

Jan. 23, 1923.

J. H. POPE.
METHOD OF MAKING NAILS.
ORIGINAL FILED JAN. 11, 1918.

1,442,969.

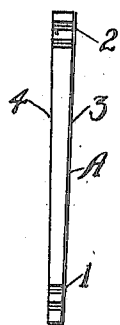


Fig. 1.

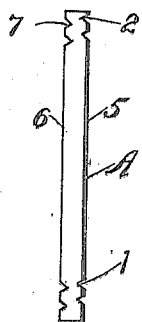


Fig. 2.

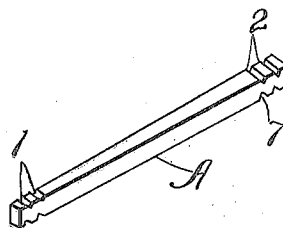


Fig. 3.

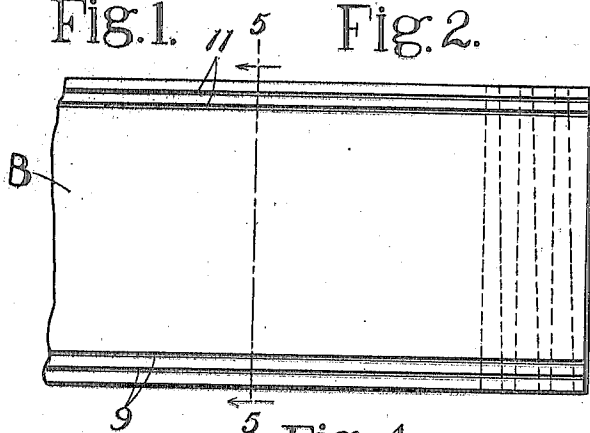


Fig. 4.

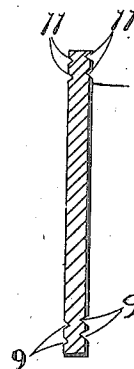


Fig. 5.

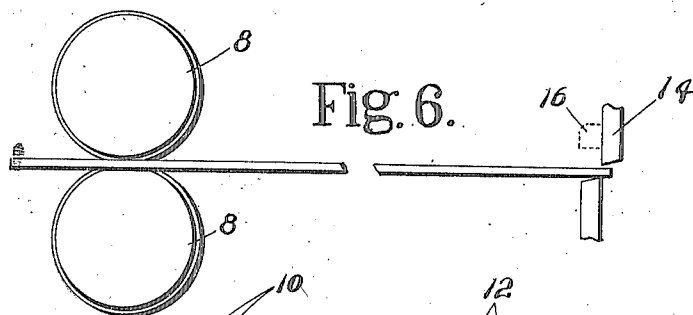
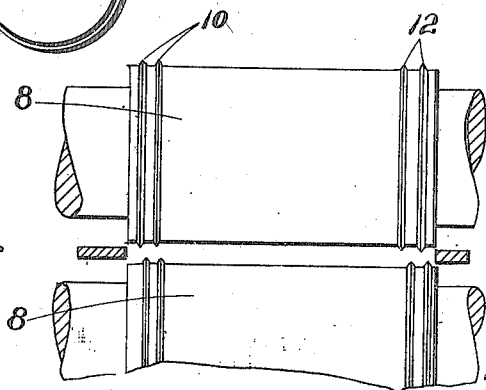


Fig. 6.

Fig. 7.



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METHOD OF MAKING NAILS.

Original application filed January 11, 1918, Serial No. 211,349. Divided and this application filed October 2, 1920. Serial No. 414,268.

To all whom it may concern:

Be it known that I, JOSEPH H. POPE, a citizen of the United States, residing at Hamilton, in the county of Essex and State of Massachusetts, have invented certain Improvements in Methods of Making Nails, of which the following description, in connection with the accompanying drawings, is a specification, like reference characters on the drawings indicating like parts in the several figures.

This invention relates to methods of making metallic fastenings, being illustrated in connection with the manufacture of nails particularly designed for use in nailing the heels of boots and shoes and of such character that they may be inserted in the bodies of heels of boots or shoes with their head ends projecting from the surfaces of the heels and constructed to penetrate the toplifts when they are applied to the heels so as to retain the toplifts in place.

This application is a division of my co-pending application Ser. No. 211,349, for improvements in nails, filed January 11, 1918, upon which Letters Patent No. 1,419,981 were granted June 20, 1922.

An object of the invention is to provide an effective and satisfactory method of making nails which will fulfill the practical requirements of heel nails in all particulars. To this end the invention in one aspect, and as illustrated herein, contemplates grooving the side of each nail adjacent to the head end thereof, each nail being made of tapering form from one end to the other so that it can be easily driven into the heel and so that its head end is adapted to penetrate a toplift when the latter is spanked on to the heel so as to insure holding the toplift securely in place.

The invention in another aspect contemplates forming the point of the nail so as to be easily clinched and this without liability of the breaking away of the point from the body of the nail. In still another aspect, the method of the present invention contemplates forming a nail blank with a groove or grooves in its side or sides adjacent to an edge or edges of the blank and severing nails from the blank, preferably at distances from the end of the blank less than the thickness of the blank to form nails which, when driven, will be clinched on a

side other than that on which the groove or grooves are formed.

In carrying out the invention in accordance with the exemplification of the method disclosed in this specification and the drawings accompanying the same, a blank of uniform thickness and of a width substantially equal to the length of the nails to be formed is grooved adjacent to both edges. Thereafter tapered portions are cut successively from an end of the blank, the heads of alternate nails being formed from portions at opposite sides of the blank. In this manner are formed nails provided with grooves at both their heads and their points, the grooves at the points facilitating the clinching thereof and assisting in holding the nails in place in the stock in case there should be no clinching, while the grooves at the heads of the nails result and are adapted to assist in holding firmly in place a toplift or whatever other article may be attached by means of the nails.

It is recognized that the method of this application may be modified in certain particulars without departing from the spirit of the invention, and that certain of the features of novelty of the nail may be employed in nails of different form from the nail herein illustrated and described, for which reason the scope of the invention is intended to be limited only by the appended claims.

Other objects and features of the invention will appear as the description proceeds.

In the drawings,—

Fig. 1 is a view looking toward the side of a nail in which grooves are formed and in connection with the manufacture of which the method of the invention is disclosed.

Fig. 2 is a view of the nail taken at right angles to the view shown in Fig. 1;

Fig. 3 is a view in perspective of the nail;

Fig. 4 illustrates a nail blank from which the nails may be cut;

Fig. 5 is a sectional view of the nail blank along the line 5—5 of Fig. 4;

Fig. 6 illustrates diagrammatically a manner in which the grooves may be formed in the nail plate and the nails cut therefrom; and

Fig. 7 shows diagrammatically rolls of a kind which may be employed for forming the grooves in the plate.

The illustrated nail designated A in Figs. 1 and 2 is formed with two parallel grooves 1 extending across each of two opposite sides of the nail adjacent to the point thereof and with two grooves 2 extending across each of the same sides of the nail adjacent to the head thereof. The nail is of a tapering form, and its other opposite sides designated 3 and 4 (Fig. 1) which, as shown, are not grooved, converge gradually from the head end of the nail to the point end. The grooved sides 5 and 6 of the nail (Fig. 2) do not converge but are substantially parallel throughout the entire length of the nail.

The nail is illustrated as substantially square in cross section at its head end. The converging sides 3 and 4 are therefore closer together at the point end of the nail than are the grooved sides 5 and 6, by reason of which resistance to bending of the nail on its side 3 or 4 is less than that on its side 5 or 6. Consequently, the nail when driven will be clinched along its side 3 or 4. The grooves 1 adjacent to the point of the nail promote its clinching, but preferably are relatively shallow, not being extended far enough into the sides 3 and 4 to weaken the nail at the grooves sufficiently to cause the nail to be clinched on either of the grooved sides of the nail. When a nail is clinched on a side in which a single relatively deep groove is formed, i. e., in the groove, the point of the nail is not bent below the groove but is turned about the groove as a center at a sharp angle to the body of the nail. When the nail point is thus clinched, a crack is likely to be formed between the point and the body of the nail and the connection between the point and the body of the nail is apt to be so weakened that the point will be broken away from the nail either in the clinching operation or subsequently by wear of the work in which it is driven. By providing the grooves in a side or sides of the nail other than that on which the point is clinched, I avoid any tendency of the point of the nail to crack away from the body of the nail in clinching, and by forming a plurality of grooves in the side of the nail, I insure a gradual deflection of the point of the nail as it is clinched. If only one groove were formed in each side of the nail, the point of the nail in clinching would be bent more abruptly on the line defined by the bottoms of the grooves than at other points.

The head end of the nail as illustrated is formed to penetrate a toplift when it is spanked on to a heel and the grooves 2 are formed closely adjacent to the head of the nail so as to be engaged in the toplift. The nail is preferably formed of relatively soft metal so that when the toplift is forced down on it, the edges 7 below the grooves 2 are spread out somewhat into the material of the toplift so as to hold it more securely.

The sides of the main body portion of the illustrated nail are preferably made smooth and unbroken by grooves, by reason of which such nails may be driven into heel stock easily and with little possibility of injury thereto.

In making nails by the method of this invention, I may first form a nail blank B preferably of substantially uniform thickness from one edge to the other. I then, as illustrated, form two parallel grooves 9 and 11 adjacent to each edge of the blank and in each of the opposite sides of the blank. The grooves may be formed by any suitable means, such, for instance, as the rolls 8 (Fig. 6) having annular corrugations 10 projecting therefrom adjacent to one of their ends and corrugations 12 adjacent to their other ends. After the grooves are rolled in the blank, it is operated upon by a cutting or shearing device indicated at 14 (Fig. 6) by which the nails are cut from the blank.

The number of grooves which are formed on the side of the blank adjacent to each of its edges is determined by the number of grooves which it is desired to have near the head end and point end of the nail. The grooves on one side of the blank are preferably arranged in staggered relation to the grooves on the other side of the blank since it is desirable that the grooves of the nails bear such relation to each other in order not to weaken substantially the point or head end of the nail.

The nails are preferably cut from the plate along substantially straight lines from one edge of the blank to the other. The line of cut is spaced from the end of the blank at one edge of the blank by a distance substantially equal to the thickness of the blank, and at the other edge of the blank by a distance less than the thickness of the blank. The nail is thus formed with a taper, being larger at one end, hereinafter designated the head end, than at the other end, hereinafter designated the point end. The making of the nail blank of uniform thickness throughout without enlargement at its edges and the cutting of the nails from the blank along straight lines from one edge of the blank to the other causes the head end of the nail to be of a form adapted to penetrate a toplift and hold it in place on a heel. The severance of the point end of the nail at a less distance from the edge of the blank than the thickness of the blank causes the nail to clinch when driven on a side other than that in which the grooves are formed.

By reference to Fig. 3, in which the broken lines represent lines of cut, it will be seen that the point ends of the nails as also, of course, the head ends of the nails, are formed alternately from each edge of the

blank. The nails are severed alternately at each edge of the blank at a distance from the end of the blank less than the thickness of the blank and at a greater distance from the end of the blank at one edge than at the other to form each nail with a head end and a point end.

Instead of the grooves being formed in the nail blank by means of rolls, as hereinbefore set forth, such grooves may be formed in the part of the nail blank from which a nail is formed in the operation of cutting the next preceding nail from the blank, for example, by means of indenting members 16 carried by the cutter 14, as indicated in Fig. 6.

What I claim is:

1. The method of making nails which consists in forming a nail blank, making a groove in the side of the blank adjacent to the edge of the blank, and then severing a nail from the blank at a distance from the end of the blank less at one end of the nail than the thickness of the blank to cause the nail thus made to clinch when driven on a side other than that in which the groove is formed.

2. The method of making nails which consists in forming a nail blank with grooves in its side adjacent to its edges, and severing the nails from the blank alternately at each edge of the blank at a distance from the end of the blank less at one end of the nail than the thickness of the blank.

3. The method of making nails which consists in forming a nail blank with grooves in its side adjacent to its edges and severing the nail from the blank at a greater distance from the end of the blank at one edge of the blank than at the other so as to form the nail with a head end and a point end and alternately at each edge of the blank at a distance from the end of the blank less than the thickness of the blank.

4. The method of making nails which consists in forming a nail blank of substantially uniform thickness from one edge of the blank to the other, grooving the blank in its side adjacent to its edge, and severing the nails from the blank along substantially straight lines from one edge of the blank to the other so that the grooved ends of the nails are adapted to penetrate a piece of shoe stock and to be engaged therein to hold it in place.

5. The method of making nails which consists in forming a nail blank of substantially uniform thickness from one edge of the blank to the other, grooving the blank in its side adjacent to each of the edges of the blank, and severing the nails from the blank along substantially straight lines from one edge of the blank to the other and at a greater distance from the end of the blank

at one edge of the blank than at the other to form the nails with head ends constructed to penetrate a toplift that is spanked thereon and with point ends constructed to be clinched when the nail is driven.

6. The method of making nails which consists in forming a nail blank of substantially uniform thickness from one edge of the blank to the other, grooving the blank on its side adjacent to each of the edges of the blank, and severing the nails from the blank along substantially straight lines from one edge of the blank to the other and at a greater distance from the end of the blank at one edge of the blank than at the other to form the nail with a head end constructed to penetrate a toplift that is spanked thereon and with a point end constructed to be clinched when the nail is driven, and in such manner as to form the head ends of the nails alternately from each edge of the blank.

7. The method of making nails which comprises grooving a piece of sheet metal adjacent to an edge thereof and severing portions from an edge of the sheet which toward their point ends are narrower than the thickness of the sheet and which are separated from the sheet on lines approximately at right angles to the edge adjacent to which the groove has been formed.

8. The method of making nails which consists in grooving a strip of sheet metal adjacent to both of its longitudinal edges and severing narrow portions from an end of the strip approximately at right angles to the longitudinal edges thereof, each of said portions being narrower near its point end than the thickness of the sheet, so that the nails will clinch toward one of the ungrooved sides.

9. The method of making nails which consists in forming grooves adjacent to both of the longitudinal edges of a strip of sheet metal and severing narrow tapered portions from an end of the strip approximately at right angles to the longitudinal edges thereof, each of said portions being narrower near its point end than the thickness of the sheet, so that the nails will clinch toward one of the ungrooved sides.

10. The method of making nails which consists in forming grooves adjacent to both of the longitudinal edges of a strip of sheet metal and severing narrow tapered portions from an end of the strip in such manner that the wider ends of alternate portions are severed from opposite edges of the strip and the opposite ends are narrower than the thickness of the strip so that the nails will clinch toward one of the ungrooved sides.

11. The method of making nails which consists in severing nails successively from

the end of a strip which is rectangular in cross section by cuts alternately oppositely inclined with respect to normal to the edges of the strip, to form tapered nails, successive cuts being spaced apart, for the greater part of the distance from the points of the nail formed thereby toward the head, a distance less than the thickness of the stock, so that the nails will clinch toward a side made by one of the cuts. 16

In testimony whereof I have signed my name to this specification.

JOSEPH H. POPE.

Certificate of Correction.

It is hereby certified that in Letters Patent No. 1,442,969, granted January 23, 1923, upon the application of Joseph H. Pope, of Hamilton, Massachusetts, for an improvement in "Methods of Making Nails," an error appears in the printed specification requiring correction as follows: Page 4, line 3, claim 11, for the word "normal" read *normals*; and that the said Letters Patent should be read with this correction therein that the same may conform to the record of the case in the Patent Office.

Signed and sealed this 20th day of March, A. D., 1923.

[SEAL.]

KARL FENNING,
Acting Commissioner of Patents.