

B. C. YOUNG & L. L. BARBER.

SEWING-MACHINE.

No. 172,545.

Patented Jan. 18, 1876.

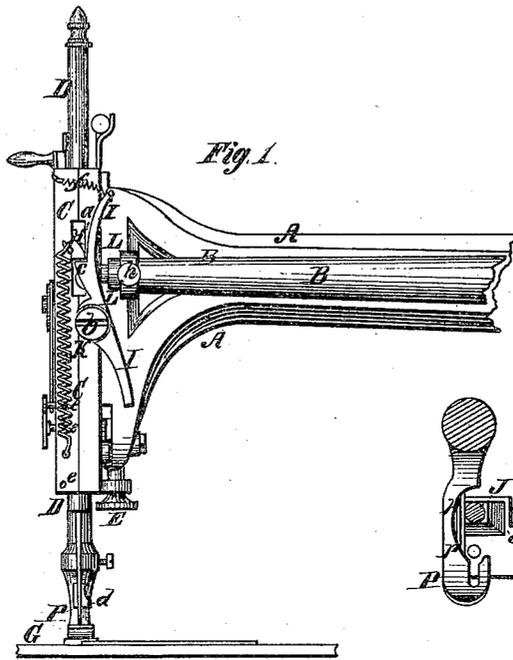


Fig. 3.

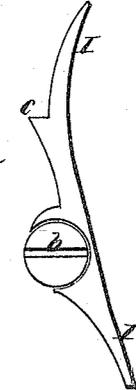
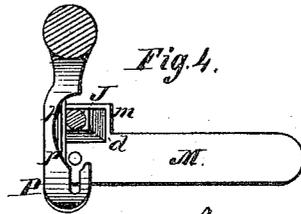
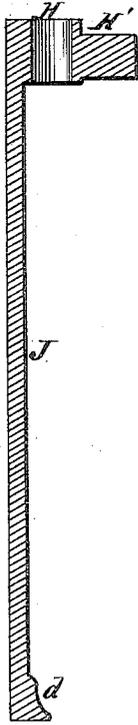


Fig. 5.

Fig. 2.

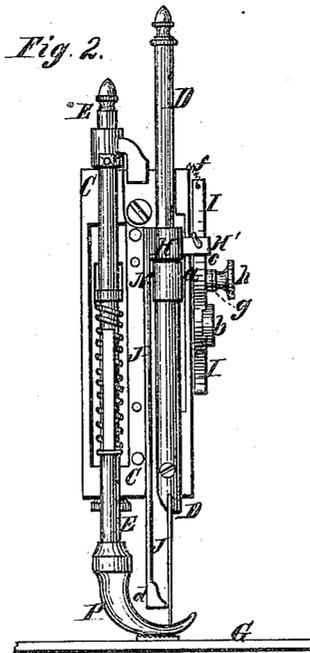
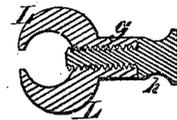


Fig. 6.



Witnesses

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UNITED STATES PATENT OFFICE

BARKER C. YOUNG AND LYMAN L. BARBER, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN SEWING-MACHINES.

Specification forming part of Letters Patent No. 172,545, dated January 18, 1876; application filed June 10, 1874.

To all whom it may concern:

Be it known that we, BARKER C. YOUNG and LYMAN L. BARBER, both of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Sewing-Machines, of which the following is a specification:

Figure 1 of the accompanying drawings is a side view of a portion of a sewing-machine, with our invention applied. Fig. 2 is a front view of a portion of a sewing-machine, with the front plate of the head removed, showing our invention. Figs. 3, 4, 5, and 6 are parts in detail of our invention.

The present invention relates to certain new and useful improvements in sewing-machines, having for their object the providing of a simple, economical, and readily-adjusted hammer attachment, arranged and operated to be readily thrown in and out of connection to hammer down the stitches and seam, so as to form a smooth and even finish to the same, and improve the appearance of the work; and to effect these ends our invention consists of a hammer or plunger arranged to operate automatically in connection with a sewing-machine, as we will now proceed to describe.

This invention is applicable to any sewing-machine, although in the present example it is represented as applied to a so-called shuttle-machine, of which A in the drawings represents the neck; B, the needle-lever; C, the head; D, the needle-bar; E, the presser-bar, and G the bed-plate, arranged as ordinarily. Arranged to fit over, so as to travel up and down on, the needle-bar D is a collar, H, having a side lug or dog, H', that extends through a slot, a, formed in the side of the head C, and is curved on the upper edge of one side to allow the passage of a curved pawl, I, pivoted to the side of the head C at b, and notched to form a latch at c, or otherwise shaped and arranged to perform its desired purpose. Formed on or attached to the inner side of the collar H is a rod or bar, J, that extends downward below the needle-bar, and at the bottom is formed or connected with a hammer or plunger, d, curved or inclined from the top outward on the side toward the needle

and on the inner face, or otherwise formed to increase its weight and enlarge in length and width its bottom, to cover two or more stitches in length, and two rows of parallel stitches in width. The bottom of the hammer or plunger d may be flat, inclined, curved, or formed as desired, for the work to be performed. Connected with the lug or dog H' is a spring, K, which connects at the bottom in an aperture, e, of the head C, which head is formed with several like apertures, e, one above the other, to allow the spring K to be attached at different heights to regulate its tension to various thicknesses of work operated on; or a spring may be otherwise arranged and connected with the machine, so as to be adjusted at different heights, and perform its required function, as preferred. Attached to the top of the pawl I and the head C is a spring, f, to give the required tension to the pawl I. Curved in the required shape to fit over and move on the needle-lever B is an adjustable clutch, L, Fig. 6, formed with a dog, g, having a screw-socket to receive a thumb-screw, h, which is adjusted to bear against the needle-lever B to hold the clutch in the desired position, or is released therefrom to allow the clutch to be moved on the needle-lever; or any suitable adjustable dog or catch may be otherwise constructed and arranged, as preferred, to connect with and operate a pawl, or be disconnected from it for the purpose specified. The throat-plate M is formed as usual, with the exception of the addition of a side-projecting front plate, m, Fig. 4, which forms a bed for the hammer. The presser-foot P is cut out on the inner side, as shown at p in Fig. 4, to allow the passage of the hammer, which may be arranged to be operated equally as well where a roll-presser is used.

If desired, the lug or dog g may be provided with a friction roller or sleeve to lessen its wear.

The operation of our invention, arranged as above described, is as follows: As the needle is carried down by the action of the lever at the latter part of its descent, the dog g of the clutch L is brought by the lever B in contact with the lower end of the pawl I, which is

thus actuated so as to release the lug or dog H', and cause the hammer *d*, by the action of the spring K, to fall automatically, with a quick strong blow, upon two or more stitches and seam behind the needle, the width of the hammer covering two rows of stitching when made side by side, and effecting the result produced by the stroke of a small hammer as ordinarily operated, flattening down the stitches and filling up the needle-holes around them, smoothing down the seam and edge of the leather or other work, and producing the appearance of fine hand-work, without liability of injury to stock or stitches, as the force of the blow may, by the adjustment of the spring K, be adapted to any stock, from the lightest kid to the heaviest leather.

While the work is feeding, the hammer *d* is released from it by the elevation of the needle-bar D, whose shoulder or band, N, at the latter part of its ascent, is brought in contact with the collar H, and raises the hammer *d* to its original position, ready for its downward action, as above described, the curved side of the dog H' passing over the face of the catch *c*, which, by the action of the spring *f*, is thrown by the pawl I under the dog H', and holds the hammer in position. By means of the thumb-screw *h* the clutch L is readily released, so as to be moved on the lever B, to disconnect the dog *g* from the pawl I, to permit the machine to be worked, when required, independently of the hammer, which is held up in position out of the way of the work and presser-foot.

Ordinarily, the formation of stitching near the edge of the stock causes the edge to rise or curl up and present an abrupt and unfinished appearance. This objection is obviated in our invention by the hammering which the edge receives as the stitches are hammered; and when two rows of parallel stitches are formed, the edge of the stock is yet more effectively smoothed, as the hammer, in operating on the second row of stitches, acts on the first row the second time, thus giving the edge a double hammering. If desired to further increase the effectiveness of the hammer on the edge of the work, the bottom of the hammer may be beveled so that its outer portion shall make a deeper impression on the edge of the work than its inner portion does on the stitches. In our invention the quick, sharp, and direct blows of the hammer upon the stitches prevents the stretching of the stitches, often occasioned by the slipping of one piece of leather on the other by the action of the presser-foot, when two pieces of leather are stitched together, one above the other. By our invention, owing to the filling in of the needle-holes, the smoothing down of the seams, and finished appearance of the work, a large size needle may be used with better advantage, and produce apparently as fine finished work as a fine needle, thus less-

ening the liability of the needles breaking, and saving the expense heretofore incurred by the use of fine needles.

It is well known that presser-feet have been and are now in use that are raised and lowered and press upon the work, but such do not accomplish the result for which our invention is intended, as they do not produce a strong sudden blow directly on the stitches, so as to flatten them down or fill up the needle-holes and form a smooth seam, as is done by our automatical hammer, which we believe to be the first device of the kind used on sewing-machines for effecting the desired result.

We do not confine ourselves to the exact construction and arrangement of the devices herein described for connecting and operating a hammer in connection with the needle-bar and lever of a sewing-machine; for it will be evident, to any one versed in mechanical art, that a hammer may be connected with and operated automatically by a variety of mechanical devices otherwise arranged and operated by other portions of a sewing-machine, so as to strike the desired blow at the proper time upon the work, and hammer down the stitches and produce the desired finished appearance to the work.

Sewing-machines have heretofore been constructed with rising and falling presser-feet, and with helper-bars for assisting the feed, such presser-feet and helper-bars being raised by the needle-bar, and descending with it, striking upon the seam. But such devices are not effective for closing the needle or awl holes in leather, the springs by which they are forced down not having sufficient strength to simply press the holes closed, because if they had such strength they would oppose too great resistance to the rising of the needle-bar, and render the machine impracticable; and said devices have no resilient action, but are restrained by the needle-bar during the whole of their descent.

What we claim as our invention, and desire to have secured to us by Letters Patent, is—

1. In a sewing-machine having a presser-foot or work-holding device, a seam-smoothing hammer, forced downward by a spring and raised by the motion of the sewing-machine, in combination with a latch which holds said hammer until after the descent of the needle, and is then automatically tripped to allow the hammer to deliver a blow upon the seam immediately behind the needle.

2. In a sewing-machine, the pivoted pawl I having a latch, *c*, and spring *f*, in combination with the hammer *d*, having the rod or shank J, collar H, and dog H', all arranged and operating substantially as and for the purpose described.

3. In a sewing-machine an adjustable clutch, L, having a dog, *g*, and thumb-screw *h*, in combination with lever B, pawl I, and ham-

mer *d*, substantially as and for the purpose specified.

4. The combination of hammer *d*, having rod or shank J, collar H, and dog H', needle-bar D, spring K, head C, pawl I, spring *f*, clutch L, and lever B, all arranged and operating substantially as and for the purpose described.

In testimony whereof we have signed our names to this specification in the presence of two subscribing witnesses.

BARKER C. YOUNG.
LYMAN L. BARBER.

Witnesses:

CARROLL D. WRIGHT,
SAMUEL M. BARTON.