

(No Model.)

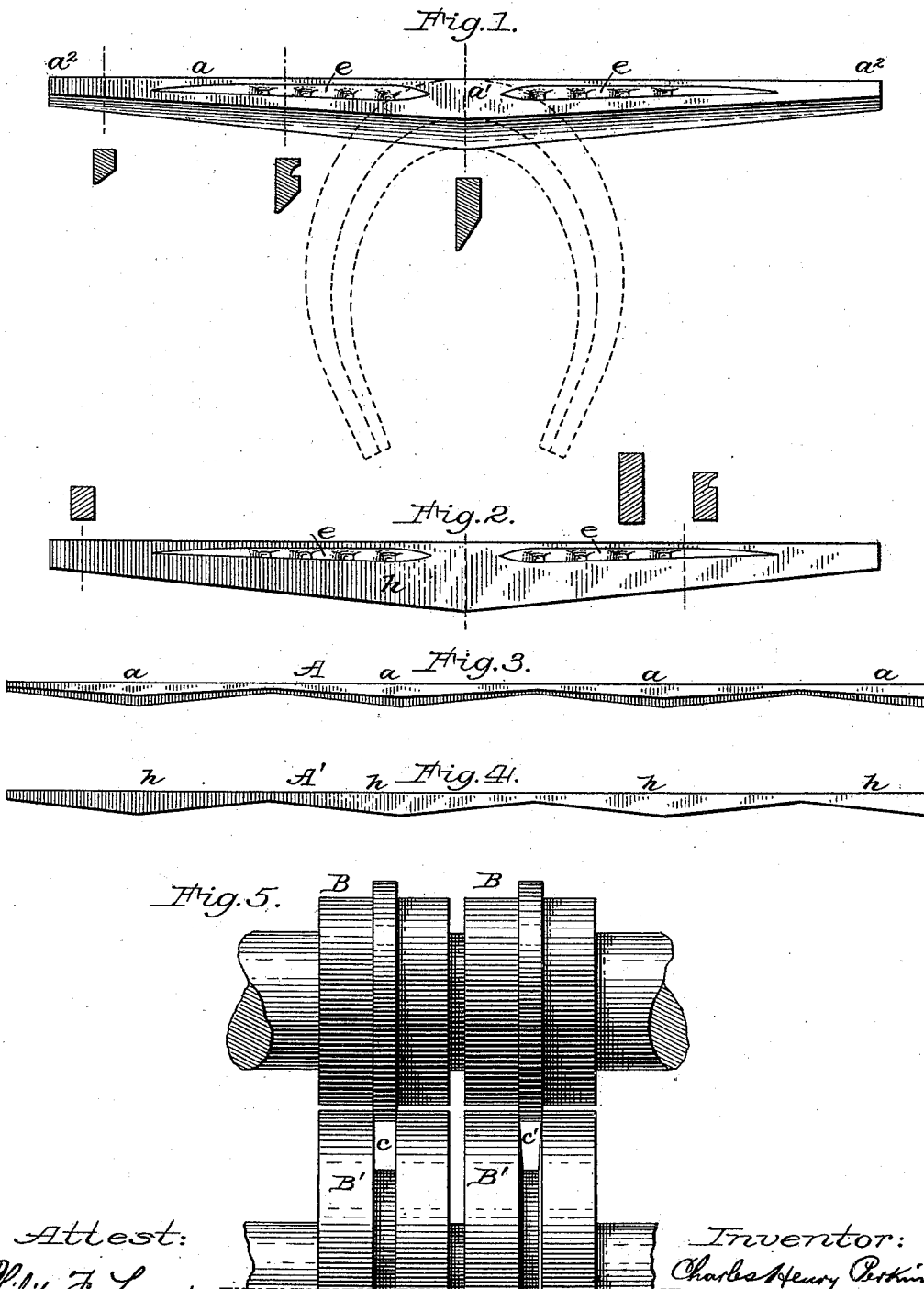
2 Sheets—Sheet 1.

C. H. PERKINS.

METHOD OF AND MEANS FOR MAKING BLANKS FOR HORSESHOES.

No. 470,351.

Patented Mar. 8, 1892.

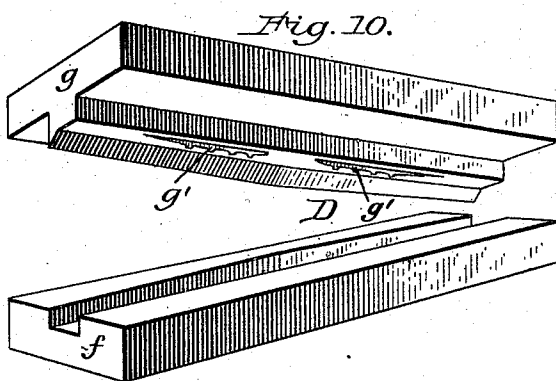
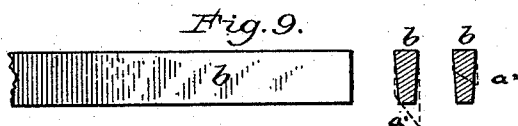
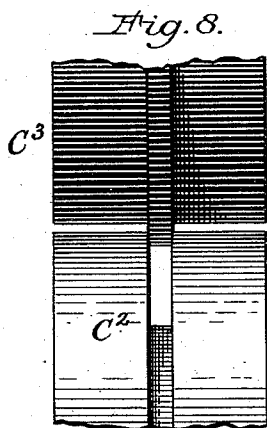
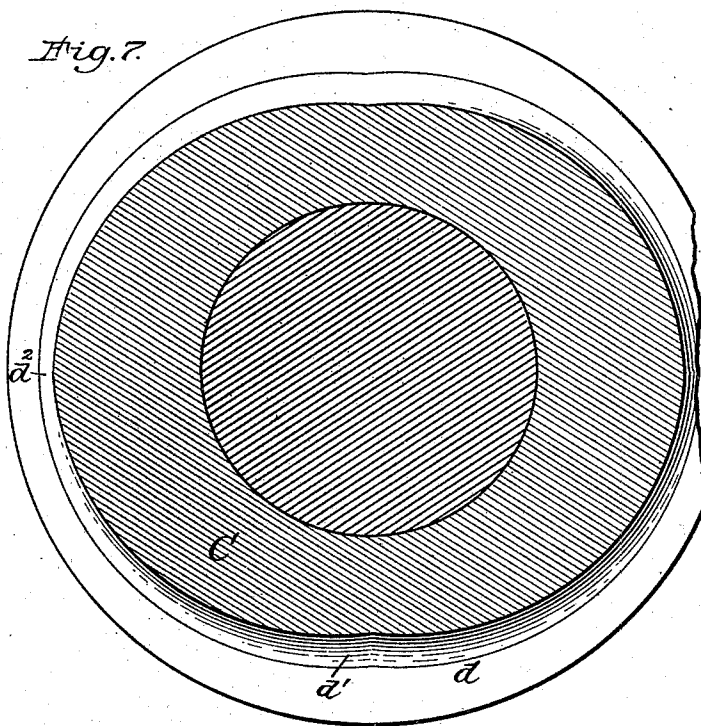
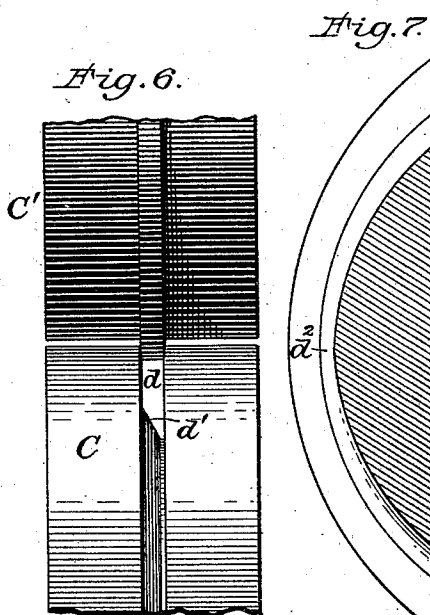


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METHOD OF AND MEANS FOR MAKING BLANKS FOR HORSESHOES.

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UNITED STATES PATENT OFFICE.

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METHOD OF AND MEANS FOR MAKING BLANKS FOR HORSESHOES.

SPECIFICATION forming part of Letters Patent No. 470,351, dated March 8, 1892.

Application filed February 25, 1891. Serial No. 382,741. (No model.)

To all whom it may concern:

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

My said invention relates to the production of blanks which involve only a bending operation for forming or shaping them into toe-
15 weighted horseshoes, in which the metal is of uniform thickness, but is of much greater width at the toe than at the heels. In my application for Letters Patent, filed August 14, 1890, Serial No. 361,963, I disclosed a novel
20 method of producing such blanks, which involved what I will term "zigzag" rolling operations for developing a multiple blank-bar embodying two or more lines of blanks side
25 by side, but with the toe portion of each blank in either line opposite the heel portions of two adjacent blanks in the other line. I have now devised what I believe to be another equally novel method, under which such
30 blanks may be produced in a single line. These single-line blank-bars were devised by me, and regardless of the method or process by which they may have been produced they constitute, in part, the subject of my application for Letters Patent, filed October 1, 1890,
35 Serial No. 366,723. My said novel method, when practiced with reference to securing the best results, consists, first, in rolling iron or steel into straight bars, which are thinner at one edge than at the other and substantially
40 equal to the thickness of the shoes desired and having a sectional area substantially equal to the average sectional area of the blank desired, and, secondly, rolling said bar edgewise and developing its thin edge into a
45 series of reversed inclines, each equal to one-half the length of each blank. In thus proceeding during the second step in this method or process one side of the blank may be
50 variably beveled, as is required for producing light shoes of the most approved forms,

or the bevel may be slight and uniform, or, as is required for producing heavy shoes, the blanks may be plain or free from beveled edges. The creasing of the blanks produced
55 by this method cannot be accomplished during the rolling operation, as is done under my prior method, and while the creasing may be done upon the blanks after detachment from the bar it can be much more rapidly and economically accomplished while the blanks
60 are kept in bar form, this operation constituting another step—viz., progressively developing the creases in each blank while still a part of the blank-bar and then separating them preparatory to the bending operation.
65

Referring to the drawings, Figure 1 illustrates in several views a toe-weighted-horseshoe blank in its best form for producing comparatively light-weight shoes. Fig. 2 illustrates in several views a blank as used for producing heavy toe-weighted shoes. Figs. 3 and 4 illustrate blank-bars embodying blanks of the form shown, respectively, in Figs. 1 and 2. Fig. 5 illustrates in front view a pair of rolls adapted to produce a stock-bar in its best
75 form as well as in a simpler form. Fig. 6 in front view illustrates a pair of rolls adapted to develop the blank-bar, Fig. 3. Fig. 7 is a section of the pattern-roll, Fig. 6, on a line with its pass or groove. Fig. 8 illustrates in
80 front view a similar pair of rolls having a differently-shaped groove adapted to produce the blank-bar, Fig. 4, the pass being shown at its greatest vertical dimension. Fig. 9 in several views illustrates a rolled stock-bar
85 in its best form, the sectional views being provided with dotted lines, indicating the sections of the blank, Fig. 1, at the middle and end. Fig. 10 illustrates creasing-dies.

Referring to Fig. 1 it will be seen that the
90 blank *a* is uniform in thickness and that it is much wider at the toe portion *a'* than at the heel portions or ends *a''*, and also that from the middle to both ends one edge is reversely inclined. This inclined edge becomes the
95 inner edge of a shoe when bent into form, and it will also be seen that the tread side of the blank is variably beveled at the inclined edge, said bevel being quite flat and wide at the central or toe portion and narrower and
100

more abrupt at the heel portions. Dotted lines indicate the blank as when bent to form a horseshoe.

The blank-bar A, Fig. 3, contains a series of the blanks *a* and it is developed from a straight stock-bar *b*, which is thinner at one edge than at the other, as illustrated in Fig. 9. Sectional views of said bar are shown accompanied with dotted-line sections at *a*² and also at *a'*, these respectively indicating in an approximate way the sectional areas of the heel and toe portions of the blank to be rolled therefrom. Said stock-bar has a greater sectional area than the sectional area of the heel portion of the blank and a correspondingly smaller sectional area than the toe portion, so that the surplus metal at the one point will be carried forward in the bite of the rolls to fill out the excess of metal required at the other point. The initial form of the stock-bar affords metal at the thick edge, which undergoes little, if any, change, and the thin edge is more readily changed into the beveled and reversely-inclined edge than when the bar is rectangular in cross-section, although fairly good results will accrue if a bar of the latter form be used.

The initial rolling is performed in the pattern-rolls B B' of Fig. 5, wherein two passes are shown at *c* and *c'*. The pass *c* develops a bar in rectangular cross-section and the pass *c'* develops the preferred stock-bar *b*.

The rolling of the blank-bar A is performed in the pattern-rolls C C', Fig. 6. The roll C is provided with a properly-cut groove *d*, having the variable bevel at *d'* and *d*² and conforming in contour with the two sides and the reversely-inclined edge of the blank-bar A; and, as here shown, the roll is provided with a groove so cut that at each revolution two blanks will be rolled; but larger rolls may be employed, if desired. A suitable guide is employed in front of these rolls; but as it is merely to secure the presentation of the stock-bar while standing on its edge it requires no illustration. It is also desirable to employ a receiving-platform back of the rolls for obviating undue distortion of the blank-bars when the metal is rolled at specially high heats, as is sometimes desirable. If the metal is worked at a specially soft heat, receiving-guides may be profitably employed back of the rolls for maintaining the blank-bar in an edgewise position until it is delivered upon the platform, which may then embody a set of bed-rollers all grooved in line with the pass between the working rolls.

It is to be understood that the form of the stock-bar may be varied, as well as its sectional dimensions, with relation to the blank to be rolled without departure from the main feature of my invention.

The nail-head scores or creases *e* cannot be formed during the rolling operation; but the blanks may be separated from each other and placed in the creasing-dies D, Fig. 9. The bed-die *f* has, preferably, a sunken face or matrix conforming to the outline of the

blank, and it is of such size as will freely accommodate it, and the plunger or top die *g* has, essentially, the creasers *g'*, and preferably in addition thereto a working surface conforming to the tread-surface and to the particular bevel desired in the blank, and the latter should be at such a heat as will enable the dies to operate as perfectly as possible. The plunger-die should be slowly actuated by rapidly-moving and powerful mechanism, including a balance-wheel weighted for securing proper impetus during the downward stroke of the die and for carrying out the compressing operation without liability of failure. In performing the creasing operation the most economic results will accrue by working blank-bars containing, say, three or four blanks, because of the greater facility involved in the progressive delivery of blanks to the die and their removal after creasing.

In forming the plain blank-bar A' of Fig. 4, which contains plain blanks *h*, as in Fig. 3, the stock-bar may be rectangular in cross-section, as when rolled in the pass *c* of the rolls, Fig. 5. These blanks and blank-bars having only the reversely-inclined edge without the bevel before described are developed in the rolls C² C³, Fig. 8, the groove in the roll C² being appropriately shaped. Such blanks are creased in dies like those described so far as relates to the creaser *g'* and the creasing is performed in a like manner.

I am aware that pattern-rolls have been heretofore devised in various forms for the production of connected series of blanks for many purposes; but so far as I know I am the first to devise rolls capable of rolling a bar of metal edgewise into horseshoe-blanks of any kind, as well as the first to devise rolls capable of developing the variably-inclined edge contour essential in blanks suitable for use in the manufacture of toe-weighted horseshoes, and whether beveled, or variably beveled, or plain.

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

1. The method or process of forming blank-bars containing toe-weighted-horseshoe blanks, which consists in edgewise-rolling a stock-bar and developing it into a single line of connected blanks, each uniform in thickness and with one edge thereof reversely inclined in the length of each blank and then appropriately creasing the blanks.

2. The method or process of forming blank-bars containing toe-weighted-horseshoe blanks, which consists in edgewise-rolling a straight stock-bar thicker at one edge than at the other, and then rolling said bar by means of pattern-rolls into a connected series of blanks uniform in thickness and each reversely inclined at one edge from the middle thereof toward its ends.

3. The method or process of forming blank-bars containing toe-weighted-horseshoe blanks, which consists in edgewise-rolling a

straight stock-bar of appropriate sectional dimensions, substantially equal to the average sectional dimensions of the particular blank desired, and then rolling said bar by means
5 of pattern-rolls which will develop a connected line of blanks uniform in thickness and each reversely inclined at one edge from the middle toward its ends.

4. The pattern-roll for rolling toe-weighted-
10 horseshoe blanks and provided with a groove affording a pass, substantially as hereinbefore described, said groove having variably beveled sides and adapted to convert a straight stock-bar of metal into a series of connected

horseshoe-blanks, each at one edge inclined 15 from the middle toward its ends.

5. A pattern-roll for rolling toe-weighted-horseshoe blanks provided with a groove cut to pattern, as described, and adapted to edge-
roll a straight stock-bar of metal and convert 20 it into a connected series of toe-weighted-horseshoe blanks uniform in thickness and each reversely inclined at one edge from the middle to both ends.

CHARLES HENRY PERKINS.

Witnesses:

R. W. COMSTOCK,
CHARLES R. STARK.