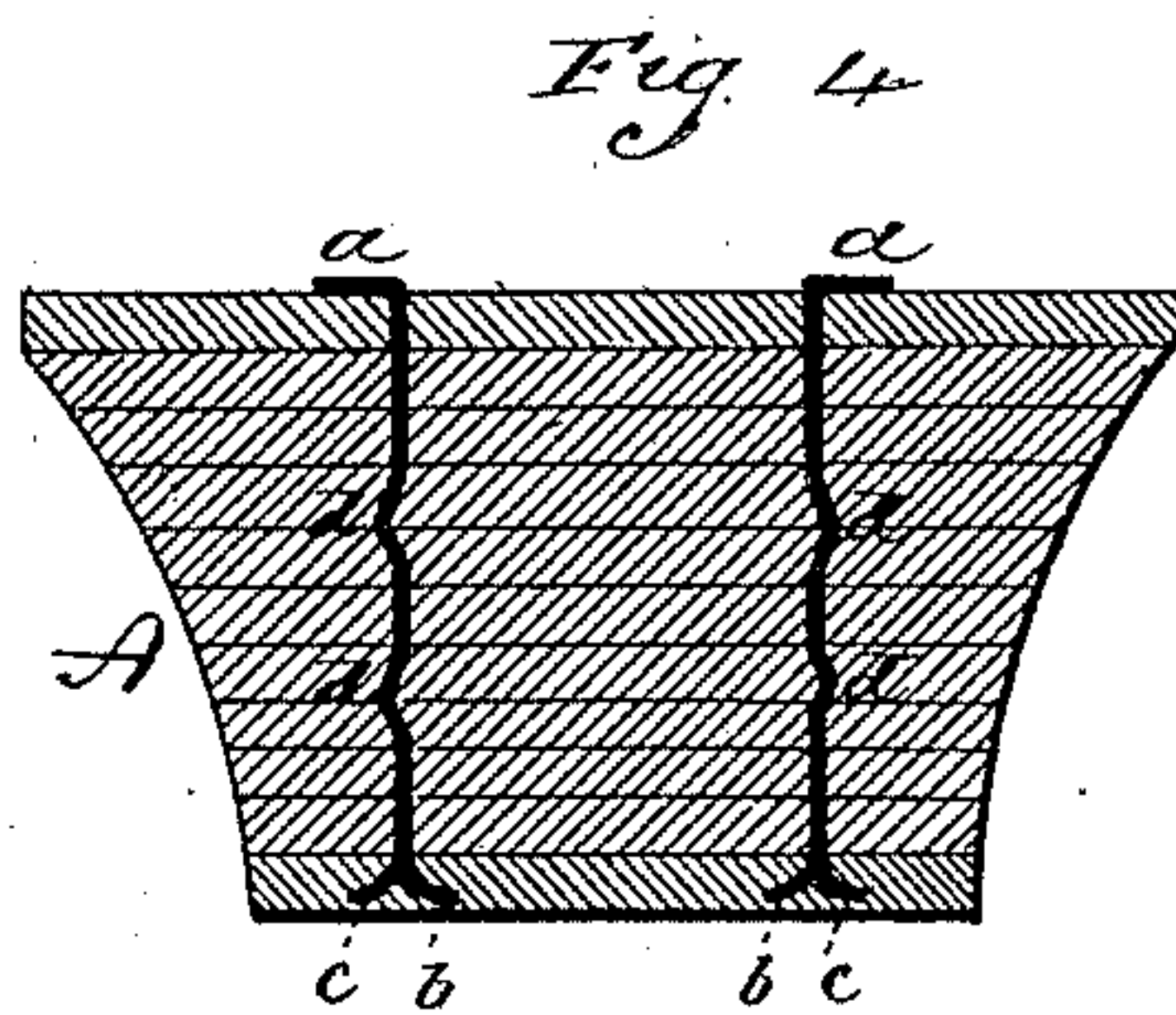
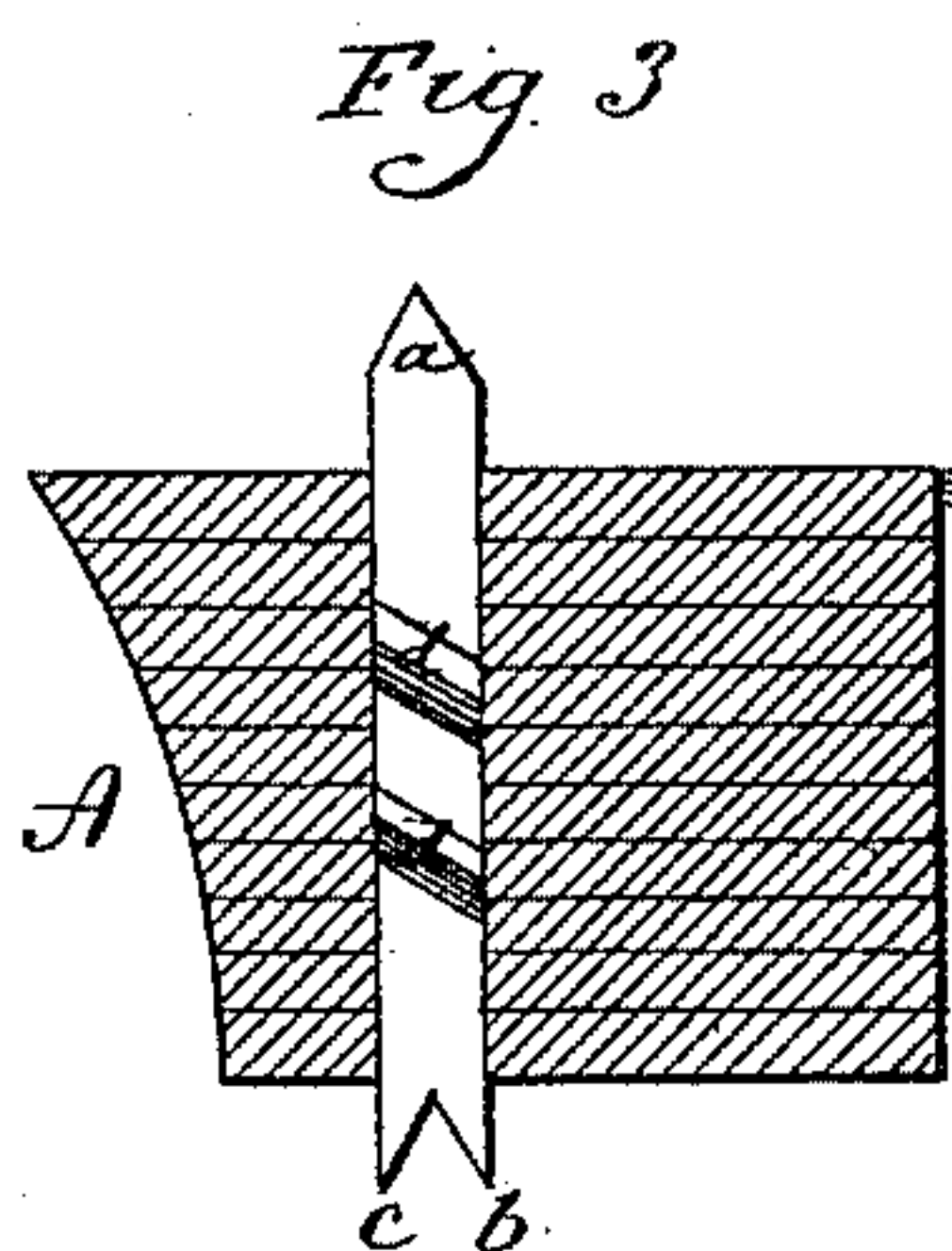
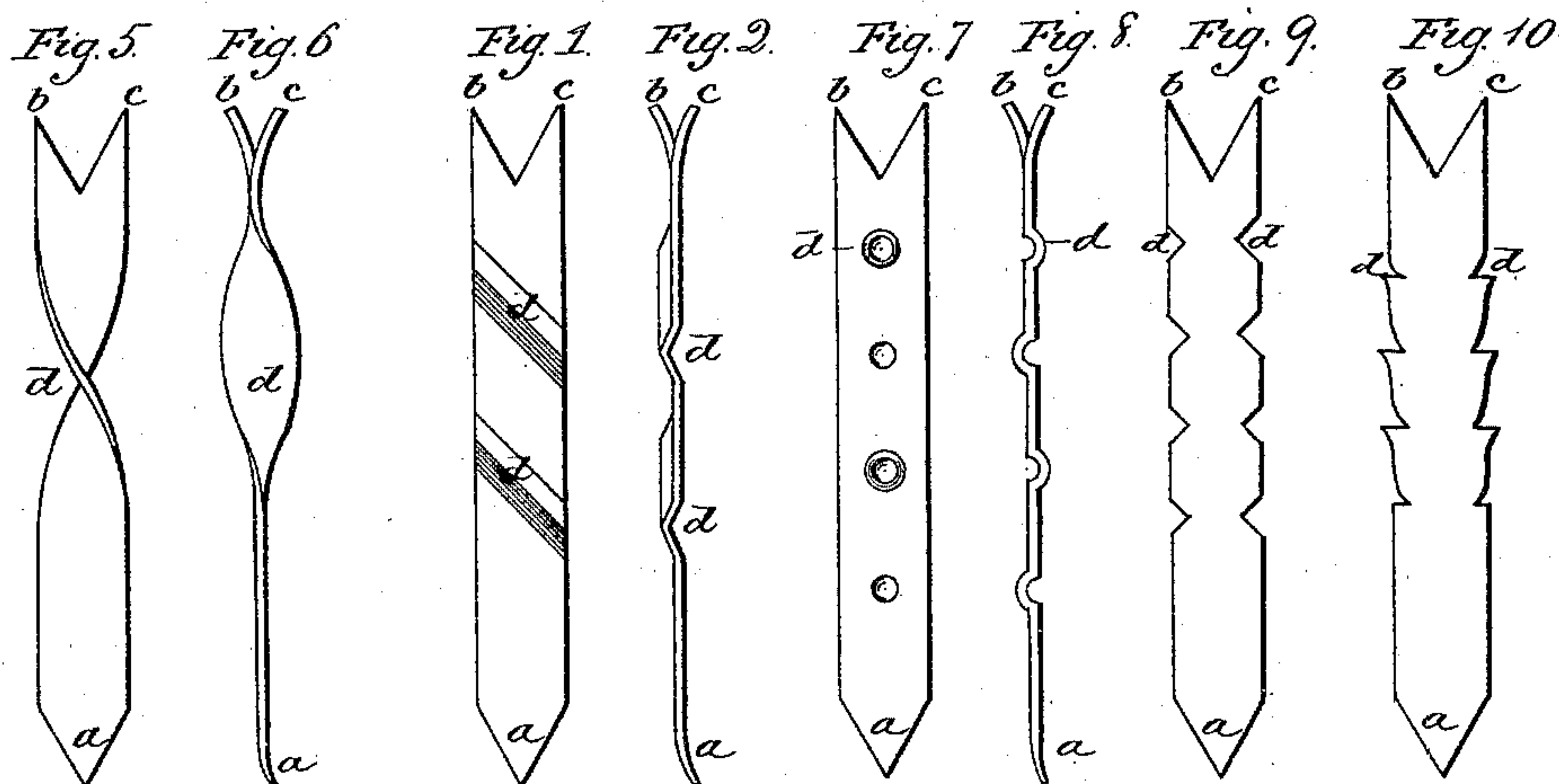


(No Model.)

H. A. SANFORD.
SHOE NAIL.

No. 412,981.

Patented Oct. 15. 1889.



Witnesses.
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UNITED STATES PATENT OFFICE.

HOPKINS A. SANFORD, OF NEW HAVEN, CONNECTICUT, ASSIGNOR TO THE
NEW HAVEN NAIL COMPANY, OF SAME PLACE.

SHOE-NAIL.

SPECIFICATION forming part of Letters Patent No. 412,981, dated October 15, 1889.

Application filed September 24, 1888. Serial No. 286,171. (No model.)

To all whom it may concern:

Be it known that I, HOPKINS A. SANFORD, of New Haven, in the county of New Haven and State of Connecticut, have invented a new
5 Improvement in Heel-Fasteners for Boots or Shoes; and I do hereby declare the following, when taken in connection with accompanying drawings and the letters of reference marked thereon, to be a full, clear, and exact
10 description of the same, and which said drawings constitute part of this specification, and represent, in—

Figure 1, a side view of the nail complete; Fig. 2, an edge view of the same; Fig. 3, the
15 nail as introduced through the heel preparatory to applying the cap; Fig. 4, the heel and cap as attached to the sole; Figs. 5 and 6, side and edge views of a modification; Figs. 7 and
20 8, a side view and vertical section of a modification; Figs. 9 and 10, side views of modifications in the shape of the body of the nail.

This invention relates to an improvement in that class of nails which are introduced into boot-heels, so as to become a part thereof
25 as articles of manufacture, the point portion of the nail projecting upon the upper side of the heel, so as to be forced through the sole and turned down upon the inside as a means for securing the heel, while the outer end is
30 provided with means for securing the finishing-cap to the heel, the object of the invention being to make the nail from thin flat metal—may be cut from sheet metal—or from narrow strips rolled or drawn, and so that it
35 may make a firm engagement with the heel itself and insure proper attachment of the cap; and it consists in the construction as hereinafter described, and particularly recited in the claims.

40 My improved nail is cut from metal—may be sheet metal—or narrow strips rolled or drawn to the requisite width, and under its best construction the flat-metal blank is of equal width from end to end and of a length
45 sufficient to extend through the heel to be attached, giving a projection upon the upper side to be bent down upon the inside of the sole and a projection on the face of the heel of sufficient extent to engage the cap.

50 In Figs. 1 and 2 I illustrate the nail, one

end *a* pointed, which is to constitute the inner end, the other end bifurcated to form two points *b c*, which two points are turned from the plane of the nail to the right and left, as indicated in Fig. 2. That portion of the nail
55 which is to stand within the heel I make of irregular shape, preferably with diagonal corrugations *d* across the blank, but so that the body of the nail remains in the same plane. The nail is introduced through the heel *A*, as
60 seen in Fig. 3, so that the point portion *a* projects above the heel a sufficient extent to pass through the sole and be turned down upon the inside of the sole, so as to secure the heel firmly thereto. The other or double-pointed
65 end projects through the face side of the heel, so as to receive the cap. The points *b c*, being turned to the right and left, are deflected and turned into the cap in opposite directions, so as to make firm engagement with the cap,
70 as seen in Fig. 4.

The nail may be introduced into the heel, so that the heel becomes an article of manufacture ready for attachment; or the nail may be forced through the heel and sole after the
75 heel is applied and clinched upon the inside of the sole, it being understood that the heel is first pierced for the introduction of the nail. The irregularity in the shape of the body of the nail in the heel causes it to so
80 engage the heel that it becomes immovable therein.

While I prefer the irregular shape produced by a twist in the body of the nail, the irregularities may be otherwise formed—say as seen
85 in Figs. 5 and 6, in which the blank for the nail is of the same shape as that seen in Figs. 1 and 2; but the blank is twisted, say, half round, so as to bring the end portion of the nail into the same plane; or the nail may be
90 made as seen in Figs. 7 and 8, the blank for the nail being of the same shape as in Figs. 1 and 2, but depressions formed in the body, producing corresponding projections on the opposite side, as seen in Fig. 8.

95 The double-pointed nail which I have described is driven by an instrument prepared for the purpose, which is adapted to grasp the outer end of the nail and force it to its place in the heel.

The nails may be made in a machine having combined therewith devices which will receive the nail directly from the forming devices and force it into the heel. Such driving devices, however, are immaterial to this invention, and may constitute the subject of an independent application. A good result is attained by forming the blank as seen in Fig. 9, in which notches are cut in the edge of the blank, or as seen in Fig. 10, in which notches are cut and the metal upset to form barbs, all of which produce firm engagement between the nail and the body of the heel. While therefore preferring the diagonally-corrugated body of the nail, I do not wish to be understood as limiting the invention to this corrugated shape; but

What I do claim is—

1. A nail for boot-heels, made from sheet metal, one end constructed in the form of a point *a*, the other end terminating in points

b c, turned in opposite directions from the plane of the nail, the body of the nail between its two ends of irregular shape, substantially as described.

2. A flat nail for the heels of boots or shoes, made from a strip of sheet metal, pointed at its respective ends, the body of the nail between its two ends diagonally corrugated, substantially as described.

3. A nail for the heels of boots or shoes, made from a strip of sheet metal, one end terminating in a point *a*, the other end terminating in points *b c*, turned in opposite directions from the plane of the nail, the body of the nail between the two points diagonally corrugated, substantially as described.

HOPKINS A. SANFORD.

Witnesses:

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