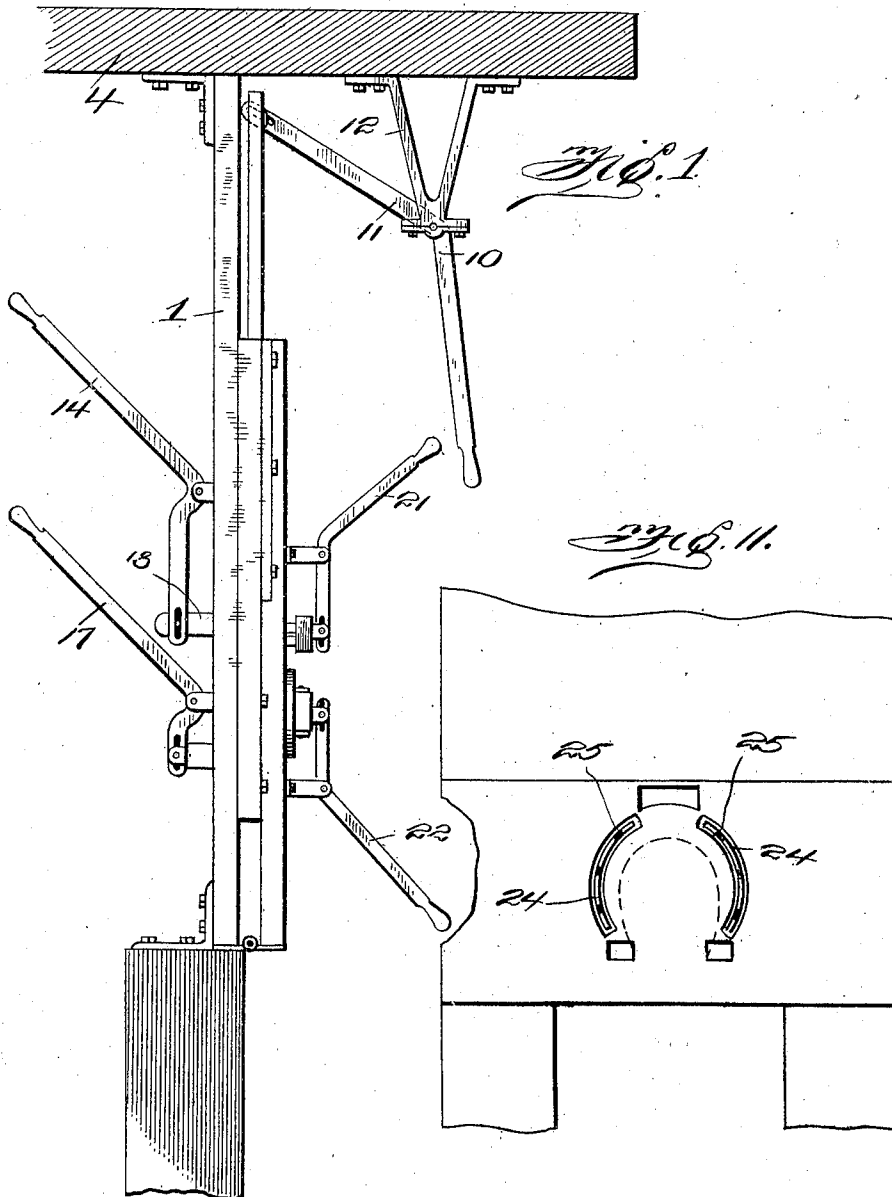


A. J. RANGE.
HORSESHOE FORMING MACHINE.
APPLICATION FILED JULY 24, 1909.

980,674.

Patented Jan. 3, 1911.

4 SHEETS—SHEET 1.



Witnesses

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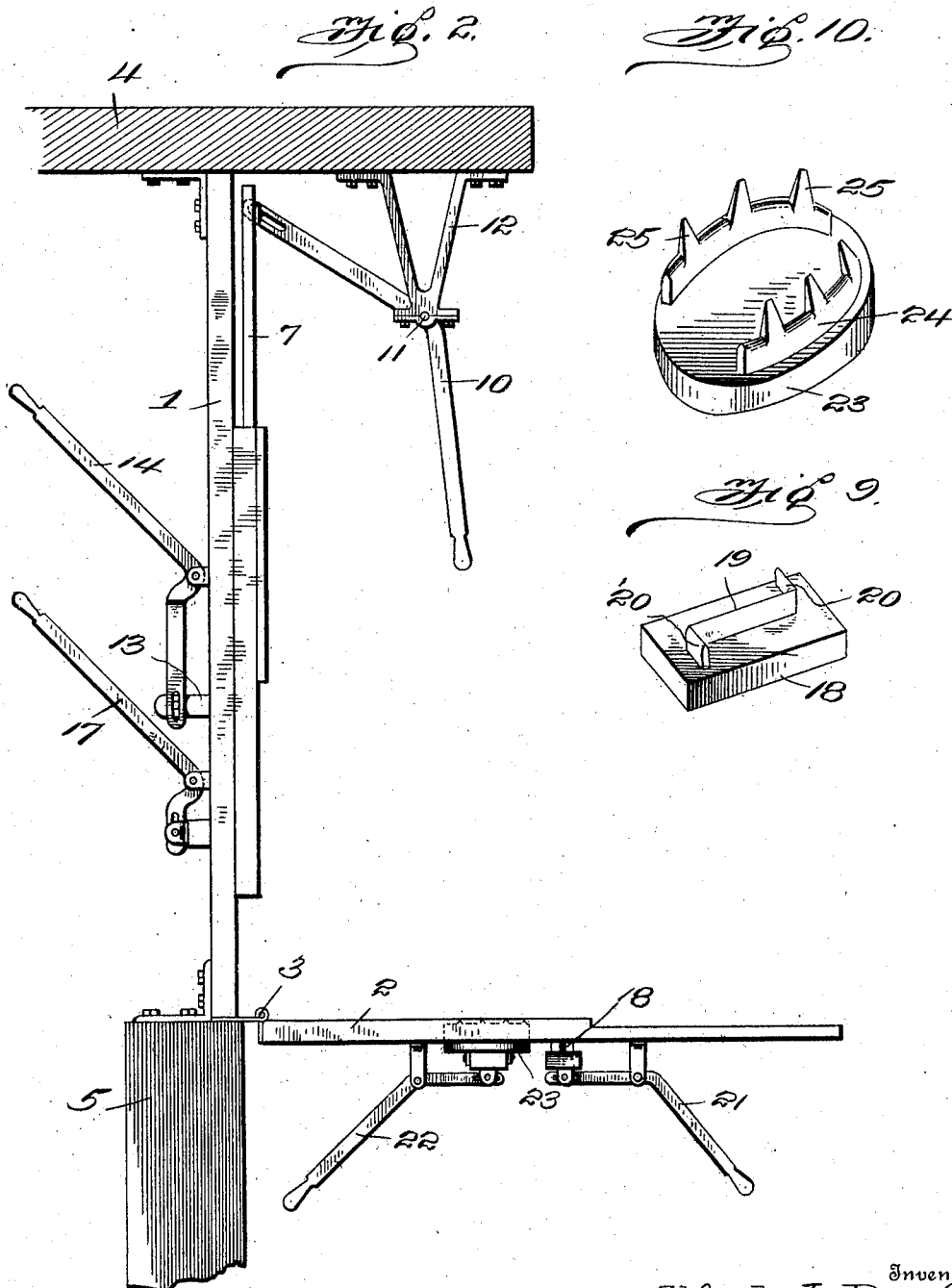
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4 SHEETS—SHEET 2.



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4 SHEETS—SHEET 3.

Fig. 3.

Fig. 7.

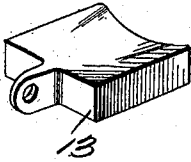


Fig. 8.

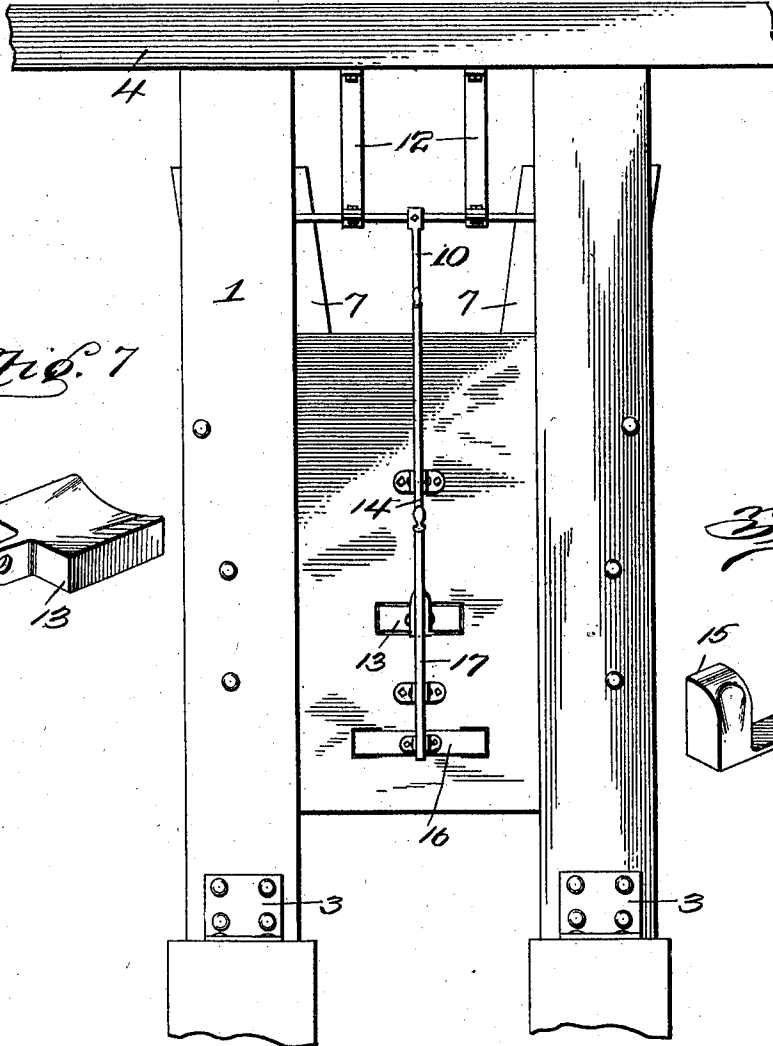
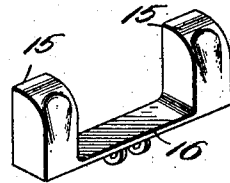


Fig. 6.



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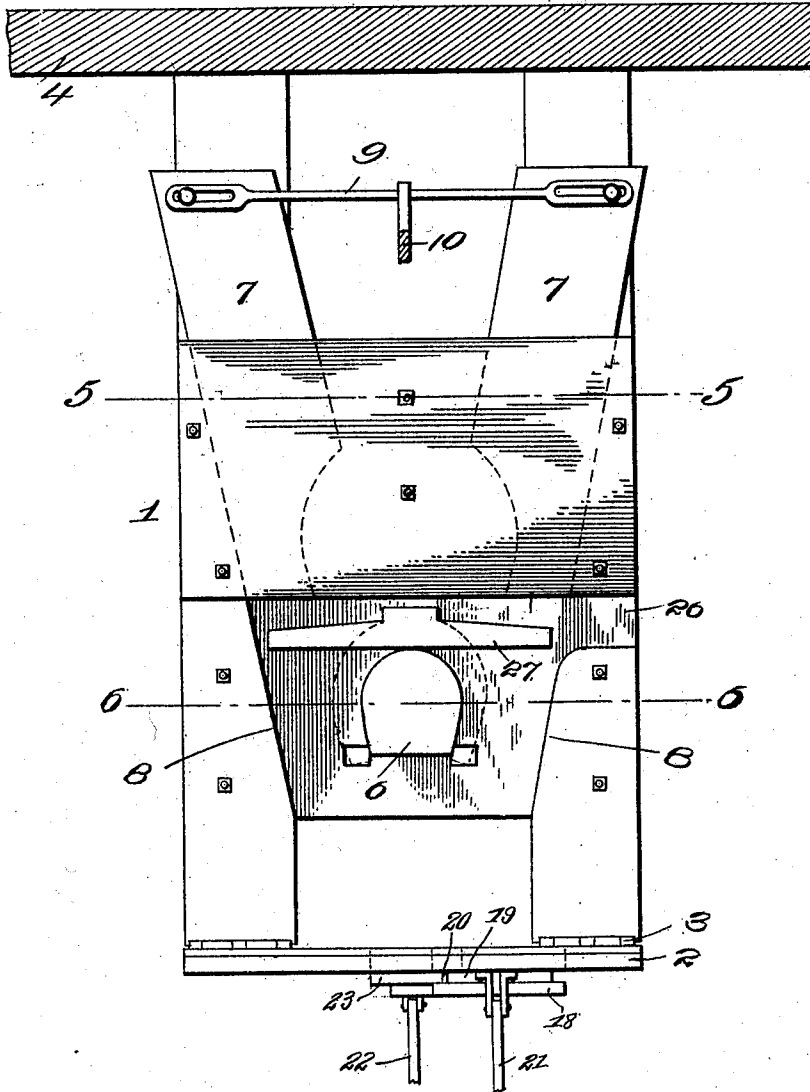
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4 SHEETS—SHEET 4.

Fig. 4.



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Fig. 5
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UNITED STATES PATENT OFFICE.

ALFORD J. RANGE, OF ARMATHWAITE, TENNESSEE.

HORSESHOE-FORMING MACHINE.

980,674.

Specification of Letters Patent.

Patented Jan. 3, 1911.

Application filed July 24, 1909. Serial No. 509,316.

To all whom it may concern:

Be it known that I, ALFORD J. RANGE, a citizen of the United States, residing at Armathwaite, in the county of Fentress and State of Tennessee, have invented new and useful Improvements in Horseshoe-Forming Machines, of which the following is a specification.

The present invention has for its object to devise a machine of novel formation for shaping blanks into horse shoes complete with the toe and heel calks and having the usual nail grooves and openings for the nails by means of which the shoes are fastened when in use.

The invention contemplates a machine which will enable a flat bar being fed thereto and which will cut lengths from the bar into blanks and shape such blanks to form the complete shoe. The bar from which the horse shoe blanks are cut may be fed into the machine in any manner and is reversed after each cut thereby bringing the blanks in proper position.

The invention also has for its object to combine in one machine means for bending the blanks into the form of the horse shoe, dies for providing the heel and toe calks and means for swaging and punching the shoe to provide the nail grooves and the nail openings, the several parts being arranged for successive operation while the shoe is held in fixed position.

The invention further contemplates a machine of the character and for the purpose aforesaid which embodies complementary frame members between which the bar is fed, cut into proper lengths bent into the required form and provided with the heel and toe calks and the nail grooves and openings, one of said members being relatively fixed and the other pivoted to admit of the members being opened to remove the shoe when completed.

The invention consists of the novel features, details of construction and combination of parts, which hereinafter will be more particularly set forth, illustrated in the accompanying drawing and pointed out in the appended claims.

Referring to the drawing forming a part of the specification, Figure 1 is a side view of a horse shoe forming machine constructed in accordance with and embodying the essential features of the invention. Fig. 2 is a view of the parts shown in Fig. 1, the

pivoted frame member being turned into horizontal position. Fig. 3 is a rear view. Fig. 4 is a front view of the fixed frame member with a horse shoe blank in position. Fig. 5 is a horizontal section on the line 5—5 of Fig. 4. Fig. 6 is a horizontal section on the line 6—6 Fig. 4. Fig. 7 is a detail perspective view of the toe-calk die. Fig. 8 is a perspective view of the heel-calk die. Fig. 9 is a perspective view of the cutter for severing the horse shoe bar into horse shoe blanks. Fig. 10 is a perspective view of the die for forming the nail grooves and the nail openings. Fig. 11 is a view in elevation of a portion of the pivoted frame member showing the relation of the cutter, the nail groove and punch die and the openings for receiving the toe and heel calks.

Corresponding and like parts are referred to in all views of the drawing by the same reference characters.

The machine comprises complementary members 1 and 2 which form parts of a frame carrying the several operating elements. The frame member 1 is relatively fixed whereas the frame member 2 is movable being pivoted at 3 thereby admitting of the members 1 and 2 of the frame being separated for removal of the shoes when completed or admit of access being readily had to the working parts. The frame may be arranged in any relative position and mounted in any convenient and substantial way. As shown timbers or supporting beams 4 and 5 are provided and the member 1 is rigidly secured thereto in vertical position, the member 2 being pivoted to the supporting part 5 in any way. The shoe bending or forming mechanism is located between the frame members 1 and 2 and comprises a former 6 and shoe forming slides 7 the latter being arranged to operate upon opposite sides of the former 6 and having their inner lower portions shaped to correspond approximately to the outline of the former 6. The former 6 is stationary and disposed medially between the vertical edges of the frame. The shoe forming slides 7 are mounted to have a reciprocating or sliding movement imparted thereto. The shoe forming slides are directed in their movements by guides 8 arranged upon opposite sides of the former 6 and having their inner portions upwardly flared or oppositely inclined whereby the shoe forming dies 7 are gradually brought together when lowered or

advanced so as to bend the shoe blank about the former 6. The guides 8 constitute bars which are bolted or otherwise firmly attached to opposite edge portions of the frame member 1, the inner edges of said bars being inclined to provide the guides 8 upon which the shoe forming slides 7 move. Any means may be provided for operating the shoe forming slides 7 and for convenience the means illustrated have been devised the same consisting of a rod or bar 9 having sliding connection at its ends with the upper end portions of the shoe forming slides 7, and an operating lever 10 the latter being mounted upon a rod or bar 11 supported in brackets 12 secured to the timber 4, said operating lever having its inner end slotted and receiving the rod or bar 9.

The toe-calk die 13 is mounted in the frame member 1 and is adapted to be operated across the space formed between the frame members 1 and 2 so as to bend a portion of the shoe blank laterally to form the toe-calk. For convenience of operating the die 13 a lever 14 is provided and pivoted upon the frame member 1 and has its lower end connected with the die 13 or a projecting part thereof so as to effect movement thereof when required. The toe-calk die 13 is adapted to operate in transversely aligned openings formed in the frame members 1 and 2 and is of a shape to properly form the toe-calk.

The heel-calk dies 15 are connected by means of a bar 16 and are mounted in openings formed in the frame member 1 and are adapted to enter corresponding openings formed in the frame member 2. The dies 15 may be operated in any manner and as shown a lever 17 is provided and mounted upon the frame member 1 and has its lower end connected with the bar 16 so as to insure simultaneous movement of both dies.

The frame member 2 is supplied with a cutter 18 which as shown in Fig. 9 is of peculiar formation so as to cut the bar longitudinally thence laterally in opposite directions from the longitudinal cut. The cutter proper comprises a blade 19 and end blades 20 arranged about at a right angle to the blade 19. The blade 19 extends longitudinally and forms a corresponding cut in the bar and the end blades 20 sever the blank from the bar at the ends of the longitudinal cut. The cutter is of such form as to provide similar end portions to adjacent shoe blanks thereby preventing the waste of any material and minimizing the number of cuts necessary for severing a shoe bar into shoe blanks. The cutter 18 is mounted upon the frame member 2 and is operated by means of a lever 21 similar in mounting and formation to the other operating levers. The cutter 18 is located at one side of the frame so that after the shoe bar has been fed into the

machine and the blank severed by the cutter is in proper position to be bent into the required form.

The die for forming the nail grooves or creases in the shoe and the nail holes is likewise mounted upon the frame member 2 and is operated by means of a lever 22. The die is engaged at 23 and has projecting ribs 24 and teats 25 along the outer edges of the ribs 24 to form the nail holes. The ribs 24 form the nail creases or grooves in the shoe when the die 23 is pressed forward and the teats 25 penetrate the shoe and form the nail holes.

As hereinbefore stated the several parts may be operated by any means so long as they are arranged to perform the several steps herein indicated in the form of the completed shoe. When the frame member 2 is opened the shoe may be readily moved from the former 6 and likewise access may be had to the working parts for any desired purpose. It is to be understood that the frame members when closed may be secured in any convenient way.

In the operation of the machine a bar of proper width and thickness is fed into the machine through an opening 26 in one of the side bars forming the guide 8, the other side bar constituting a stop to limit the movement of the bar. Preliminary to feeding the bar an end portion thereof is cut so as to give the proper shape to the horse shoe blank after which the bar is fed into the machine to the limit of its movement. The cutter is now operated thereby severing the blank from the bar. The bar is withdrawn leaving the blank 27 in proper position for bending into the required shape to form the horse shoe. The shoe forming slides 7 are depressed by operating the lever 10, thereby bending end portions of the blank about the former 6. The die 13 is now operated to form the toe-calk and subsequently the dies 15 are pressed forward to form the heel-calks. The shoe is now completed with the exception of forming the nail grooves or creases and the nail holes, the same being formed by operating the die 23. After the shoe is completed the pivoted member 2 of the frame is turned outward and downward thereby releasing the shoe and admitting of its removal from the former 6 and the frame member 1. After each blank is cut from the bar it is necessary to reverse the bar preliminary to making the next cut thereby forming both ends of the shoe blank alike. An intermediate portion of the shoe blank is left the full width of the shoe bar, the projecting portion being bent to form the toe-calk and terminal portions of the blank being bent in the usual manner to form the heel-calks.

It is to be understood that the several parts are of substantial formation in order

to withstand the strain and wear incident to a machine of the character set forth and the working parts are of such configuration as to provide a shoe of the required form and outline.

From the above description, taken in connection with the accompanying drawing, the advantages of the construction and of the method of operation will be readily apparent to those skilled in the art to which the invention appertains, and while I have described the principle of operation of the invention, together with the device which I now consider to be the best embodiment thereof, I desire to have it understood that the device shown is merely illustrative, and that such changes may be made when desired as are within the scope of the claims appended hereto.

Having thus described the invention, what is claimed as new is:—

1. In a horseshoe forming machine, the combination of a main frame, a shoe former mounted upon the frame and adapted to have a straight shoe blank bent about the same, oppositely inclined guides located upon opposite sides of the former, one of the guides having an opening for the entrance of the shoe blank and the other guide

forming a stop to properly position the shoe blank and limit the inward movement thereof, shoe forming slides mounted upon the frame and adapted to be advanced to bend the shoe blank about the former, said slides being gradually brought together in their forward movement by the guides, and a hinged frame adapted to coact with the main frame to hold the blank in position during forming and to permit the removal thereof after being formed.

2. In a horseshoe forming machine, the combination with a main frame and means carried thereby to bend the blank into horseshoe form, of an auxiliary frame hinged to the main frame, and a cutter carried by the auxiliary frame for severing shoe blanks from a bar, said cutter comprising a longitudinal blade and oppositely projecting lateral blades connected thereto at the ends of the longitudinal blade, said cutter forming opposite ends of adjacent blanks in a similar manner to prevent wasting material.

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

ALFORD J. RANGE.

Witnesses:

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JAMES A. HURST.