(No Model.)

F. F. RAYMOND, 2d.

HEEL NAIL AND METHOD OF USING THE SAME.

No. 356,550. Patented Jan. 25, 1887.

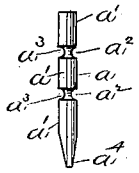


Fig. 1.

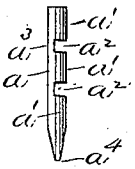


Fig. 7.

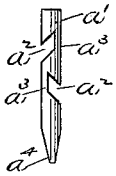


Fig. 8.

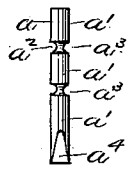


Fig. 2.

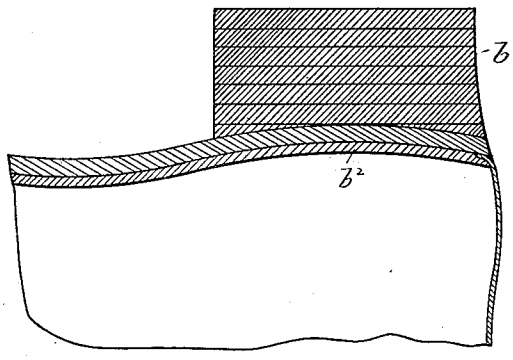


Fig. 3.

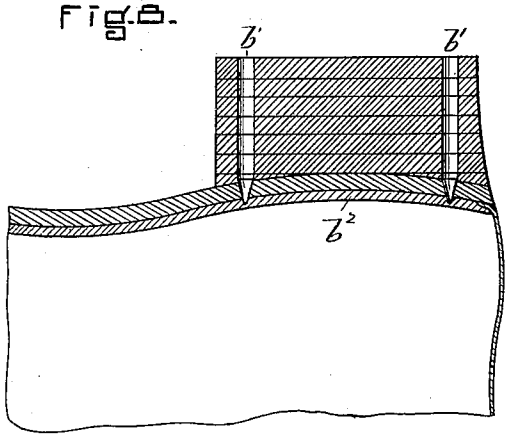


Fig. 4.

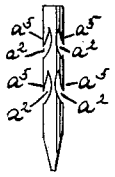


Fig. 9.

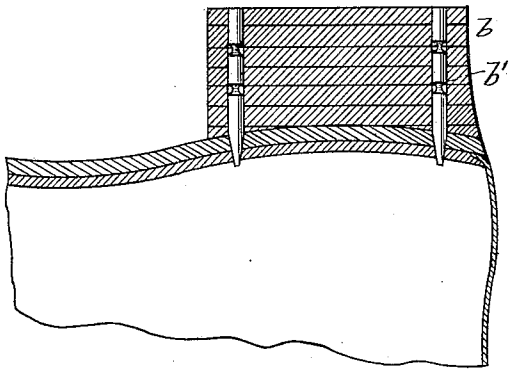


Fig. 5.

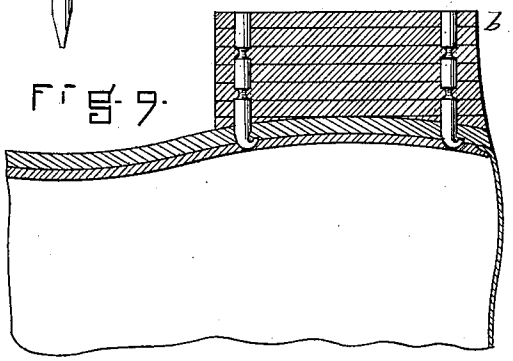


Fig. 6.

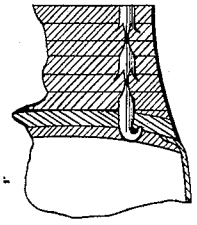


Fig. 10.

WITNESSES.

Fred. B. Dolan.

J. W. Dolan.

INVENTOR

F. F. Raymond 2d

N. PETERS, Photo-Lithographer, Washington, D. C.

UNITED STATES PATENT OFFICE.

FREEBORN F. RAYMOND, 2D, OF NEWTON, MASSACHUSETTS.

HEEL-NAIL AND METHOD OF USING THE SAME.

SPECIFICATION forming part of Letters Patent No. 356,550, dated January 25, 1887.

Application filed November 1, 1886. Serial No. 217,064. (No model.)

To all whom it may concern:

Be it known that I, FREEBORN F. RAYMOND, 2d, of Newton, in the county of Middlesex and State of Massachusetts, a citizen of the United States, have invented a new and useful Heel-Nail and Method of Using the Same, of which the following is a full, clear, and exact description, reference being had to the accompanying drawings, forming a part of this specification, in explaining its nature.

The invention relates to a heel nail or fastening having one or more sections made so much smaller than the remainder of the nail that in the act of compressing the heel the nail may be shortened, and thereby bind or secure the heel more rigidly to the soles of a boot or shoe, while at the same time it is so secured to the heel that its movement in relation thereto becomes practically impossible.

In using this nail it is necessary to place the heel-blank upon the outsole of a boot or shoe, to form holes therein without compressing it thereon to any appreciable extent, which holes should extend well into or even through the outsole of the boot or shoe into the insole, and after the holes have thus been formed the nails are inserted and driven down, without compressing the heel-blank, until their points strike the upper surface of the iron bottom of the last or work-support, when the heel-blank is compressed; or the nails may be driven so that their heads shall be flush with the upper surface of the blank before compressing the blank, and the blank then compressed. The result of this compression of the blank is to cause the leather to be thrown into the recess or recesses in the nails, and to also shorten the nails, so that this leather which is forced into these recesses is nipped or held by the shortening of the nail and the closing toward each other of the surfaces which form the recess, and also by the throwing out of line, to some extent, of one part of the nail in relation to the other, so that the nail is cramped in its hole and the heel very solidly united to the soles.

Referring to the drawings, Figure 1 is a view, in elevation, of my improved heel-nail. Fig. 2 is a view, also in elevation, showing the nail turned a quarter. Fig. 3 represents the heel-blank as applied to the soles of a boot or shoe without, however, being compressed vertically thereon. Fig. 4 shows the blank substantially uncompressed, but with the nail-receiving holes formed therein to extend through the outsole to the insole. Fig. 5 represents the heel, still uncompressed, with the nails inserted or driven through the holes therein and resting upon the surface of the last. Fig. 6 represents the heel as compressed, the nails as shortened and clinched, and the leather of the heel as forced into the recesses of the nail. Figs. 7, 8, and 9 show a form of nail slightly different from that represented in Figs. 1 and 2. Fig. 10 is a view, in section, of a part of a shoe and heel, illustrating the use of the nails shown in Fig. 9.

a represents the nail. It has the cylindrical sections *a'*. It has the recesses a^2 formed therein, two being shown, but one only may be used, or more than two, if desired. The recesses are shown in Figs. 1, 5, and 6 as extending entirely around the shank of the nail, so as to give reduced or weakened sections a^3, and they are shown as curved or in a form of a groove. I would say, however, that I do not limit myself to this especial form of recess, as any form which will provide the nail with a weakened section or sections and a cavity or space for the reception of the leather or stock of the heel upon compression may be employed, and in Fig. 7 I show a nail in which the recess is formed upon one side, and to extend inward beyond the center of the nail. The nail, preferably, also has a clinchable point, a^4.

In use the heel-blank *b* is placed upon the boot or shoe, which is mounted upon a suitable last or work-support, and moved into the machine beneath the templet or pressure-plate, and the plate is moved downward upon the heel-blank sufficiently to hold it in place upon the sole, but not sufficiently to compress it. While it is thus held the awl-holes *b'* are formed. These holes must be large and deep, in order that in driving the nails they may not be shortened before the heel-blank is compressed, and I have represented in Fig. 4 the holes as extended into the insole b^2. The nails are then inserted in the holes in the pressure-plate or templet and driven therefrom into the heel-blank without, however, compressing the heel-blank until the points of the nails come in contact with the upper surface of the last

or work-support. This will bring the upper surface or top of the nails substantially flush with the upper surface of the heel-blank, as represented in Fig. 5. The heel-blank is then subjected to vertical compression, which solidifies it and causes its stock to extend laterally into the recesses a' of the nails, and at the same time shortens the nails and causes the recesses to act as jaws in biting or engaging the stock that is forced into them by the coming together of the parts of each nail upon each side of the recess or recesses. The nails also serve to hold the heel-blank after compression firmly to the soles, and prevent their extending or expanding away from the sole upon the removal of the pressure.

Of course it is not essential that the nail be cylindrical, although I prefer this shape.

In Fig. 8 I show a nail in which a deep notch, a^2, is formed on each side of the nail. In Fig. 9 I show a nail in which the notches a^2 are formed opposite each other and are shaped to produce sharp points a^5, which are turned outward into the stock of the heel upon shortening the nail and depressing the heel-blank, as shown in Fig. 10.

I am aware that the Patents Nos. 166,663 and 169,259 show sole-nails having cross grooves or cuts formed therein; but these grooves or cuts are not formed for the purpose of weakening the nail in order that it may be shortened in driving, but simply for the purpose of providing projections which shall serve to hold the nail from working out of the sole after it has been driven, while my invention is not designed to prevent the nail from working out of the heel, but more particularly to prevent it from working into the boot or shoe.

Having thus fully described my invention, I claim and desire to secure by Letters Patent of the United States—

1. The nail having the recess or recesses a^2, and the weakened section or sections a^3, substantially as described.

2. The nail having the deep recess or recesses a^2, the neck or necks a^3, and the clinchable point a^4, substantially as described.

3. The method of uniting sections of leather by the nail A, consisting in forming in the sections of leather a hole for the reception of the nail, then inserting the nail into said hole, and then shortening the nail in said hole by end pressure to bring its sections in closer relation to each other within the stock or sections of the leather, whereby the stock is forced into the recesses of the nail and then nipped or held therein and the nail firmly embedded in the stock, substantially as described.

FREEBORN F. RAYMOND, 2D.

Witnesses:

FRED. B. DOLAN,

J. M. DOLAN.