(No Model.)

G. H. PERKINS.

SHEET METAL NAIL.

No. 266,511. Patented Oct. 24, 1882.

FIG. 1.

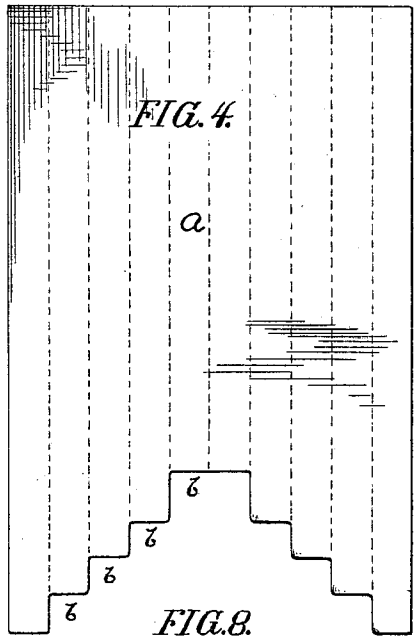


FIG. 4.

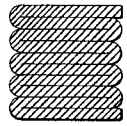


FIG. 3.

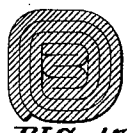


FIG. 17.

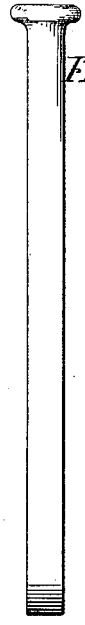


FIG. 2.



FIG. 5.

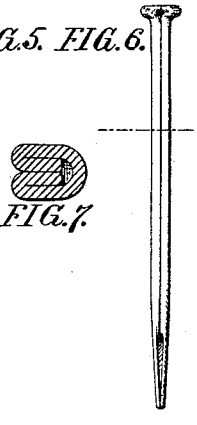


FIG. 6.

FIG. 7.

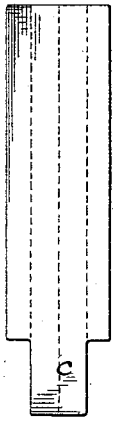


FIG. 8.

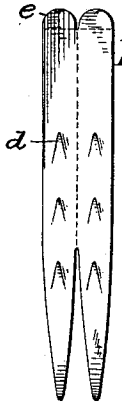


FIG. 13.

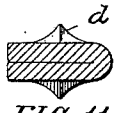


FIG. 11.



FIG. 12.



FIG. 9.

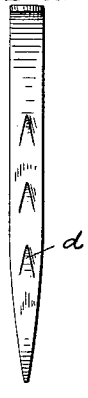


FIG. 10.

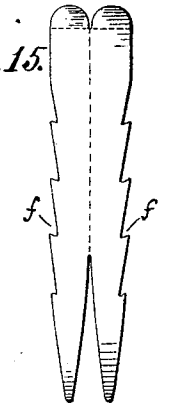


FIG. 15.



FIG. 14.

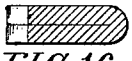


FIG. 16.

Attest,

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George H. Perkins

By his Attorneys,

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UNITED STATES PATENT OFFICE.

GEORGE H. PERKINS, OF PHILADELPHIA, PENNSYLVANIA.

SHEET-METAL NAIL.

SPECIFICATION forming part of Letters Patent No. 266,511, dated October 24, 1882.

Application filed August 1, 1881. (No model.)

To all whom it may concern:

Be it known that I, GEORGE H. PERKINS, of Philadelphia, Pennsylvania, have invented certain Improvements in Sheet-Metal Nails, of which the following is a specification.

The object of my invention is the utilization of waste or scrap sheet metal of the various thinner varieties for the manufacture of useful articles, such as tacks, nails, brads, spikes, and the like.

Although primarily I contemplate utilizing only waste material, yet the employment of sheet metal, not being waste, is, as will be understood, effectual for the carrying out of my invention.

Heretofore nails and kindred products have been made by stamping heavy-weight metal in sheets to the form required. Heretofore, also, these products have been made by forging, compressing, or otherwise compacting or consolidating metal in heavy sheets into a solid nail or kindred product of a predetermined exterior configuration. Heretofore, also, sheet metal has been formed into hollow nails by grooving, ridging, or corrugating it longitudinally, so as to stiffen it and form it into a hollow nail in the form of a longitudinally-corrugated tube. Heretofore, finally, a blank of sheet-iron has been rolled to form a hollow tubular body, which could be driven into material to be united, and which to such extent constituted a nail.

I have discovered that light sheet metal—such as the tin of commerce or light brass or copper in sheets—can be utilized for the formation of practically solid nails, spikes, brads, and kindred articles of thickness in excess of that of the sheet employed by folding or otherwise working or manipulating such sheet metal until it forms under such action a nail or kindred product of the desired form.

As will be readily understood, many methods of folding, working, or manipulating the sheet metal may be resorted to for the practical carrying out or embodiment of the idea of the employment of thin sheet metal, *per se*, for the making of practically-solid nails, which idea this invention is designed to further effectuate.

This invention embraces another method of carrying out a certain invention in making nails of thin sheet metal made by me, application for patent of which was executed and filed by me in the United States Patent Office contemporaneously with this application under the denomination of "Case A."

The method of forming nails, spikes, brads, and kindred articles from light and thin sheet metal, which is the subject of this application, lies in the folding of such thin sheet metal upon itself once, twice, or several times until the folded sheet metal becomes compact and assumes the exterior form which is desired.

In the carrying out of this invention, as in my former one, I first form a blank of a desired configuration, and subsequently fold the blank in the desired manner until such blank assumes the desired solid form.

This invention differs from my former one in this, that while, as in my former invention, the leading idea is the utilization of thin sheet metal for the formation of nails, yet the nails in this invention are formed by the folding of a blank of sheet metal upon itself once, twice, or more times, as opposed to the rolling of the blank in helical, cylindrical, or other form, as in the former invention. The idea of the new utilization of light sheet metal is the same. The mechanical operation or manipulation to which such sheet metal is subjected alone is different.

In the accompanying drawings, in Figure 1, I have represented in side elevation, looking from the right-hand side of the magnified sectional detail of Fig. 3, a nail formed by the folding of, for instance, such a blank as is represented in Fig. 4 upon itself on the dotted vertical lines of said Fig. 4. In Fig. 2 I have represented, also in side elevation, the nail of Fig. 1, viewed, however, when such nail is given a quarter-turn, or, in other words, viewed from either the top or the under side of Fig. 3.

The blank *a*, which is represented in plan in Fig. 4, is stepped off or notched, as at *b*, as shown in the drawings, for the purpose, when the blank has been folded upon the dotted lines, of allowing the formation of a hollow outwardly and downwardly diverging interior at the lower portion of the folded blank or nail, which is compressed upon itself, so as to point the nail, so to speak, in the manner indicated in Fig. 1. Such stepping off of the blank, however, is not of the essence of the invention, as the

nail may not require to be pointed, or its pointing may be effected by forging, filing, or otherwise shaping one extremity of the folded metal.

In Figs. 1 and 2 is represented a head formed by forging, swaging, compressing, or otherwise compacting the folded metal. The head, however, may be dispensed with and no head employed, or a head, being a separate member, applied.

The operation of folding is conducted in any manner which convenience of manufacture may dictate, either by the use of special machinery or otherwise, as the intelligence of the mechanic may direct.

The blank of Fig. 4, when folded to form the nails of Figs. 1 and 2, may be folded from the central line outwardly toward the sides, or from the sides inwardly toward the center.

In Fig. 8 is represented a blank which, when folded upon the outside dotted lines from both sides inwardly toward the center and then again inwardly about a central dotted line upon the folded sides, forms a nail the cross-section of which through the substance of the top is represented in Fig. 7, and side elevations of which are represented in Figs. 5 and 6, the first being supposed viewed from either the upper or the lower side of the sectional view of Fig. 7, and the latter from the left-hand side of said view of Fig. 7. The head upon this nail is represented as formed by forging, swaging, compressing, or otherwise compacting or massing the upper portion of the folded metal upon itself; but a separate head may be applied, if desired, or the nail may be driven without a head. The point is formed by compressing upon itself the lower portion of the blank of Fig. 8, which in the plan view of said Fig. 8 forms the tongue or extension C at the base thereof.

In Fig. 13 is represented in plan a form of blank adapted to be folded once upon itself, and to form when folded the nail represented in side elevation in Fig. 10, in end elevation in Fig. 9, in transverse sectional plan in Fig. 11, and in top plan view in Fig. 12. These blanks may, if desired, be struck out with barbs *d*, as indicated in the drawings, which barbs may be formed either by the die which forms the blank itself, or may be subsequently struck by hand, die, or otherwise. The head is formed by turning over at right angles in opposite directions the upper semicircular ears, *e*, upon the blank. The head thus formed is represented in magnified detail in Fig. 12, and is clearly indicated also in Figs. 9 and 10. This form of my invention is in effect a brad, which is barbed, if desired, so as to prevent its withdrawing from the material into which it is entered.

In Fig. 15 I have represented a blank similar to the blank of Fig. 13, with the exception that it is correspondingly indented at *f* upon both of its sides, so that when it is folded over upon itself it forms, for instance, such a nail as is represented in side elevation in Fig. 14, one edge of which is smooth, and the other edge of which is provided with serrations or indentations which are composite of the opposite indentations of the blank.

In Fig. 16 is represented in top sectional enlarged plan the nail of Fig. 14.

In Fig. 17 I have represented in transverse section a nail which is formed by first folding upon itself to the desired number of folds such a blank as is represented in Fig. 4, and by then wrapping thereabout a further portion of such blank, the blank being of course made large enough to wrap around the folded portion, which incloses the folded portion and forms a very compact and strong nail, which may be pointed or headed at will.

In this invention, as in my former one embraced in Case A, it will be found sufficient to fold the sheet metal to the desired form and in the desired number of folds and subject it to pressure either during the operation of folding or thereafter, in order to make the folded product stiff enough to retain itself in its folded condition. When, however, it is found to be desirable to solder, swage, or dip the nail to preserve it in proper shape, such methods may be resorted to, or in lieu thereof the nail may be galvanized.

As to the best methods of folding the sheet metal, or as to the best forms in which the blank may be shaped, or as to the heading or pointing of the nail, I do not propose to be specific, as the gist of the invention lies in the folding of light sheet metal to form a compact and solid nail, spike, brad, or kindred article which is practically without interior interstices and practically the equivalent of a nail of homogeneous metal, which is well consolidated in fiber.

As to the forms of head represented in Figs. 9, 10, 12, 14, and 15, I simply depict them as convenient forms, and do not limit myself to them as the only forms of head possible to be made.

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

1. As a new article of manufacture, a nail, spike, brad, or kindred article the body of which consists of sheet metal folded upon itself.

2. As a new article of manufacture, a nail, spike, brad, or kindred article the body of which consists of sheet metal folded upon itself and provided with a head.

3. As a new article of manufacture, a nail, spike, brad, or kindred article formed of folded sheet metal, one or more of the folds of which upon the edge or side is or are notched, barbed, serrated, or indented, substantially as set forth.

In testimony whereof I have hereunto signed my name this 28th day of July, A. D. 1881.

GEORGE H. PERKINS.

In presence of:

J. BONSALL TAYLOR,

WM. C. STRAWBRIDGE.