(No Model.)

A. NEWTON.

Shoe Nail.

No. 243,603. Patented June 28, 1881.

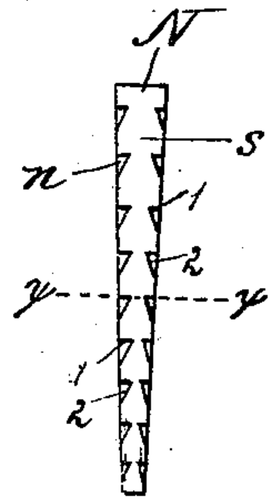

Fig. 1.

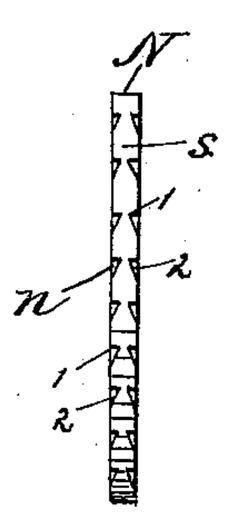

Fig. 1a.

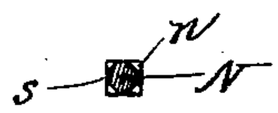

Fig. 3.

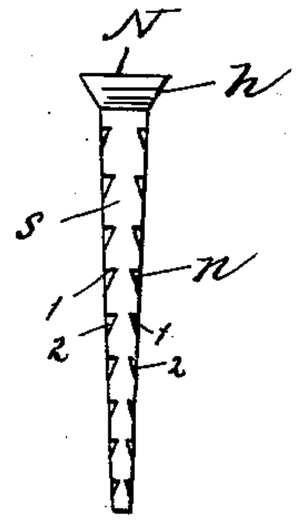

Fig. 2.

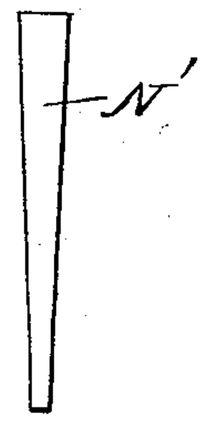

Fig. 4.

Witnesses:
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W. Climo.

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Arthur Newton,
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Atty's.

UNITED STATES PATENT OFFICE.

ARTHUR NEWTON, OF BOSTON, MASSACHUSETTS.

SHOE-NAIL.

SPECIFICATION forming part of Letters Patent No. 243,603, dated June 28, 1881.

Application filed March 12, 1881. (No model.)

To all whom it may concern:

Be it known that I, ARTHUR NEWTON, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain Improvements in Shoe-Nails, of which the following is a specification.

This invention relates to nails or sole-fastenings for boots and shoes; and it has for its object to provide a nail adapted to be struck or cut from a sheet or strip of metal, and embodying certain improvements whereby the nail is prevented from working loose after having been driven.

To this end the invention consists in a nail angular in cross-section, having a series of indentations or notches formed in each of its angles, each series of notches being separated from the adjacent series by intervening smooth surfaces or sides of the nail, substantially in the manner I will now proceed to specifically describe and claim.

Of the accompanying drawings, forming part of this specification, Figures 1 and 1ª represent respectively front and side elevations of a nail or sole-fastening embodying my invention. Fig. 2 represents a similar nail, in this case provided with an enlarged head. Fig. 3 represents a section on line *x x*, Fig. 1. Fig. 4 represents a blank. All the figures are considerably enlarged.

The same letters refer to the same parts in all the figures.

In the drawings, N represents a nail angular in cross-section and tapering upon two of its sides from head to point. This nail is preferably formed by striking a blank, N′, of proper shape and size, (shown in Fig. 4,) from a sheet or continuous strip of metal, after the manner of making ordinary cut-nails. The blank is then subjected to the action of suitable dies, whereby a series of indentations or notches, *n*, are made in each of its corners or angles. These notches *n* may be either square, V-shaped, or of any desired form, but each is preferably formed with two surfaces, 1 2, the first being a shoulder substantially at right angles with the length of the nail, and the other being gently inclined, as shown, this form of notch being preferred for reasons hereinafter given. The indentations on two of the opposite angles of the nail may be made to alternate with those on the two other opposite angles, or they may be made opposite to each other entirely around the nail, as shown in the figures. In either case each series of notches *n* is separated from the adjacent series by the intervening smooth surfaces or sides *s* of the nail, the notches *n* extending only partially across the sides, as shown. By thus separating the series of notches from each other by intervening smooth surfaces, the leather adjacent to said surfaces is not disturbed in driving the nail, and the latter is less likely to be turned or worked loose in the leather than if the nail were corrugated or threaded entirely across one side or all around, in which case the leather would be torn and displaced on each side of the nail when it was driven.

The nail N may be without an enlarged head, as shown in Figs. 1 and 1ª, or by suitably forming the blank N′ an enlarged head, either angular or round, may be struck up from the body of the nail, as shown in Fig. 2, the head in this instance being square. The head thus formed overlaps the outer surface of the leather when the nail is driven in the usual way.

In operation, when the nail N is driven the leather displaced by the nail settles into the indentations *n* formed upon the angles thereof, and the solid portion of the nail over each set of indentations acts as a "head," preventing the nail from working loose, the nail being prevented from turning or suffering sidewise displacement by the leather adjacent to the sides or smooth surfaces *s* remaining undisturbed, as previously described.

The reason of my preference for forming the notches with the shoulder 1 and the inclined side 2 is as follows: The bottom stock or sole-leather is usually submitted to moisture or undergoes the treatment commonly termed "tempering" before being united with the uppers. It is thus in a yielding condition, and when the nail is inserted the leather will easily press into or follow the inclined sides 2 of the notches and conform to their shape, thereby producing a series of wedge-like braces projecting into the notches, and preventing any action by wear from forcing said fastening out of place or into the foot, whereas notches made with upper and lower surfaces at abrupt angles with the sides of the nail would check such conforma-

tion, each edge of the notch in effect holding the leather back, so that the leather will only bulge slightly into the notches, and is not so intimately connected to the nail as when the improved form of notch above described is employed.

A quick blow in driving the nail tends to compress the latter longitudinally by bringing its point violently in contact with the iron bottom of the last. For this reason, besides the advantages already set forth, it is preferable to indent or notch the nail N only on its corners or angles, leaving the intervening smooth surfaces *s* between each series of notches and the adjacent series rather than to extend the indentations entirely across one or more sides of or entirely around the nail, as by notching the nail in the manner I have described and shown it is possible to avoid any liability of weakening or breaking the sections of the nail or of closing them together by the blow or pressure brought to bear upon the nail for the purpose of driving it, and thus destroying the headed effect or holding properties dependent on the open notches. The notches or indentations, separated, as described, by the unindented sides of the nail, also enable the point of the nail to be turned or clinched without danger of breakage, whereas if the indentations were carried continuously across one side or entirely around the nail there would be more liability of breakage, as will be readily seen.

I am aware that it is not new to make a nail angular in cross section, with notches in one or more of its angles, said notches extending (on one side of the nail at least) nearly or quite across the entire width of the nail, and having upper and lower surfaces substantially at right angles to the sides of the nail, and I do not therefore claim, broadly, such a nail.

I am also aware that a nail which is longitudinally fluted to give it four corners or ribs separated by intervening grooves has been provided with notches in said corners or ribs to give the nail a better hold on the leather. Said nail, however, is not adapted for clinching, and differs in this respect from mine, which has flat sides separating the notched corners, as above described, and is adapted to be clinched.

What I claim is—

1. A nail or sole-fastening for boots and shoes rectangular in transverse section, with flat sides or surfaces, and having a series of notches or indentations formed on each of its corners or angles, each series of notches being separated from the adjacent series by intervening smooth surfaces or sides of the nail, whereby said notches are enabled to increase the holding-powers of the nail without impairing its strength, substantially as shown and described.

2. A nail or sole-fastening for boots and shoes angular in transverse section, and having a series of notches or indentations formed in each of its corners or angles, each series of notches being separated from the adjacent series by intervening smooth surfaces or sides of the nail, and each notch being formed with a shoulder, 1, and an inclined side, 2, substantially as and for the purpose described.

In testimony whereof I have signed my name to this specification, in the presence of two subscribing witnesses, this 10th day of March, A. D. 1881.

ARTHUR NEWTON.

Witnesses:
ARTHUR P. WILSON,
C. F. BROWN.