W. S. FITZGERALD.

BOOT AND SHOE SOLE CHANNELING-MACHINE.

No. 182,812. Patented Oct. 3, 1876.

Fig. 2.

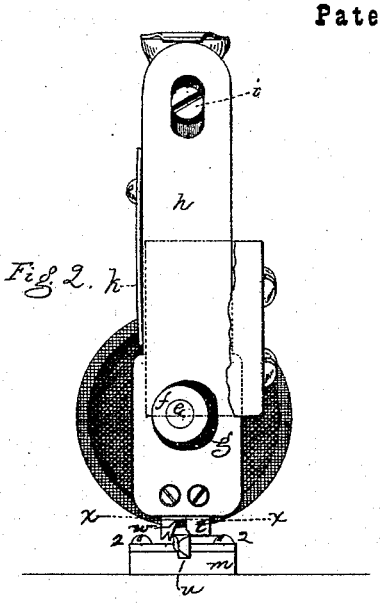


Fig. 3.

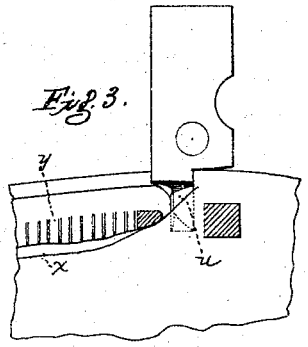
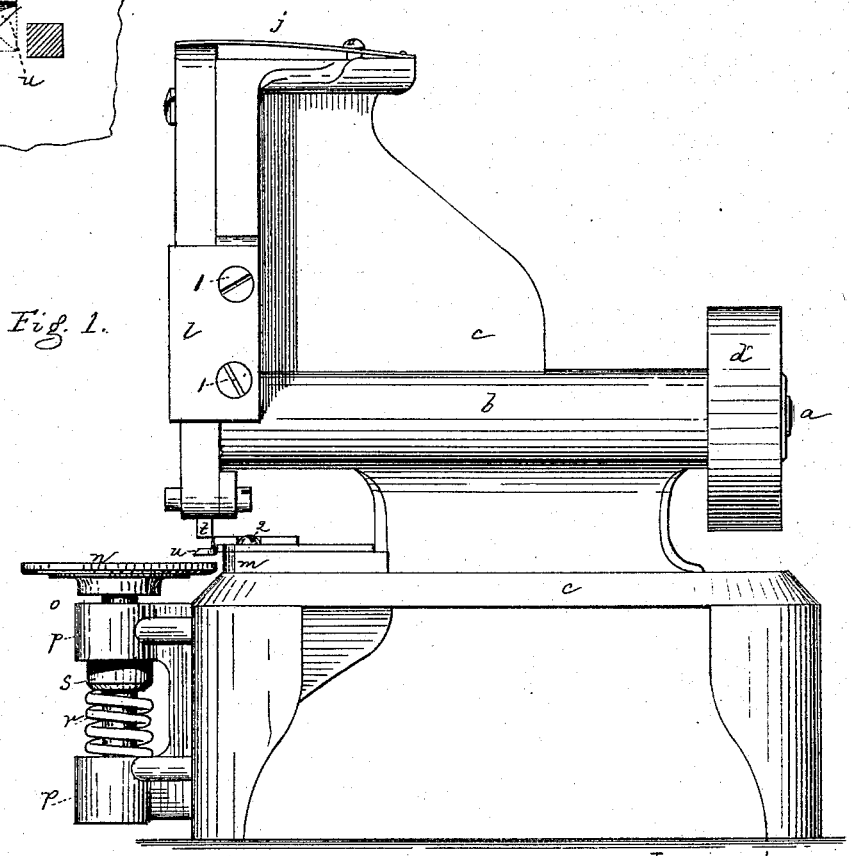


Fig. 1.



Witnesses.
L. H. Latimer.
W. J. Pratt.

Inventor.
Walter S. Fitzgerald
per Crosby, Gregory, Atty

UNITED STATES PATENT OFFICE.

WALTER S. FITZGERALD, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO HENRY C. WAINWRIGHT, OF SAME PLACE.

IMPROVEMENT IN BOOT AND SHOE SOLE CHANNELING MACHINES.

Specification forming part of Letters Patent No. **182,812**, dated October 3, 1876; application filed August 26, 1876.

To all whom it may concern:

Be it known that I, WALTER S. FITZGERALD, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improved Channeling-Machine, of which the following is a specification:

This invention has reference to machines for channeling leather for soles of boots and shoes; and consists in the combination, with a yielding rotating support and a channel-cutting knife, of a rough-surfaced lifting and horizontally moving or engaging and disengaging upper feed, adapted to engage the leather and present it to the channel-knife.

In connection with the feed-foot, adapted to engage the surface of the sole, I employ a second drawing-feed that enters the channel cut in the sole by the channel-knife.

Figure 1 represents, in side view, a channeling-machine provided with these improvements; Fig. 2, a partial front view; and Fig. 3, a detail, showing a piece of a sole with the feeding devices and cutter in operative position, the feeding devices being in section on line *x x*, Fig. 2.

The driving-shaft *a* of the machine extends through the horizontal bearing *b* of the frame *c* of the channeling-machine. The shaft *a* has at one end the belt-pulley *d*, and at its other end it is provided with an eccentrically-placed crank-pin, *e*, on which is placed a friction-roller, *f*. This crank-pin and friction-roller enter an opening, *g*, in a feed-carrying bar, *h*, having its fulcrum, in this instance, at *i*. An adjustable spring, *j*, holds the bar down, and an adjustable spring, *k*, bearing against the edge of the bar, presses it back after it has been moved by the crank-pin. A cap, *l*, attached to the frame *c* by screws 1 1, holds the feed-carrying bar upon the crank-pin and fulcrum, and acts as a back-stop for the bar. This cap is shown as broken away in Fig. 2. The gage *m*, attached to the frame *c*, and preferably adjustable, serves as an edge-gage for the edge of the piece of leather being channeled. The circular bed or support *n* for the material has its shaft *o* guided in bearings *p p*. The bed is sustained on a strong spiral spring, *r*, having its seat on one of the bearings *p*, and adjustable collar *s*, attached to the shaft *o* resting upon the spring. The shaft and bed are free to be rotated with the material moved by the feeding devices, and to yield vertically to adapt the bed to soles or stock of different thickness. At the lower end of the feed-carrying bar are adjustably attached two feeding-surfaces. The one, *t*, has a roughened surface at its lower end, and it bears on the material in advance of and pushes it forward against the edge of the channeling-knife *u* of any usual or proper shape, and made vertically and horizontally adjustable through screws 2. The second feeding device *w*, provided with one or more sharpened or chisel-like prongs at its lower end, adapted to firmly engage or penetrate the stock, is placed behind the knife *u*. The edge of the flap or lip *x* formed by the knife passes against and is raised by the curved or inclined outer face of the drawing-feeder *w*, and this feeder, located behind the flap, engages with the sole in the channel *y*, and pulls it away from the knife. The two feeders *t w* are placed on opposite sides of the knife and are pressed down intermittingly against the surface of the sole and into the channel, engaging the sole and moving it forward step by step. The feeder always descends to a given point, and, bearing against the surface of the sole, it depresses it a certain definite distance, so that the knife always cuts into the sole substantially the same distance from its face, and makes the depth of the channel uniform; but this would not be the case if the support did not yield to accommodate itself to the thickness of the stock. If the support was fixed as to its horizontal position, the back of the sole, resting thereon, would always move in a fixed path, and the channel-knife, acting from the face of the sole, would vary as to the depth of its cut from the face according to the thickness of the stock; but when the support at the back of the sole yields, the channel may be maintained at a uniform depth from the face. The depth of the channel may be regulated by raising or lowering the edge of the knife with reference to the lowermost position of the feeder *t*. The spring *r* is sufficiently strong to press the material being channeled up against the channel-knife.

Instead of moving the feeding-surfaces by

means of the reciprocating and vibrating bar *h*, I may operate them through any devices commonly used in sewing-machines to operate the rough-surfaced feeding-dogs.

The support for the sole is adapted to rise or fall in front of the edge-gage for the sole. The lower end of the drawing-feeder *w* is lower than the lower end of the pushing-feeder *t*. Both, when engaged with the sole, move together, and, acting together, they move the sole positively against the knife in substantially a straight path. The edge of the feeder *t* next the cutting-edge is beveled, so that the feeder, acting upon the upper surface of the sole, may remain in contact with the sole during the whole of each feeding motion, and during the time that the knife acts to cut the sole to form the channel. With this construction it will be noticed that the forward portion of the feeder *w* will press upon the material forming the lip as it passes above the inclined upper surface of the knife.

In another application made by me for a patent for a skiving-machine I show a rotating table and a feed-carrying bar and two feeders; but I do not therein claim such devices, except under the construction therein described, whereby they are adapted to skiving leather.

I claim—

1. The rotating yielding support and stationary channel-knife, in combination with an engaging and disengaging feeder to move the material up to the knife, substantially as described.

2. The rotating support and channel-knife, in combination with an engaging and disengaging feeder adapted to engage the material in the channel back of the knife, and to operate substantially as described.

3. The rotating spring-supported table and channel-knife, in combination with two sole engaging and disengaging feeders, arranged one at the front and the other at the rear of the knife, and adapted to operate substantially as described.

4. The fixed channel-knife and vertical edge-gage *m*, in combination with the spring-supported annular table or bed, to hold the sole up to the knife and permit the edge of the sole to bear against the gage, substantially as described.

5. A horizontally-rotating and vertically-movable sole-support and a vertical sole-edge gage, situated outside the path in which the support rises and falls, in combination with a channel-knife and sole engaging and disengaging feeders, adapted to operate substantially as described.

6. A cutting-knife, in combination with a feeding device, adapted to engage and disengage the material, feed it up to the cutter, and shaped at its front edge to bear upon the lip cut from the sole as it passes over the cutter, substantially as described.

In testimony whereof I have signed my name to this specification in the presence of two subscribing witnesses.

WALTER S. FITZGERALD.

Witnesses:

G. W. GREGORY,

S. B. KIDDER.