

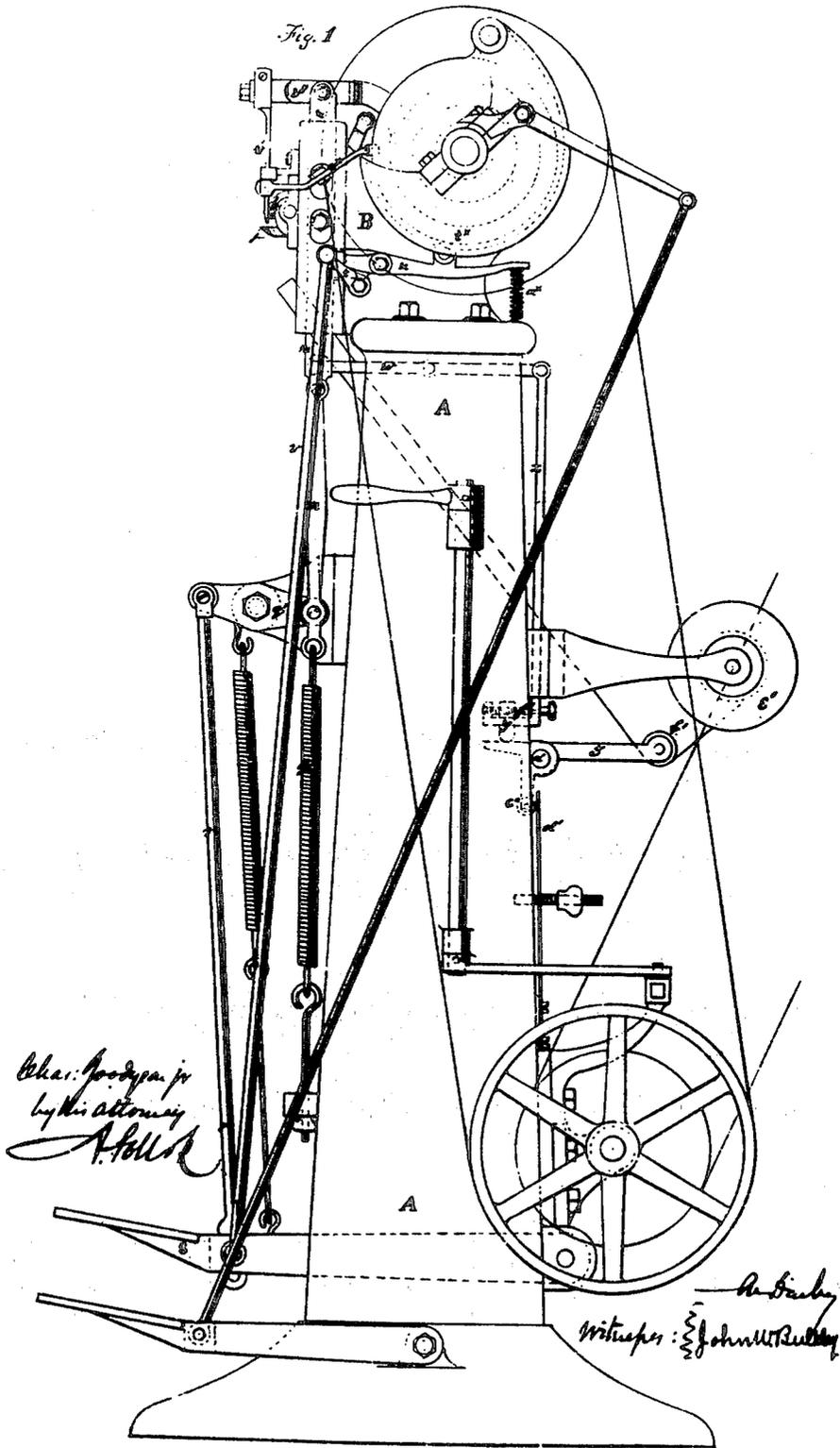
C. GOODYEAR, Jr.

2 Sheets—Sheet 1.

Machine for Sewing Boots and Shoes.

No. 111,197.

Patented Jan'y 24, 1871.

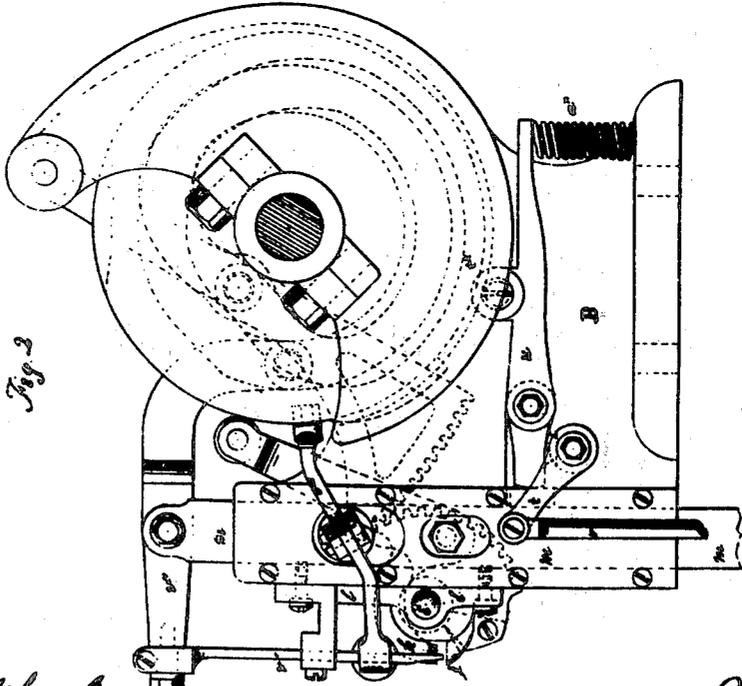
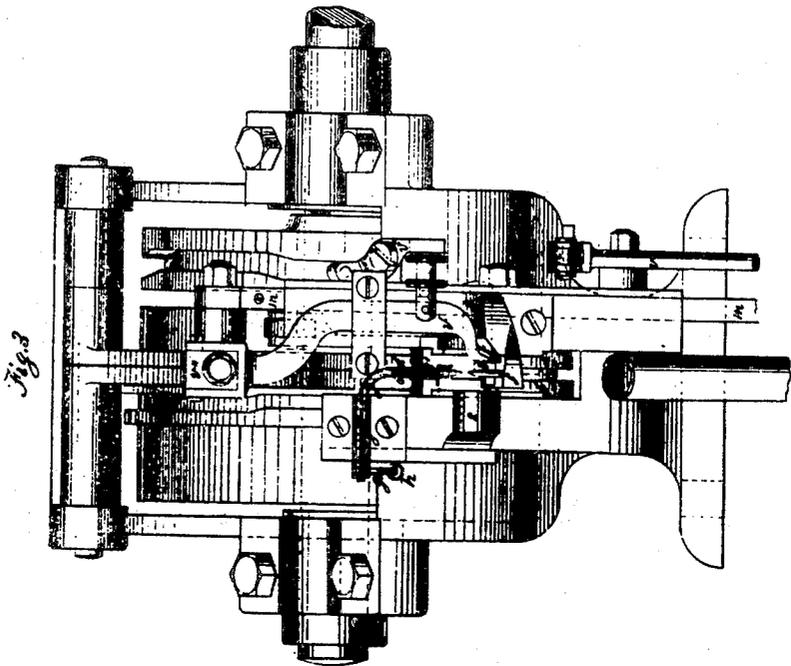


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Chas. Goodyear Jr
by his attorney *Wm. B. Smith* *Witness: J. B. Smith*

UNITED STATES PATENT OFFICE.

CHARLES GOODYEAR, JR., OF NEW ROCHELLE, NEW YORK.

IMPROVEMENT IN MACHINES FOR SEWING BOOTS AND SHOES.

Specification forming part of Letters Patent No. 111,197, dated January 24, 1871.

To whom it may concern:

Be it known that I, CHARLES GOODYEAR, Jr., of New Rochelle, in the county of Westchester and State of New York, have invented certain new and useful Improvements in Machinery for Stitching Soles to the Welts of Boots and Shoes, of which the following is a specification:

One of these improvements consists in a "take-up," combined with the movable jaw of a sole-stitching machine, as hereinafter described, so that the quantity of thread given out for each stitch is regulated automatically according to the thickness of the material or stock through which the needle has to pass. The take-up mechanism is made adjustable so that the ratio of the supply of thread relatively to the variations in the thickness of the stock can be varied; or, in other words, so that the supply of thread for each stitch may be varied independently of variation in the thickness of the stock.

The needle used in these machines is the same as that used in the machine for sewing welts or turns, described in the specification accompanying my application for a patent of even date herewith—that is to say, the curved needle is provided with a barb on the same side as the direction of the feed; if, for instance, the feed is from right to left, the barb will be on the left side of the needle, while a groove extends across the periphery or convex side of the needle, *i. e.*, toward the front, so as to carry the thread over from the barb to the opposite side of the point when the loop is drawn out, but it is used in connection with an awl, which is preferably made with an end flattened similar to the square awl used for hand-stitching.

As in this machine the work is also moved by the feeding mechanism in the same direction relatively to the position of the barb of the needle, as is described in the specification of the application for a patent above named, no cast-off is necessary. It is, however, sometimes desirable, though not indispensable, to use a device to prevent the dropping of loops or stitches, which sometimes happens in the process of sewing, and I have shown in the drawing a device intended for this purpose.

In the machines of this description heretofore made, and in which the needle and awl

have been operated by clogged segments, the needles and awls have been mounted in independent bearings, the awl being mounted in a stationary bearing, and the needle being mounted in a bearing on the end of a lever, having an outward swinging motion in drawing out the loop. I have found, however, that by slightly increasing the radius of the circular awl and needle, a sufficient length of loop may be secured without this motion of the needle away from the common center; and thus the awl and needle may be mounted on the same center or bearing, thereby simplifying the machine very much.

These improvements are illustrated in the accompanying drawing, in which—

Figure 1 represents a side view of the sole-stitching machine, in which the upper jaw is movable. Fig. 2 is a similar view of the head detached from the supporting-column, on a larger scale than the previous figure. Fig. 3 is a front view of the same.

Similar letters indicate corresponding parts.

In the drawing, the letter A designates a column which supports the head B, forming the bearings for the principal working parts of the sewing mechanism. This mechanism consists principally of an oscillating awl-stock, *a*, and oscillating needle-stock *b*, to which the required motions are imparted by lever-segments *c d*, provided with cogs which gear in corresponding cogs in the awl and needle-stocks. The needle and awl stocks are mounted upon one and the same shaft, *e*, which is made stationary, and supported by lugs or brackets cast upon the head B, the needle and awl stock being bored to fit and rotate upon said shaft. With the needle is combined a needle-guard, which is made movable, and in other respects corresponds to that described in the specification accompanying the aforesaid application for a patent for a welt-machine, of even date herewith, so that a shorter needle than that heretofore used is made available. The device for preventing the dropping of loops or stitches is represented by the letter *g*, and consists of a piece of strong wire, bent into convenient shape, so that one end, *g*¹, which is slightly curved and grooved, will partially cover the end of the needle when it has drawn up the loop, and by the operation of a coil-spring, *h*, attached to a short arm,

g^2 , on the other extremity of said piece of wire, the curved end is made to press gently upon the loop as it lies in the barb of the needle, and hold it there until the needle has commenced its downward motion, so as to prevent the loop from leaving the barb too soon, in which case it would sometimes twist or curl over the point of the needle in such a way as to occasion the dropping of stitches. The wire g is mounted in a sleeve or bearing, g^3 , so that it may turn therein, and permit the end g^1 to oscillate and press against the needle.

The operation of the movable jaw with its locking device is as follows: The work or stock, while being sewed, is clamped between the stationary jaw j and the movable jaw k .

The stationary jaw j is secured to the front of the machine by means of a simple bracket, l , (see Fig. 2,) while the movable jaw k is attached to a sliding bar, m , which connects, by a link, n , with a spring, p , and also with one end of a lever, q , the opposite end of which connects, by means of a rod, r , with a treadle, s , mounted in the lower part of the column A .

By the action of the spring p the slide-bar is drawn down, and the movable jaw closes upon the stock supported by the stationary jaw, and by depressing the treadle s the slide-bar is forced up against the action of its spring and the work is released.

During the operation of sewing, the slide-bar, together with the movable jaw, is alternately locked and released by a lever, u , which receives the required motion by the combined action of a cam, t^x , and a spring, a^x . As the roller-stud of this lever is depressed, the slide-bar is released, and the movable jaw is free to accommodate itself to any change taking place in the thickness of the work; but before the awl begins to act the slide-bar is locked and retained in the locked position until the stitch is completed. Upon the slide-bar m is mounted not only the movable jaw but also the feed-dog v^1 , and its actuating levers v^2 and v^3 . The locking-lever u is subjected to the action of a dog, t , which connects by a rod, v , with the treadle s and the rod r , which serves to lift the slide-bar, is provided with a slot in its bottom end, so that, by depressing the treadle the rod v , which connects with the dog t , will cause the eccentric upon the dog t to press against the bottom edge of the locking-lever, so as to slightly raise it, and thus release the slide-bar before the same is acted upon by the rod r ; and then, if the treadle be still further depressed, the slide-bar will be raised with the upper jaw, so as to receive or release the work.

The automatic take-up is arranged as follows: The slide-bar connects by a lever, w , and rod x , (see Fig. 1,) with a tappet, y , that acts on the take-up, or thread-controller z .

This take-up consists of a three-armed lever, which has its fulcrum on a pivot, a^1 , and is provided in the ends of two its arms with rollers $b^1 c^1$, while its third arm bears against the tappet y , being held in contact therewith by a spring, d^1 , acting on the roller c^1 . The roller b^1 forms the guide for the thread, which is taken from the spool e^1 , and passes through under said roller b^1 , as shown in Fig. 1.

If the thickness of the stock between the two jaws $j k$ of the stitching-machine increases, the tappet y is depressed, and the roller b^1 rises so as to give out more thread, and if the thickness of the stock between said jaws decreases, the tappet y rises, and the roller b^1 descends, so as to decrease the quantity of thread given out. The tappet y is adjustable by a screw, f^1 , and by moving said tappet in or out the ratio of the decrease or increase of the quantity of thread given out for each stitch with any given thickness of the stock is changed.

Having now described my invention, and the manner in which the same is or may be carried into effect, what I claim, and desire to secure by Letters Patent, is—

1. In a sewing-machine, organized for sewing boots and shoes, the combination, with a stationary jaw and a movable jaw, for holding the sole or other material of variable thickness, of a mechanism constructed and operating substantially as herein shown and described, whereby the supply of thread to the needle is regulated by the relative distance of the two jaws from each other, and without reference to the stroke of the needle.
 2. The means, substantially as described, for varying the ratio of the supply of thread, so that with a given thickness of stock the supply of thread may be varied without altering the degree of tension upon the bobbin.
 3. The needle and awl stocks, mounted upon one and the same axis or shaft, when said awl-stock and needle stock are actuated by geared lever-segments, substantially as herein set forth.
 4. The mechanism herein described, or its equivalent, for releasing or unlocking the sliding bar which supports the movable jaw, when it is desired to move the jaw to insert or remove the work.
 5. The combination, with a needle, having its barb on the side from which the shoe is moved by the feed mechanism, of the device shown and described, or its equivalent, to prevent the dropping of loops or stitches, as set forth.
- In testimony whereof I have signed my name to this specification before two subscribing witnesses.

CHAS GOODYEAR, JR.

Witnesses:

CHAS. T. DE FORREST,
GOWEN H. CRAGG.