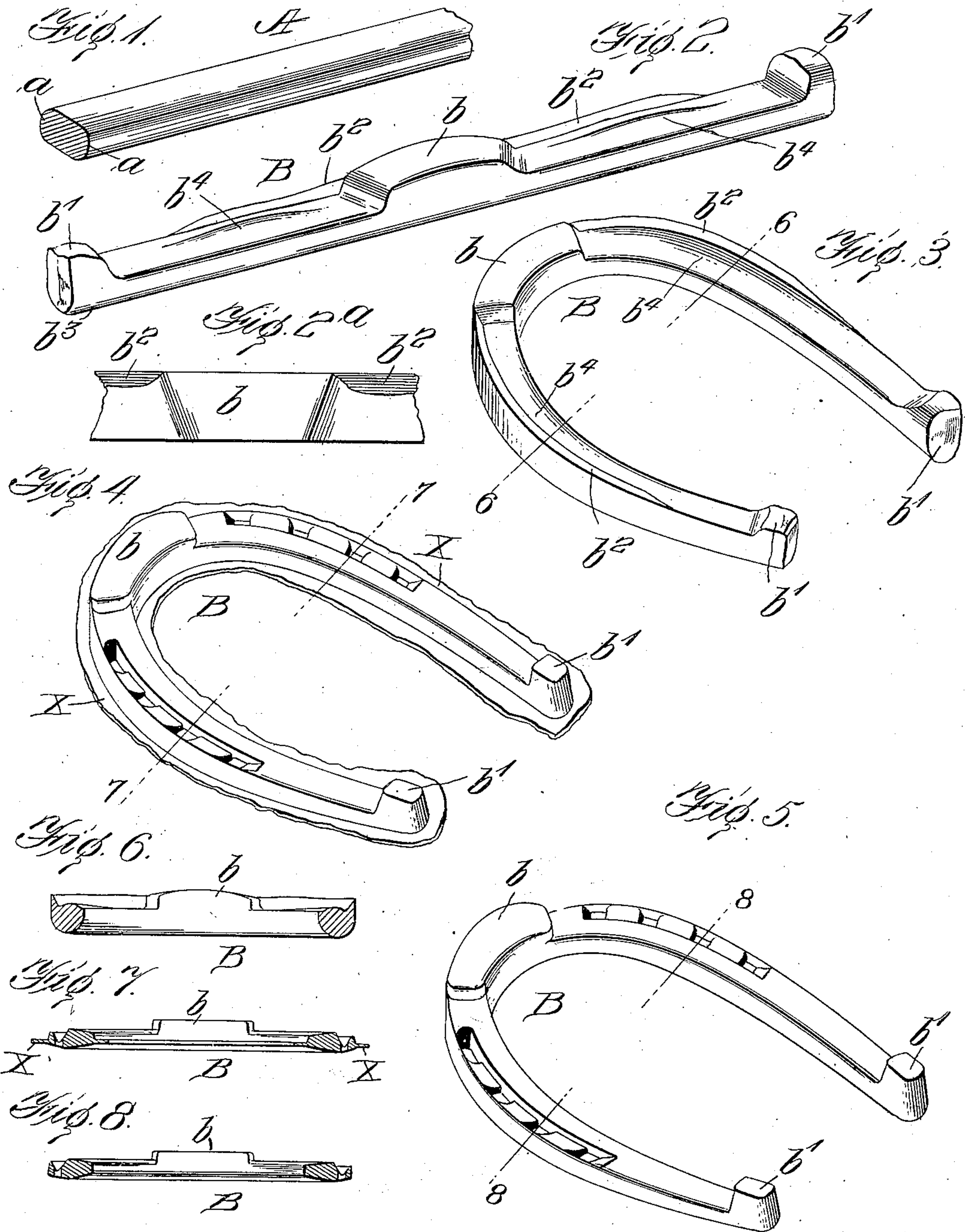


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W. R. YOST.
MANUFACTURE OF HORSESHOES.
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UNITED STATES PATENT OFFICE.

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MANUFACTURE OF HORSESHOES.

No. 845,211.

Specification of Letters Patent.

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To all whom it may concern:

Be it known that I, WILLIAM ROWLAND YOST, a citizen of the United States, residing at Barton Heights, in the county of Henrico and State of Virginia, have invented certain new and useful Improvements in the Manufacture of Horseshoes, of which the following is a specification.

My invention relates to the manufacture of that class of horseshoes in which the toe and heel parts are formed integrally with the body of the shoe by first rolling a blank of proper size with the toe and heel parts properly spaced, then bending the blank to horseshoe shape, then drop-forging or pressing the bent blank in dies to complete the shaping of the shoe and to form the creases and nail-holes, and finally shearing off the fin produced by the dies.

The object of my invention is to modify this process in such way as to prevent waste of the metal, facilitate the bending of the blank, relieve the dies from undue strain, and more easily form the shoe into its final shape.

A further object of my invention is to provide a blank of improved shape for facilitating the operations of bending and forging or pressing, as above explained.

It has heretofore been proposed to form blanks for horseshoes with integral toe and heel parts and to form ribs on the outer edges of the blank extending from the toe toward the heels adjacent to the parts where the creases and nail-holes are subsequently formed by the forging-dies for the purpose of affording additional stock to be forced into the shoe to prevent the blank from being de-faced or formed with a ragged or distorted part outside the creases.

According to my invention, I provide a blank having these characteristics; but in addition thereto I form the toe part in a novel way whereby the bending of the blank is facilitated and the toe-piece will be when bent made to conform more nearly to the finished shoe. I form the inner or back side of the blank in such manner that the spreading of the blank to fill the die and to give final shape to the shoe may be effected with less power than heretofore. The outer side of the blank between the toe and heels is so formed that the creasing and hole-punching portions of the die are supported against

undue lateral strain. Heretofore in the manufacture of horseshoes where the ribs above referred to were made in the blanks on the outside of the crease portions the hammering of the additional stock into the shoe had a tendency to bend inward the crease-forming and nail-hole making parts of the die; but by my improvements I provide a compensating resistance to this pressure and so support the inner side of the crease and nail-forming portions on the die that the bending or breaking of these parts is prevented.

In the accompanying drawings I have illustrated the several steps in the manufacture of horseshoes in accordance with my invention.

Figure 1 is a perspective view of a part of the bar which I use and which is passed through suitable rolls to produce the blank. Fig. 2 is a perspective view of my improved blank with the toe and heel portions, the ribs, the rounded back, and the swells on the outer face of the blank adjacent to the nail-hole portions. Fig. 2^a is a plan view of the toe portion of the blank. Fig. 3 is a perspective view of the blank of Fig. 2 after it is bent. Fig. 4 is a perspective view of the bent blank after it has been drop-forged or pressed. Fig. 5 is a perspective view of the completed shoe. Figs. 6, 7, and 8 are cross-sectional views on the lines 6-6, 7-7, and 8-8 of Figs. 3, 4, and 5, respectively.

The bar A, from which the blank is rolled, is of the shape shown in Fig. 1, being substantially oval in cross-section—i. e., its opposite sides *a a* are curved. By providing this shape I prevent the formation of fins on the blanks, which would otherwise be formed when the blank is passed through rolls. The bar A is passed between rolls suitably shaped to form a series of blanks B, (shown in Fig. 2,) with a toe part *b*, heels *b'*, ribs *b²*, a rounded back *b³*, and swells *b⁴* on the outer side of the blank between the toe and the heels and between the inner edge of the blank and the crease-receiving portions. The rolls also mark off blank lengths in the usual way. It will be observed that the toe part *b* instead of being rectangular in plan, as heretofore, is trapezoidal, the narrower of the two parallel sides being at the inner edge of the blank, so that less resistance is offered to the bending

operation and the toe part when bent more nearly conforms to the final shape of the shoe at the toe.

The heels do not differ from those heretofore made, and the ribs b^2 are similar to those heretofore used. They are for the purpose of providing sufficient metal to be hammered into the shoe to produce even edges for the shoe outside the creases and nail-holes. Without some such provision a ragged and distorted edge would be formed.

The swells b^4 are, I believe, new and original with me. The shape of these swells is clearly shown in the drawings. They are arranged between the inner edge of the blank and the crease-receiving portions thereof and extend from the toe nearly to the heels and are curved in cross-section from the ribs b^2 toward the inner edge of the blank. I have found that when the bent blank is being drop-forged or pressed into the shape shown in Fig. 4 the pressing or hammering of the ribs in the shoe have a tendency to bend inward the crease and the nail-hole forming portions of the die. I have also found that by providing the swells b^4 a compensating resistance to this pressure is afforded, which supports the inner side of the crease and nail-hole forming parts of the die and prevents them from breaking or bending, as they were before liable to do.

The rounded shape of the blank provides the additional metal required to fill the die and give final shape to the shoe. Horseshoes of the most approved form are always wider at the toe than at the heel. Therefore by providing a blank approximately the width of the narrowest part of the shoe desired the blank may be made to enter the die more easily when being hammered into it; but in order to fill out the sides of the shoe at its widest part there must be sufficient stock of metal to be spread by the blow of the hammer or by the pressure of the upper member of the die. If this stock is obtained by merely thickening the blank with the back of the blank flat the blow to spread it must be much harder than when the back is rounded, because the metal must be compressed through the whole width of the blank, while with a blank having a rounded back, as above described, the metal when struck by the hammer spreads out to a flat condition and fills the die—that is to say, when the hammer-head strikes the crest of the rounded back of the blank the material is driven laterally as well as downward, and in its lateral movement it meets with no resistance of metal. In fact, the lateral movement is along the lines of least resistance. After the blank is reheated

and bent to the shape shown in Fig. 3 it is by means of suitable dies given the shape shown in Fig. 4, which is the final shape of the shoe, except that the dies form a fin X, which is subsequently trimmed off by suitable cutting-dies.

It may be remarked that owing to the peculiar shape of my blank the fin produced in my improved process is smaller than that heretofore made, and I am thus able to save considerable metal which would otherwise go to scrap.

I claim—

1. A horseshoe-blank formed with raised heel parts and a raised toe part which is trapezoidal in plan for the purpose specified.

2. A horseshoe-blank formed with raised heel parts and a toe part and swells on the outer face of the shoe between the toe and heel parts and between the inner edge of the blank and the crease-receiving portions for the purpose specified.

3. A horseshoe-blank formed with raised heel parts and a raised toe part, ribs on the outer edge of the shoe adjacent the crease portions and swells on the shoe between the toe and heel parts and between the ribs and the inner edge of the shoe.

4. A horseshoe-blank formed with raised toe and heel parts and a rounded back for the purpose specified.

5. The process herein described of manufacturing horseshoes, which consists in forming a blank with raised heel parts and a raised toe part which is trapezoidal in plan, heating the blank, and bending it into horseshoe shape.

6. The process herein described of forming horseshoes, which consists in rolling a blank to form raised heel parts, a toe part trapezoidal in plan, ribs outside the crease portions of the shoe, swells extending from the toe toward the heels and a rounded back, heating the blank, bending it into horseshoe shape, and then drop-forging or pressing it.

7. The process herein described of forming a horseshoe, which consists in forming a blank with a rounded back and with raised toe and heel portions, heating the blank, bending it into horseshoe shape, and then drop-forging or pressing the blank to flatten the rounded back and to spread the metal to give final shape to the shoe.

In testimony whereof I have hereunto subscribed my name.

WILLIAM ROWLAND YOST.

Witnesses:

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