W. JACKSON.

BOOT AND SHOE SEWING-MACHINES.

No. 181,941. Patented Sept. 5, 1876.

Fig. 1.

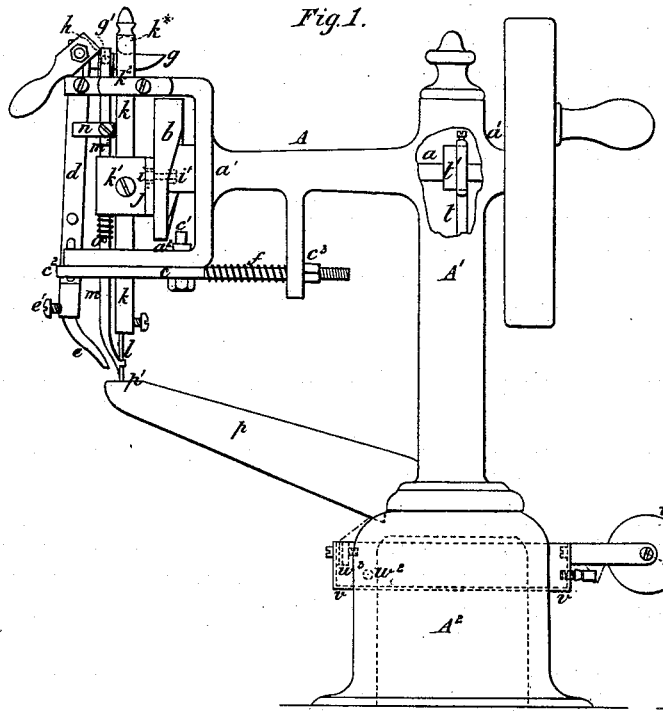


Fig. 2.

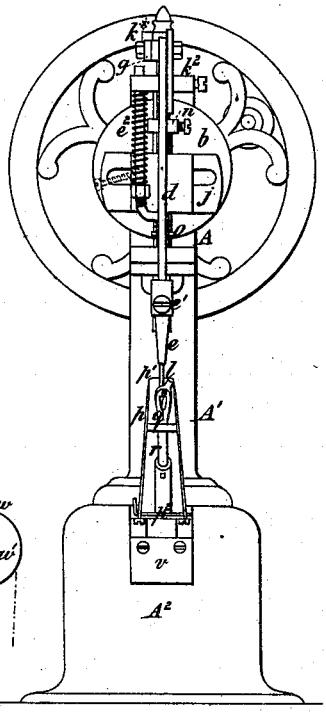
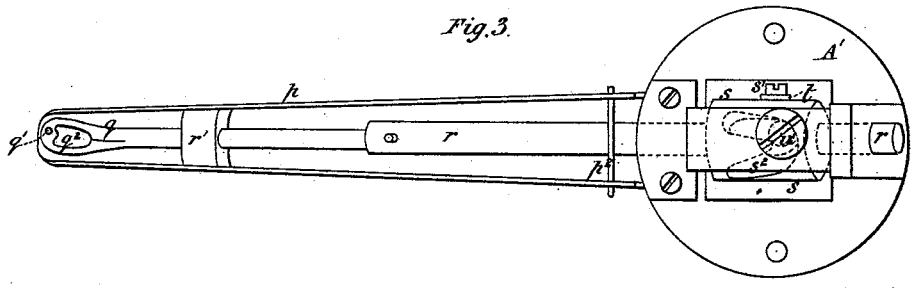


Fig. 3.



Attest:
Charles Thurman.
Isaac N. Goodhue

Inventor.
William Jackson.
by Geo. W. Dyer
Atty.

UNITED STATES PATENT OFFICE.

WILLIAM JACKSON, OF LONDON, ENGLAND.

IMPROVEMENT IN BOOT AND SHOE SEWING MACHINES.

Specification forming part of Letters Patent No. **181,941**, dated September 5, 1876; application filed October 30, 1875.

To all whom it may concern:

Be it known that I, WILLIAM JACKSON, of London, England, have invented Improvements in Machines for Sewing the Soles of Boots and Shoes, of which the following is a specification:

My invention relates to that class of sewing-machine for sewing the soles of boots and shoes wherein a chain or loop stitch is formed with waxed thread; and it consists in the peculiar mechanism for operating the looper, and further, in the peculiar means for operating the feed-bar, all as more fully hereinafter explained.

Figure 1 is a side elevation of a machine constructed according to my invention. Fig. 2 is a front elevation of the said machine. Fig. 3 is an under-side view of portions of the said machine drawn to an enlarged scale.

Like letters indicate the same parts throughout the drawing.

A^1 is the frame or standard of the said machine, which is hollow or tubular, and is constructed of cast-iron or other suitable metal. *a* is the main shaft, working in bearings at a^1 in the said frame. This shaft carries at its front end the disk *b*, whose rear or inner face forms a cam which operates the slide-bar *c*, through the medium of a roller, c^1, fitted on a pin fixed on the said bar, and projecting up through a slot in the frame at a^2. The said slide-bar *c* is jointed at c^2 to the feed-bar *d*, at whose lower extremity is fixed the presser-foot *e*, whereby the boot or shoe being sewed is moved forward after each stitch. The said cam-disk gives the inward movement to this feed apparatus, and its outward or return movement is given to it by a spring, *f*. The length of feed can be regulated by the nut c^3, or by equivalent means. The presser-foot *e* is held on the bar *d* by a screw, e^1, in such a manner that it can be readily adjusted to suit any thickness of material. The required downward pressure of this foot *e* is produced by the spring e^2. The presser-foot bar *d* is connected to the lever *g*, and operated thereby, as hereinafter set forth, and the said bar is provided with a cam, *h*, or other suitable device, whereby it may be adjusted to raise the presser-foot to release the work and to set it down upon the work, as required. The front face of the disk *b* is provided with a pin or stud, *i*, preferably fitted with a roller projecting into the slotted cross-piece *j* on the needle-bar *k*, for giving motion to the said needle-bar. The said pin *i* is fitted in a radial slot in the said disk, and secured by a nut, *i'*, and may be adjusted in this slot to vary the motion of the needle to suit different thicknesses of material. The said cross-piece is attached to the needle-bar *k* by a screw, k^1. The said needle-bar is fitted to slide freely in bearings k^2, and by the rotation of the said disk *b* and the action of the pin *i* in the slot of the piece *j*. The required reciprocating motion is given to the said needle-bar and the needle *l*. The lever *g*, to one arm of which the presser-bar *d* is connected, has its fulcrum at *g'*, and its other arm is arranged under the roller k^*, which is attached to the upper end of the bar *k*, and at each descent of the latter this roller, acting on the lever *g*, raises the presser-foot. The cast-off *m* works in combination with the needle, and serves to keep the loops of thread as they are formed from catching in the hook of the needle. The lower end of this cast-off is made taper, and has a hole in its lower extremity for the passage of the said needle-hook. This cast-off *m* has a vertical up-and-down motion given to it by the action of the cross-piece *j* on the collar *n*, which is fixed adjustably on the cast-off rod or stem m^2, and is so arranged thereon as to give the cast-off a rest after each descent of the needle. To allow the cast-off to adapt itself to different thicknesses of material, it is operated through the medium of a spring placed between the under side of the cross-piece *j* and the pin *o*, fixed in the cast-off rod m^2. The arm or horn *p* has a hollow nose, p^1, which may be as shown, or a separate piece of steel fixed by screws. It must be tempered or hardened sufficiently to prevent its cutting or wearing by the action of the needle. Inside the said nose is the looper *q*, fixed on the extremity of the spindle or rod *r*, which is fitted to oscillate and slide freely in the bearings *r'*. At its lower or rear end this spindle has fixed on it a cam, *s*, provided with a stud or finger, s^1. To this finger is connected the lower end of the rod *t*, which extends up inside the hollow standard A^1 of the frame, and is arranged with its upper end in connection

with a cam or eccentric, t', on the main shaft a. The cam s has in it a long groove, s^2, which receives the end of a fixed pin or stud, u, secured in the frame, as shown in Fig. 3. The rotation of the main shaft a, through the cam or eccentric t' and rod t, imparts to the cam s an oscillating movement around its axis, and this movement, by the action of the pin u in the groove s^2, is converted into a compound rotative and endwise oscillating or to-and-fro motion, which is communicated to the looper q, giving it the required movement around the needle for passing the thread into the barb or hook of the same. The said looper has a hole, q^1, for the thread, and an aperture, q^2, for the passage of the hook, the said aperture being large enough to give space for the said hook to pass if it should come in contact with a nail in the boot or shoe. The wax pot or pan v is fitted in the lower part or base A^2 of the frame or standard A of the machine, just below the lower part of the arm or horn p. The said base is enlarged, and forms a chamber or receptacle for the lamp or heater, whereby the wax in the said wax-pot is heated. And it will be obvious that by reason of the hollow construction of the said standard and the arm or horn the heat will be confined, and the heat will pass from the wax-pot upward, thereby heating the entire machine, so that the wax-thread is kept hot during the formation of the stitches, and therefore the work will be performed to much greater advantage than when the wax-thread is cooled after waxing by contact with the cold metal, as in other machines where there is no provision for heating the parts of the machine. The said wax-pot carries a small grooved thread-tension pulley, w, supported to turn freely on centers w^1, and provided with an adjusting-screw and check-nut to regulate its action; or instead of this pulley I may use any other suitable tension device. The thread is checked by a spring, and is passed around a pulley, w^2, within the wax-pot, and then passed between two pieces of india-rubber, w^3, which remove the superfluous wax. The thread extends from these india-rubber pieces over another pulley or a pin or bolt at p^2 to the hole in the extremity of the looper, as clearly shown in Fig. 1.

I claim as my invention—

1. In a sewing-machine, the combination of the looper q, the rod r, the cam s, having the groove s^2, the stud u, the connecting-rod t, and the shaft a, for the purpose of actuating the looper, substantially as and for the purposes set forth.

2. The combination, with the cam b and reciprocating needle-bar k, of the feed-bar d, the slide c, the spring f, and nut c^3, for giving the said feed-bar a horizontal motion, and the pin k^* on the needle-bar, lever g, and spring e^2, for imparting a vertical motion to the said feed-bar, all constructed and arranged to operate substantially as described and shown.

WILLIAM JACKSON.

Witnesses:
HENRY Q. BAILEY,
JAMES EDWARDS.