P. P. READ.

HORSESHOE FORGER.

No. 5,364. Patented Nov. 13, 1847.

Fig: 1

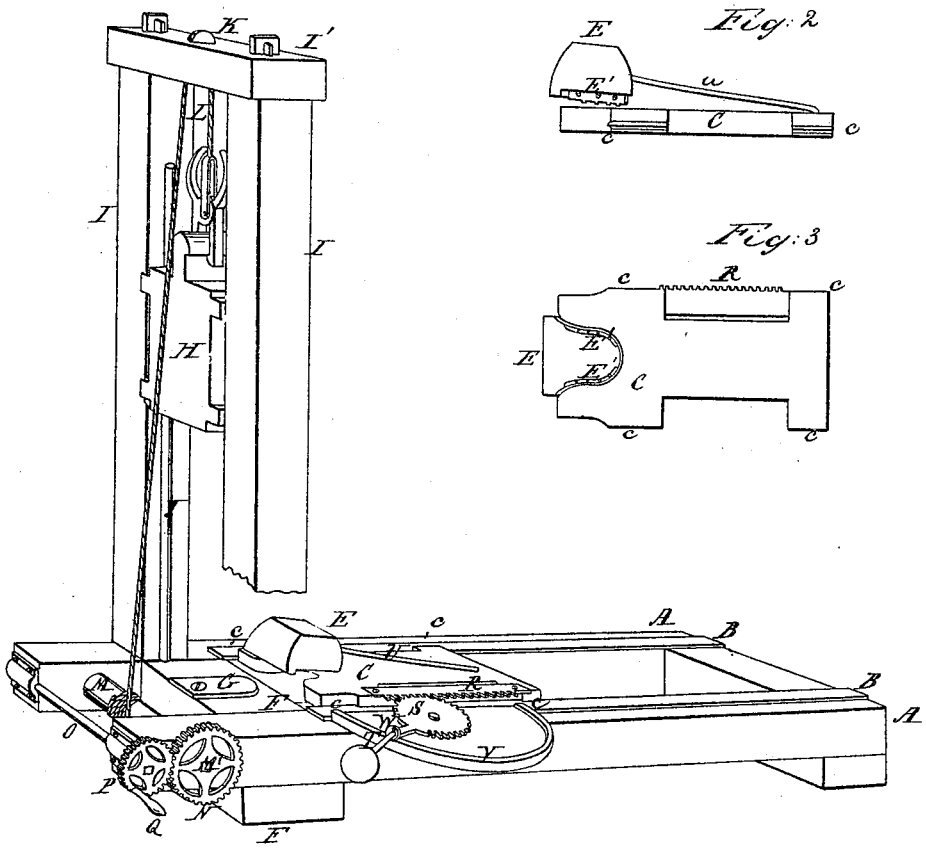

Fig: 2

Fig: 3

UNITED STATES PATENT OFFICE.

PHILIP PITTS READ, OF DURHAM, MAINE.

HORSESHOE-MACHINE.

Specification of Letters Patent No. 5,364, dated November 13, 1847.

To all whom it may concern:

Be it known that I, PHILIP PITTS READ, of Durham, in the county of Cumberland and State of Maine, have invented a new and useful Machine, called the "Lever Horse-shoe-Forger," of which the following is a full and exact description thereof, reference being had to the annexed drawings of the same, making part of this specification.

Figure 1 is a perspective view. Fig. 2 is a side elevation of the fuller and die. Fig. 3 is a view of same, turned bottom upward.

The foundation of the machine consists of two timbers or sills A A lying side by side and parallel to each other and at a distance of from sixteen to twenty inches apart measuring from the inside forming a parallelogram or oblong square, the timbers being about thirteen feet in length, the length to be increased or diminished as the power needed may vary. On the top of these timbers or sills is laid on each a bar or plate of iron B about three inches in width and one eighth of an inch in thickness, fastened to the said sills by bolts or screws, and running forward the whole length as far as the anvil hereinafter mentioned, and projecting over the inner edge, or side, of the sills about half of an inch. Upon these bars or plates is arranged a fuller *c* with its outer sides grooved as at *c*, so as to run back and forward upon said projecting bars B. The said fuller *c* is made of cast iron, about three feet in length and of considerable weight, one end of it—the forward end—is hollowed out of the shape and size of the outside circular part of a horse shoe and when driven upon the heated iron forms a horse shoe around a steel plate G called the former, resting and fastened as hereinafter described and of the shape of the inside of a horse shoe. On top of the fuller is attached by a steel spring U a piece or block of wrought iron E of a shape similar to a horse shoe called the die from two to four inches in thickness; on the outer circular edge of which is sunk cast steel dies E′ fastened by screws, which, when driven with force by the fall, or monkey, H hereinafter named upon the upper side of the heated iron, creases it, and perforates it with holes for the nails of the shoe, nearly at the same time that the form is given to the shoe as above. This block of iron or die when driven down as hereinafter described, falls into and just fills the hollowed end of the fuller *c* above described. The forward ends of the timbers or sills above named are connected by a solid block of iron or anvil E on which anvil rests and is fastened a plate or block of cast steel G one and one fourth of an inch in thickness, sunk into the anvil about three fourths of an inch, and of the shape on the end next the fuller of the inner side of the circular part of the horse shoe, before which is placed the heated iron, across the said sills, for the shoe, and about or around which the said heated iron is pressed by the fuller running with force against it as above described.

The dies E′ above described are driven or pressed down upon the heated iron by a large block of iron, or monkey H, that falls from the top and on the inside of two upright and perpendicular posts I I of same length as the sills and mortised into the forward end of the said sills, the outer edges of said block of iron being grooved so as to run up and down on round iron rods J on the inside of said upright timbers I I. The upper ends of the perpendicular timbers or posts are crossed by a cap timber I′ mortised into the posts, and in the center of the cross timber is inserted a revolving truck K over which runs an iron chain, or rope L, one end of which is attached to the iron weight or falling power or monkey H and by which said iron weight is raised after its fall, the other end of said chain being attached to a drum M or a shaft M′ as hereinafter described.

The rope or iron chain L which runs over the pulley K above named and attached to the iron weight or falling power H by one end, is fastened by the other end to the drum M on the iron shaft M′ and by the revolution of said shaft, the chain is coiled about said drum M and thereby raises the said iron weight or falling power H to the top of said perpendicular posts.

The above described iron shaft passes through the sill timbers A near the forward end, and on one end of said shaft on the outside of said side timber is a pinion wheel N which is revolved by the revolution of a smaller pinion wheel P attached to another iron shaft *o* running through said timber parallel to the first named shaft M and forward of the same, the teeth or pinions of said wheels interlocking, the smaller wheel

being of one fourth of the size of the longer one, and its shaft turned by one or more cranks Q and by turning said crank, or cranks, both wheels are set in motion and the longer shaft and its drum M and the chain coils about it and raises the iron weight or falling power.

On the upper side of the fuller *c* is placed a rack R made of cast iron and fastened to the fuller with screws;—it has pinions or teeth on its outer edge projecting over the side of the fuller and for the purpose of driving the fuller back and forward upon the sills, a pinion wheel S is so placed, that its teeth or pinions interlock with the teeth of the rack and by pushing a lever T attached to said wheel and resting upon and fastened to said sill by an iron bolt, serving as the axle, the fuller is carried forward and back; said lever is moved by the hand or otherwise.

U is the spring that connects the die to the fuller being curved upward so as to sustain the die in a raised position above the upper surface of the fuller and to spring it upward from the shoe when the monkey is raised from the die—the die being directly over the horse shoe shaped cavity in the forward end of the fuller.

V is a semi-circular way secured to one of the sills opposite the rack R, over which moves the antifriction roller W connected with the lever T in moving the lever to the right and left for operating the fuller *c*.

Operation: The monkey H being raised, and the piece of heated iron that is to form the shoe being placed flatwise on the anvil with its middle against the rounded end of the former G, the fuller *c* and die E are brought forward by moving the lever T to the right—the fuller *c* wrapping the rim around the former G in the shape of a horse shoe. The die E now receives a sufficient blow from the monkey H or other article to drive the dies E′ or punches into the iron to form the creases and the teeth or dies entirely through the iron to form the nail holes. The monkey is then raised from the die which instantly springs upward from the shoe by the elasticity of the spring U.

I do not claim the invention of making horse shoes by bending the bar of iron that forms the shoe around a horse-shoe-shaped former and pressing the crease and nail holes; but

What I do claim as my invention and desire to secure by Letters Patent is—

The particular manner of combining the sliding horse-shoe-shaped follower or fuller *c* for bending the bar of iron around the former G to form the horse shoe, with the horse-shoe-shaped die E and spring bar U connected therewith, for stamping the crease and nail holes in the shoe by the sudden blow of a falling weight H which again rebounds from the shoe as soon as the weight commences to rise by the action of the windlass, rendering the fibers of the iron of which the shoe is composed close, compact, tough, and lasting; instead of being pressed or rolled, which is an inferior mode of manufacturing shoes, leaving them in a loose, brittle state, not well adapted to the purpose for which they are intended, the several parts of the said combination being made arranged and operated in the manner and for the purpose above set forth, or other mode substantially the same.

In testimony whereof I have hereunto set my hand and seal before two subscribing witnesses this 11 day of May 1847.

PHILIP P. READ. [L. S.]

Witnesses:
WM. P. ELLIOT,
A. E. H. JOHNSON.