

(Besides these inventions there is also shown, in the United States Patent Nos. 86,054 and 86,590, means for cutting off the inwardly-protruding end of each nail, after the same has been driven into a boot or shoe, the result obtained being the same as in the above-mentioned inventions, but attained only with the waste of nail-forming material.)

In each of the first three patents described, the parts united are calipered between the feed and presser-foot mechanism and the work-supporting surface, and, while the ultimate object of my invention is the same, namely, to determine the length of each fastening, in accordance with the thickness of the parts of the shoe to be united by it, I dispense with mechanism for calipering between the two thicknesses to be united, and thereby avoid the necessity of mounting the shoe upon a work-supporting horn, instead of which horn I use a last, mounted upon a jack mechanism, as in ordinary pegging-machines, and, in combination with the last and jack, I employ a gauge, extending around the last, the top of such gauge being in accurate line with or conforming in curvature to the corner or upper edge of the last.

Upon the top of this guide rests a finger at one end of a rocker-lever, connected with the wire-feed mechanism, and, as the upward stress upon the jack holds the surface of the sole up to the feed-foot and nail-tube of the nailing mechanism, and the surface of the edge of the shoe to be nailed varies in distance above the guide, (in accordance with the varying thickness of the sole,) it will be obvious that the guiding surface must rise and fall in accordance therewith, thus imparting vertical movement to the lever, by which movement of the lever, change of feed of the wire or nail-forming material is automatically effected, so as to cause each nail to be cut in accordance with the thickness of materials to be united thereby.

Broadly stated, my invention consists, therefore, in combining with a shoe-nailing or pegging mechanism, (using wire-like fastening material,) and a jack or last-supporting mechanism, a gauge, the surface of which has sole relation to the sole surface of the last, that, by a suitable connection between the guide surface and the nail-cutting mechanism, the length of the nails successively cut may be automatically determined, in accordance with the varying thickness of the parts to be united.

The drawings represent a machine embodying my invention.

A shows a side elevation of the machine.

B is a plan of the lasted shoe and guiding mechanism.

C an end view thereof.

D, a section on the line *x x*.

a denotes the post;

b, the head;

c, the jack-standard;

d, the weighted lever that supports such standard, all of which parts may be precisely like the corresponding parts in an ordinary Sargent or Townsend pegging-machine, and the head *b* may be provided with a shoe-feeding, wire-feeding, and nail-cutting mechanism, similar to those found in other nailing-machines, for which reason they are not particularly shown, and will not be herein described.

e denotes the bottom of the nail-tube, through which the nail is driven into the shoe, the sole *f* being held up to the tube, (by stress of the weight *g* upon the lever *d*,) as seen at A.

The shoe *i* is drawn over or lasted upon a suitable last, which is supported by a suitable jack, pivoted to the standard *c*.

To this jack or shoe-holding frame is fixed the gauge *k*, which, surrounding the last, has its upper surface in line with or equidistant (vertically) from the upper or sole-surface of the last at the edge thereof, or in the nail-driving line.

In the drawings this gauge is made in two parts, one on each side of the last, each part having at its opposite ends two vertical arms, *l l* or *m m*, pivoted to the jack or frame by hinge or joint-pins *n*, so that each gauge can be swung up near to or against the shoe, as seen in the drawings, or away from the shoe, as seen by the dotted lines at C, to facilitate the application and removal of the last.

The wire-feed wheel-shaft is shown at *o*.

On this shaft is a ratchet, *p*, with which engages a reciprocating feed-pawl, *q*, actuated by any suitable mechanism.

On the shaft *o* is an eccentric wheel or shell, *r*, part of whose peripheral edge projects radially beyond the teeth of the ratchet, and the point of the ratchet is made wide enough to extend over this wheel, this construction being much the same as shown in the Crosby patent, to which reference has been made.

On the under side of the wheel are gear-teeth *s*, into which mesh teeth *t*, on a lever, *u*, fulcrumed at *z*, as seen at A.

This lever is pressed down by a suitable spring, *w*, and from its front end projects a finger, *x*.

When this finger is at its lowest position, the edge of the wheel directly under the pawl is below the ratchet-teeth, (the pawl being thrown back.)

As the finger is raised the wheel is turned, and brings the projecting part of the wheel under the pawl, or into its path of movement, so that the pawl will be raised from the ratchet, and in its forward movement will come sooner or later into engagement with the ratchet, accordingly as the finger is raised little or more, thus causing the extent of movement of the ratchet, and consequent feed of the wire, to be varied.

Now, while this finger rests upon the top surface of the gauge, as seen at A, the peg-tube foot rests on the top of the sole, (the edge of the sole abutting against a guide, *y*,) and, as the distance between the surface of the gauge and the surface of the sole diminishes or increases, so will the finger rise or fall, and the extent of feed-movement of the wire be varied by such rise or fall.

Instead of the finger resting upon the gauge, it may run in the outer groove formed between the upper and the sole, bearing against the surface of the sole, or a gauge may be fastened in such groove, and the finger rest against that; and the mechanism may be otherwise modified, but I prefer an arrangement of mechanism substantially as shown, it being simple and effective, the sole being calipered by the peg-tube foot resting against the outer surface of the outer sole, and a finger, which, instead of resting directly against the inner surface of the inner sole, rests against an adjunct or gauge outside of the shoe, the surface of such gauge conforming in curvature to the surface of the last in the nail-driving line.

By these means, a common pegging-machine jack mechanism may be employed in connection with a nailing-mechanism, with provision for automatically determining the length of the nails cut from the wire, and all the parts of the shoe are kept accurately in position and in shape by reason of the last remaining in the shoe until the nailing of the sole is effected.

I claim, in combination with a machine for nailing boots and shoes with nails cut from wire, or wire-like material, (the shoe being supported by a last and jack-mechanism,) a gauge around the outside of the shoe, and mechanism operated by such gauge, to effect such variation in the extent of wire-feed as is required by the varying thickness of the parts to be united.

T. K. REED.

Witnesses:

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J. B. CROSBY.