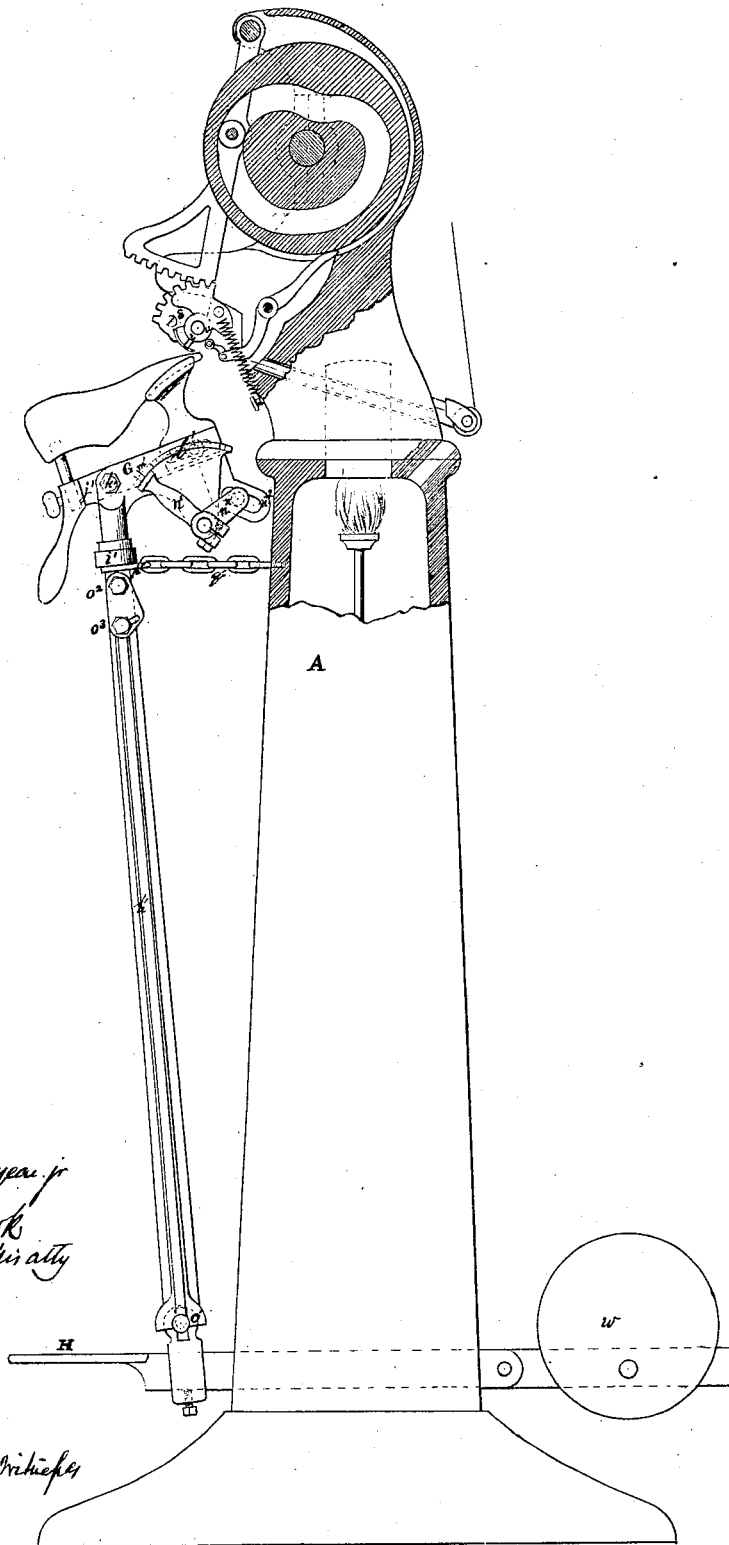


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No. 112,802.

Patented Mar. 21, 1871.



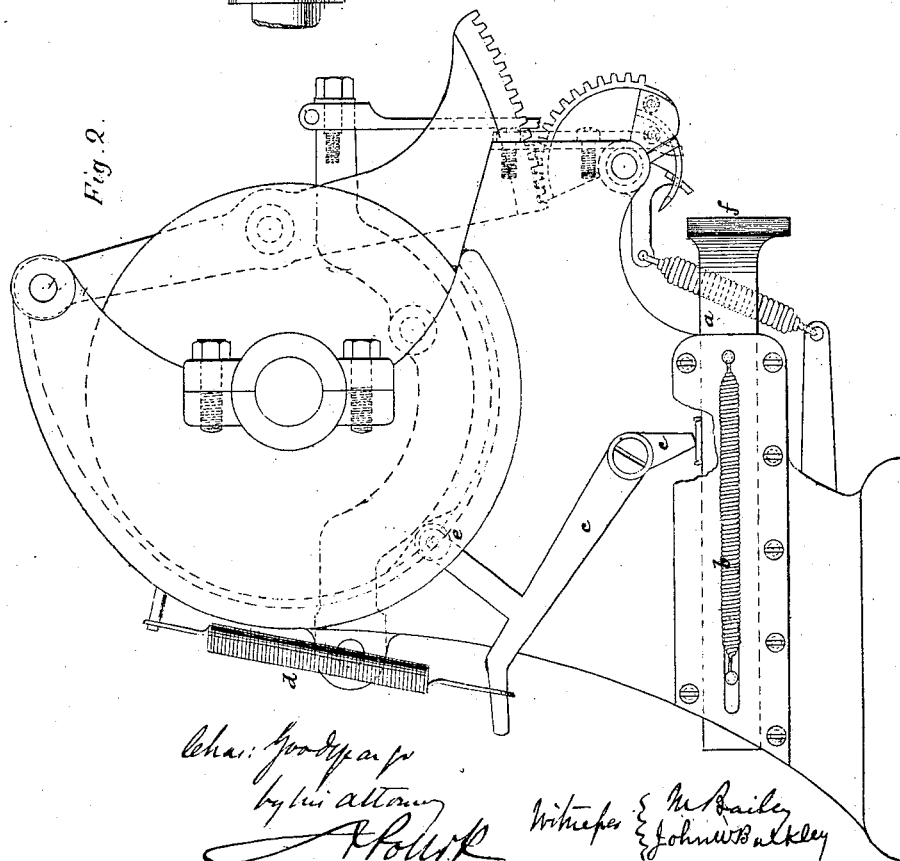
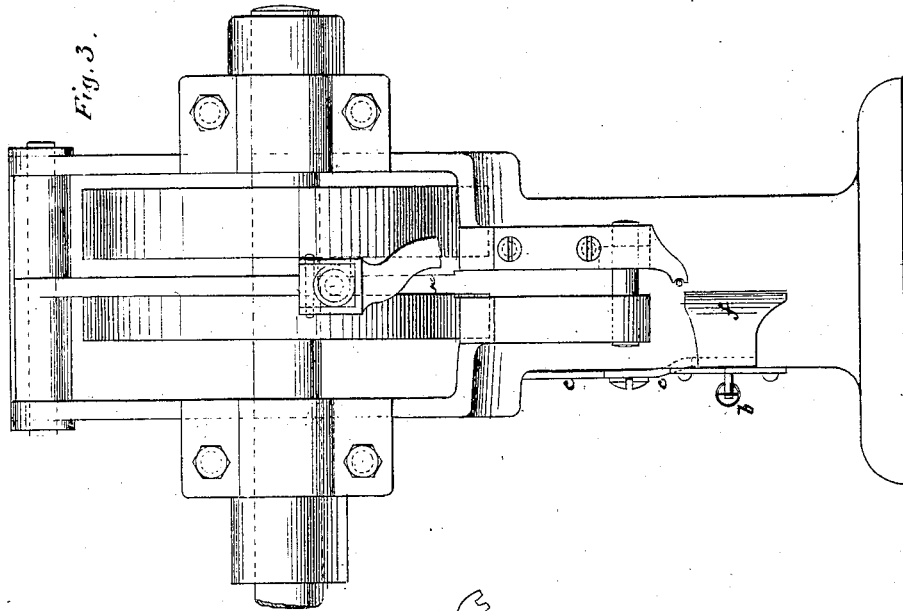
Charles Goodyear, Jr.
by A. H. H. K.
his atty

his atty
John B. H. K.
his atty

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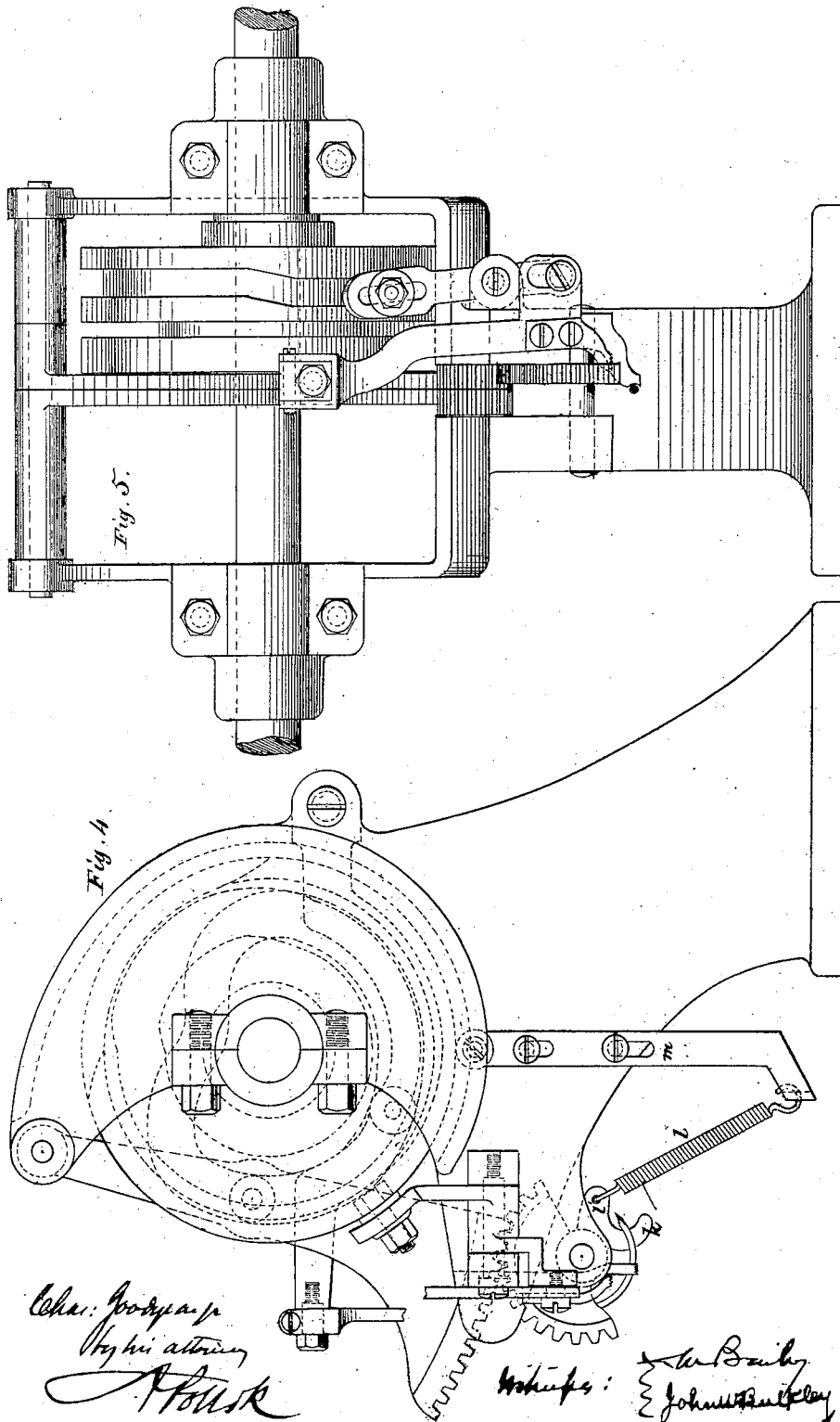
Chas. Goodyear
by his attorney
R. H. H. R.

Witnesses: M. Bailey
John W. B. Kelley

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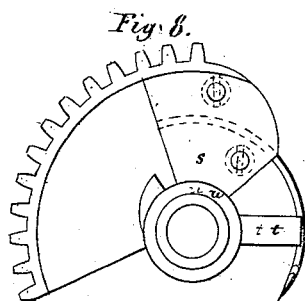
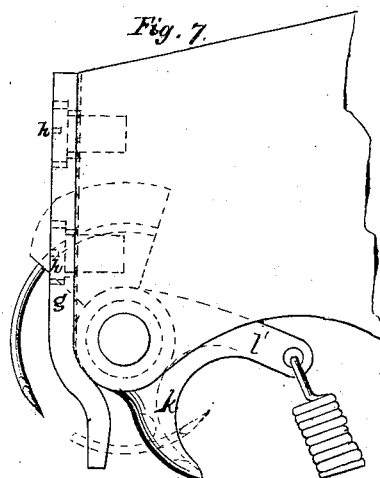
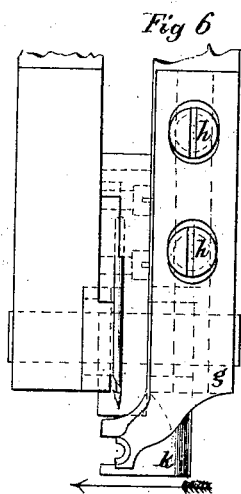


Fig. 10.

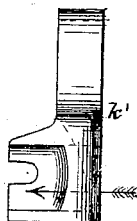


Fig. 11.

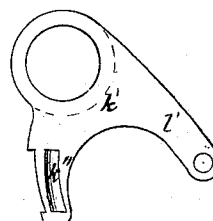


Fig. 9.

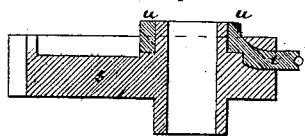


Fig. 12

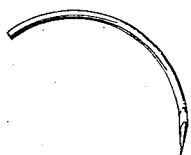


Fig. 13.



Charles Goodyear, Jr.
by his attorney
K. H. H. H.

Witnesses: John W. Bailey
John W. Bailey

United States Patent Office.

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

Letters Patent No. 112,802, dated March 21, 1871.

IMPROVEMENT IN MACHINES FOR SEWING BOOTS AND SHOES.

The Schedule referred to in these Letters Patent, and making part of the same.

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 Machines for Sewing Turned Shoes or Welts, of which the following is a specification.

This invention relates partly to an improvement in the manner of supporting the boot or shoe, and for keeping it in a proper position with reference to the sewing mechanism while in the operation of sewing; partly to improvements in the form of the needle, whereby the cast-off is entirely dispensed with; partly to an improvement in the needle-guard or support, whereby the use of a shorter needle than heretofore used is rendered practicable; partly to an independent auxiliary edge-gauge, which is alternately yielding and rigid at every revolution of the cam-disks; and partly to other details, in which the machine is improved or simplified, as hereinafter described.

To enable those skilled in the art to understand and use my invention, I will now proceed to describe the manner in which the same is or may be carried into effect by reference to the accompanying drawing, in which—

Figure 1 is a side elevation of a machine made in accordance with my invention.

Figures 2 and 3, 4 and 5 are, respectively, front and side views, on an enlarged scale, of the head detached from the column.

The remaining figures are details, which will be hereinafter referred to.

In sewing turned shoes or welts according to my invention, the boots or shoes are sewed while upon a last of ordinary construction, (see fig. 1,) which is supported by a jack G.

This jack revolves freely on the upper end of a shaft, *k*, and it rests upon an elastic cushion or spring, *i*, so that the work is capable of yielding somewhat to the sudden action of the feed-dog upon the work.

Said jack consists of a last-supporting lever, *j*, which has its fulcrum on a pivot, *k*, and can be set to any desired inclination by means of a serrated bar, *l*, and spring-catch, *m*.

A handle, *n*, serves to control the position of the jack through the crank-lever *n* and the slotted projection *n* on the frame of the jack.

The shaft *k* is connected by a joint, *o*, fig. 1, to a treadle, *H*, which is subjected to the action of a weight, *w*, or spring, so that the jack is continually forced upward, and that it can be depressed by stepping upon the treadle.

The joint *o* is so constructed as to admit of motion in any direction, but not so as to allow the shaft *k* to turn or revolve on its own axis, as such motion would be fatal to the proper action of this mechanism.

In order that the work may be inclined more or less with reference to the sewing mechanism, there is a joint, *o*, in the upright shaft *k*, below the spring *i*, which admits of such adjustments, and when the joint is set at the proper angle to suit the work, it is fastened by the set-screw *o*, so that the jack will present the work to the sewing mechanism at the same angle at all points; whereas, if the shaft was permitted to revolve at the joint *o*, the object of the adjustment would be defeated, since the work would shift around.

The upper end of the shaft *k* is provided with a loose ring or collar, *p*, which connects by a chain, *q*, with the column A.

By this arrangement the jack can be freely moved in either direction, and the work properly presented to the action of the sewing mechanism with ease and facility.

Instead of mounting the base of the shaft *k* upon the end of a weighted lever, it may be mounted upon a perpendicularly-sliding bracket, which may be actuated either by a weight or a spring, and, in either case, may be connected with a mechanism for fastening or locking the shaft in a fixed position while the work is held up against the sewing gauge and while the needle is piercing the stock.

In machinery for sewing welts and turned boots and shoes, as heretofore constructed, the last, with its adjusting mechanism, was supported on a table or an equivalent support, to which table or support an up-and-down movement was imparted automatically or otherwise. I have found, however, that by the use, in connection with a gauge working in a properly prepared channel in the sole, of a pivoted, swinging, or universal jointed shaft, pressed up against the said gauge automatically, whether held or not to the sewing mechanism by a flexible strap or chain, a much more readily and easily managed support can be obtained.

In this machine a crochet or hooked needle, shown in side elevation in Figure 12 and in front elevation in Figure 13, is used without an awl, the needle being the sole piercing instrument, so that the use of an awl-stock, with its actuating cam and lever segment, heretofore deemed indispensable, is done away with, and the machine is much simplified.

The peculiarity of this needle, which forms a part of this invention, consists in placing the barb on the side toward which the shoe is moved by the action of the feed-dog, while the groove extends across the outer periphery or convex side of the needle toward the point, so as to carry the thread over from the barb to the opposite side of the point, when the loop is drawn out, as shown in fig. 13, in which the arrow represents the direction of the feed—that is to say, if the feed be from the right to the left, the barb is on the left side

of the needle, and *vice versa*. If from left to right, the barb is on the right side of the needle.

The needles in this class of sewing-machines are formed to work within such a small radius that a shield or support, to prevent them from springing while passing through the work, and in drawing up the stitch, is found to be indispensable.

Heretofore, this shield has been made like a sheath or sleeve to cover or surround the needle for the space of about a quarter of an inch. This device has sometimes been attached to a plate working concentrically with the needle, and sometimes has been attached to a stationary part of the machine.

My improvement consists in forming this shield or support in the form of an open ring, *t*, which is mounted on the needle-stock shaft, or upon the hub of the needle-stock itself, as best shown in the drawing, Figures 8 and 9, in which *s* is the needle-stock and *t* the guard or support forming part of the collar *u*.

Figure 8 is a side elevation of the needle-stock and guard.

Figure 9 is a horizontal section of the same through the hub or shaft of the needle-stock.

On the end of the support *t* is a semicircular notch or groove closely fitting the inner periphery of the needle, and so formed as to support the needle against any strain or pressure inwardly toward the center in passing through the stock or in drawing out the loop, in both of which events it is obvious the tendency is to press the needle toward the center.

The needle by this means is also protected against any lateral pressure, while, as this shield does not enclose or cover the outer periphery of the needle, it is free to move quite down to the channel-gauge or to the stock, so as to support the needle both when it is passing through the stock and also while drawing out the loop.

This shield is operated by lugs or stops so placed upon the shield and the needle-stock, and the stationary support or bearing of the needle-stock, that the motion of the needle-stock will impart the necessary motion to said shield.

By making this shield in this manner the needle may be made much shorter than heretofore, and being so much stronger and stiffer, as well as so much better supported, is found to answer as a piercing instrument without the use of an awl, even for heavy welted work.

In the operation of sewing heavy stock it has been found necessary to use a considerable weight or heavy spring to hold the work firmly against the stationary gauge, and in order to hold the work firmly without so much weight I make use of an auxiliary side gauge in combination with the yielding-edge gauge or welt-gauge, so formed as to press squarely against the side of the shoe in whatever position it may be presented.

This gauge (see figs. 2 and 3) is furnished or combined with a locking mechanism to fasten it in a stationary position while the needle passes through the work, and is operated as follows:

The gauge *a* is mounted in such a manner as to slide back and forth, being pressed forward at all times against the work by the action of the spring *b*. This spring is designed to be light enough not to press so hard against the side of the shoe as to interfere with or embarrass the operator in guiding the work, but at the moment the needle commences to enter the stock the sliding gauge is locked fast by the pressure of the locking-lever *c* actuated by the spring *d*, and as soon as the needle has withdrawn from the work the pressure of the locking-lever is removed by the action of a suitable cam upon the roller-stud *e* in the other end of said lever.

The end of this gauge, which presses against the boot or shoe, is provided with a broad or perpendicular

edge or surface, *f*, so as to press squarely against the side of the shoe in whatever position it is presented, notwithstanding the irregularities in the shape of the last.

Another feature of this invention is best shown in Figures 6 and 7, and consists in mounting the yielding-edge gauge *k*, or the combined edge and welt-gauge, either upon the hub of the needle-stock *s* or upon the bearing which supports the needle-stock, close to the needle stock, and between it and the bracket to which the stationary or channel-gauge is fastened. Formerly this was impracticable, on account of the awl-stock occupying this space, and for other reasons.

Another feature of this invention consists in a combined edge-gauge and welt-guide, *k'*, (see Figures 10 and 11,) working concentrically with the needle. In order that this may be more perfectly understood I would state that in this machine there are four gauges contemplated to support and guide the work:

First, the stationary or channel-gauge *g*.

Second, the yielding-edge gauge *k*, used in sewing turns, (see figs. 6 and 7.)

Third, the combined edge-gauge and welt-guide *k'*, used in place of the last above mentioned in sewing welts.

Fourth, the auxiliary gauge *a*, which may be used for all classes of work, to assist in holding the work firmly in position.

The second and third-mentioned press upon the work with a strong but yielding pressure while the needle is passing through the work, but when the shoe is being fed or propelled the pressure is entirely removed.

The gauge *k* is operated by means of a spiral spring, *l*, attached at one end to the arm *l'* of the edge-gauge, best shown in fig. 4, the other end of the spring being attached to the lower end of the sliding bar *m*, which is provided at the other end with a roller-stud which presses against the periphery of its actuating cam.

The improvement here referred to, however, consists simply in the construction of a combined edge-gauge and welt-guide, formed with a slot, *k'*, and otherwise formed, as shown in figs. 10 and 11, so as to carry and guide the welt, and, at the same time, to press it firmly to its place while being sewn.

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. The combination, with a boot and shoe sewing mechanism, of a jack adjustable on axes intersecting each other, as shown and described, such jack being mounted on a shaft which rests on a pedal, and is connected therewith and with the column or other support of the sewing-machine in the manner substantially as shown and described, so as to be capable of swinging within given radiuses, as herein set forth.

2. In a boot and shoe sewing-machine, in connection with which a jack is used, adjustable and supported substantially as herein described and claimed in the preceding clause, a jack-supporting shaft composed of two parts, jointed, to admit of their rigid adjustment with respect to each other, below the pivot or support of the revolving jack.

3. The sleeve of the jack, its supporting shaft, and the spring, when arranged as described, and for the purposes set forth.

4. In a sewing-machine adapted for the sewing of boots and shoes, the curved needle actuated by geared lever segments, and provided with a guard or support constructed and operating substantially as herein shown and described, whereby the awl or other auxiliary piercing instrument is dispensed with.

5. The combination with the edge-gauge, whether the same be movable or not, of a yielding auxiliary side gauge and its locking device, arranged to assist in holding the work firmly in position by pressing the side of the boot or shoe during the stitching process.

6. In a boot and shoe sewing mechanism, employing as the piercing and stitching instrument a curved needle mounted in a segmental needle-stock, for the purpose of dispensing with the cast-off, locating the barb on the side of the needle opposite to whence the

material to be sewed is fed, substantially as herein shown and described.

7. The combined edge-gauge and welt-guide working concentrically with the needle, substantially as shown and described.

In testimony whereof I have signed my name to this specification before two subscribing witnesses.

Witnesses: CHAS. GOODYEAR, JR.

CHAS. T. DE FOREST,

GOWEN H. CRAGG.