

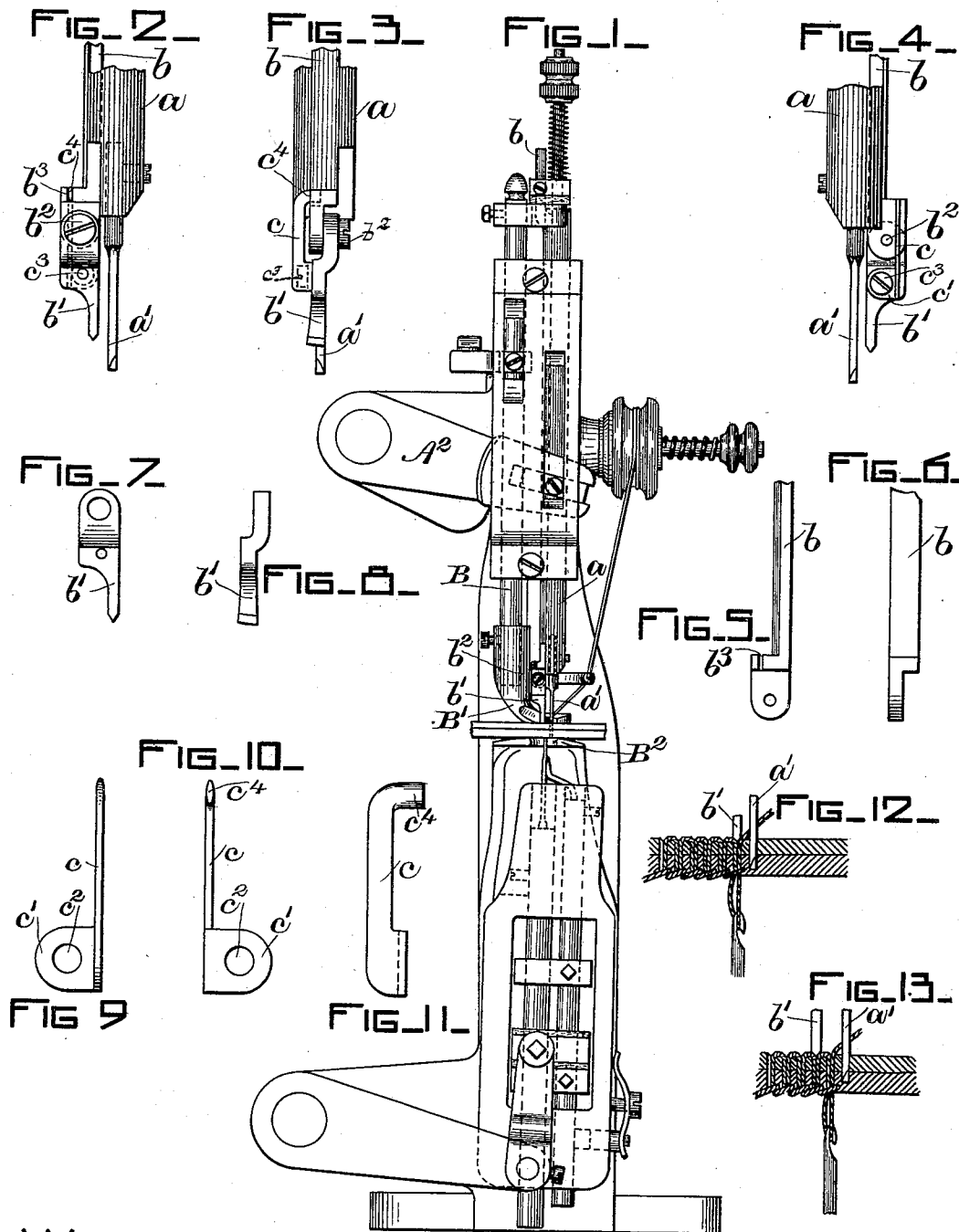
No. 616,315.

Patented Dec. 20, 1898.

J. B. HADAWAY.
SHOE SEWING AND SEAM FINISHING MACHINE.

(Application filed Feb. 5, 1897.)

(No Model.)



WITNESSES

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SHOE-SEWING AND SEAM-FINISHING MACHINE.

SPECIFICATION forming part of Letters Patent No. 616,315, dated December 20, 1898.

Application filed February 5, 1897. Serial No. 622,087. (No model.)

To all whom it may concern:

Be it known that I, JOHN B. HADAWAY, a citizen of the United States, residing at Brockton, in the county of Plymouth and State of Massachusetts, have invented certain new and useful Improvements in a Combined Shoe-Sewing and Seam-Finishing Machine; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

The present invention relates to combined shoe-sewing and seam-finishing machines, and more particularly to such machines wherein the seam-finishing tool or device will automatically locate the intervals between the stitches during the formation of the stitches in the work.

Prior to the present invention it has been proposed to combine with a shoe-sewing machine a tool to separate and indent the intervals between the stitches; but such separating-tool has been generally so arranged that its movements were in a fixed vertical plane with reference to the stitch-forming mechanism, and it has been found in practice that when stitches of varying or unequal length occur in the seam, said separating-tool, being movable in a fixed plane and positioned to separate stitches of equal length only, would, when a variation in the length of one or more stitches in a seam occurred, come into contact with the crown of a stitch instead of in the interval between two stitches and would tend to cut said stitch and otherwise damage and mar the appearance of the finished seam.

The object of the present invention is to obviate the difficulty above noted and to produce a combined sewing and stitch-separating or stitch separating and indenting machine in which the intervals between the stitches shall be automatically located and separated or separated and indented, whether said stitches be of uniform or varying length.

To the above end the present invention consists of a shoe-sewing and seam-finishing machine comprising stitch-forming devices and a seam-finishing tool, the seam-finishing tool constructed and arranged to have a lateral movement relative to the stitch-forming de-

vices to automatically locate the intervals between the stitches, whether said stitches be of uniform or varying lengths; and it further consists of the devices and combination of devices, which will be hereinafter described and claimed.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 illustrates a front elevation of a machine embodying the invention. Fig. 2 is a detail front view of the lower part of the awl-bar and the seam-finishing tool. Fig. 3 is a similar view showing the parts in side elevation. Fig. 4 is a similar view showing the back of the devices. Fig. 5 is a front elevation of the lower part of the tool-carrying bar. Fig. 6 is a side view of the lower part of the tool-carrying bar. Figs. 7 and 8 are respectively front and side views of the seam-finishing tool removed from the bar. Figs. 9, 10, and 11 are respectively front, back, and side views of the spring controlling the tool. Figs. 12 and 13 are views illustrating the operation of the device in different normal positions.

As illustrated in the drawings, for convenience I have shown my invention as combined with the shoe-sewing machine and as operated by the mechanism such as is disclosed in patent to Cobb, No. 421,095, issued February 11, 1890; but such machine has been selected for the purposes of illustration only, and any other convenient form of shoe-sewing mechanism or tool-actuating mechanism may be substituted therefor, as my present invention does not relate in any manner to the specific shoe-sewing mechanism or to the specific mechanism for actuating the tool, but consists, broadly, as before stated, in combining with a shoe-sewing mechanism a seam-finishing tool which will automatically locate and separate or separate and indent the intervals between the stitches, whether said stitches be of uniform or varying length.

The arm A^2 to actuate the awl-bar, the presser-bar B, the presser-foot B', the throat-plate B², the awl-bar a , awl a' , the tool-carrying bar b , the feeding mechanism, and the means for actuating them may be of any suitable form and arrangement, conveniently of the form and arrangement as in the patent

hereinbefore referred to, and a detailed description of such parts herein is deemed unnecessary.

Secured to the lower end of the tool-bar *b* is a seam-finishing tool *b'*, it being preferably loosely mounted upon a screw or stud *b²* in such manner that it may be free to move toward or from the vertical plane in which the awl *a'* reciprocates.

It is a common occurrence in the operation of shoe-sewing machines to have the feed mechanism of such machines impart a variable feed to the work, so that the stitches in a single seam are of varying length, and in the machine of the patent herein referred to the indenting-tool was fixed against lateral movement and moved in a fixed vertical plane with reference to the awl, and should the stitches formed by the machine vary in length the tool would in its descent strike and indent the crown of a stitch, resulting in an imperfectly-finished seam. To allow the seam-finishing tool to automatically adjust or accommodate itself to stitches of varying length and to seek and locate its point in the intervals between such stitches as said stitches are formed by the stitch-forming devices in the machine of the drawings, the working end of the seam-finishing tool *b'* is permitted to have a movement toward and away from the awl *a'* whenever the end of said tool meets an obstruction, such as the shoulder of a stitch, tending to exert a lateral pressure thereon. In the machine of the drawings this is accomplished, as before suggested, by loosely pivoting said tool *b'* upon a stud *b²*, carried by the tool-bar *b*, so that the working end thereof is free to move laterally toward and from the plane of movement of the awl or other part of the stitch-forming devices.

In the machine of the drawings the seam-finishing tool *b* is normally retained to reciprocate in a fixed vertical plane and returned to said normal position by a suitable spring, such as the spring *c*, which is connected to the tool *b'* preferably at the rear face of said tool, as shown in the drawings, the upper end of said spring being suitably connected to the lower end of the tool-bar *b*. The arrangement described is such that should the point of the tool *b'* in its movement toward the stitches come into contact with the shoulder of a stitch it will move laterally to one side or the other around the pivot *b²* and slip off the shoulder of the stitch into the interval between said stitch and the next adjacent stitch and locate such interval, and upon the movement of said tool away from the stitches the spring *c* will immediately return said tool to its normal position.

In order that the tool may be adjusted relatively to the stitch-forming devices to accommodate itself to the adjustment of said stitch-forming devices for forming long or short stitches and also to change the plane of reciprocation of the working end of said tool to

cause it to act upon the seam at different points relatively to said stitch-forming devices, either to act upon the interval between two completed stitches, as shown in Fig. 13, or between a completed and a partially-formed stitch, as shown in Fig. 12, the connection between the spring *c*, tool *b'*, and rod *b* is preferably as follows: As shown in Figs. 9, 10, and 11, the spring *c* has at its lower end an ear *c'*, provided with an eye *c²*, through which a clamping-screw *c³* passes to adjustably clamp said spring to the tool *b'*, the upper end of said spring being provided with an arm *c⁴*, preferably elliptical in cross-section or rounded at its upper and lower edges, as shown, said arm *c⁴* engaging a slot *b³* in the end of the tool-bar *b*.

By the arrangement above described the tool *b'* may be adjusted for long or short stitches, or to normally position its working end with reference to the stitch-forming devices to locate the interval between a completed and a partially-formed stitch or the interval between the last two completed stitches, as desired, by loosening the screw *c³*, which clamps the ear *c'* of the spring *c* to the tool *b'*, releasing said spring and permitting the working end of said tool to be moved laterally toward or from the stitch-forming devices, the rounded arm *c⁴* of the spring *c* turning slightly in the slot *b³* to permit of the lateral movement of the lower end of the spring with the tool, the lower end of the spring turning loosely upon the screw *c³* as said tool is moved laterally or adjusted, after which the screw *c³* is tightened, thus clamping the lower end of the spring to the tool to fix and hold the tool *b'* in its adjusted position.

The operation of my invention, as shown in the drawings, is as follows: Upon a downward movement of the awl-bar *a* and awl *a'* to puncture the work for a new stitch the tool-bar *b* is carried down, and with it the tool *b'*, toward the seam, and if the feed of the sewing mechanism has been correct and has fed the work the length of a uniform or standard stitch then the point of the tool *b'* will enter and locate the interval between the last-completed and partially-formed stitch or between the two last-completed stitches, accordingly as it has been adjusted, and will separate or separate and indent the same; but should the work have been improperly fed, resulting in a stitch varying in length from the standard stitch, then the point of said tool *b'* will in its movements toward the work contact with the shoulder or crown of such stitch and will move laterally to one side or the other, accordingly as the stitch is longer or shorter than the standard stitch, and will automatically locate the interval between such varying length stitch and the next adjacent completed or partially-formed stitch, as hereinbefore set forth. Upon the upward movement of the awl-bar *a* and awl *a'* the tool-bar *b* and tool *b'* are lifted, and the spring *c* acts to return the point of the tool *b'* to its

normal position, which operations are repeated throughout the formation of the stitches forming the seam in the particular piece of work in hand.

5 I have described my present invention as it is applied to the machine of the patent to Cobb, No. 421,095, hereinbefore referred to, and in describing the operation thereof I have employed terms descriptive of the operation
10 of devices in said machine which impart to the awl and tool their movements toward and from the work; but I desire it to be distinctly understood that my present invention is not limited to any particular shoe-sewing mechanism, nor to any specific means for imparting
15 to the seam-finishing tool its movements toward and from the work, nor to the imparting of such movements to the tool by any portion of the stitch-forming devices, nor to the moving of said tool toward and from the work in any particular time relative to any portion of the shoe-sewing mechanism, and it is immaterial so far as the present invention is concerned whether the seam-finishing tool
25 be arranged for movement from an upper position downward toward the work, or from a lower position upward toward the work the arrangement depending entirely upon the operation of the particular style of shoe-sewing machine with which my improved seam-finishing tool shall be combined; neither do I
30 consider my invention as limited to the exact construction and arrangement of devices shown and described for rendering the seam-finishing tool automatically adjustable to locate the intervals between the stitches, whether said stitches be of uniform or varying length; but in so far as I am at present
35 advised of the state of the art it is broadly

new to combine with shoe-sewing mechanism 40 a seam-finishing tool which will automatically locate the intervals between the stitches as such stitches are formed, whether said stitches be of uniform or varying length, and

I therefore claim as new and desire to protect 45 by Letters Patent of the United States—

1. In a shoe-sewing and seam-finishing machine, the combination with the stitch-forming mechanism, of a seam-finishing tool, and means to permit said tool to automatically locate 50 its point in the intervals between the stitches, whether said stitches are of uniform or varying length, during the sewing operation, substantially as described.

2. In a shoe-sewing and seam-finishing machine, the combination with the stitch-forming mechanism, of a seam-finishing tool and means to permit the point of said tool to move laterally varying distances toward and from the stitch-forming mechanism during the sewing 60 operation, to automatically locate the intervals between the stitches, substantially as described.

3. In a shoe-sewing and seam-finishing machine, the combination with the stitch-forming mechanism, of a seam-finishing tool, means 65 to permit the working end of said tool to move laterally toward and from the stitch-forming mechanism and a spring to return said tool to its normal position, substantially as described. 70

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

JOHN B. HADAWAY.

Witnesses:

A. O. ORNE,
JOHN COLLINS.