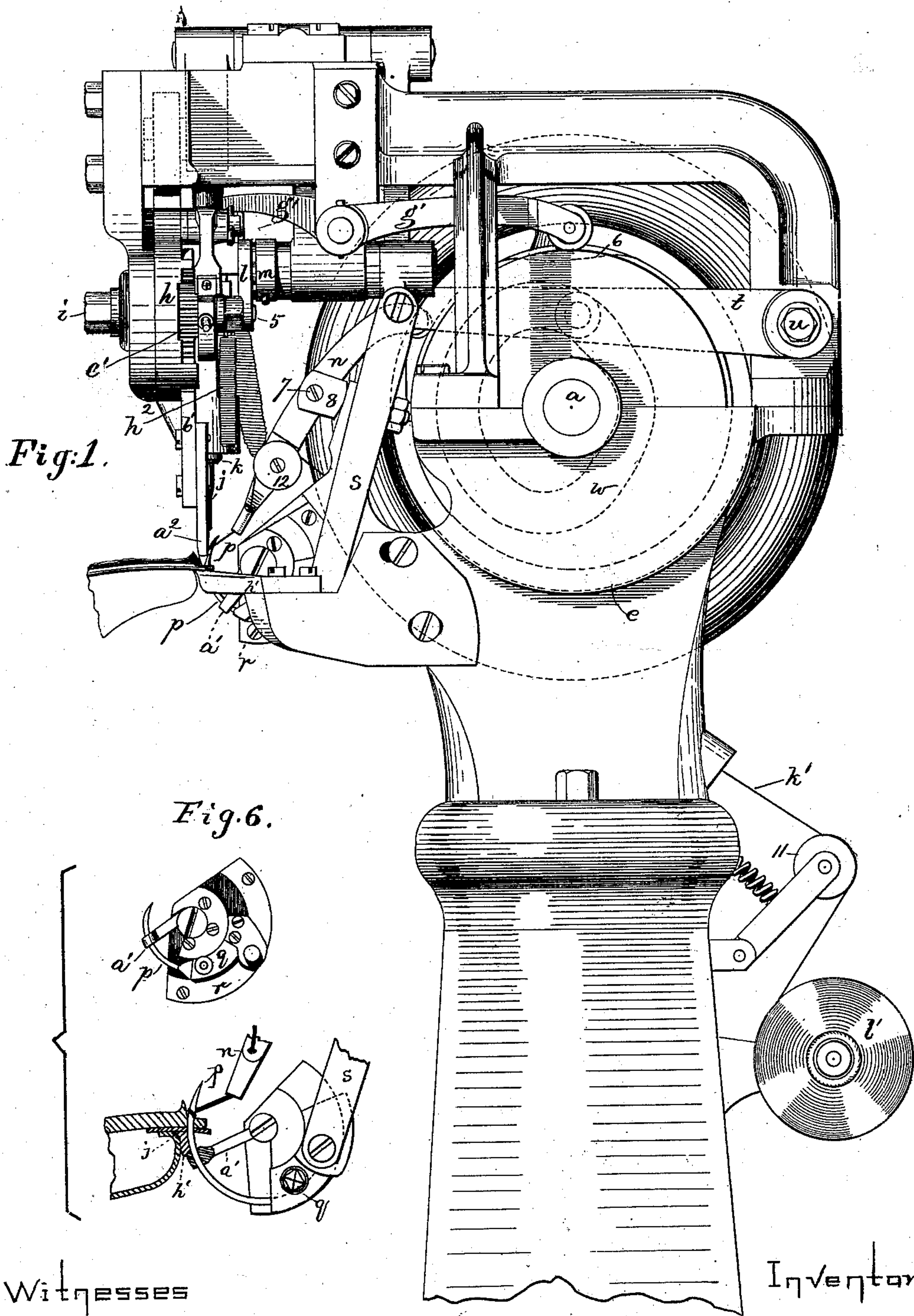


C. DANCEL.
Sewing-Machine for Boots and Shoes.

No. 199,802.

Patented Jan. 29, 1878.



Witnesses

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

Inventor

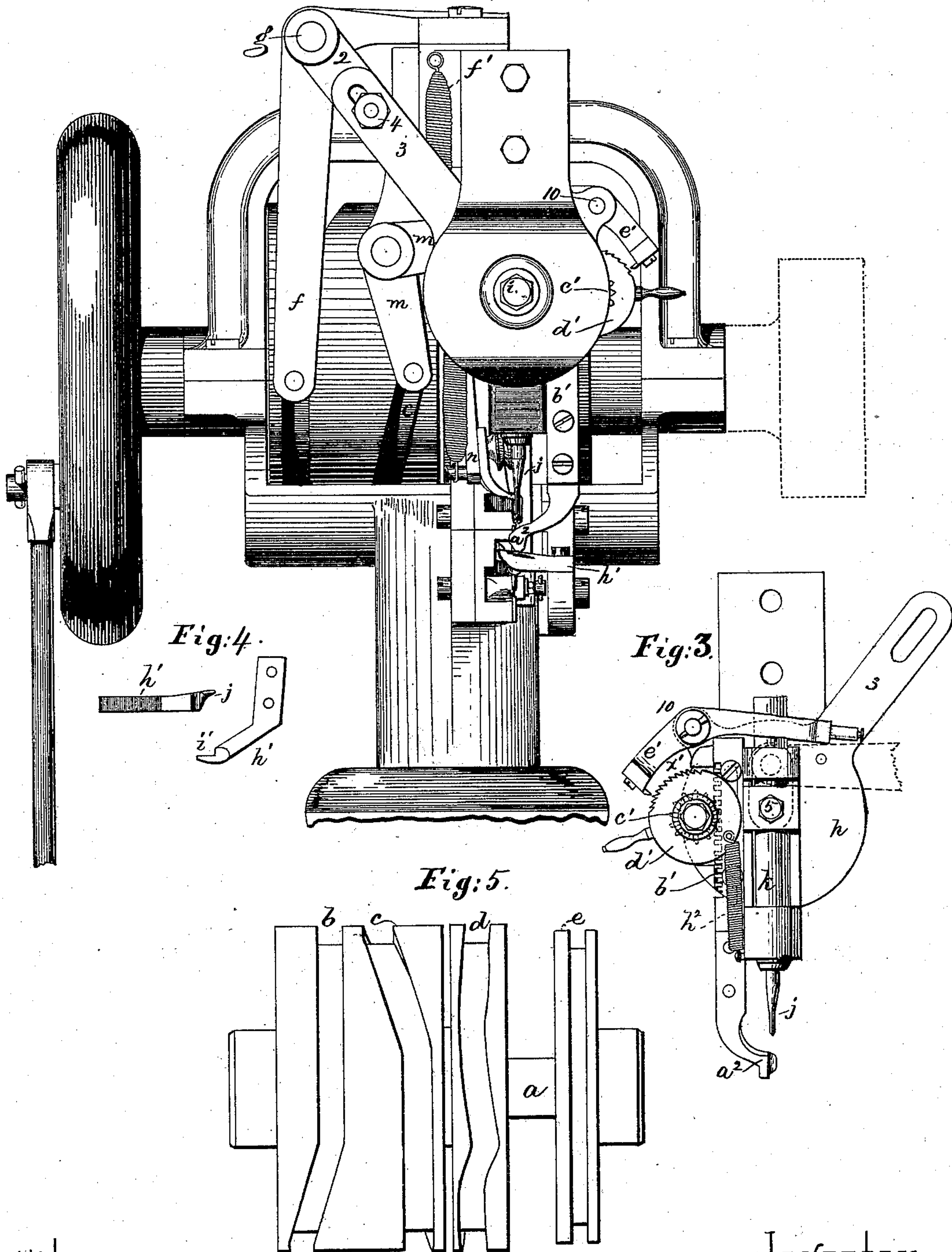
Christian Dancel
per Crosby & Gregory
Attys.

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Fig. 2.



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UNITED STATES PATENT OFFICE.

CHRISTIAN DANCEL, OF NEW YORK, N. Y., ASSIGNOR TO CHARLES GOODYEAR, JR., OF SAME PLACE.

IMPROVEMENT IN SEWING-MACHINES FOR BOOTS AND SHOES.

Specification forming part of Letters Patent No. **199,802**, dated January 29, 1878; application filed November 27, 1876.

To all whom it may concern:

Be it known that I, CHRISTIAN DANCEL, of the city, county, and State of New York, have invented an Improved Sewing-Machine for Boots and Shoes, of which the following is a specification:

This invention relates to a sewing-machine specially designed for stitching outsoles to welts. The machine employs a reciprocating curved needle, as in the class of machine represented in United States Patent No. 124,393, granted to Michael J. Stein, that machine, however, being adapted to sew what is known as turned shoes, rather than to sew outsoles to welts.

In machines heretofore made, employing curved needles to stitch outsoles to welts already attached to uppers, the doubled or chain portion of the loop forming the chain-stitch has been so drawn through the outer sole as to lie in the channel cut in the face of the outer sole; but this plan has been found to be objectionable, because of the tendency of the single thread to cut into the welt, and because of the difficulty in properly covering the loop of thread lying in the channel. The stitch in leather work is drawn very close, and the single portion of the thread lying on that side of the stock from which the needle emerges is so drawn by the needle, as it draws the stitch taut, that it embeds itself into the stock more than does the thread forming the doubled part of the loop. When the chain or doubled part is left in the channel, the channel has to be deeper, thereby weakening the sole, or else it is difficult to cause the channel-flap to properly cover the chain. If the chain is left so as to be easily uncovered, the loop of thread becomes quickly worn off, thereby injuring the integrity of the shoe, whereas the sole should wear a long time without permitting the thread uniting the outsole and welt to become worn.

The invention consists in a narrow work-support, provided with a lip, in combination with a straight awl to penetrate the outer sole, entering it at the bottom of the channel, and with a curved needle adapted to enter the welt and the hole formed in the sole by the awl, substantially as described.

Also, in the combination, in a sewing-machine, of a stationary rest or support for the material, a channel-guide free to adapt itself to the varying thickness of the material prior to each descent of the awl, and the formation of the stitch, and a locking device to hold the channel-guide positively while the awl enters the material and the stitch is formed.

Also, in a channel-guide and its toothed shank, in combination with the locking device and pinion and pawl, to engage and disengage the locking device when the awl moves backward to again penetrate the sole.

Figure 1 is a view of the machine, looking at it from the right-hand side. Fig. 2 is a front view; Fig. 3, a detail of the awl-stock and the channel-guide and presser, and its locking devices. Fig. 4 shows top and end views of the work-supporting arm; Fig. 5, a top view of the cam-shaft and cams; and Fig. 6, a detail of the needle and its shield.

The driving-shaft *a*, mounted upon a framework of suitable construction, is provided with a series of cam-grooves, *b c d e*, and a cam to operate the different parts. The cam-groove *b* receives a friction roll or stud on an elbow-lever, *f*, pivoted at *g*, the short arm 2 of the lever being adjustably connected with the head *h* for the awl-stock pivoted at *i*, the connection being made with an arm, 3, of the head by an adjustable set-screw, 4, to permit the head to be vibrated more or less about its pivot *i*, to regulate the length of the feeding-stroke of the awl *j*, carried by an awl-stock, *k*, fitted to be reciprocated in guides in the head *h*, and provided with a pin, 5, connected by a link, *l*, with the short arm of a rocking arm or lever, *m*, provided with a friction-roller or stud that enters the cam-groove *c*, the awl deriving its reciprocatory movements from this lever and cam and link.

When the awl is in the sole the head *h* is moved on its pivot to feed the material for a new stitch, and when the awl rises above the sole the head is turned in the reverse direction, carrying the awl back from the direction of its feeding movement.

The cam-groove *d* receives a pin projecting from the thread-carrier *n*, to move the looper

laterally, and the periphery of the hub in which is formed the groove is provided with a depressed portion, 6, (see dotted lines, Fig. 1,) to act upon rollers at the end of the thread-carrier.

The thread-carrier is pivoted at 7 upon a swiveling-block, 8, and is operated so that its lower end, carrying a thread, is caused to lay the same about the end of the curved needle *p* provided with a hook and attached to a segmental needle-slide, *q*, adapted to move in a segmental guideway, *r*. This slide *q* is connected by a link, *s*, with a lever, *t*, pivoted at *u* and operated by a cam-groove, *w*, formed in the side of the cam *d*. (See Fig. 1, dotted lines.)

The needle shown in this machine is like the one described in the United States Patent to Charles Goodyear, Jr., No. 112,802, to which reference may be had.

Instead of the usual cast-off I employ a needle-guide, *a*¹, as represented in United States Patent to Charles Goodyear, Jr., No. 116,947, to which reference may be had.

The shank of the presser-foot or channel-guide *a*², fitted to move in the head *h*, is shown as provided with rack-teeth *b*¹, engaged by the teeth of a pinion, *c*¹, connected with a locking device, *d*¹, in this instance provided with ratchet-teeth *x*¹, adapted to be engaged by a pawl or detent, *e*¹, pivoted at 10, and held in engagement with the locking device by a spring, *f*¹. The detent is moved in opposition to the spring by a lever, *g*¹, acted upon by the cam *e*. The lower end of the channel opener or presser *a*² rides in the groove or channel in advance of the needle, in the bottom of the sole, thereby keeping the channel open. When the awl is moved backward after its feeding-stroke the lever *g*¹ acts upon the pawl or detent and frees the locking device, permitting the channel-opener, then held down by reason of its weight or by the spring *h*² connecting the locking device *d*¹ and awl-stock, to yield to the thickness of the stock being sewed.

When the awl commences its descent the spring *h*² is distended, thereby forcing the channel-guide down upon the material, and, just as the head is moved to give the awl its feeding movement, the detent is caused to engage the locking device and hold the channel guide or presser down in the channel during the time that the feed takes place and while the needle rises through the welt and outsole to receive the thread.

The locking device has a number of ratchet-teeth, according to the thickness of the stock, for the reception of the teeth of the detent, this being necessary because the locking device changes its position upon its center through the action of the rack and pinion, according as the channel-guide is raised or lowered by the varying thickness of the stock.

In the Stein machine, herein mentioned, the channel-guide was always pressed down to a certain defined position, and the work-support was adapted to yield to the varying thickness of the material.

In a machine for sewing outsoles to welts, as herein described, the support for the material being sewed should be rigid. This support or rest for the work is a rigid arm, *h*¹, notched, at its forward end, at *i*¹, to permit the passage of the needle, the arm at that point being made narrow to permit the needle to work close to the upper, to place the seam properly with relation to the upper. The arm *h*¹ is solid or unperforated opposite the point where the awl perforates the leather before moving laterally to feed the sole for a new stitch. In this way a burr is not formed on the outer face of the welt and the outer sole next the welt. This arm is provided with a lip, *j*¹, to enter the angle between the upper and welt, and the arm is of sufficient depth to serve as a guard to prevent the curved needle from penetrating the upper, which would injure the shoe or boot. This lip, besides increasing the width of the arm at top, also acts to retain the shoe or boot from rising or falling under the action of the awl or needle. The arm also performs the purpose of a gage, as well as a sole-support.

The arm *h*¹ is made adjustable with relation to the needle, so as to regulate the distance of the line of stitching from the edge of the shoe or from the edge of the welt, and arms of different widths may be employed, according to the distance it is desired to place the line of stitches away from the upper.

The spring *h*², or an equivalent spring, might be connected with the shank of the channel-guide, instead of with the locking device.

The detent and locking device might be varied, as to their particular construction, without departing from this invention, so long as they act in unison, as described, to permit the channel-guide to yield when the awl and channel-guide are moved back, and to lock the guide when the feed takes place and the needle penetrates the material.

The devices herein described for moving the awl may be embodied in a machine for sewing turns, as described in the Stein patent, before referred to.

The thread *k*¹, waxed or otherwise, placed upon the spool *l*¹, is passed through a suitable tube or passage, heated in any usual way, and is then led through the eye of the thread-carrier, it passing over suitable guide-pulleys 11 12.

The work-support, as herein shown, is constructed to form a firm unyielding support for the material acted upon by the awl, which enters, but does not pass through, the material. The awl, driven partially through the material, is made to move the material until the awl and needle are in line, and then the needle enters the material in line with the awl-hole, the awl rising therefrom.

The needle used is a curved needle. If it were not so, it would be impossible to stitch the outer sole to a welt stitched to an upper held on a last, for a straight needle could not be made to work to sew about the shank portions of the sole. To successfully sew an out-

sole to a welt, the upper being on a last, a curved needle must be used, and a curved needle therefore becomes an important and actually necessary element of the machine.

I disclaim the use of a straight hooked needle.

The driving-shaft is rotated in any usual way.

I claim—

1. The narrow rest or work-support $h^1 i'$, provided with a lip, j' , in combination with a straight awl to penetrate the outer sole, entering it at the bottom of the channel, and with a curved needle adapted to enter the welt and the hole formed in the sole by the awl, substantially as described.

2. In combination, a stationary rest or support for the material, a channel-guide free to adapt itself to the varying thickness of the material prior to each descent of the awl and the formation of the stitch, and a locking device to hold the channel-guide positively while

the awl enters the material and the stitch is formed.

3. The channel-guide a^2 and its toothed shank b' , in combination with the locking device, pinion, pawl, and mechanism for causing the said pawl to engage and disengage the locking device when the awl moves backward to again penetrate the sole, substantially as described.

4. In combination, the awl-bar, the locking device, the channel-guide, and the spring connected with the awl to draw down the channel-guide upon the material as the awl descends, substantially as described.

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

CHRISTIAN DANCEL.

Witnesses:

GEO. W. GREGORY,
L. H. LATIMER.