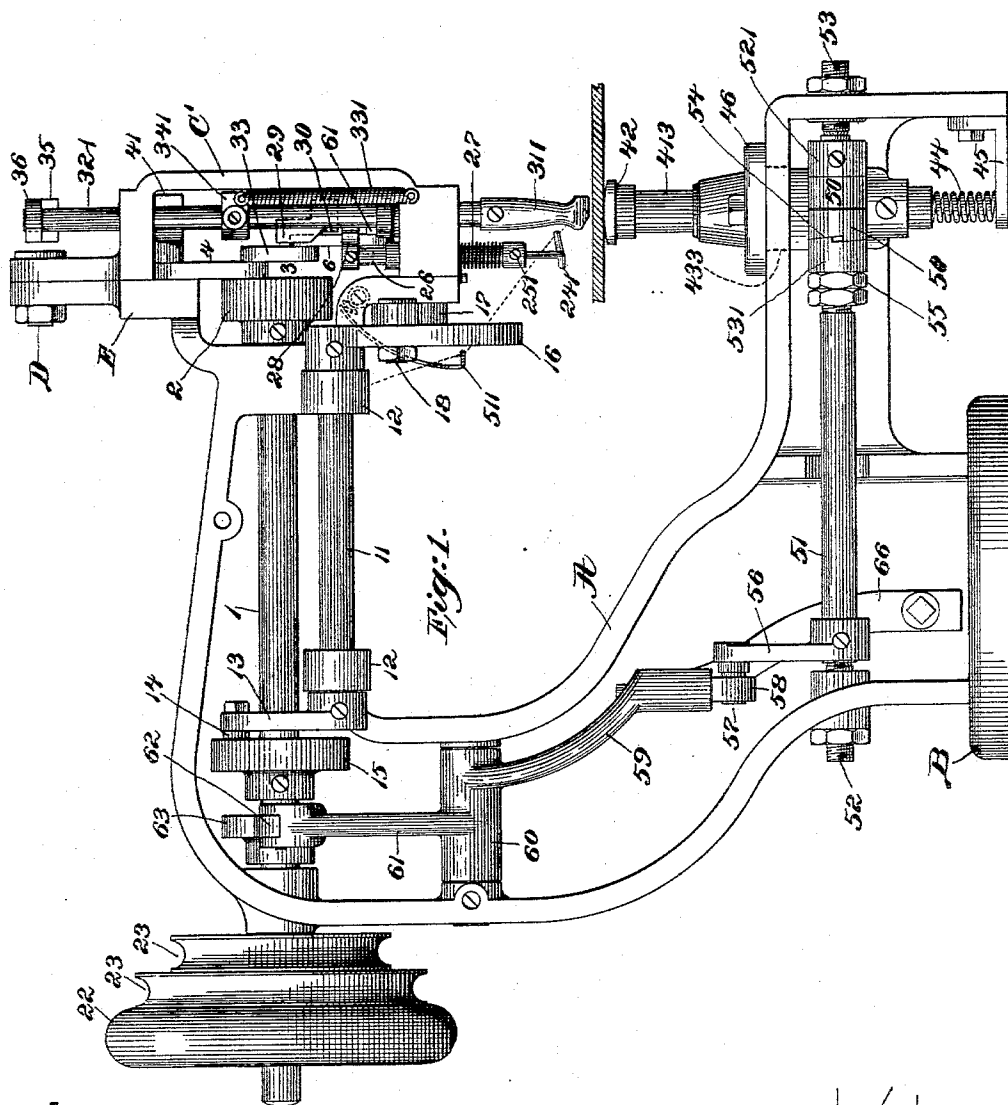


3 Sheets—Sheet 1.

E. F. MOWER.
SEWING MACHINE.

No. 563,871.

Patented July 14, 1896.



Witnesses.

Arthur H. Randall,
Robert Wallace.

Inventor.

Edwin F. Mower,
by Macleod Calver & Randall,
his Attorneys.

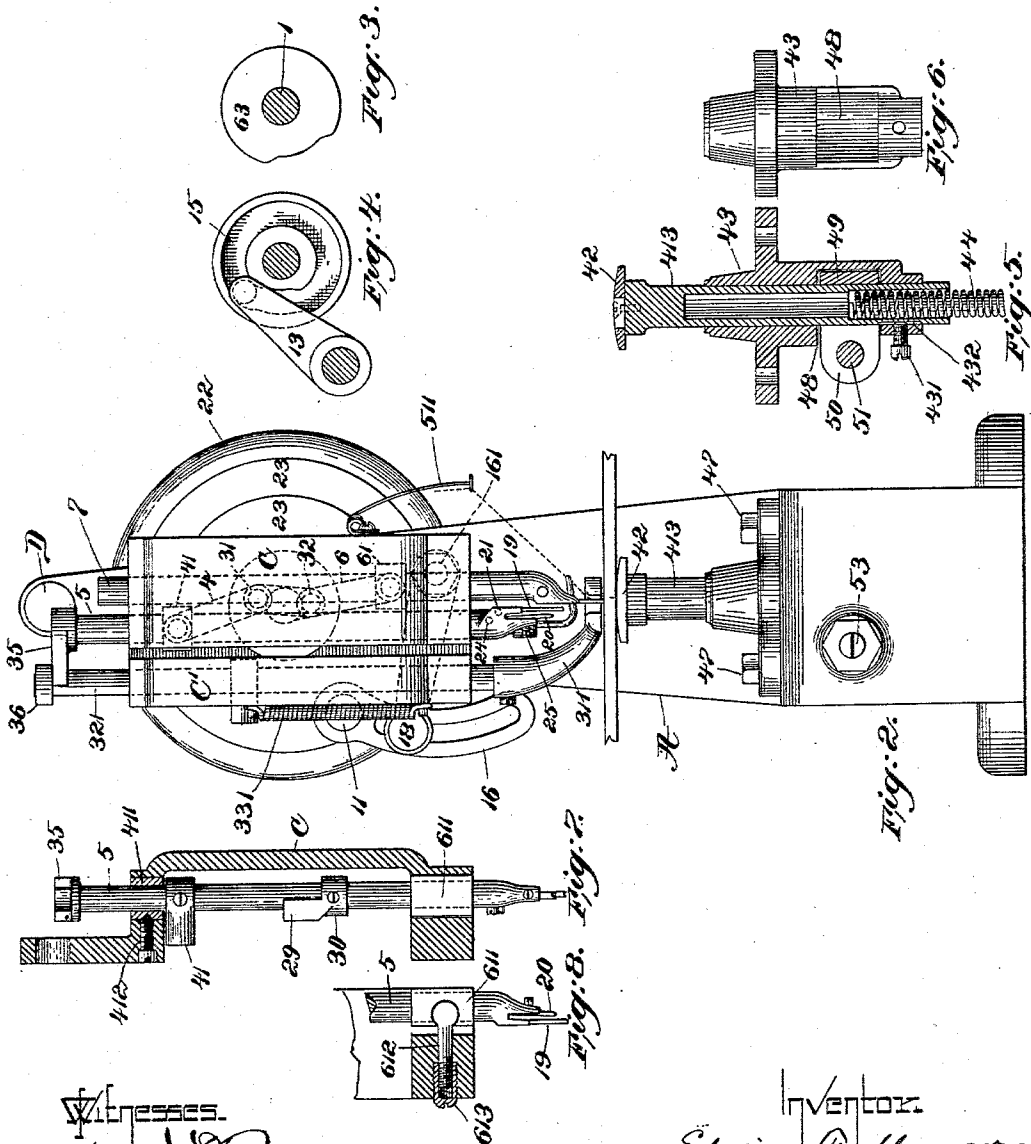
(No Model.)

3 Sheets—Sheet 2.

E. F. MOWER.
SEWING MACHINE.

No. 563,871.

Patented July 14, 1896.



Witnesses.
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(No Model.)

3 Sheets—Sheet 3.

E. F. MOWER.
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Fig. 9.

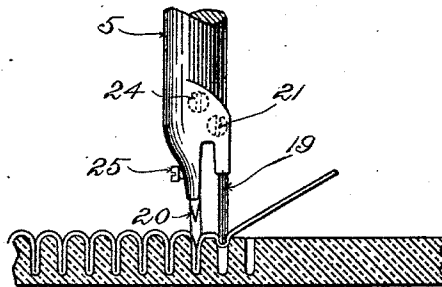
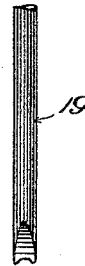


Fig. 10.



Fig. 11.



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by Mancelo Balver & Randall
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UNITED STATES PATENT OFFICE.

EDWIN F. MOWER, OF BOSTON, MASSACHUSETTS, ASSIGNOR TO FRANK W. WHITCHER, OF SAME PLACE.

SEWING-MACHINE.

SPECIFICATION forming part of Letters Patent No. 563,871, dated July 14, 1896.

Application filed March 4, 1895. Serial No. 540,400. (No model.)

To all whom it may concern:

Be it known that I, EDWIN F. MOWER, a citizen of the United States, residing at Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Sewing-Machines, of which the following is a specification, reference being had therein to the accompanying drawings.

My invention has for its object to provide an improved sewing-machine which is more particularly adapted for use in producing an imitation stitch which is frequently employed for purposes of ornamentation in the manufacture of leather goods and the like, but my invention is also adapted for use in securing two or more pieces of leather or similar material together.

The invention consists in the peculiar construction and arrangement of the parts of a mechanism in which it is embodied, all as hereinafter more fully set forth and described, and the novel features of which are particularly pointed out and clearly defined in the claims at the end of this specification.

In the following description reference is made to the accompanying drawings, in which I have shown my invention in the best form now known to me, and in which—

Figure 1 is a side elevation of a machine embodying my invention, the view being from the rear side, or that which is away from the operator as the machine stands on the bench. Fig. 2 is an end view of the same from the right of Fig. 1. Fig. 3 is a detail of the cam by means of which the device for clamping the work-post is operated. Fig. 4 is a detail of the cam and its lever by means of which the awl-feed is operated. Fig. 5 is a vertical central section showing the automatic work-post and the method of mounting the same, as also the clamp by means of which the post is held rigid at certain times in the operation of the machine. Fig. 6 is a detail in elevation of the housing or sleeve in which the work-post is mounted. Figs. 7 and 8 are details showing the manner of mounting and adjusting the tool-bar. Fig. 9 is a detail view of the lower end of the tool-bar 5 and the tools which are carried thereby, this figure showing the form of tool 20, which is

shown separately in Fig. 10, it also showing a piece of work in vertical section and illustrating the mode of operation of the tools which are carried by the bar 5. Fig. 10 is a view showing, detached, one form of the combined pricker and marker. Fig. 11 is a view showing, detached, the tool 19, which serves to punch the thread into the work.

Referring to the drawings, A is the frame of the machine, which is of the well-known gooseneck pattern and which is provided with a base-plate B, preferably integral therewith and of circular form. This base-plate is intended to fit within a correspondingly-shaped recess in a metal base (not shown) upon which the machine is placed when it is in use. This arrangement of a circular base B, which fits within a correspondingly-shaped socket or recess in the plate or stand upon which the machine is placed, allows the machine to be turned around conveniently by the operator when for any reason he wishes to get at the rear side of the machine, that is, the side which is shown in Fig. 1.

The machine is intended to be clamped to the bench in well-known manner, and it is only necessary for the operator to loosen the clamp and turn the machine around on its circular base B to get at the rear side thereof.

The rear side of the frame A is open, so that the working parts may be readily gotten at by the operator. In the frame A is journaled the main shaft 1, which is provided with a fly-wheel 22 and pulleys 23 23 in the usual manner. At the opposite end of the shaft 1 and within the frame is secured a disk 2, which is provided with a double crank 3. The double crank consists of a pin 31, a bar or connection 33, and another crank-pin 32, extending from said bar at the opposite end thereof and in an opposite direction from the said pin 31. The said pin 31 is rigidly secured in place in the face of the disk 2, so that the pins 31 and 32 and the bar 33 revolve with the said disk 2. A link 4 is pivoted to the crank-pin 31, and at its opposite end to an adjustable collar 41, which is secured to the tool-bar 5. A link 6 is pivoted at one end on the pin 32 and at the opposite end to an adjustable collar 61, which is secured to the awl-bar 7. By this construction, above de-

scribed, the awl and tool bars are alternately reciprocated, one moving up as the other moves down. The said bars are mounted in the usual manner to permit them to slide vertically in a frame C, which constitutes a part of the head of the machine and which is pivoted at D to an upright E on the forward end of the gooseneck-frame A, as will be clear from Fig. 1. By so mounting the frame C, which carries the tool and awl bars, as above described, it is permitted to swing laterally, and thus the said bars are moved laterally as well as vertically, thus providing for the feeding forward of the work by the awl. For the purpose of moving the said swinging frame C laterally and causing the awl to feed the work forward, a rock-shaft 11 is provided which is journaled in projections 12 12 on the frame of the machine. At one end of the shaft 11 is secured an arm 13, having a cam-roll 14, which coöperates with a cam 15, secured upon the main shaft 1. At the opposite or forward end of the rock-shaft 11 is secured a curved slotted arm 16. A link 17 is secured by means of a bolt 18 in the curved slot of the said arm 16, said curved slot being provided for the purpose of permitting the adjustment of the link 17 relatively to said arm, so that the lateral movement of the swinging frame C may be increased or diminished when it is desired to vary the extent of the feed movement. The opposite end of the link 17 is pivotally connected with the lower end of the frame C at the rear or inside thereof, the connection being indicated at 161, Fig. 2. The parts above described are so timed that the feed movement of the awl is obtained while the latter is in the work.

The tool-bar 5, which is arranged, as heretofore described, to slide vertically, passes through a block 411, which is set in and has slight lateral play in a recess formed in the upper part of the frame C, (see Fig. 7) and held therein by means of a screw 412, having a conical point which bears in said block and permits the block to be turned on said screw, the latter serving as a pivot. The lower bearing of the bar is a block 611, set in a recess formed in the lower part of the frame C. This block is provided with a pin 612, having a rounded head secured in a correspondingly-shaped socket in said block, to permit the pin to be moved relatively to said block.

The shank of the pin is threaded and projects into an exteriorly and interiorly threaded sleeve 613, set in the frame C, as shown. By turning the said sleeve the block 611 may be moved and the bar 5 adjusted laterally toward or away from the awl-bar. Such an adjustment of the parts is necessary when the length of the stitch is varied. The tool-bar 5 is shaped at its lower end as shown, and is provided with sockets in which the stitch-forming tool 19 and combined pricker and marker 20 are held by securing-screws 21 24, respectively. An adjusting-screw 25, which

bears at its inner end against the shank of the combined pricker and marker affords a means of adjusting the said pricker and marker laterally relatively to the stitch-forming tool 19. The tool 19 is notched in the well-known manner, at its lower or operating end, to insure its engaging and holding the thread while forcing the latter into the stock. Since the vertical line of movement of the awl is close to that of the stitch-forming tool, it is necessary to provide against the abrasion or cutting of the thread by the awl in its descent, and it is also necessary to present the thread accurately and at the proper time in the path of the stitch-forming tool. To effect these objects, the thread is controlled by a thread carrier or guide 241, which is arranged to swing horizontally in the well-known manner, so as to take the thread out of the path of the awl by a rearward movement while the awl is descending, and then carry the thread forward into line with the stitch-forming tool when the latter is descending. The said carrier 241 consists of a vertical shank portion and a curved horizontal portion, the latter being provided at its free end with an eye or aperture through which the thread passes. The shank of the carrier is secured, by means of a screw 251, in the lower end of a vertical rock-shaft or bar 26, which is journaled in the base of the swinging frame C, adjacent to and parallel with the awl and tool bars. The said shaft 26 is actuated in one direction by means of a torsional spring 27, which encircles the said shaft beneath the said frame C and is secured at one end to the said rock-shaft and at the other to the said frame. This spring operates to move the thread-guide rearwardly and thus to carry the thread out of the path of the awl. The said guide is operated in the reverse direction, to carry the thread into the path of the stitch-forming tool, by means of a beveled projection 28, which is secured to the upper end of the vertical shaft 26, and the free end of which projects into the path of a cam-piece or beveled projection 29, projecting from a collar 30, which is adjustably secured to the tool-bar 5. The said collar is so set on the said bar 5 as to engage the beveled projection 28 at the proper time in the descent of the bar 5, causing the shaft 26 to rock and moving the thread-guide forward against the tension of the spring 27 and bringing the thread into line to be engaged by the stitch-forming tool in its descent. At the completion of a feed movement the swinging frame C is brought to its normal vertical position, carrying the stitch-forming tool into vertical alinement with the hole formed in the stock by the awl. The tool-bar then descends, operating the thread-guide in its downward movement by means of the devices above described and causing the notched end of the stitch-forming tool to engage the thread and force it into the awl-hole. Shortly after the tool enters the stock the tip of the tool 20 enters the pre-

ceding awl-hole, as shown in Fig. 9, passing between the portions of thread which are located therein, and holding the same firmly, thereby preventing the preceding loop of thread from being drawn out or disturbed and forcing the thread, which is required for the stitch in process of formation by the stitch-forming tool, to be drawn from the supply of fresh thread. This pricking and marking tool not only operates to prevent the preceding stitch from being drawn out, but also serves to prick up the stitch and to mark the stock adjacent the line of stitches, by causing a mark to be made on the surface of the stock. The mark preferred is usually in the form of a line extending at right angles, substantially, to the line of stitches, one of said marks being opposite each stitch. The pricking and marking tool 20 may be provided in order to effect the marking either with a lateral extension which operates to mark the leather as aforesaid, said extension being located slightly above the tip which effects the pricking, as shown in Figs. 9 and 10, or the operative end or face of the tool may be formed of such a width that it will extend outwardly from the line of stitches, as shown in Fig. 7. In either case the said tool 20 will not only serve to prick up the stitches, but also to mark them. The marking of the stitches is desired because of the ornamental effect produced thereby.

The presser-foot 311 is of usual form, and is mounted in the usual manner at the lower end of the presser-bar 321, which latter is arranged to slide in a frame C', which is rigidly secured to the gooseneck in any well-known manner. The spring 331, which is secured at its lower end to the frame C' and at its upper end to a pin set in an adjustable collar 341, which is secured upon the presser-bar, serves to hold the presser-foot in engagement with the work. As the tool-bar ascends, and during the time at which the feed takes place, the projection 35 on the upper end of the tool-bar engages the collar 36 on the upper end of the presser-bar and raises the presser-foot from the work, freeing the latter and permitting it to be fed forward.

The spring-arm 511, which is secured to the rear side of the frame, as shown, is provided with an eye through which the thread passes on its way from the wax-pot to the thread-carrier. This arm has a spring sufficient to take up the slack in the thread and is a well-known device for this purpose. The wax-pot, which is not shown, may be of any well-known form and construction and may be mounted in the well-known manner on the frame of the machine. The thread passes from a thread-holder of any well-known description, located in convenient proximity to the machine, through the wax-pot and thence to the stitch-forming mechanism, a suitable tension device being employed, if desired.

The work-post 413 is so constructed and mounted as to automatically adjust itself to

any thickness of stock which may be placed in the machine. It is held rigid while a stitch is being formed and until the end of the feed movement, when it is free to adjust itself in case the stock shall have varied in thickness at the point at which the succeeding stitch is to be formed.

The work-post is shown at 413, (see particularly Fig. 5,) and it is provided with preferably a slotted work-plate 42, the slot in said plate being formed to accommodate the awl in case it should pass through the work. The post 413 is mounted in a sleeve or housing 43 in such manner that it may slide vertically therein. The lower end of the post 413 is cored out to receive the spring 44, the lower end of said spring resting on a projection 45, secured inside the base of frame A, as shown in Fig. 1. The said spring 44 supports the post 413, when the latter is not rigidly clamped, as hereinafter described, and said spring is of less force than the spring 331, which tends to hold the presser-foot down in engagement with the work, so that when the work-post is not clamped the work-plate 42 will be forced upwardly against the under side of the work, but will not force the work upwardly against the pressure of the presser-foot. A screw 431 is fitted to a threaded hole in the sleeve 43. The inner end of this screw 431 lies in a vertical groove 432, formed in the post 413, and prevents the same from turning in its support. By this arrangement the presser-foot will always move downwardly to the same point, while the work-post will be depressed or raised in accordance with the thickness of the work. It is important that the presser-foot be at the same vertical point at all times when the stitch-forming mechanism is operating, since the upper surface of the work must occupy the same position with reference to the vertical movement of the marking and stitch-forming tools. The sleeve 43 is set in a hole 433 in the frame A, as shown, its annular projecting flange 46 resting on top of the base of the frame A. Said flange is provided with holes through which pass the bolts 47, which serve to secure the sleeve in place. The sleeve 43 is cut away at one side, as shown at 48, Figs. 5 and 6, to accommodate the clamping device 49. The latter consists of a split collar having projections at one side thereof, which are shown at 50. The collar encircles the shank of the work-post, and it will be clear that if the collar is pinched upon the post the latter will be held rigid and prevented from vertical movement. For the purpose of pinching or compressing the clamp a rock-shaft 51 is provided, which is mounted in the base of the frame, as shown, Fig. 1, by means of conical bearings 52 53, set in bosses in said frame, and which permit any wear to be readily taken up. The shaft 51 passes through the projections 50 on the clamping-collar 49. On the said shaft, at one side of the said projections 50, is secured a collar 521, which serves as a bearing

against which the force which compresses the clamp is exerted. At the other side of the projections 50 a collar 531 is secured on said shaft 51, said collar 531 having a beveled or cam face 54, which coöperates with a correspondingly-beveled portion of the proximate projection 50. Check-nuts 55 serve to adjust and hold the collar 531 in place, said collar 531 being secured to the shaft 51 by means of a feather or spline.

It will be obvious that if the shaft 51 be rocked the beveled faces of the collar 531 and projection 50 will move relatively to each other and will cause the clamp to be loosened or compressed. The work-post is normally gripped by the clamp and held rigid, but at one point in the operation of the machine, namely, at the end of each feed movement, the shaft 51 is rocked slightly, freeing the clamp 49 and allowing the work-post to accommodate itself to any variation which may have occurred in the thickness of the stock.

For the purpose of rocking the shaft 51 I provide an arm 56, secured to said shaft, and which is provided with a pin 57, which engages the lower adjustable end 58 of the arm 59. The latter projects from a sleeve or boss 60, which is pivotally secured within the frame A. An arm 61 projects upwardly from said boss 60 and is provided at its upper end with a cam-roll 62, which is held in engagement with a cam 63 on the main shaft 1 by means of spring 66, which is secured to the frame A. The cam 63 is more clearly shown in Fig. 3. By means of the above-described mechanism the work-post clamp 49 is free during a portion of each revolution of the main shaft.

The machine is durable in construction, economical in operation, and is so readily adjusted to produce stitches of different lengths, as also to carry the thread vertically a greater or less distance into the stock, that even wholly unskilled operators may very readily learn to operate the machine.

What I claim is—

1. The combination with stitch-forming mechanism, of a vertically-movable spring-supported work-post, and means for clamping said work-post to hold it rigid while a stitch is being formed, said means comprising a clamp-collar surrounding said post, one side of said clamp-collar having a projection which is provided with a beveled face, a cam engaging said face, means for moving said cam to compress the clamp or release it, a stop or abutment for a projection on the other

side of said clamp-collar, and a fixed support in which said clamp is mounted, substantially as set forth.

2. The combination with stitch-forming mechanism, of a vertically-movable spring-supported work-post, a clamp-collar which surrounds said post, and means for operating said clamp-collar to seize or release the post, said means comprising a rock-shaft passing through holes in projections of said clamp-collar and provided with a cam which engages one of said projections, a stop-collar on said rock-shaft, and means to actuate said rock-shaft, substantially as set forth.

3. The combination with an awl, of a tool which punches a loop of thread into the hole made by the awl to thereby form a stitch, a pricking-up tool which enters the preceding hole to thereby engage the thread therein said pricking-up tool operating to hold the preceding stitch in place against the strain of the stitch-forming tool as it forms the new stitch, and means to actuate the awl and said tools, substantially as set forth.

4. The combination with an awl, of a stitch-forming tool, which punches a loop of thread into the hole made by the awl to form thereby a stitch, a combined pricker and marker having a portion which enters the preceding hole to engage the thread therein, and operates to hold the preceding stitch in place against the strain of the stitch-forming tool as it forms the new stitch, and also having a portion which marks the work at the side of the line of stitches, and actuating means for said devices, substantially as and for the purposes set forth.

5. The combination with an awl, of a stitch-forming tool, which punches a loop of thread into the hole made by the awl to form thereby a stitch, a pricker which enters the preceding hole to engage the thread therein, said pricker operating to hold the preceding stitch in place against the strain of the stitch-forming tool as it forms the new stitch, and having a lateral extension above its tip which operates while the pricker is in the hole of the preceding stitch to mark the stock at the side of the line of stitches, and means to actuate said devices, substantially as set forth.

In testimony whereof I affix my signature in presence of two witnesses.

EDWIN F. MOWER.

Witnesses:

WM. A. MACLEOD,
ROBT. WALLACE.