

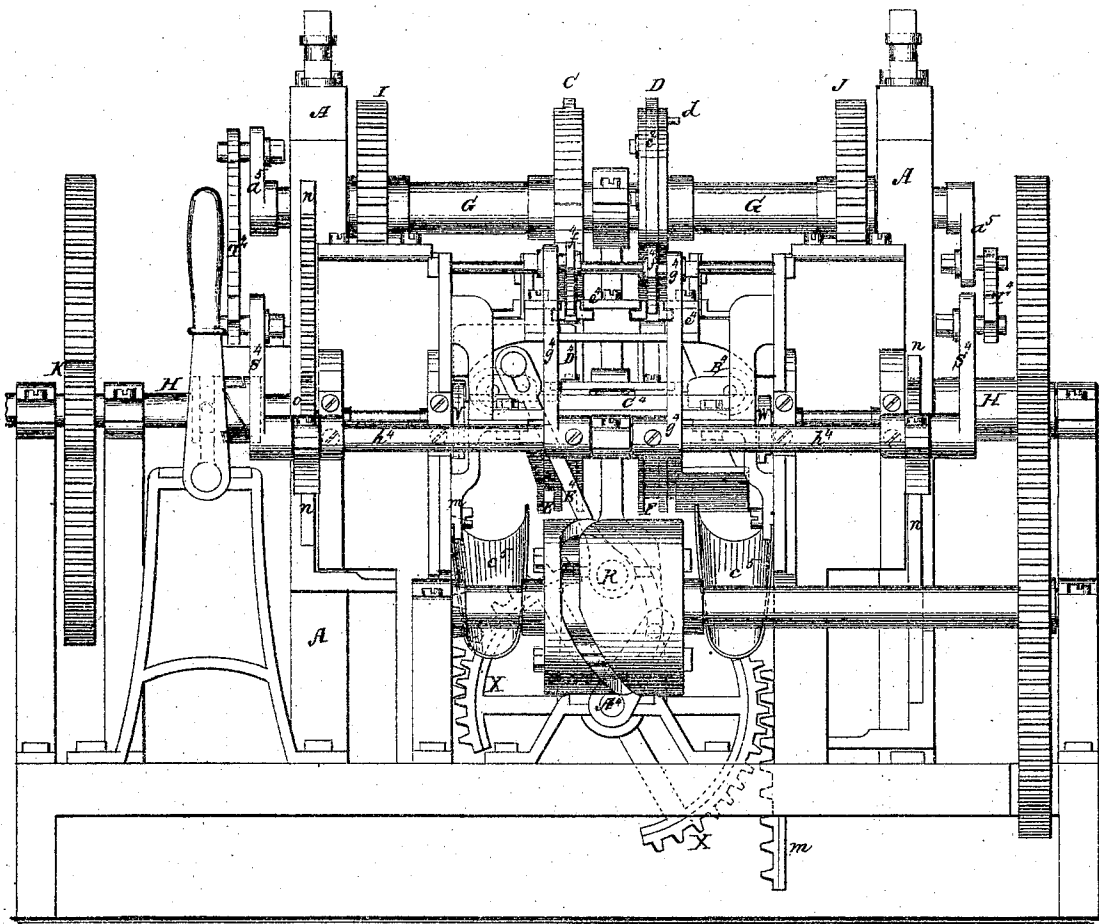
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Sheet 1.

J. H. Snyder. Imp^d Horse Shoe Machine.

No. 118,399.

Patented Aug. 22, 1871.

Fig. 1.



Witnesses:

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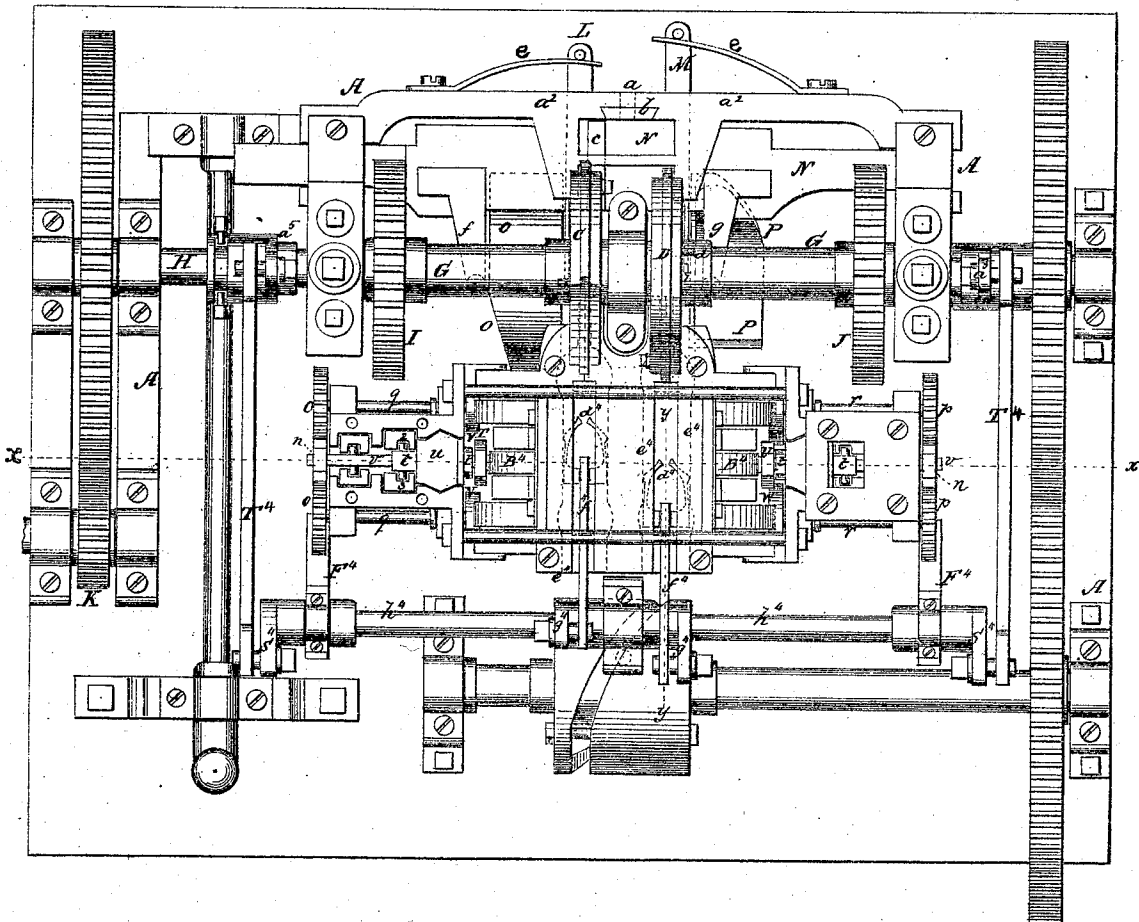
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J. H. Snyder. Imp^d Horse Shoe Machine.

No. 118,399.

Fig. 2.

Patented Aug. 22, 1871.



Witnesses

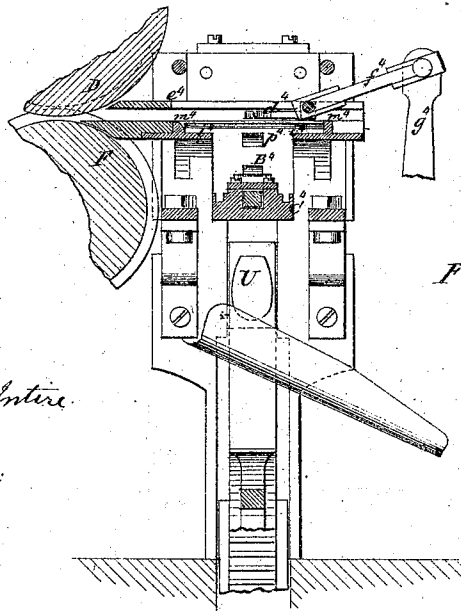
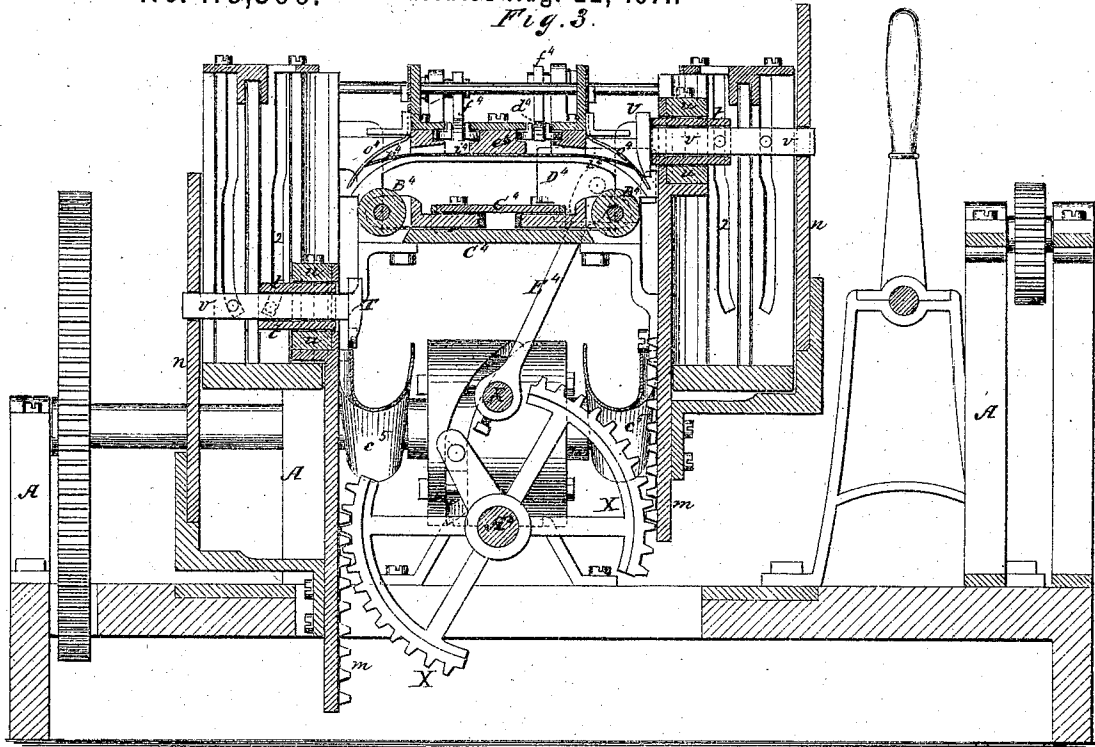
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Fig. 3.



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UNITED STATES PATENT OFFICE.

JOHN H. SNYDER, OF RICHMOND, VIRGINIA.

IMPROVEMENT IN MACHINES FOR MAKING HORSESHOES.

Specification forming part of Letters Patent No. 118,399, dated August 22, 1871.

To all whom it may concern:

Be it known that I, JOHN H. SNYDER, of Richmond, in the county of Henrico, in the State of Virginia, have invented certain new and useful Improvements in Machines for Making Horseshoes; and I do hereby declare that the following is a full and exact description thereof, reference being had to the accompanying drawing making part of this application.

My invention relates to certain new and useful improvements in that kind of horseshoe-machines in which the bar of iron fed in is simply cut up and formed into shoes, with the exception of the toe and nail-holes, and particularly to the machine made the subject of Letters Patent granted October 18, 1870, to me, for "improvements in machines for making horseshoes." In the machine patented to me, as just recited, the blanks were discharged, after having been rolled out into form straight, into the arms of automatic carriers, which carried them upward and placed and held them in the proper position to be operated upon by the bending-and-finish-ing mechanism.

My present invention has for its object to simplify and render more efficient that part of the machine or mechanism by means of which the blank, after it leaves the rolls, is conveyed to and placed in the bending mechanism; and this I propose to accomplish by having the bending mechanism located lower than in my patented machine, and providing a means for taking the rolled blanks from the rolls and placing them in the bending mechanisms. My present invention consists in the employment, in combination with the rolling mechanism for rolling out the cut-off blanks into shape straight, of carriers arranged to travel in the same plane that the blank is "rolled" in, and adapted to gripe the blank as it comes from the rolls, carry it along and discharge it in a proper position to be moved off sidewise to the bending mechanism, as will be hereinafter more fully described; and my invention further consists in the use, in combination with the rests on which the rolled blanks are deposited, of a reciprocatory carriage and suitable guides, by means of which the rolled blanks are automatically carried to the bending mechanism and there presented and held in adjustment, as will be hereinafter more fully described; and my invention further consists in

having the guides in which the blank travels while being forced by the carriage to the benders curved downward, and so constructed that the blank is retained by a spring-pressure and turned (on its axis) over, so that the sides opposite to those on which the rolls operate shall be presented to the action of the benders, as herein-after more fully explained.

To enable those skilled in the art to make and use my invention, I will now describe the construction and operation of my improved machine, referring by letters to the accompanying drawing, in which—

Figure 1 is a back elevation; Fig. 2, a top or plan view; Fig. 3 a vertical section at *x x*, Fig. 2; and Fig. 4, a detail vertical section through the carrier uppers at *y y*, Fig. 2.

In the several figures the same part of the machine will be found designated by the same letter of reference.

A is the main frame-work or body of the machine, in which are supported the table and all the working parts, as will be directly explained. C and D are the upper, and E F the lower rolls of two sets of rolling-dies for shaping the straight blank, and are respectively on the shafts G and H, which are geared together by spur-wheels I and J, so that the shaft H is driven from the shaft G. This last-named may have the motive power applied to it directly or through the medium of a counter-shaft and driving-pinion, *k*. The table is arranged so that its top surface lies in a plane passing through the point or line of contact of the upper and lower rolls. In the front cross-piece *a*² of the frame is a hole, (seen in dotted lines at *a*, Fig. 2,) through which the bar of iron is fed, in the usual manner, to the machine, and at the inner end of which is a cut-off plate or die-plate, *b*, against which works the cut-off die *c*, which moves back and forth past the feed-hole and die-plate *b*. On each side of the cut-off and about in line with the rolls is a feeder, L and M, which is periodically moved longitudinally in one direction by means of the roll or rotary disk C or D, through the medium of a pin or lug, *d*, projecting from said disk, which engages with a projection at 1 on the rear end of said feeder, and which is moved back in the other direction by the action of a spring, *e*, so soon as released from the hold of said lug *d*. The cut-off die *c* is secured on the surface of a carriage, N, which has a recip-

rocatory movement in suitable bearings, effected by two inclines or side cams, O P, on the lower rolls, which act alternately upon the two arms or projecting stands *f g* of said carriage. This carriage has an arm or stand projecting downward from it, which is coupled, by means of a wrist-pin, to the slotted arm of a rock-shaft, R, and through this medium of connection the said carriage imparts to the said shaft an intermittent oscillatory motion, for purposes to be presently explained. T U are the benders or formers, and V V and W W the forming-cams of the bending mechanism. *m m* are two vertical bars, which are each connected, by a cross-frame at its lower end, to a bar, *n*, and these bars *m m* and *n n* serve to move the formers T and U up and down. Each of said bars *m* has a rack on it, into which meshes a toothed sector, X, on a rock-shaft, A⁴, through which it is driven, and each of the bars *n* is provided on each of its edges with teeth which mesh into and drive pinions *o p* on shafts *q r*, which drive the rotary cams V and W. Each of the benders or formers T U is composed of two parts; the shank *t* of one part is free to move longitudinally in the carriage *u*, and is provided with pins on either side, which fit into grooves 2 3 of a stationary casing, and the shank *v* of the other part passes longitudinally and is moved freely through the shank *t* by pins and grooves of the first-named part, for purposes to be presently explained. B⁴ are caster-wheels or presser-rolls, which are hung in a suitable frame or stand, C⁴, and which serve to press or hold the outer part of the former T up to its work. As is clearly shown, the upper rolls C D are formed with tongues, which work in grooves in the circumference of the lower rolls E F, and on each of said upper rolls is a removable die, *e*², of the proper shape to induce the required form to be imparted to the blank previous to its being bent around into the horseshoe or U-shape. Between the two bending mechanisms, and arranged opposite to and in the plane of contact of each set of rolls, is a pair of nippers, *d*⁴. Each pair of these nippers is arranged to work in ways formed in the framework *e*⁴, and is coupled to and driven by a pitman, *f*⁴, driven from the arm *g*⁴ of a rock-shaft, *h*⁴. Each of the pairs of nippers is made so that its fingers naturally spring apart, and they are forced together to gripe the blank by being drawn in between the surfaces of the grooves or ways in which they travel. The shape of these grooves, by which these fingers of the nippers or carriers *d*⁴ are forced together to gripe the blank, and allowed to spring apart to release it, is clearly illustrated by dotted lines in Fig. 2. On the supporting surfaces *i*⁴, onto which the rolled blank is deposited by the carriers *d*⁴, are projections *m*⁴, between which the blank falls, and which serve as guides and retainers at each end of the blank to insure its proper placement endwise, for the action of the carriage that forces it to the bending mechanism. This carriage D⁴ is mounted in suitable bearings, has a reciprocatory motion at right angles to the path of motion of the carrier-nippers, and moves beneath them.

It is driven by the arm E⁴ of the rock-shaft R, and acts merely to push against the side of the rolled blank and force it toward the bender. The supporting-surfaces, on which rest the ends of the blanks when discharged from the nippers, are curved downward toward the benders, and have curved guide-plates *o*⁴ arranged over them, as seen at Fig. 3. *p*⁴ are sustaining-springs, over which the blanks ride in their passage to the benders. The rock-shaft *h*⁴ is mounted in suitable bearings in arms or stands F⁴, and is provided with arms S⁴ at its ends, through the medium of which and pitman T⁴, connected to cranks A⁵ on the shaft G, said rock-shaft is moved.

The operation of the several parts of the machine will be understood from the following explanation in connection with what I have already said: The motive power being applied and the machine put in motion or set running, the bar is fed, as usual, into the machine through the hole at *a* until its end strikes the gauge-stop, and has a blank cut off each time the carriage N moves, or at each forward and each backward movement. At each motion of the cut-off the blank is carried along to one or the other of feeders L M, which then moves in with it to the rolls, which roll the blank out into the proper form, straight, and ready for bending up. As the blank leaves the rolls its forward end enters or passes between the distended (or opened out) fingers of the spring-nippers *d*⁴, which immediately begin to move in the same direction as the rolled blank, and, closing on it, gripe and carry it along further away from the rolls, and, after taking it to the proper place, release it, and it falls in between the projections or retaining-stops *m*⁴ and onto the supporting-surfaces *i*⁴, on which it rests until the carriage D⁴ comes along. This carriage presses against the sides of the blank and pushes it laterally over the supporting-spring *p*⁴. As the blank is pushed along by the carriage it is held between the spring *p*⁴ and the guides *o*⁴ in such manner that it turns on its own axis a quarter revolution, (its flat sides being confined between said spring and guides,) or so that the side which was uppermost is brought round into a vertical position and against the face of the frame of the bending mechanism. The carriage D⁴ then holds the blank in the proper position exactly over the former cams V W and beneath the bender, until it is confined between and acted on by these parts of the bending mechanism. The bender T comes down onto the upper edge of the rolled blank while the former-cams V come against the lower edge of the blank, and it is bent up into the proper horseshoe-shape, finished, and discharged, dropping into a chute, C⁵, from which it is discharged into a suitable receptacle onto the floor or ground.

The operations of feeding in, rolling out, carrying to the benders, and bending up the blanks are performed successively in the opposite sides of the machine by the two sets of rolls, the two carrying mechanisms, and the two bending-and-finishing mechanisms, just as in my patented machine, and the construction and operation of each of the mechanisms are the same precisely in this

machine as in that described in my said patent of October 18, 1870, except that of the mechanism for carrying the rolled blanks to the benders. In this machine this operation is performed by the entirely different mechanism shown and described, and in, I believe, a much more practical, successful, and every way more desirable manner. I do not deem it necessary to refer further to the peculiarities of operation or to the advantages of that part of this machine which is made the subject of my former patent, where they are all fully explained.

The mechanism employed in this machine for taking the rolled blank from the rolls and depositing it in supporting-surfaces, and then carrying it off sidewise to the bending mechanism, is such as is not only simple and efficient, but is positive in all its movements, and will continue to work perfectly after the machine is once adjusted properly and set running.

Having fully described the general construction and operation of the machine, (it being in part a duplication of that shown and described in my former patent,) and having particularly pointed out the improvements made, what I claim as new, and desire to secure by Letters Patent, is—

1. In combination with the dies for rolling out the blank, and the rests or supporting-surfaces, arranged as specified, the automatic nipper-carrier for taking the rolled blank and depositing it in proper position to receive the action of the device which moves it off to the benders, the whole constructed and operating in the manner described.

2. In combination with the surfaces or supports for holding the blanks brought from the rolls, the reciprocatory carriage and guides, by means of which the blanks are fed to the benders, the whole constructed and operating in the manner and for the purpose set forth.

3. The curved spring-guides, in combination with a bending mechanism arranged below the point from which the blank is fed to it, and a suitable device for pushing the blank along so that it may be turned and presented edgewise to the bender, substantially as described.

In testimony whereof I have hereunto set my hand and seal this 3d day of May, 1871.

J. H. SNYDER. [l. s.]

Witnesses:

J. N. McINTIRE,
ISIDORE FELBEL.