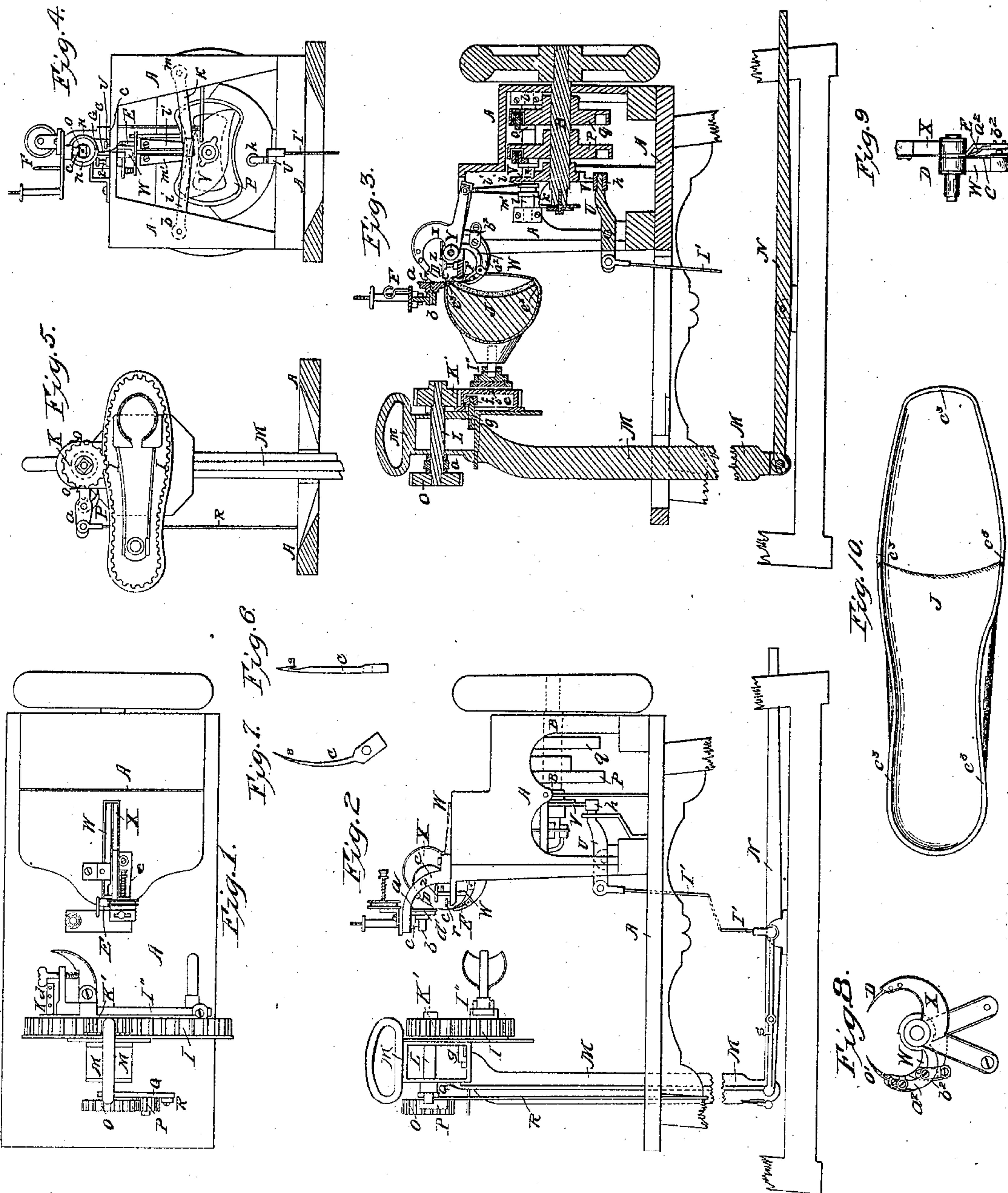


H. DUNHAM, Jr.
MACHINE FOR SEWING SOLES TO BOOTS AND SHOES.
No. 36,396. Patented Sept. 9, 1862.



Witnesses:
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UNITED STATES PATENT OFFICE.

HENRY DUNHAM, JR., OF ABINGTON, MASSACHUSETTS.

IMPROVEMENT IN MACHINES FOR SEWING SOLES TO BOOTS AND SHOES.

Specification forming part of Letters Patent No. 36,396, dated September 9, 1862.

To all whom it may concern:

Be it known that I, HENRY DUNHAM, JR., a citizen of the United States of America, and a resident of Abington, of the State of Massachusetts, have made an Invention of a new and useful Machine for Sewing the Sole to the Upper-Leather of either a Boot or a Shoe; and I do hereby declare the same to be fully described in the following specification and represented in the accompanying drawings, of which—

Figure 1 is a top view, and Fig. 2 a front elevation, of my said machine. Fig. 3 is a longitudinal section of it. Figs. 4 and 5 are vertical and transverse sections of it, taken through its middle, one exhibiting the parts to the right and the other those to the left of the plane of section.

The nature of my invention or improvements consists as follows—viz., of a combination of a curved hooked needle and the last as made with a concave bottom, in order that the needle may work through the upper-leather and the sole at or near their adjacent edges; also, in the combination of the last-holder with its carrying-plate in such manner as to enable the former to be inclined or adjusted with respect to the latter as may be necessary from time to time, to vary the position of the last in order to maintain the plane of the guide-wheel flange tangential to the curve of the bottom of the last; also, in an arrangement of the feeding mechanism with respect to the last-carrying-plate supporter and the sewing mechanism; also, in a curved awl and a curved hook-needle arranged and combined with a guide-wheel and a last provided with a concave bottom, the whole being in manner and so as to operate substantially as hereinafter described.

In the drawings, A represents the frame of the sewing mechanism, while B is the driving-shaft thereof. C is the curved hooked needle; D, the curved awl; E, the needle-closer, and F the thread-guide.

G is a guide-wheel, made with a flange, *a*, and in form like a common railway-wheel, it being supported by a horizontal journal, *b*, held in position by a stationary arm, *c*. It is against the flange and the lower part of the periphery of the said guide-wheel that the sole and upper are borne while being sewed together. The said sole and upper-leather are to be arranged on a last, J, whose bottom is

to be concave instead of convex, as in ordinary lasts, this form being necessary in order to enable the needle and awl to operate in a proper manner with respect to the edge of the sole and the upper. This concavity of the bottom extends longitudinally as well as transversely through the last. The said last is supported by a last-holder, I', which, at one or its heel end, is hinged to its carrying-plate I, while its toe or other end is free to slide on a perforated pin, K, projecting from the said part I, as shown in the drawings. The said pin has a series of holes made transversely through it, as shown at *d*. By inclining the last-holder with respect to its plate I and passing a pin through that hole of the series *d* which is next to the last-holder and between it and the plate I, I am enabled to retain the last-holder in the assumed inclined position.

There is nothing specially new in the construction of the last-holder; but the edge or periphery of its carrying-plate has the form shown in the drawings, and is provided with teeth, like a gear, and engages with a pinion, K', fixed on a horizontal shaft, L, which is supported by an upright standard, M, whose lower end is hinged or jointed to a treadle-lever, N.

The carrying-plate I is made with a recess or chamber, *e*, the inner surface of whose edge is parallel to the periphery of the plate, and is supported on a roller, *f*, which, in its turn, is sustained by and so as to be capable of freely revolving on a journal, *g*, extending from the standard M. A ratchet, O, is fixed on the outer end of the shaft L, and is actuated by a pawl, P, carried by a lever, Q, which has the shaft for its fulcrum, and is jointed to a rod, R, whose lower end is jointed to one arm of a lever, S, whose fulcrum projects from the middle of the lesser arm of the treadle-lever. A rod, I', jointed to the other arm of the lever S, is carried upward and jointed to one arm of another lever, U, which is arranged within the frame A of the sewing-machine. The other arm of the lever U carries a roller, *h*, which, during the revolution of the shaft B, is struck by a cam, V, carried by such shaft. The said cam, by its form, serves to effect the proper feeding movement of the last, which, while the needle and awl are entering the sole and upper, is to be at rest. From the above it will

be seen that the feeding of the article to be sewed is not effected by a toothed or serrated roller placed near to the needle and awl, but is accomplished by mechanism arranged mostly on the treadle-lever and the upright standard which supports the last-carrier-supporting plate I.

The needle, as well as the awl, is curved in the arc of a circle, and they are respectively carried by two bent levers, W X, which are arranged side by side and play in vertical planes on one fulcrum-pin Y. The rearmost arms of these levers are connected to two arms, *i k*, (projecting from separate shafts *l m*,) by connecting-rods *l' m'*. Each of the shafts *l m* has another arm, *n* or *o*, extending from it and being operated by one of two cams, *p q*, fixed on the driving-shaft, the whole being constructed and arranged so as to impart to the needle and awl their necessary motions, in order to enable what is termed "chain-stitch sewing" to be effected with a waxed thread when passed through the thread-carrier *z*.

As my invention has no reference to any mode of actuating the thread-carrier *z* or the needle-closer E, and as the operation of producing chain-stitch sewing by means of a waxed thread, a needle, an awl, a needle-closer, and a thread-carrier is well known, any further description thereof or of mechanism therefor would be irrelevant and unnecessary.

A small guide or supporting roller, *r*, is arranged below the wheel G and rests against the bottom of the sole or the ridge or crease

usually made therein for reception of the needle, which, besides being curved, as described, is provided with a pointed extremity and a hook, as shown at *s*.

With my invention the sole and the upper of a shoe are sewed together in very much the same manner in which they are usually connected by hand-sewing, except that the stitch differs from that usually performed by the workman when using either one or two threads.

My invention, or what I claim, is as follows:

1. The combination of the covered and hooked needle, with the last constructed with a concave bottom, the whole being substantially as described and represented.
2. The combination of the last-holde, with its carrying-plate, in such manner as to enable the former to be inclined with respect to the latter substantially in the manner and as set forth.
3. The above-described arrangement of the feeding mechanism with respect to the last-carrying-plate supporter M and the sewing mechanism.
4. A curved awl and a curved-hook needle, arranged and combined with a guide-wheel, G, and a last having a concave bottom, the whole being in manner substantially as specified.

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Witnesses:

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