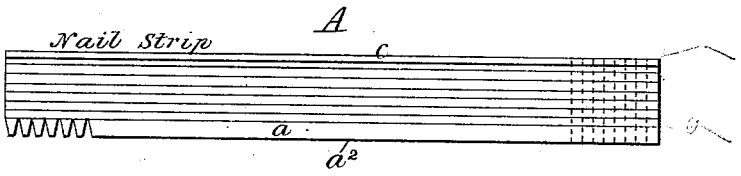
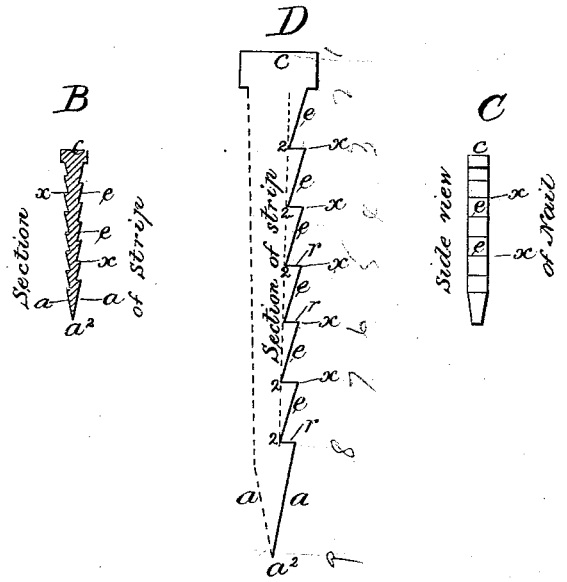
A. VAN WAGENEN.

Nail-Strips for Sole-Fastenings.

No. 166,659. Patented Aug. 10, 1875.





WITNESSES

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UNITED STATES PATENT OFFICE.

ALBERT VAN WAGENEN, OF BOSTON, MASSACHUSETTS.

IMPROVEMENT IN NAIL-STRIPS FOR SOLE-FASTENINGS.

Specification forming part of Letters Patent No. **166,659**, dated August 10, 1875; application filed May 17, 1875.

CASE B.

To all whom it may concern:

Be it known that I, ALBERT VAN WAGENEN, of Boston, in the county of Suffolk and State of Massachusetts, have invented certain new and useful Improvements in Nail-Strips for Sole-Fastenings; and I do hereby declare that the following is a full, clear, and exact description thereof, which will enable others skilled in the art to which it pertains to make and use the same, reference being had to the accompanying drawing and to the letters of reference marked thereon, which form a part of this specification.

Metallic and wooden strips of indefinite lengths, both straight and in coils, have been made for use in nail cutting and driving machines, and such strips have been corrugated in various ways, and provided with a shoulder and tapering sides from which to form the head and clinching-point of each nail when cut. So far, however, as metallic strips have been used, they are found to be more or less objectionable, either in difficulties encountered in their manufacture by machinery, or in driving the nail when cut therefrom into the stock, or in clinching them properly, and in not keeping their place in the sole under the bending and constant working action of the sole, which tends either to force the nails in against the wearer's foot or to cause them to work out, and in either case damage the sale of the boots and shoes.

After much careful study of these matters, and experiments with a view to remedy the objections to the use of the nail-strip fastenings, I have devised a series of improvements in the production of nail-strips, possessing merits of great value and practical utility in the manufacture of boots and shoes with strip-cut nails, as contradistinguished from wire-fed nails.

One separate and distinct feature of my improvements is embraced in this patent, and this consists in the combination, in a nail-strip, of a shouldered or head-forming edge thereof, tapering sides, tapering clinching-edge, and parallel side ratchet-fins, to form nails when cut therefrom with heads and clinching-points, and the side ratchet-fins forming seizing-points, having long and short sides, and co-operating with the head and the clinching-point, to prevent the nail from moving either in or out, for without the shouldered head the nail is liable to work through the leather and injure the foot, while without the side seizing-fins and the clinching-points the nails are liable to work out from the sole. The taper sides of the nail, in connection with the long inclined sides of the angular seizing-fins, facilitates the entering of the nails into the stock, and the separate or secondary taper for the thin edge forms a well-defined clinching-point for the nail.

In the accompanying drawings, A represents a side view of a nail-strip; B, a cross-section of a nail-strip embracing my invention, C, a side view of a nail when cut from the strip, and D an enlarged diagram of the side projecting fins, and in which the dotted lines show the sides of the strip.

The strip is of any suitable metal, and may be made of greater or less length, to adapt it to be fed into the nailing-machine in straight sections, or from a coil, as may be desired.

The sides of the strip are tapering, or, rather, they are made with a double taper, as shown in B and D, the longest taper of each side being gradual, and the shortest one, *a a*, being more steep, to form a thin edge, a^2, which makes the clinching-point when the nail is cut and driven into the stock. Upon its thickest edge is formed a shouldered or head-forming edge, *c*, projecting alike from both sides of the strip, and forming, when the nail is cut, the head thereof. On one or both sides of the strip, preferably on both, are formed ratchet-fins, running parallel with the edges of the strip or oblique thereto; but I prefer to have them parallel, as stated, as in this form they are more easily made with the strip. These ratchet-fins are not like the parallel corrugations heretofore used in nail-strips, either in construction or function, but they differ in the particulars of being formed with long inclined sides *e*, which terminate in a point, *x*, forming the apex of an obtuse-angled triangle, the shortest side, *r*, whereof joins the strip with a straight line or a slight slant.

In practice I prefer to have the ratchet-fins of the form of a right-angled triangle in their cross-section. The effect of this construction gives a smooth entering action to the nails, while the seizing-fins serve by their angles to penetrate the stock, and thus hold in the sole, and prevent the clinched point of the nail from turning up into the foot. The seizing-fins, in this particular, serve to re-enforce the clinching-points against the constant force and action of the foot in bending the sole to work the nails out.

The ratchet-fins are not made opposite each other in the sides of the strip; but the deepest point 2, formed by the short side *r* of the fin on one side, is opposite, or nearly so, to the greatest point of projection, *x*, of the fin on the opposite side of the strip, to give the greatest possible strength to the nail under the action of the driver.

In the operation of cutting and driving the nail, the portion of the shoulder cut enables me to form symmetrical heads to all the nails, which is a most important advantage, while the outer flat sides *e* of the ratchet-fins enter the material as though the sides of the nail were intact flat surfaces, and it is, therefore, driven as readily as a smooth-sided nail; but when driven home the fiber of the leather spreads into and enters freely the angles formed between the apex and the shortest side of the fin, and form thereby so many seizing-points, acting upon the leather only in one direction, to hold the nail from working out of the sole, and leaving the leather as solidly compacted against the sides of the nail as if the sole had not been pierced by a nail having side seizing-fins. The greatest double taper at the point of the strip gives the nail, when cut, a much better and more certain clinching-point than could be produced by a single taper of both sides extending the entire width of the nail-strip, because the clinching point of the nail is defined within certain limits of the point, and this element, in combination with the shoulder from which the head is formed and the side seizing ratchet-fins, forms the gist of the invention claimed herein.

I am aware that a shouldered nail-strip, in combination with the tapered sides extending the whole width of the strip, is not new, as such strip is shown in the patent granted to J. F. Sargent, of date February 4, 1862; but the new elements of a separate thin-edge taper and the side seizing-fins constitute important advantages in a strip from which nails are to be supplied to a cutting and driving machine. I am also aware that a nail-strip with parallel sides and separate tapering point with side corrugations is not new.

The following is claimed as new in nail-strips for sole-fastenings, namely:

1. A nail-strip for boot and shoe nailing machines, consisting in the combination of the shouldered or head-forming edge *c*, the tapering sides, the parallel seizing ratchet-fins of the long and short angles, and the secondary tapers *a a* at the thin edge, substantially as and for the purpose stated.

2. A nail for boot and shoe nailing machines, having the taper sides, head *c*, side seizing-fins of long and short angles, *e r*, and secondary tapers *a a* at the thin edge, as shown and described.

In testimony that I claim the foregoing as my own, I have affixed my signature in presence of two witnesses.

ALBERT VAN WAGENEN.

Witnesses:
A. W. ADAMS,
B. S. HENRY.