

(No Model.)

G. E. MILNER.
SHOE SEWING MACHINE.

No. 580,880.

Patented Apr. 20, 1897.

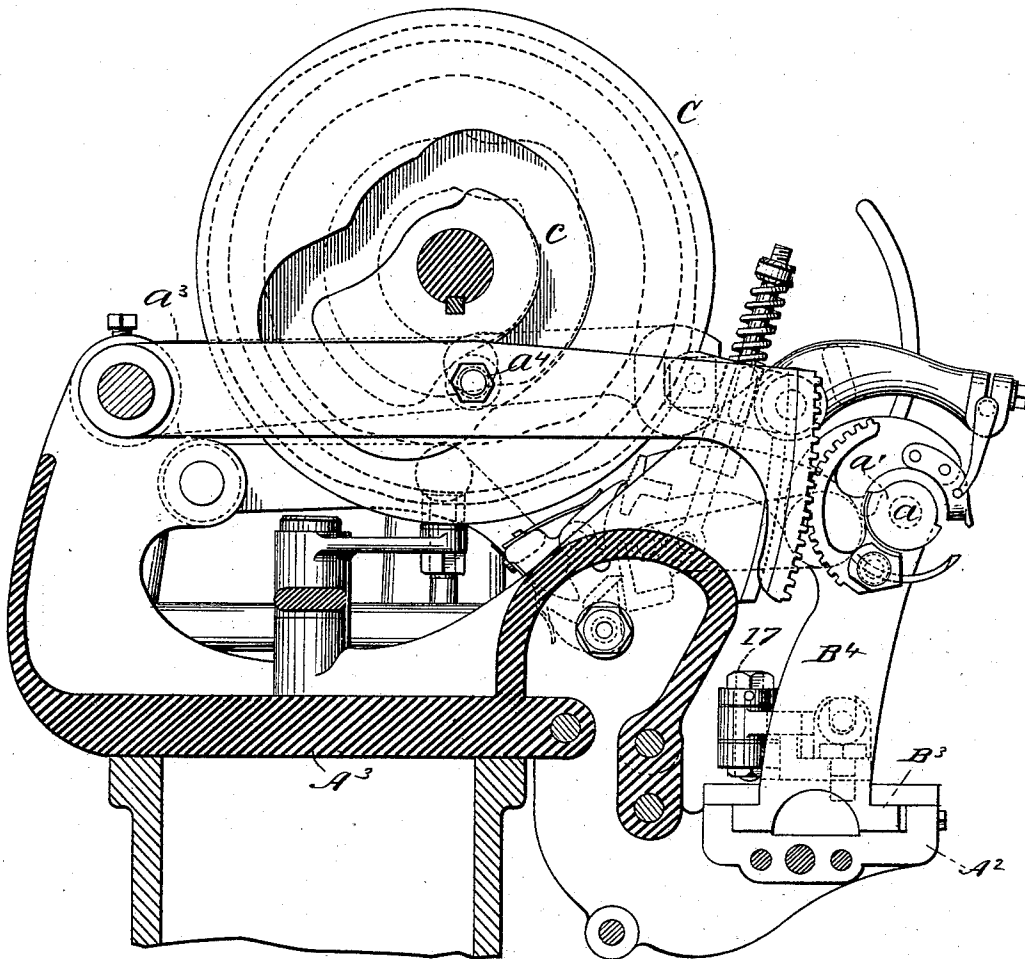


Fig. 1.

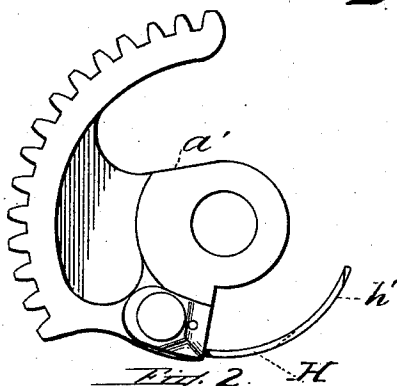


Fig. 2.

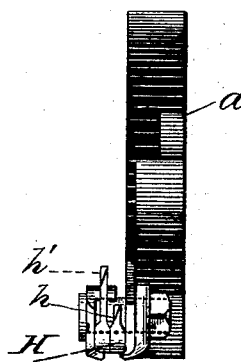


Fig. 3.

Witnesses:
H. Remick.
A. E. Hyatt.

Inventor:
George E. Milner
By his Attorney
Benjamin Phillips

UNITED STATES PATENT OFFICE.

GEORGE E. MILNER, OF CHICAGO, ILLINOIS.

SHOE-SEWING MACHINE.

SPECIFICATION forming part of Letters Patent No. 580,880, dated April 20, 1897.

Application filed July 1, 1896. Serial No. 597,661. (No model.)

To all whom it may concern:

Be it known that I, GEORGE E. MILNER, a citizen of the United States, and a resident of Chicago, in the county of Cook and State of Illinois, have invented a new and useful Improvement in Shoe-Sewing Machines, of which the following, taken in connection with the accompanying drawings, is a specification.

The present invention relates generally to machines of the above class, and more particularly to improvements in devices whereby the work is fed to the stitch-forming mechanism and the length of the stitch determined.

It is common in the art to provide in shoe-sewing machines a feed-awl which by means of a suitably-actuated awl-segment and feed-slide is advanced to puncture the work, moved laterally to feed the work the length of a stitch, retracted to clear it from the work, and a reverse lateral movement imparted thereto to return the awl to its original position preparatory to puncturing the work for the next feeding operation. The above-suggested device has heretofore been found to be objectionable in that after the parts have become worn more or less lost motion is developed, which causes the awl to engage the work at irregular intervals, resulting in irregular variation in the length of stitch.

The present invention has for its object to remove the objection above noted and generally to improve the construction and operation of machines of this class; and to such end it consists in providing, in connection with the feed mechanism, in machines of the above class, a double feed-awl comprising a relatively short and long awl-section, the short section being arranged to form a preliminary puncture in the work, which is thereafter engaged by the long awl-section to feed the work.

My invention further consists in providing a double awl both sections of which shall be in the material during the feeding movement and of the devices and combinations of devices hereinafter more specifically set forth and claimed.

A preferred form of the present invention is shown in the accompanying drawings, in which—

Figure 1 is a sectional view of a sewing-machine embodying the same. Fig. 2 is a side

elevation of the awl-segment and awls. Fig. 3 is a front view of the awl-segment and awls.

Similar letters of reference refer to similar parts throughout the several views.

In the drawings, A³ represents a portion of the fixed frame of the head of the machine.

B³ is the feed-slide, which is fitted to a suitable guideway A², so as to be movable to feed the work. The slide B³ is provided at its inner end with the upright B⁴, having set in its upper end the fixed stud *a*, upon which is loosely mounted the awl-segment *a'*. The awl-segment derives its movement of oscillation from the segmental lever *a*³, which is provided with a roller A⁴, which enters a groove *c* in the side of the cam C. The slide B³ receives its horizontal movement from a cam-actuated lever (not shown) fulcrumed on the stud 17.

The above-described parts form no part of the present invention and may be and conveniently are the same in form and arrangement as corresponding parts of the machine shown and described in Letters Patent granted to the Goodyear Shoe Machinery Company on the invention of Zachary T. French and William C. Meyer, No. 473,870, dated April 26, 1892, for improvements in sole-sewing machines, to which reference may be had for a detail description thereof as well as of other portions of a sewing-machine not shown or described herein.

My improved feed-awl is shown at H and comprises a relatively short awl-section *h* and a relatively long awl-section *h'*. The sections *h* and *h'* may be united at their shanks to form an integral bifurcated awl H or may be otherwise suitably secured together or may consist of independent awls clamped in proper juxtaposition by suitable clamps on the awl-segment *a'*. Whether applied to a curved awl machine, as shown, or to a straight awl machine the awl-sections *h* and *h'* are substantially parallel, being located in substantially the same lateral plane, and separated by an interval substantially equal to the length of a stitch. The awl-section *h'*, as compared with the awl-section *h*, is preferably relatively blunt, the awl-section *h* being made with as sharp a point as practical to puncture the material at the point of contact.

The operation of my invention, as applied to the machine of the drawings, is as follows: When the machine is started, the awl-section *h'* first enters and punctures the material and is projected into or through the same a sufficient distance to allow the awl-section *h* to enter the material, and form what I have hereinbefore termed a "preliminary puncture." The feed-slide *B*³ is then moved laterally to feed the work, both of the awl-sections *h* and *h'* remaining in the material. When the work has been fed a distance equal to the length of a stitch, both of the awl-sections *h* and *h'* are retracted to clear the work, and by a reverse movement of the slide *B*³ returned to their original position preparatory to engaging the work for the next stitch. When the awl-sections *h* and *h'* are again advanced to puncture the work, the section *h'* will come in contact with the work at the point of or immediately adjacent to the preliminary puncture made by the awl *h*, and will enter said puncture and be projected into or through the work until the awl *h* has made a second preliminary puncture, and the hereinbefore-described operation will be repeated until the entire work has been fed to the stitch-forming devices.

It will be noted in connection with the above description that if the awl-section *h'* does not engage the work immediately at the point at which the preliminary puncture is formed, but owing to play in parts of its actuating mechanism is brought in contact with the work at a point adjacent thereto, it will nevertheless slip into the preliminary puncture, and the distance to which the work is fed by the feed mechanism will therefore depend upon the interval separating the awl-sections, thus insuring a uniform length of stitch.

While I do not consider that the forming of the awl-section *h'* with a relatively dull point is an essential feature of the present invention, I find in practice that it greatly facilitates the engagement of the awl-section *h'* with the preliminary puncture formed by the section *h*.

I am of course aware that the awl-sections *h* and *h'* will operate as above stated only to correct slight variations in the operation of

the feed mechanism, but such slight variations tend to disfigure and weaken the shoe by forming an irregular seam. I also find that it is of the greatest advantage to have both the awl-sections *h* and *h'* in the material during the feeding movement, since it gives the machine a more positive control of the work, particularly in the case of soft or thin stock. I would further say that I am aware that it has been heretofore proposed to attach to the awl of a shoe-sewing machine a puncturing device for "pricking up" or separating the intervals between the stitches, but such device in no way affects the present invention, since it follows and does not precede the awl and its function is entirely different.

Having thus described my invention and its mode of operation, I desire to say that I do not consider the same as limited to the particular construction herein shown nor to its application to the machine of the drawings; but I claim as novel and desire to secure by Letters Patent—

1. The combination with the associate parts of a stitch-forming mechanism, of a double awl comprising a relatively short and a relatively long awl-section, arranged to enter the work from the same side thereof, the short awl-section forming a preliminary puncture in the work and the long awl-section entering said puncture, substantially as described.

2. The combination with the associate parts of a stitch-forming mechanism, of a double awl comprising two awl-sections arranged to enter the work from the same side thereof, one awl-section having a relatively dull point, substantially as described.

3. The combination with the associate parts of a stitch-forming mechanism, of a double awl comprising two awl-sections, both of which enter the work from the same side thereof and remain therein during the feeding operation, substantially as described.

In testimony whereof I have hereunto set my hand, in the presence of two attesting witnesses, this 16th day of June, 1896.

GEORGE E. MILNER.

Witnesses:

BENJAMIN PHILIPS,
W. D. VAN RODER.