(No Model.) 2 Sheets—Sheet 1.

H. H. ARNOLD.

CHANNELING MACHINE.

No. 458,331. Patented Aug. 25, 1891.

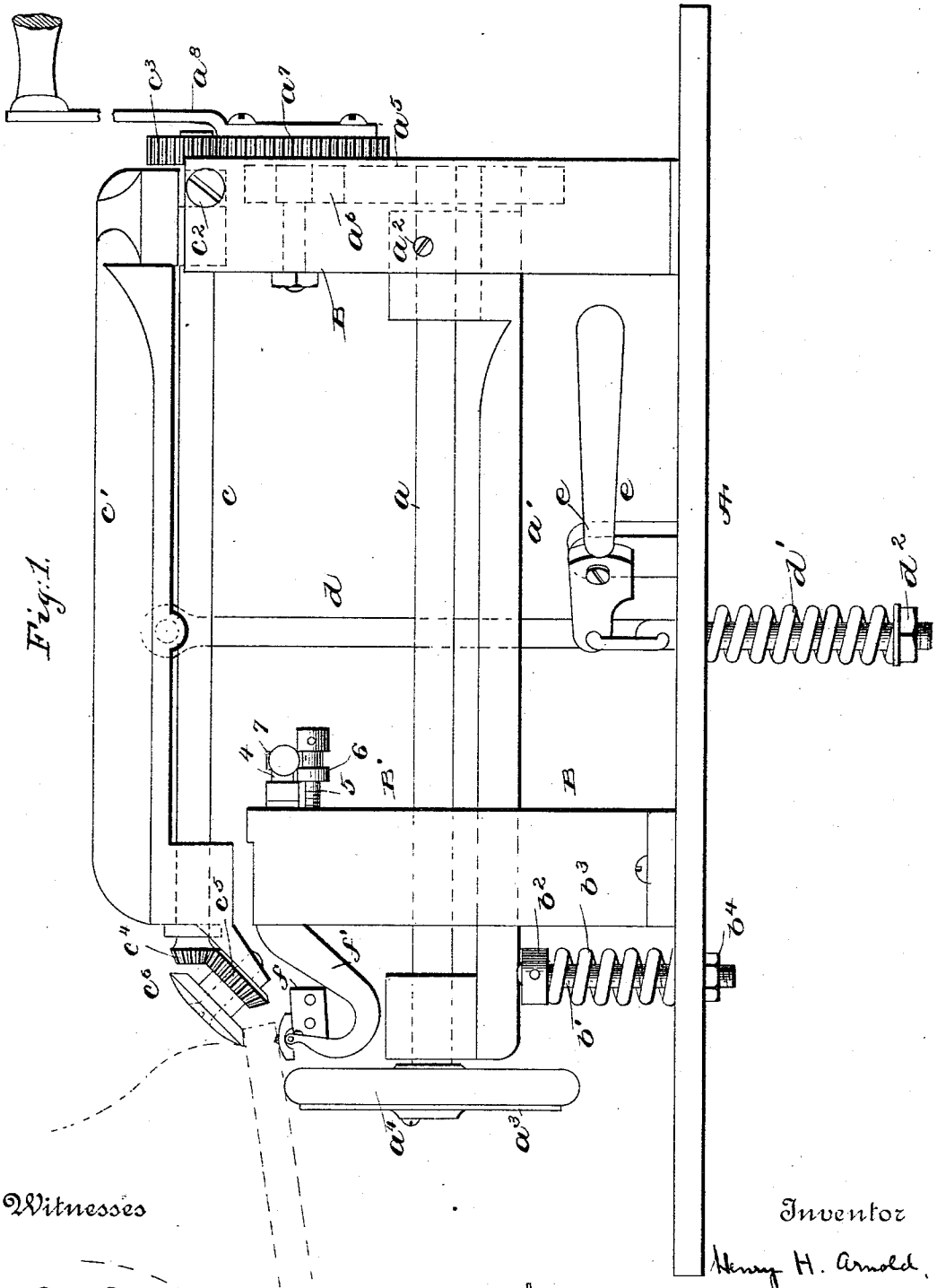


Fig. 1.

Witnesses

John Dawnie

John B. Edwards.

Inventor

Henry H. Arnold.

By his Attorneys.

Crosby & Gregory.

THE NORRIS PETERS CO., PHOTO-LITHO., WASHINGTON, D. C.

(No Model.) 2 Sheets—Sheet 2.

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Fig:2.

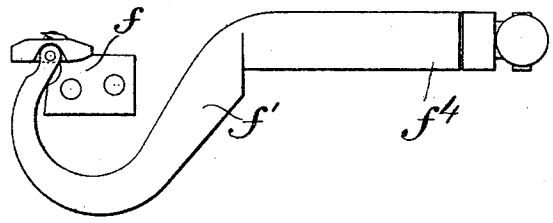


Fig:3.

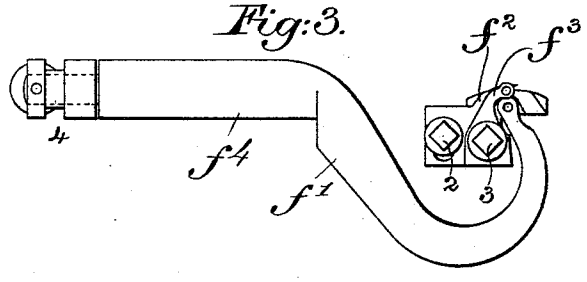


Fig:4.

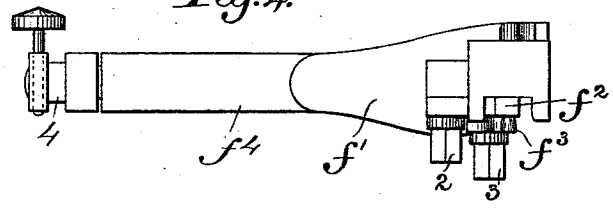


Fig:5.

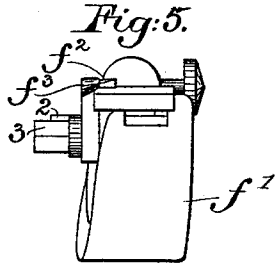


Fig:6.

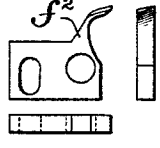
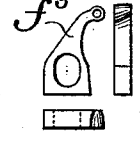


Fig:7.



Witnesses:
Fred. L. Grenleaf.
Edward F. Allen

Inventor:
Henry H. Arnold.
by Crosby & Gregory Attys.

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UNITED STATES PATENT OFFICE.

HENRY H. ARNOLD, OF ROCKLAND, MASSACHUSETTS.

CHANNELING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 458,331, dated August 25, 1891.

Application filed March 10, 1891. Serial No. 384,435. (No model.)

To all whom it may concern:

Be it known that I, HENRY HERBERT ARNOLD, of Rockland, county of Plymouth, State of Massachusetts, have invented an Improvement in Channeling-Machines for Boots and Shoes, of which the following description, in connection with the accompanying drawings, is a specification, like letters and figures on the drawings representing like parts.

It has heretofore been common to channel the soles of boots and shoes before applying or securing them to the boot or shoe, and when so channeled a pattern-plate is used, or the channel-cutting tool is guided by the edge of the sole. The channel or slit which is cut rarely exactly conforms to the shape of the boot or shoe to which it is to be secured, and hence such channeled sole is objectionable. In order to cut the channel so that it shall exactly conform to the shape of the finished boot or shoe, I find it is most desirable to employ the last as the guide, and with this object in view I have devised a channeling-machine which comprehends the employment of a channel-cutting blade mounted on a rocking or tilted block or holder, movement of which is entirely unrestrained, said block or holder affording a bearing for the outer face of the sole while the blade cuts the channel or slit, and a gage-roll or equivalent is provided which bears upon the opposite or welt side of the sole and against the upper drawn taut over the last, so that as the boot or shoe is fed or carried forward the channel or slit which is cut will exactly conform to the shape of the last. The gage-roll or equivalent presser which bears on the welt side of the sole against the upper, drawn taut over the last, is adapted to yield. The rocking or tilting blade-holder is supported by an arm or carrier, preferably adapted to oscillate or to have a movement substantially at right angles to the movement of the said blade-holder. In addition to the bearing for the sole afforded by the blade-holder, I preferably employ one or more bearing-rolls or equivalents, which are made yielding. In order to obtain the best results the channel-cutting blade is located in alignment with the axis of the arm or carrier supporting it, such relation of the parts enabling the blade to occupy a proper position to cut a slit of a certain depth regardless of the position of its holder.

Figure 1 shows in front elevation a boot or shoe channeling machine embodying this invention; Fig. 2, an enlarged detail of the rocking or tilting channel-cutting blade-holder and its supporting or carrying arm; Fig. 3, a rear side view of the parts shown in Fig. 2; Fig. 4, a plan view of the parts shown in Fig. 3; Fig. 5, a right-hand end view of the parts shown in Fig. 3; Figs. 6 and 7, details of the blades or knives to be referred to.

The main frame-work comprises a base-plate A, having erected on it suitable stands or supports B B′.

Pivoted or jointed at a^2 is a bearing-frame a' for a shaft a, having at one end a roll a^3, provided at its periphery with a rubber or other yielding band a^4. The shaft a has a gear a^5, (see dotted lines,) which is engaged by a pinion a^6, (also shown by dotted lines,) secured to a short arm having its bearings in the stand B and having fixed to it a toothed wheel a^7, to which is secured a crank-arm a^8, said gears serving as a means for rotating the shaft a. The roll a^3 receives upon it and supports the sole of the boot or shoe in a slightly-inclined position, as shown in Fig. 1.

The bearing-frame a' rests on a stud b', supported by a spring b^3 and extended through a hole in the base A, the said spring resting at its lower end on the bed, the upper end of the spring acting against a collar or fixed support b^2 on the upper end of the stud, the tendency of the spring being to keep the stud in its elevated position. The lower end of the stud b' is screw-threaded and receives upon it at a point below the base A a nut b^4, by which to limit the ascent of the stud and the bearing and wheel a^3. The spring b^3 serves as a yielding support for the frame a', and adjustment is obtained by the nut b^4.

The stand B has pivoted upon it at c^2 a frame c', having bearings for a shaft c, provided at one end with a pinion c^3, which is engaged and rotated by the pinion a^7, the said shaft having at its opposite end a toothed beveled gear c^4, which engages a beveled gear c^5, secured to a short inclined shaft, to which is fixed a roll c^6, which bears upon the upper

surface of the sole of the boot or shoe and against the upper drawn taut over the last.

The roll a^3 and roll c^6 constitute feeding mechanism for the boot or shoe.

The frame c' has attached to it the upper end of a rod d, the lower end of which is passed down through a hole in the base-plate A and through a spiral spring d', the threaded part of the rod receiving a nut d^2, adjustment of the nut d^2 on the rod adjusting the tension of the spring b'. A lever e, pivoted to a fixed stand or support, is connected at one end with the rod d, and its other end serves as a handle by which it may be operated. By depressing the lever e the frame c may be raised to permit the entrance of the sole of the boot or shoe beneath the gage-roll c^6.

An arm or carrier having a cylindrical shank or stem f^4 and a curved end f' has its bearings in the stand or support B', and is adapted to be freely oscillated. A block f, pivotally connected to the outer curved end f' of the oscillating arm, has secured to it by screws 2 3 the blade or channel-cutter f^2. (See Figs. 3 and 6.) The screw 3 passes through a hole in the shank of the blade and serves as a pivot on which it may be adjusted, and the screw 2 passes through an elongated hole in said shank, which permits the blade to be turned on its pivot. The channel-grooving tool f^3, (see Figs. 3 and 7,) is also secured to the block f by means of the screw 3, which passes through an elongated hole in the shank of said grooving-tool, which permits vertical adjustment thereof, as well as adjustment in the arc of a circle of which the screw 3 is the center. The channel-grooving tool is located just back of the channel-cutting blade to form a groove at the bottom of the slit formed by said channel-cutting blade. The channel-cutting blade and grooving-tool are located in alignment with the axis of the oscillating arm f', so that, regardless of the position of said arm, the cutting-blade and grooving-tool will remain in substantially the same position with relation to the work, that a slit of equal depth be cut. The rear end of the arm or carrier f' at the opposite end of the stand B' has a circumferential groove 4, and by the side of and parallel with the arm an adjusting-screw 5 is screwed into the stand or support B', said adjusting-screw having an annular projection 6, which enters the groove 4. By turning the adjusting-screw 5 the arm f' will be moved longitudinally or toward or from the roll a^3, yet at the same time it does not interfere with its free oscillating motion.

The boot or shoe containing the last and having on it the outer sole which is to be channeled is presented to the machine, the gage-roll c^6, owing to its inclination, following along the top or welt side of the sole beneath the bulging portions of the last and bearing against the upper drawn taut over the last, so that said last may serve as the true guide, and as the machine is operated the channel-cutting blade will cut a slit corresponding to the shape of the last and regardless of the shape and irregular surface of the sole, the latter oftentimes being the result of building up the fore part and thereby leaving the shank of less thickness.

This machine is especially adapted for welted work.

While I prefer to employ a roll, as c^6, adapted to act both as a feed and gage roll, yet its most essential function is its use as a gage or guide, and hence I desire it to be understood that I do not desire to confine myself to such particular construction.

I claim—

1. In a machine for channeling boots and shoes after they have been secured upon the last, a gage-roll located at the welt side of the sole, adapted to bear against the upper drawn taut over the last, combined with a channel-cutting blade and a rocking or tilting holder for it, substantially as described.

2. In a machine for channeling boots and shoes after having been secured upon the last, a gage-roll at the welt side of the sole, adapted to bear against the upper drawn taut over the last, combined with a channel-cutting blade, a blade-holder having a bearing-surface for the tread-face of the sole, and an oscillating arm or carrier supporting said blade-holder with the cutting-edges of the blade in alignment with its own axis, substantially as described.

3. In a machine for channeling boots and shoes after they have been secured upon the last, a gage-roll at the welt side of the sole, adapted to bear against the upper drawn taut over the last, combined with a channel-cutting blade, a rocking or tilting blade-holder, and an oscillating arm or carrier for said blade-holder, the axis of the arm or carrier being at right angles to the movement of the blade-holder, substantially as described.

4. In a machine for channeling boots and shoes after they have been secured upon the last, a gage-roll at the welt side of the sole, adapted to bear against the upper drawn taut over the last, combined with the channel-cutting blade and a channel-grooving tool, a holder for said blade and tool, having a bearing-surface for the tread-face of the sole, and an oscillating arm or carrier to which said holder is pivoted with its axis at right angles to the axis of the oscillating arm, substantially as described.

5. In a machine for channeling boots and shoes after they have been secured upon the last, a gage-roll at the welt side of the sole, adapted to bear against the upper drawn taut over the last, combined with a channel-cutting blade, a rocking or tilting holder for it, a carrier for said holder, and means, substantially as described, for adjusting it longitudinally, substantially as set forth.

6. In a machine for channeling boots and shoes after they have been secured upon the last, a yielding gage-roll located at the welt side of the sole, adapted to bear against the

upper drawn taut over the last, combined with a channel-cutting blade, and a rocking or tilting holder for it, substantially as described.

7. In a machine for channeling boots and shoes after they have been secured upon the last, a gage-roll located at the welt side of the sole, adapted to bear against the upper drawn taut over the last, combined with a channel-cutting blade, a tilting holder for it, and the yielding roll, as a^3, substantially as described.

8. In a machine for channeling boots and shoes after they have been secured upon the last, feeding mechanism comprising the roll a^3 and yielding bearings therefor, a roll c^3 and yielding bearings therefor, and means for rotating said rolls, combined with a channel-cutting blade and tilting blade-holder, substantially as described.

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

HENRY H. ARNOLD.

Witnesses:
BERNICE J. NOYES,
EDWARD F. ALLEN.