No. 624,433. Patented May 2, 1899.

E. BUMFORD.

ROLLS FOR FORMING HORSESHOE BARS.

(Application filed Aug. 30, 1898.)

(No Model.)

Fig. 1.

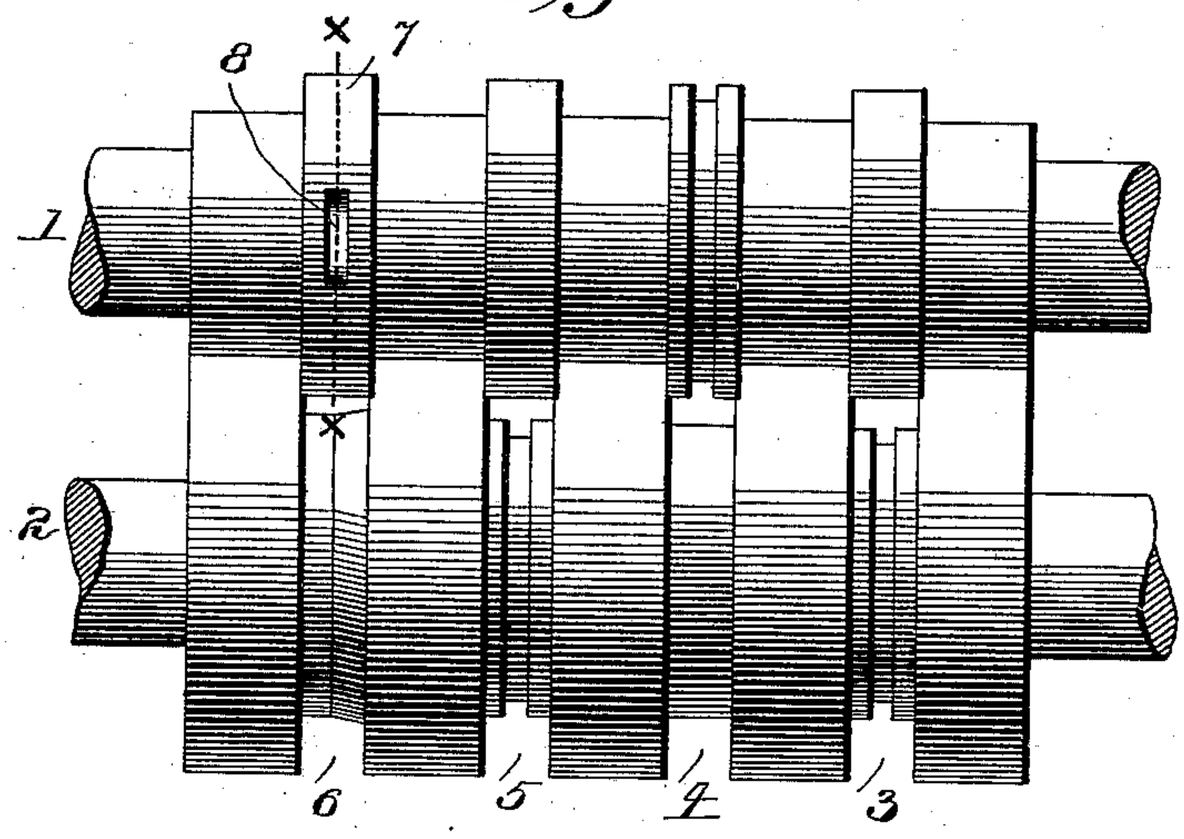


Fig. 2.

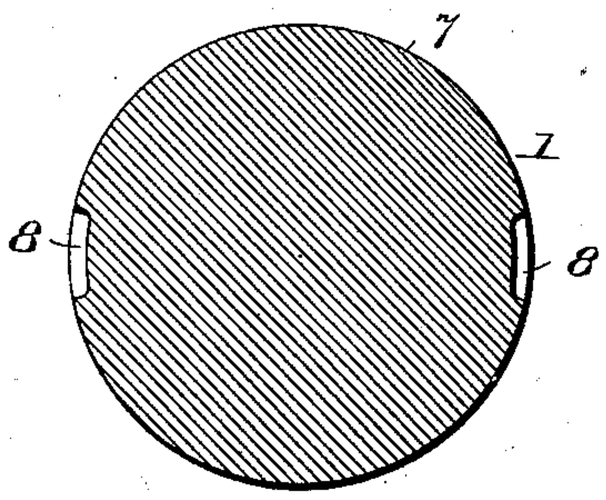


Fig. 3.

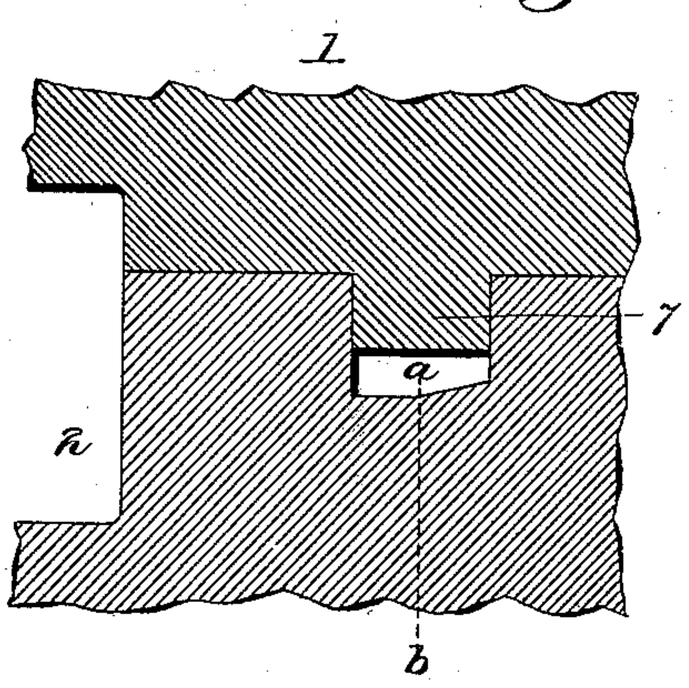


Fig. 4.

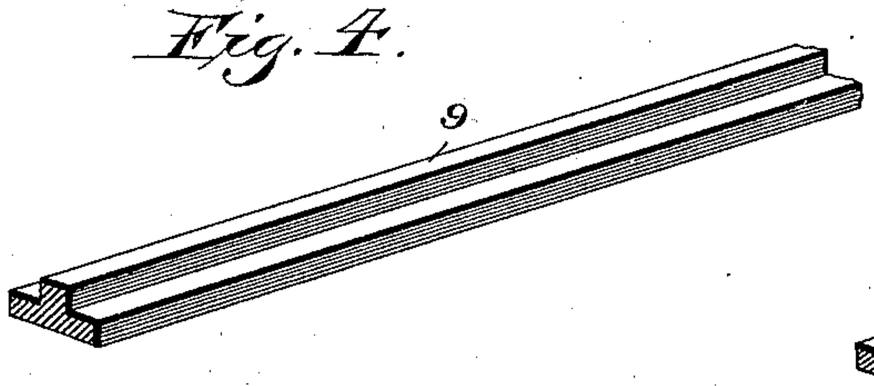
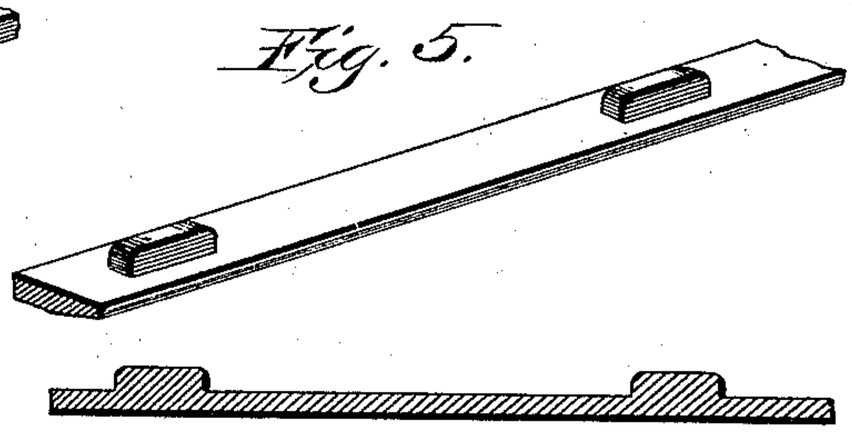


Fig. 5.



Witnesses
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UNITED STATES PATENT OFFICE.

EMANUEL BUMFORD, OF COLUMBUS, OHIO.

ROLLS FOR FORMING HORSESHOE-BARS.

SPECIFICATION forming part of Letters Patent No. 624,433, dated May 2, 1899.

Application filed August 30, 1898. Serial No. 689,844. (No model.)

To all whom it may concern:

Be it known that I, EMANUEL BUMFORD, a citizen of the United States, residing at Columbus, in the county of Franklin and State of Ohio, have invented certain new and useful Improvements in Rolls for Forming Horseshoe-Bars Having Calks; and I do hereby declare the following to be a full, clear, and exact description of the invention, such as will enable others skilled in the art to which it appertains to make and use the same.

My invention relates to rolls for forming horseshoe-bars having calks.

The object of the present invention is the provision of rolls of novel form for producing horseshoe-bars having toe-calks, whereby a finished bar of superior construction can be obtained after a small number of rollings.

The rolls are provided with a series of T-passes, decreasing in size in consecutive order beginning with the receiving-pass, and a finishing-pass in which the bar is flattened and slightly beveled simultaneously with the formation of the calks thereon, as more fully set forth hereinafter.

In the accompanying drawings, Figure 1 is a front view of the rolls; Fig. 2, a cross-section taken through the upper roll on line *x x* of Fig. 1, showing the calk-forming pockets or recesses; Fig. 3, a detail longitudinal section of the upper and lower rolls; Fig. 4, a perspective detail of the bar as it appears after going through the T-passes, and Fig. 5 detail views of the finished bar.

The numerals 1 and 2 represent the upper and lower rolls, respectively, which have T-passes 3, 4, and 5 and a finishing-pass 6, all of which are formed by collars on the upper roll fitting in the grooves or passes in the lower roll. The pass 3, which initially receives the bar to be rolled, is the largest, the passes 4 and 5 are next in point of size in the order given, and the finishing-pass is the smallest of all. The collar 7 on the upper roll, that fits in the finishing-pass, has two diametrically-disposed recesses or pockets 8, which are located exactly at the center of the pass and are adapted for forming the calks on the central longitudinal axis of the bar as it is being finished.

Referring to Fig. 3, it will be observed that the right-hand half of the finishing-pass 6 of the lower roll 2 gradually tapers or becomes narrower, beginning at the dotted line *a b*, denoting the center of the pass. This formation of the roll causes a taper to be put on one longitudinal half of the bar, which when the shoe is complete is located on the inside of it and prevents any touching of the soft part of the hoof by the shoe.

The bar is first run through the passes 3 4 5 in the order given, during which operations it is reduced three times, and when emerging from pass 5 it appears as in Fig. 4, being then provided with the central longitudinal rib 9 and of proper shape and size to enter the finishing-pass. When going through the finishing-pass, the collar 7 flattens out all portions of the rib 9 on the bar except such as come opposite the calk-forming pockets or recesses. Those pockets leave portions of the rib standing and shape them into calks. Simultaneously with the forming of the calk the bar is reduced and tapered at one side, and when it emerges from the pass it is complete and ready for bending by suitable means. A sufficient length of bar to constitute two complete shoes having toe-calks is finished at one revolution of the rolls.

The advantages of the present construction are, first, the bar is gradually reduced and made to approximate its final shape with only a few operations by being run through the T-passes; second, the central disposition of the calk-forming pockets insures the formation of the calks along the central axis of the bar, thereby preventing elongation of the bar on one side and distortion on the other side, which is the difficulty experienced with those rolls having the recesses at the side of the pass, and also leaves ample metal at the sides for the raising of a lip after the bar has been completed and insures a straight and even delivery of the bar; third, the novel shape of the finishing-pass in the lower roll causes the taper or bevel to be formed on the bar for the useful purpose of preventing injury to the hoof by the complete shoe, and, fourth, the final reduction of the bar, the forming of the calks thereon, and the beveling and finishing are all accomplished in one pass.

I am aware that T-passes have been employed heretofore in rolls and that pockets

or recesses are commonly used for forming calks when rolling horseshoe-bars, and I do not, therefore, lay claim, broadly, to rolls provided with such features.

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

The herein-described rolls for forming horseshoe-bars having a plurality of reducing T-passes, decreasing in size one after the other, one of said rolls being provided with a finishing-pass having one-half tapered so as to gradually narrow, beginning with the center line of the pass, and the other roll having a collar received in the pass, which has calk-forming pockets or recesses disposed in the plane of the center line of the pass, whereby the finished bar is provided with calks along its central axis on its flat side and is provided with a longitudinally-extending bevel occupying half its width on its opposite side.

In testimony whereof I affix my signature in presence of two witnesses.

EMANUEL BUMFORD.

Witnesses:

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