

(No Model.)

2 Sheets—Sheet 1

W. J. KENT.

MACHINE FOR FORMING HORSESHOE BLANKS.

No. 446,066.

Patented Feb. 10, 1891

*Fig. 1.*

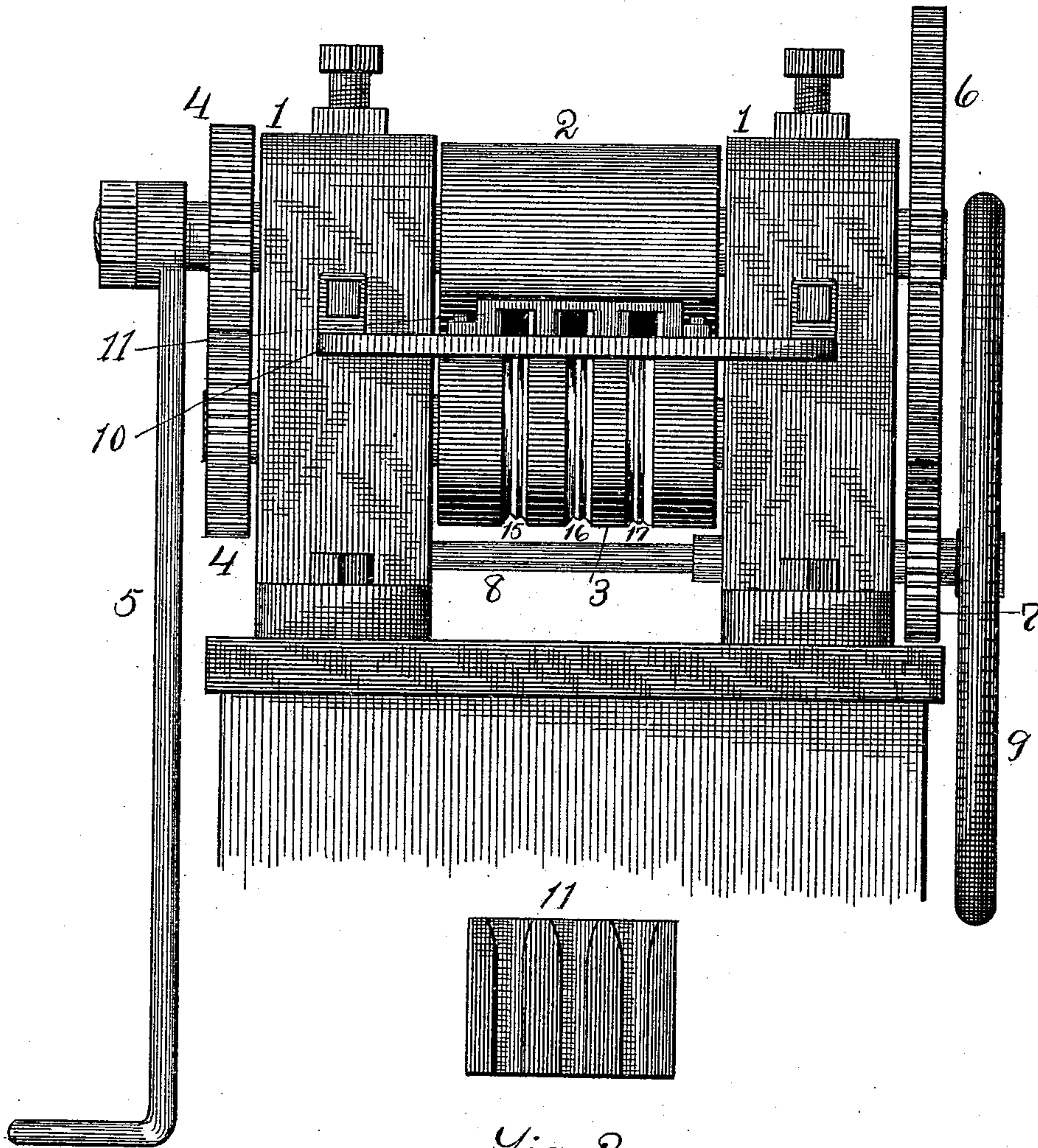


Fig. 2.

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# UNITED STATES PATENT OFFICE.

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## MACHINE FOR FORMING HORSESHOE-BLANKS.

SPECIFICATION forming part of Letters Patent No. 446,066, dated February 10, 1891.

Application filed October 28, 1890. Serial No. 369,629. (No model.)

*To all whom it may concern:*

Be it known that I, WILLIAM J. KENT, a citizen of the United States, residing at St. Paul, in the county of Ramsey and State of Minnesota, have invented certain new and useful Improvements in Machines for Forming Horseshoe-Blanks; and I do 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, reference being had to the accompanying drawings, and to the figures of reference marked thereon, which form a part of this specification.

This invention relates to machines for forming blanks for that class of horseshoes known to the trade as "racing-plates," in which lightness, combined with strength, capability of affording a firm hold, and a sufficiently broad inner surface to afford a support for the hoof are important features. The usual form consists of a plate having a smooth inner face to fit the hoof and an outer face having two or more ridges formed longitudinally thereon, the outer edge having its apex in substantially the same plane as the edge of the shoe and the other of less height and lying about half-way between the outer and inner edge of the plate. The customary manner of forming plates for this purpose is by means of a swage having a face properly formed, upon which the face of the plate is formed. In the case of swaging not only is a considerable degree of care and skill required, but a great expenditure of time and labor is necessary, while the results are not uniformly satisfactory, since the successive blows upon the metal to cause it to conform to the face of the swage is liable to cause inequalities in the density of the metal as well as some irregularity of surface.

The present invention is designed to obviate the difficulties herein set forth by forming the plates by passing through rollers having the necessary passes, and the invention consists in the various features hereinafter more fully set forth.

The invention is illustrated in the accompanying drawings, in which—

Figure 1 represents a front view of the machine; Fig. 2, an under side view of the guide employed for directing the strip of metal in

the proper direction to pass between the rollers; Fig. 3, a side view of the machine; Fig. 4, a detail of the grooves and blank, and Fig. 5 a view showing the plate for guiding the blanks away from the rolls.

In bearings in upright standards 1 1 are mounted rollers 2 3, one having a perfectly-smooth surface and the other provided with two or more grooves or passes suitably formed, as hereinafter described, for the purpose of reducing the blank-strip of metal to its finished shape. These rolls are connected, so as to move in unison, by means of intermeshing gears 4 4, mounted upon corresponding extremities of the shafts of the rolls, and to the extremity of one of the shafts is attached a crank 5 or other operating means.

The machine may be readily adjusted for either hand or power service, as will be readily understood. To the opposite end of one of the roll-shafts, preferably the same to which the power is directly applied, is mounted a large gear 6, intermeshing with a small gear 7 upon an independent shaft 8, upon which is also mounted a heavy fly-wheel 9, for the purpose of steadying the movement of the rolls and assisting in the work by the momentum acquired before the blank is introduced. Upon the front of the upright standard is secured a table 10, its upper surface being substantially in the same plane as the line of contact of the rolls, and upon the upper side of this table is located a guide-plate 11, having passages therethrough corresponding in position and substantially in width with the grooves upon the roll. The width of this plate is sufficiently great to furnish a guide for the blanks for a considerable distance, in order to insure the proper holding of the blanks while passing between the rolls. Upon the opposite side or in the rear of the standards is attached a similar table 12 and similar guides 13, for the purpose of holding the blanks after passing the rolls to prevent them from bending to one side on account of the inequality of pressure exerted by the rolls. To this table is also attached an extension 14, for the purpose of receiving the blanks.

The passes in the roll are of peculiar form, and preferably three in number, for the purpose of adapting the machine for hand use



by forming the face of the blanks gradually. I have shown three grooves or passes 15, 16, and 17, through which the blanks are to be passed successively. The grooves gradually  
 5 increase in extreme width, and within the limits of each is a ridge whose relative position varies slightly in the same manner—that is, in the first pass the ridge is substantially central, and with each succeeding pass  
 10 its position is changed, so as to lie a little closer to the side of the groove forming the edge of the shoe.

As shown in Fig. 4, 18 designates the intermediate ridge, which is substantially the  
 15 same form in each case, having its sides at angles of about thirty and sixty degrees, respectively, to the plane of the inner face of the shoe, the longer side lying toward the outer edge. The angle of the side of the  
 20 groove forming the outer edge of the shoe is also correspondingly changed in the several grooves, its position in the first pass 15 being at an angle of about forty-five degrees to the face of the roll and gradually varying until  
 25 in the last pass it stands in a direction—say at an angle of ten or fifteen degrees—from a perpendicular to the face of the roll. At the other edge of the groove a corresponding  
 30 change is made in the opposite direction—that is, the side of the groove, from being a plane surface lying at an angle of about forty-five degrees to the plane of the face of the roll, is lengthened out and convexed, so as to  
 35 form a curved surface at an angle of about thirty degrees to the roll.

The form of the blank after going through the several passes is clearly shown in Fig. 4, and it will be observed that a good holding-  
 40 face is given to the shoe, and the greatest support for the hoof consistent with lightness and strength is produced.

In the channel formed by the ridge intermediate between the sides of the groove as many holes as may be desirable are punched  
 45 for purposes of attachment.

I claim as my invention—

1. In a machine for forming horseshoe-blanks, the combination of the upright standards, rolls mounted in bearings in said stand-  
 50 ards, means for operating said rolls, one of said rolls being provided with a series of grooves or passes, a table mounted upon the front of said standards on a level with the meeting-point of the rolls, and a guide-plate  
 55 having a series of passes therein corresponding in relative position and width with the said roll-grooves and located upon said table, substantially as and for the purpose herein specified.

60 2. In a machine for forming horseshoe-blanks, the combination of the upright standards, rolls mounted in bearings in said standards, means for operating said rolls, one of said rolls being provided with a series of

grooves or passes, tables attached to said 65 standards in front and rear of said rolls and substantially in a plane tangential to said rolls at their meeting-point, and guides forming a series of passes corresponding in relative position and width with said grooves, se- 70 cured to said tables, substantially as and for the purpose herein specified.

3. In a machine for forming horseshoe-blanks, the combination of the rolls located tangentially to each other, one of said rolls 75 having a smooth cylindrical surface and the other provided with the grooves 15, 16, and 17, substantially as and for the purpose herein described.

4. In a machine for forming horseshoe- 80 blanks, the combination of the rolls located tangentially to each other, one of said rolls being provided with a series of grooves or passes, the section of the side of said groove adapted to form the outer edge of the shoe- 85 blank being in a straight line varying from about forty-five degrees nearly to a perpendicular to the face of the roll from the first to the last of the series, substantially as de- 90 scribed.

5. In a machine for forming horseshoe-blanks, the combination of the rolls located tangentially to each other, one of said rolls being provided with a series of grooves or passes, the said grooves having an inter- 95 mediate ridge whose position varies from a substantially middle point in the first to a position nearer the side forming the outer edge of the shoe in the last of the series, substan- 100 tially as described.

6. In a machine for forming horseshoe-blanks, the combination of the rolls located tangentially to each other, one of said rolls being provided with a series of grooves or passes, an intermediate rectangular ridge the 105 position of whose apex varies from a substantially middle point in the first to a position nearer the side forming the outer edge of the shoe in the last of the series, substantially as described. 110

7. In a machine for forming horseshoe-blanks, the combination of the rolls located tangentially to each other, one of said rolls being provided with a series of grooves or passes, the section of the part of the groove 115 adapted to form the inner part of the shoe varying from a straight line at an angle of about forty-five degrees to an outward curve lying substantially at an angle of thirty de- 120 grees to the face of the roll, substantially as described.

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

WILLIAM J. KENT.

Witnesses:

WILLIAM GEORGE,  
T. W. LANE.