2 Sheets—Sheet 1.

C. GOODYEAR, Jr., & B. H. HADLEY.

MACHINE FOR SEWING BOOTS AND SHOES.

No. 170,547. Patented Nov. 30, 1875.

Fig. 2.

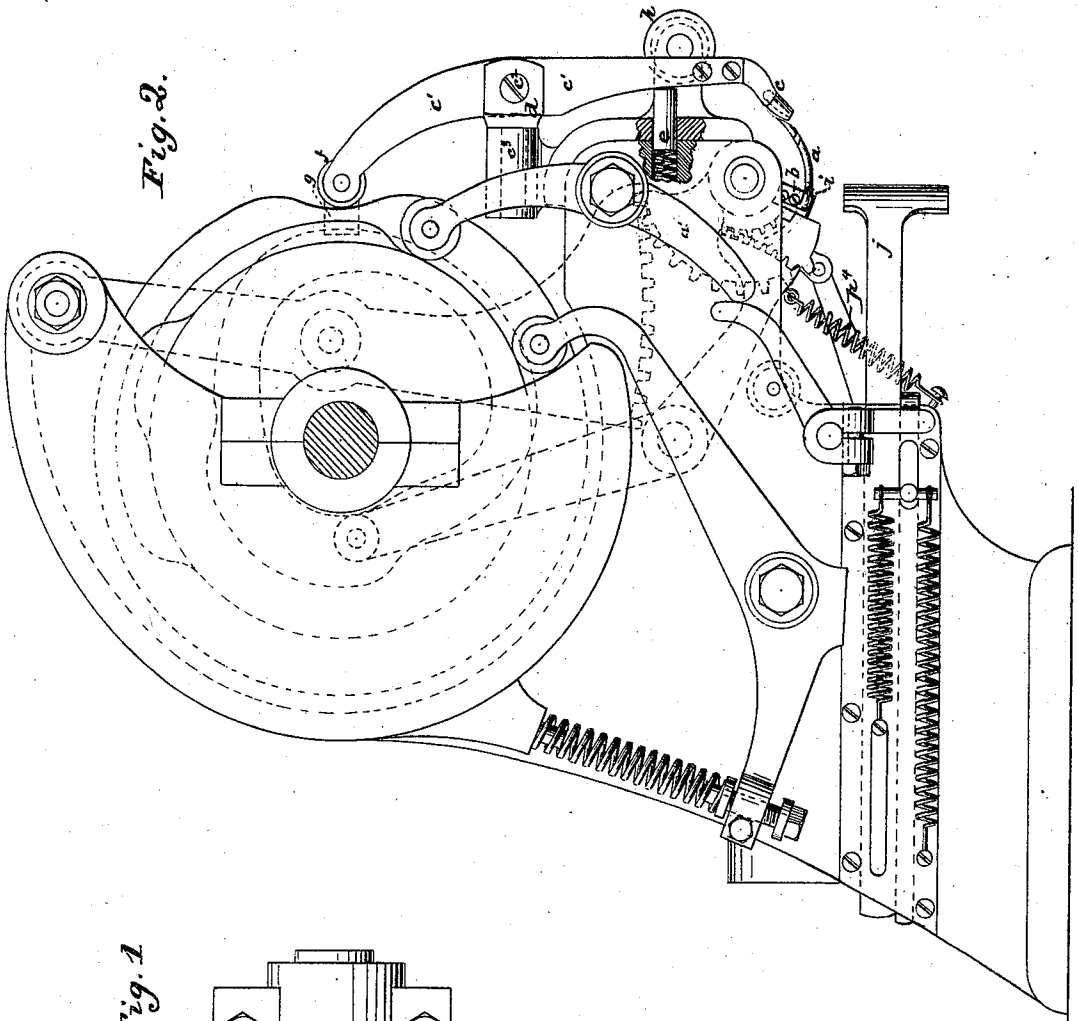
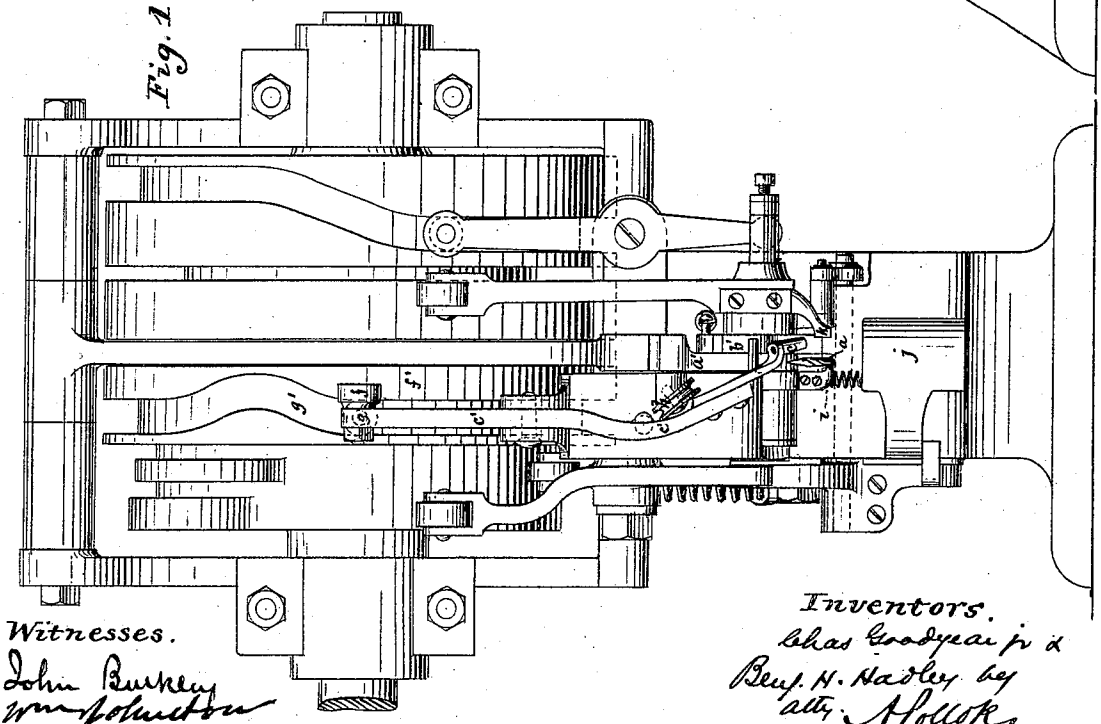


Fig. 1



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2 Sheets—Sheet 2.

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Fig 3.

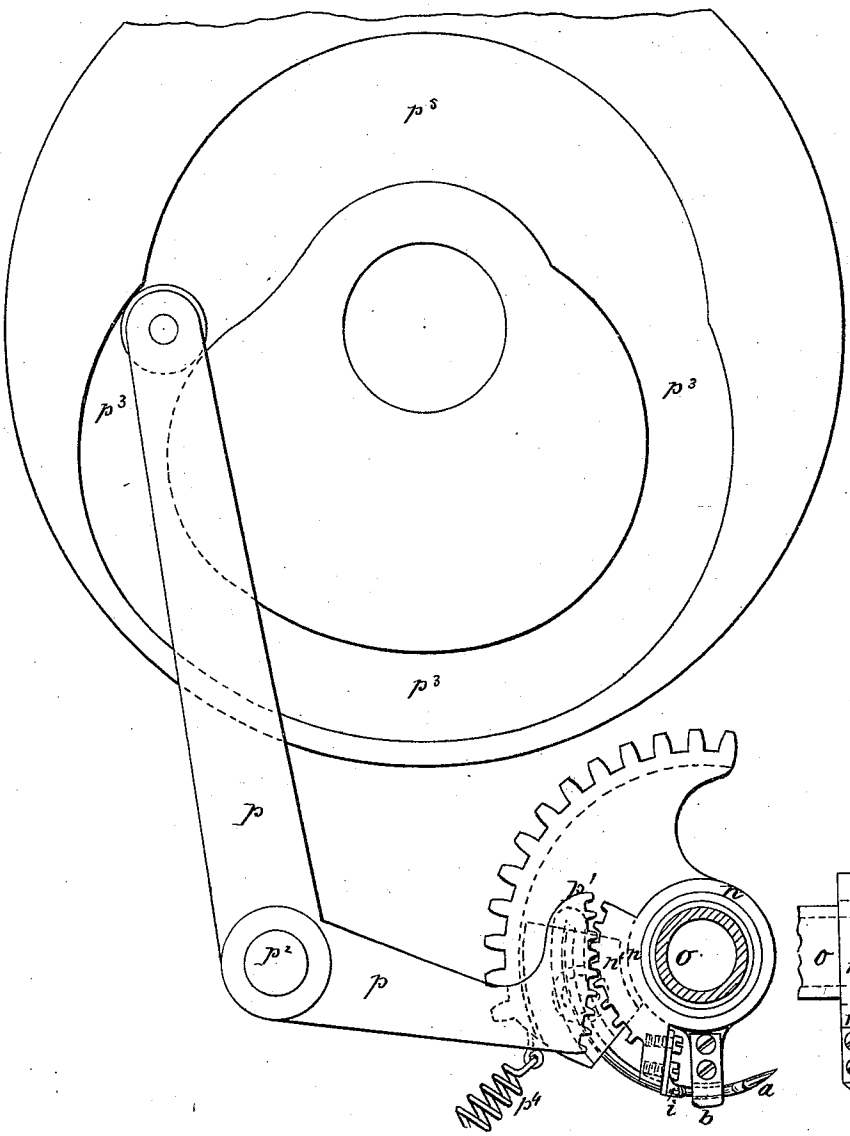


Fig. 4.

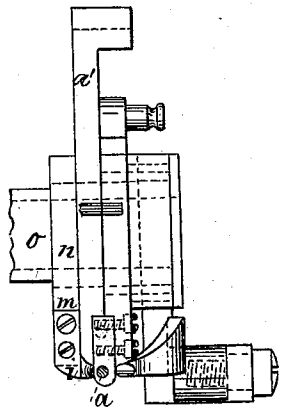
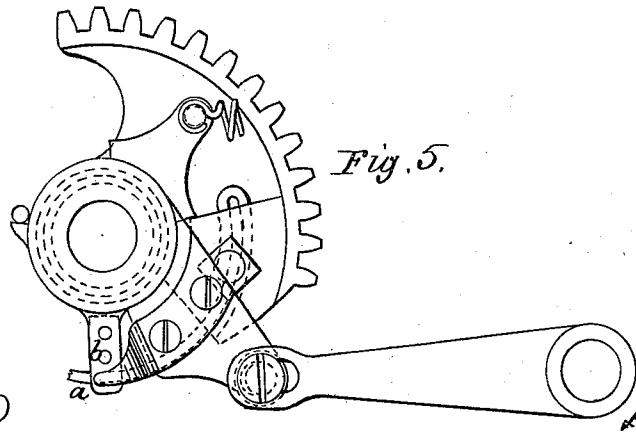


Fig. 5.



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UNITED STATES PATENT OFFICE.

CHARLES GOODYEAR, JR., OF NEW ROCHELLE, AND BENJAMIN H. HADLEY, OF BROOKLYN, NEW YORK, ASSIGNORS TO THE GOODYEAR BOOT AND SHOE SEWING-MACHINE COMPANY.

IMPROVEMENT IN MACHINES FOR SEWING BOOTS AND SHOES.

Specification forming part of Letters Patent No. **170,547**, dated November 30, 1875; application filed July 30, 1873.

To all whom it may concern:

Be it known that we, CHARLES GOODYEAR, Jr., of New Rochelle, Westchester county, New York, and BENJAMIN H. HADLEY, of Brooklyn, Kings county, New York, have invented certain new and useful Improvements in Machines for Sewing Boots and Shoes, of which the following is a specification:

This invention consists of certain improvements on boot and shoe sewing machinery, such as secured by several Letters Patent heretofore granted to Daniel Mills, and also to Charles Goodyear, Jr.

The particular machine to which we have here represented our invention as applied will be found described in Letters Patent granted to Charles Goodyear, Jr., July 11, 1871, No. 116,947.

The main object we have in view is to bring the chain-stitch on the outside of the seam, or next to the upper or welt, instead of laying it in the inside channel, as is the case in the above-mentioned patented machine. This necessitates changes in the arrangement of the needle, needle-brace, barb-shield, feeding-dog, &c., with relation to each other. The principal changes, however, may be specified as follows: first, reversing the needle, so that it shall point outward away from the head of the machine, instead of inward toward the same; second, corresponding alterations in the positions of the needle guard or brace and barb shield, and in the manner of mounting the same; third, mounting the looper on a bracket in front of the machine, as hereinafter described; fourth, the addition of a device, resembling somewhat what is known as a cast-off, which, however, in our present machine, has nothing to do with the controlling the thread or preventing the catching of the loop upon the barb of the needle, but is used solely to prevent the barb of the needle from catching the lining of the shoe.

The manner in which our invention is or may be carried into effect will be readily understood by reference to the accompanying drawing, in which—

Figure 1 is a side elevation of the head of a boot and shoe sewing-machine embodying our invention; and Fig. 2 is a front elevation of the same. Fig. 3 is a side elevation, partly in section, of that portion of the machine embracing the needle and work-protecting device above referred to, together with the mechanism for operating the same. Fig. 4 is a front elevation of the same parts, excluding the lever and cam for operating the said projecting device; and Fig. 5 is an elevation of the same from the side opposite to that shown in Fig. 3.

The barbed needle *a* occupies a position exactly the reverse of that which it has formerly occupied in machines of the kind above referred to, being arranged so as to point outwardly, and so as to pass first through the upper, (in sewing turned work,) and then through the sole from the outside groove or channel to the inside channel, its motion thus being the opposite of that which it formerly has had, consequently bringing the chain-stitch on the outside of the seam, and laying it in the outside groove on the upper, instead of in the inside channel. The needle-stock *a'* is a toothed segment gearing with a toothed segment-lever, operated by a cam, as usual, and the operation and construction of these parts consequently require no detailed description here. We also make use of the back-gage or welt-guide, (according as it is desired, to sew welts or turned work,) as described in the before-mentioned Letters Patent. The auxiliary yielding edge-gage *j'* is also arranged and operated, substantially as shown and described in the above-named patent and in other patents to Charles Goodyear, Jr., and needs no further description. The same is true of the combined channel-gage and feed-dog *k*, which has an out-and-in and back-and-forth movement, as described in the above-recited Letters Patent. The position of the needle guard and shield *b* is changed to accommodate it to the altered position of the needle, being mounted on a plate, *b'*, on that side of the needle-segment opposite to the work-protector hereinafter described; but, in other respects, as regards its

function, and operation, and combination with the needle, it is unchanged, and works in the manner described in said Letters Patent.

In order to adapt the looper *c* to the changed conditions of the machine, I mount it on a bracket, *d*, on the front of the machine, the looper-lever c^1 being pivoted upon a horizontal axis, c^2, to the bracket, which is mounted to turn on a horizontal axis at right angles with pivot c^2 in a sleeve, c^3, on the machine, thus allowing the looper all necessary movement. A spring-stud, *e*, bearing against the lower arm of the lever tends to hold the looper outwardly while the necessary motions of the looper, with respect to the needle, are derived from two roller-studs on its upper end—the one, *f*, working against the face of a cam, *f'*, the other, *g*, working in a cam-groove, *g'*. The thread passes from the bobbin and take-up in the usual way, and is carried over a grooved pulley, *h*, on the front of the machine down to the looper.

Inasmuch as in sewing turned work in this machine, the upper is the last portion of the work from which the needle withdraws in its retreat, there is danger that the needle-barb, when it withdraws, will catch or become entangled with the threads of the shoe-lining. To prevent any such occurrence, I provide what may be termed a work-protector, *i*, a thin suitably-shaped piece of steel or other suitable metal, which lies close to the needle on the barbed side thereof, and moves up with the needle, or while the same is in the work, so as to press or bear on the work closely around the orifice made therein by the needle, and remains in such position until the needle has fully withdrawn from the work, so as to prevent the catching and tearing of the lining by the barb. It then withdraws and leaves the barb open and the needle free to again enter the work. In order to obtain most practicably and readily this movement of the work-protector, I fasten it by screws (by which it can be adjusted, if need be,) to a projection, *m*, on a ring or hub, *n*, mounted loosely on the same shaft or bearing *o* on which the needle-segment is mounted. This hub is provided with an independent toothed segment, *n'*, gearing with a toothed segment, p^1, on the end of a lever, *p*, pivoted to the machine at p^2, and provided at its upper end with a roller-stud working in a cam-groove, p^3, so shaped as to impart the requisite motions at the proper times to the work-protector. A spring, p^4, attached at one end to the lower end of lever *p*, serves to keep the roller-stud in continuous contact with the inner surface of the cam-groove, which groove at that part, p^5, which the roller-stud occupies when the protector is pressed against the work, is somewhat wider than the diameter of the roller-stud, to permit the lever to so move as to allow the protector to adapt itself to different thicknesses of work, it being held, when against the work, with a yielding pressure due to the spring p^4, and the formation of the part p^5 of the cam-groove.

It will, of course, be understood that the mechanism above described is adapted equally well to sewing welts as to sewing turned work.

We have not deemed it necessary here to describe the machine, save in those particulars in which it differs from the patented machine above referred to. In other respects its construction and mode of operation are substantially the same as described in said Letters Patent.

Having described our invention, what we claim, and desire to secure by Letters Patent, is—

1. A sewing mechanism for boots and shoes, in which the channel-gage and back-gage are combined with and arranged relatively to a circularly-curved needle, substantially as set forth, so that the operation of sewing therewith places the loop or chain stitch on the outside of the seam, instead of in the channel in the sole.

2. In combination with the circularly-curved needle, the channel-gage, and the back-gage, or welt-guide, arranged together for operation as set forth, we claim the looper arranged and mounted relatively to the needle and guiding devices, as herein shown and set forth.

3. The combination, with the curved outwardly-pointed needle, operating substantially as described, of a vibratory work-protector, moving to and from the work at proper intervals, as set forth, the same being placed close to the needle on the barbed side thereof, and arranged to press upon the work at the time the needle is retreating, and until the needle-barb is fully withdrawn therefrom, substantially as and for the purposes shown and set forth.

4. The work-protector carried by an independent toothed segment mounted on the axis or shaft of the needle-segment, in combination with a lever-segment, cam, and spring, for operating the same, substantially in the manner set forth.

In testimony whereof we have hereunto set our hands in the presence of two subscribing witnesses.

CHAS. GOODYEAR, JR.
BENJAMIN H. HADLEY.

Witnesses:
FREDRICK CRAGG,
C. D. ADAMS.

150