

(No Model.)

C. H. PERKINS.

METHOD OF AND APPARATUS FOR MANUFACTURING BLANKS AND
BLANK BARS FOR SIDE WEIGHTED HORSESHOES.

No. 470,365.

Patented Mar. 8, 1892.

Fig. 1.

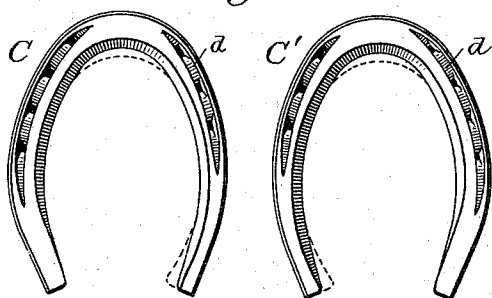


Fig. 2.

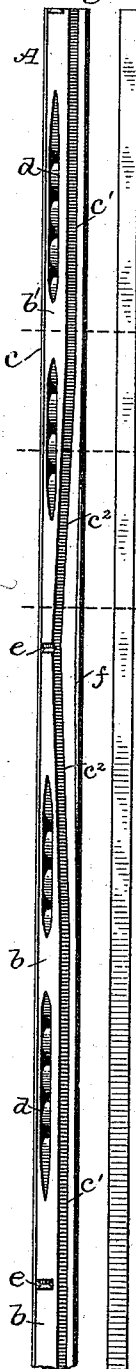


Fig. 3.

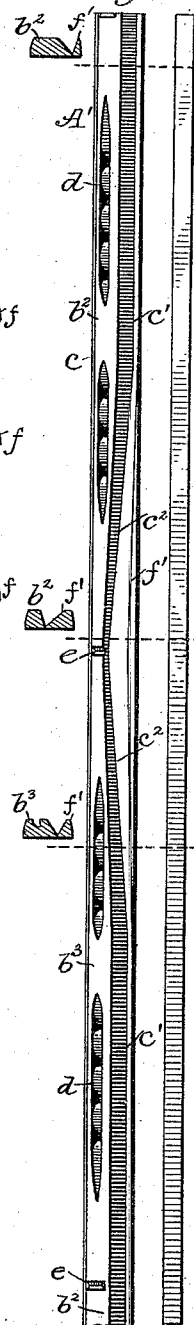


Fig. 4.

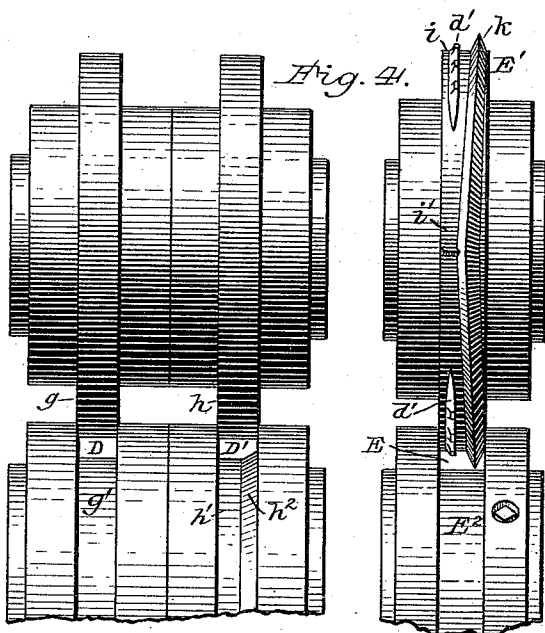
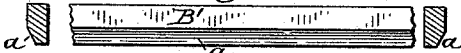


Fig. 5.



Fig. 6.



Attest:
Philip F. Larner,
Notary Public.

Inventor:
Charles Henry Perkins.
By *Wm. M. Wood*
attorney.

UNITED STATES PATENT OFFICE.

CHARLES HENRY PERKINS, OF PROVIDENCE, RHODE ISLAND, ASSIGNOR TO
THE RHODE ISLAND PERKINS HORSE SHOE COMPANY, OF JERSEY CITY,
NEW JERSEY.

METHOD OF AND APPARATUS FOR MANUFACTURING BLANKS AND BLANK-BARS FOR SIDE-WEIGHTED
HORSESHOES.

SPECIFICATION forming part of Letters Patent No. 470,365, dated March 8, 1892.

Application filed August 7, 1891. Serial No. 402,007. (No model.)

To all whom it may concern:

Be it known that I, CHARLES HENRY PERKINS, of the city and county of Providence, and State of Rhode Island, have invented a
5 certain new and useful Method of and Apparatus for Manufacturing Blanks and Blank-Bars for Side-Weighted Horseshoes; and I do hereby declare that the following specification, taken in connection with the drawings
10 furnished and forming a part of the same, is a clear, true, and complete description of my invention.

In my application for Letters Patent filed May 9, 1891, Serial No. 392,209, I disclosed
15 various forms of bars containing blanks for side-weighted horseshoes, and I therein expressed preferences for such bars as contain the blanks in double lines as compared with those in which the blanks are in a single
20 line. I have now, however, practically demonstrated that in rolling single-line blank-bars flatwise and laterally displacing the waste metal the slight excess of scrap or waste as compared with that involved in double-line
25 rolling is practically of little consequence, because of a minimum of destructive wear on the die-roll and the high speed at which the bars can be produced. Moreover, in the flatwise single-line rolling each blank is formed
30 in as perfect condition as when rolled in double lines, and with proper variations in the grooving or displacing tongue of the die-roll portions of the metal which would otherwise be waste or scrap may be readily utilized
35 in the formation of reinforcing projections at various portions of the shoe. In the matter of scrap or waste metal I further find that it will be well reduced by first rolling stock-bars of a thickness substantially equal to or but
40 little greater than the blanks desired and forming thereon a liberal bevel at one side and edge. When the die-roll operates flatwise on the bar so beveled, the tongue or edge
45 "cutting and displacing portion of the roll in forming the blank works adjacent to the beveled line and the small bulk of metal which is laterally displaced in producing each blank involves a minimum of destructive labor by the tongue of the roll. It is to be understood,

however, that although the beveling of the
50 stock-bar is of great practical value I do not restrict myself thereto, inasmuch as the main feature of my present invention consists in first rolling a flat straight stock-bar of suitable sectional area and then flatly rolling said
55 bar and laterally displacing the metal thereof at one edge to a degree variably corresponding to the varying width of the consecutive blanks. The forming of the nail-head creases simultaneously with the shaping of the blanks
60 will of course be always preferable to subjecting the blanks to a subsequent operation; but this latter procedure may be practiced with satisfactory results if the shaping of the
65 blanks be first performed, as described, this latter being the most important operation.

After describing my improvements in detail in connection with the drawings, the several features of my invention will be designated in the appropriate clauses of the claim hereunto
70 annexed.

Referring to the drawings, Figure 1 illustrates in bottom or tread view a pair of side-weighted horseshoes embodying blanks from
75 blank-bars produced in accordance with my present invention, dotted lines indicating certain desirable variations in the distribution of metal. Fig. 2, in bottom or tread side view, edge view, and in several sections, illustrates a blank-bar containing such blanks as are embodied in shoes shown in Fig. 1. Fig. 3 in similar views illustrates a blank-bar differing from
80 that shown in Fig. 2 in the matter of affording a specially-beveled inside edge in the shoes formed therefrom. Fig. 4 illustrates in
85 front view a set of rolls affording passes for two forms of stock-bar and a die-roll pass for the single-line blank-bar, Fig. 2. Figs. 5 and 6 in side view and cross-section, respectively, illustrates plain and beveled stock-bars.
90

The first step in the production of the blank-bar A of Fig. 2 or A' of Fig. 3 is the rolling of a stock-bar of suitable sectional form and area. The stock-bars are substantially flat-sided and straight-edged and a little thicker
95 and a little wider than the blanks desired. For the production of the blank-bar in both forms, Figs. 2 and 3, the stock-bar may be substan-

tially rectangular in cross-section, as with the stock-bar B of Fig. 5; but substantially valuable results accrue by beveling it at one side and edge, as at *a*, on the stock-bar B', Fig. 6.

5 The second step in the production of the blank-bars A and A' is the rolling of a suitable stock-bar flatwise and laterally displacing waste metal at one side of the bar to an extent corresponding to the varied width of

10 each blank *b* and *b'* in the blank-bar A, Fig. 2, or the blanks *b*² *b*³ in the blank-bar A', Fig. 3. It will now be observed that these differently-designated blanks in the blank-bars, Figs. 2 and 3, although end to end in one line,

15 are respectively "rights" and "lefts," a right blank *b* being used in the appropriately-designated shoe C of Fig. 1, and the left blank *b'* in the shoe C'. Each blank is therefore of substantially uniform width for a portion of

20 its length and tapered throughout the remainder of its length. One edge of the blank is straight throughout its length, as at *c*, this edge being a portion of the corresponding straight edge of the blank-bar, but more symmetrically developed. At the opposite or

25 specially-shaped edge one portion is straight and parallel with the adjacent edge of the roll, as at *c'*, and the other is inclined, as at *c*², thus affording in the shoe a wide toe, a wide side and heel, and a narrow side and

30 heel. In the forming of the specially-shaped edge *c'* *c*² provision is made for varying the displacement of metal and correspondingly varying the linear and sectional contour of

35 the shoe at its inner edge, two such variations being illustrated by the obvious differences between the narrow and wide bevels of the blanks in the bars of Figs. 2 and 3, and further differences are indicated by dotted

40 lines in the shoes of Fig. 1, as will be hereinafter again referred to. The best results will obviously accrue if during the rolling and shaping of the blank-bar the nail-head creases *d* are simultaneously formed, and it

45 is at least desirable at the same time to make end parting cuts or scores, as at *e*, although these may be dispensed with wholly by relying upon properly-gaged cutting-shears for the endwise separation of the blanks. The

50 nail-creases *d* in each blank are in line with each other and closely adjacent to and parallel with the straight edge *c* of the blank. The scrap or waste metal pieces *f* and *f'* of the blank-bars A and A' are usually so far severed from the blank-bar as to admit of their

55 ready removal.

Referring now to Fig. 4 it will be understood that the several roll-passes D, D', and E used by me may be afforded by a group of

60 rolls mounted in one housing or mounted separately, it being preferable, however, that the die-roll E' and its co-operating grooved roll E² should constitute a separate organization conveniently adjacent to the stock-bar

65 rolls. The pass D is afforded by rolls *g* and *g'*, which are of the plain ordinary tongue-and-groove type, for rolling the stock-bar B

of Fig. 5. The roll *h* at the pass D' is a plain tongue-roll, the grooved roll *h'* having at one side an upwardly-inclined annual bevel, as at *h*², for rolling the stock-bar B' of Fig. 6, with its

70 bevel *a* at one side and edge. The die-roll E' has a face which at its widest point at *i* is as wide as the widest portion of the tread side of a blank, and at *i'* the face corresponds in width

75 with the tapered or narrowest portion of a blank, and a grooving or displacing tongue *k* defines one edge of said face, said tongue being straight and parallel with the adjacent end of the roll at intervals, as at *i*, but inclined

80 toward the opposite edge of the face, as at *i'*, and then it is reversely inclined from said edge back to the succeeding straight portion at the rear side of the roll opposite to that shown in the drawings. This grooving or dis-

85 placing tongue *k* is varied in its cross-sectional contour according to the particular form in which the inner edge of a shoe may be desired, and its contour in this instance can be readily determined by the various sectional

90 contours of the scrap metal *f* of Fig. 2 and the variable shape of the groove intervening between it and the blanks.

I have devised a die-roll for producing double-line blank-bars, and the same constitutes the subject of a separate application for

95 Letters Patent, (see Serial No. 401,753,) said rolls differing materially from the die-roll E' herein shown, the characteristic feature of which is a grooving-tongue located mainly

100 near one edge of the roll and parallel therewith, and which is at intervals inclined toward and from the opposite edge of the roll.

The roll E² may be an ordinary solid grooved roll, or the groove may be afforded by two movable collars, or one stationary and the other

105 movable and adjustable in a manner well known, and in either event the groove or pass should be a trifle wider than the stock-bar to be used, and also so that the straight or non-in-

110 clined portion of the displacing-tongue *k* will occupy a line well within the plane occupied by the adjacent side of the pass E, thus affording space for the free displacement of the

115 metal at the narrowest or lightest parts of the scrap-piece *f*. For forming the blanks for the shoes, Fig. 1, the grooving or displacing tongue *k* is quite steep and but slightly beveled on the side next to the face of the roll; but on the

120 outer side it is variably beveled; the tongue being alike on both sides along the straight portions at *i*, and at the inclined portion it is widely beveled on the outer side, as clearly indicated in the appropriate sectional view of

125 the blank-bar A. The beveled surface of the tongue at its inner side next to the face of the roll is materially enlarged or widened for producing the blank-bar A'; but the outer side is provided with a minimum and uniform bevel.

130 It will be seen that there is ample space afforded by the groove of the roll E² (or pass E) for accommodating the waste metal which is laterally displaced from the plain stock-bar, and that with the beveled stock-bar B' there is

even still more space afforded for the waste metal and that the weight of the latter will be lessened to the extent of the reduction in the cross-sectional area of the scrap-piece due to the bevel, and in working such beveled stock-bars the edge of the portion of the tongue k at i can occupy a line along the stock-bar adjacent to the junction of the flat top surface and the beveled surface. The nail-head creasers d' are appropriately located parallel with the end of the roll farthest from the tongue k , and in some instances the creasers will be continuous; but they will always afford the special depressions or head-points in the creasers, and they will be varied in number, but usually, as shown, with four head-points at the wide side and three at the narrow or light side of the shoe. By thus working the blank-bars by flatwise-rolling and with the blanks in a single line it will be seen that for producing certain special forms of side-weighted shoes the tongue has only to be correspondingly varied—as, for instance, the narrow heels of the shoes can be broadened, as indicated in dotted lines, thus lessening waste and increasing the tread area at the heel without materially changing the side-weighted character of the shoe and to some extent lessening waste. Again, by imparting an outward curve to the tongue k adjacent to the junction of the wide and narrow portions it will take in some of the otherwise waste metal and increase the width of the shoe, as indicated in dotted lines in Fig. 1, at the toe, and thereby also increase its front weight.

It has been stated that in both of the blank-bars shown the blanks are consecutively rights and lefts, and it will be obvious that when the wide end of one blank abuts in the same bar against the narrow end of the next blank in line the blanks will either be all lefts or all rights, and while such bars are less desirable than those shown, the method described would be employed in producing all of them, and the die-rolls would be the same to the extent that each would essentially have a grooving and metal-displacing tongue partly parallel with one edge or face of the roll and partly inclined toward the opposite edge.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The method or process of manufacturing

bars containing a single line of blanks for side-weighted horseshoes, which consists in first rolling a flat straight-edged stock-bar of suitable area in cross-section, and then rolling said bar flatwise and forming one edge of the consecutive blanks by laterally displacing the metal at the corresponding edge of the bar to an extent corresponding to the variation in the width of each blank, substantially as described.

2. The method or process of manufacturing bars containing a single line of blanks for side-weighted horseshoes, which consists in rolling a straight-edged stock-bar of appropriate sectional area and beveled at one side and edge, and then rolling said bar flatwise and variably forming one edge of the consecutive blanks by laterally displacing the metal at the beveled side and edge of the bar, substantially as described.

3. The method or process of manufacturing bars containing a single line of blanks for side-weighted horseshoes, which consists in first rolling a flat straight-edged stock-bar and forming appropriate nail-head creases simultaneously with rolling said bar flatwise, and shaping the consecutive blanks by laterally displacing metal at one edge of the bar to an extent corresponding to the varied width of the blank, substantially as described.

4. A die-roll for forming bars containing a single line of side-weighted-horseshoe blanks, provided with a grooving-tongue, which is located mainly near and parallel with one edge of said roll and is also inclined toward the opposite edge, said roll being adapted, substantially as described, to operate flatly upon a stock-bar of metal for shaping one edge of consecutive side-weighted-horseshoe blanks, and laterally displacing waste metal at one edge of the bar.

5. A die-roll for forming bars containing a single line of side-weighted-horseshoe blanks, provided with a grooving-tongue, which is located mainly near and parallel with one edge of the roll and is inclined at intervals toward and from the opposite edge of the roll, and is also provided with appropriate creasers for forming nail-head creases in the blanks, substantially as described.

CHARLES HENRY PERKINS.

Witnesses:

CHAS. H. PERKINS, Jr.,

CHARLES R. STARK.