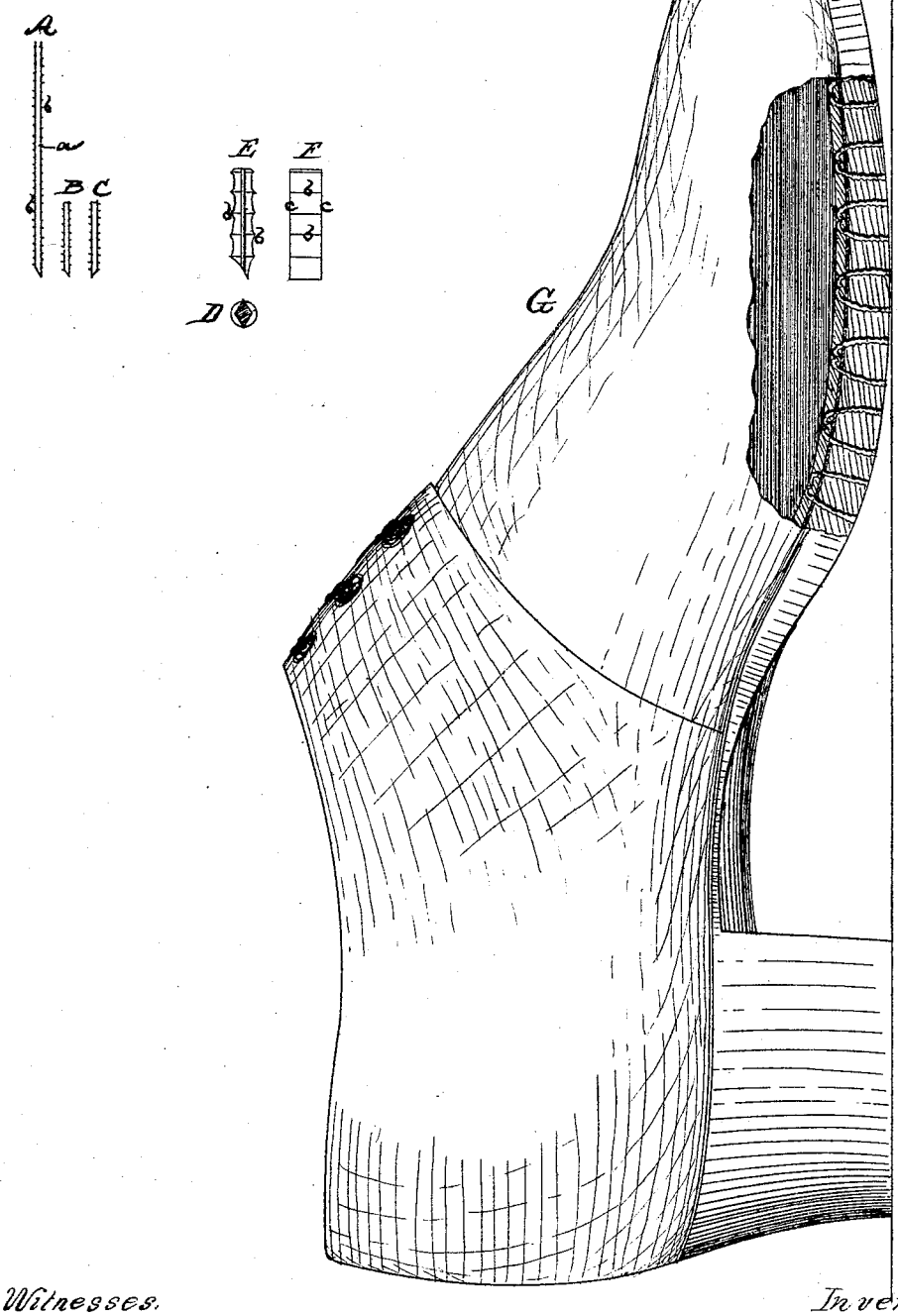
L. R. BLAKE & A. S. LIBBY.

Nailing Boots and Shoes.

No. 140,400. Patented July 1, 1873.



Witnesses.
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UNITED STATES PATENT OFFICE.

LYMAN R. BLAKE, OF BROOKLYN, NEW YORK, AND ASA S. LIBBY, OF LAWRENCE, MASSACHUSETTS.

IMPROVEMENT IN NAILING BOOTS AND SHOES.

Specification forming part of Letters Patent No. **140,400**, dated July 1, 1873; application filed August 14, 1872.

To all whom it may concern:

Be it known that we, LYMAN R. BLAKE, of Brooklyn, in the county of Kings and State of New York, and ASA S. LIBBY, of Lawrence, in the county of Middlesex and State of Massachusetts, have invented an Improvement in Nailing Boots and Shoes; and we do hereby declare that the following, taken in connection with the drawings which accompany and form part of this specification, is a description of our invention sufficient to enable those skilled in the art to practice it.

The invention relates particularly to an improvement in uniting the uppers and soles of boots and shoes by nailing.

In our invention we employ peculiar nails cut from wire, which nails are so pointed that the form of the point of each causes the nail to deflect or turn from the direction in which it is driven, and also causes the point to clinch when it strikes the metal surface against which the work is held to be nailed, said nails holding not only by their inclinations and by their clinched points, but also by serrated or roughened surfaces, which are made upon one or more sides of each nail-shank.

In making these nails we use a wire which is rolled in roller-grooves formed with notches, which notches form spurs upon the wire, while the spaces between the notches bring the wire into such form that it is lenticular in section. From the end of this wire the nails are cut one by one, and each with an inclined one-sided point that causes the nail to dip or bend as it enters the leather, and, to form the strongest seam, alternate nails have their points upon opposite sides, so that one turning in one direction by reason of the form of its point, the next turns in the opposite direction by reason of its oppositely-located point.

Our invention consists in the nail-forming wire, made lenticular or lozenge-shape in section, and with the barbs or spurs, and in uniting the soles and uppers of boots and shoes by a row or rows of side-pointed nails, the form of the point of each of which causes it to dip or deflect as it enters the work; also, in uniting the soles and uppers of boots and shoes by side-pointed nails, the form of which points causes them to turn and clinch against the metal surface upon which the boot or shoe is supported.

The drawing represents the wire, nails, and nailed seam embodying our invention.

A shows a piece of the wire. B and C show two of the nails. D is a cross-section of the nail, all the views, D E F, showing the wire enlarged. G shows the seam in section.

a denotes the nail-wire, formed from round, or approximately-round, wire, which, by drawing through suitable roller-grooves, is brought to the shape shown at A B C D E F, having barbs or spurs *b* extending from opposite sides, and having parallel edges *c c*, the wire between the bars being of lenticular or lozenge shape in cross-section, as seen at D.

In cutting each nail its point is formed on one side, as seen at B and C, and the one-sided points on alternate nails are preferably oppositely inclined, as seen at B and C.

Such point insures the turn of the nail, although the blows are in the direction of the straight shank or squarely upon its end, and, by alternately forming the points at opposite sides, the series of nails assume alternate inclinations in opposite directions, thereby forming the seam, as shown at G, the same peculiarity of the points also causing them to clinch when they strike the metal surface against which the shoe is held to be nailed, the inclinations of the shanks, the clinched points, and the barbs or spurs all combining to render separation of the united parts by wear impossible.

The lozenge shape of the shank in section enables the shank to bend easily under the force of the blows and the dip of the point.

We claim—

1. Nails, cut from wire of lenticular section, with the one-sided points, substantially as shown and described.

2. Soles and uppers of boots and shoes united by side-pointed nails, the form of which points causes them to upset or clinch as they strike the anvil-surface upon which the boot or shoe is supported.

3. Soles and uppers of boots and shoes united by means of side-pointed nails, the form of which points causes the nails to assume inclined positions as they enter the sole, substantially as described.

4. Soles and uppers of boots and shoes united by side-pointed nails, the nails being alternately pointed upon opposite sides and being thereby caused to assume opposite inclinations as they enter the sole.

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