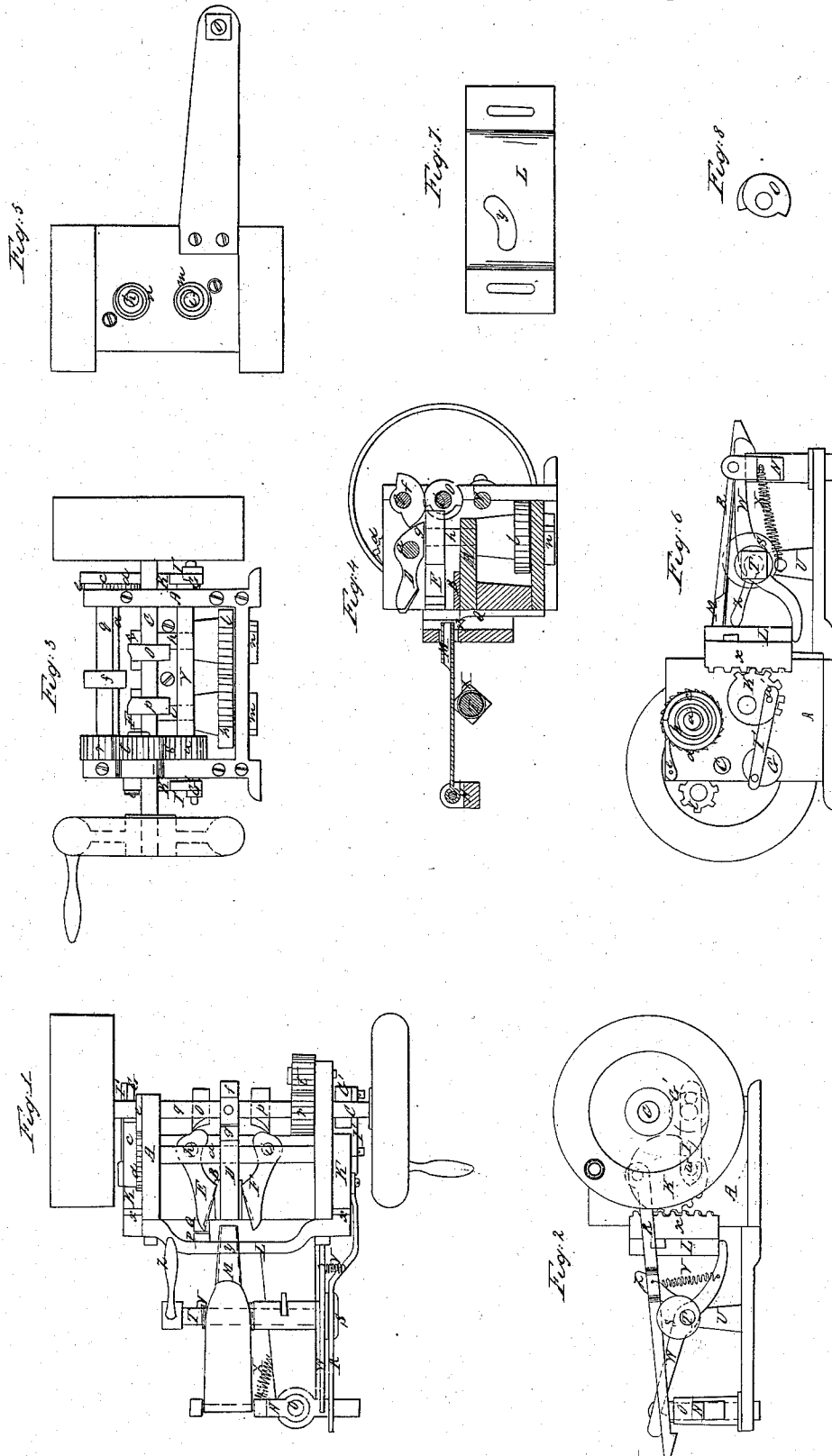


C. PARKHURST & C. WEED.
MACHINE FOR FORGING HORSESHOE NAILS.

No. 15,571.

Patented Aug. 19, 1856.



UNITED STATES PATENT OFFICE.

CHS. PARKHURST AND CHS. WEED, OF BOSTON, MASSACHUSETTS.

MACHINE FOR FORGING HORSESHOE-NAILS.

Specification of Letters Patent No. 15,571, dated August 19, 1856.

To all whom it may concern:

Be it known that we, CHARLES PARKHURST and CHARLES WEED, of Boston, in the county of Suffolk and State of Massachusetts, have invented an Improved Machine for Forging Horseshoe-Nails; and we do hereby declare that the same is fully described and represented in the following specification and the accompanying drawings, of which—

Figure 1, is a top view of said machine. Fig. 2 a side elevation of it. Fig. 3, a rear elevation of it. Fig. 4, a vertical central and longitudinal section. Fig. 5, an underside view of the bed plate and springs attached thereto. Fig. 6, another side elevation in which the driving pulley is not represented in order that the mechanism connected with the adjacent sides of the frame may be shown to advantage. Fig. 7, is a front view of the vertical slider. Fig. 8, is a top view of one of the cams of the lateral hammers.

The object we have had in view in constructing our machine has been to employ a stationary anvil or die and thereby get rid of the difficulty incident to the use of a movable anvil, as well as the application of mechanism for elevating and depressing the same.

We are perfectly aware of the construction and mode of operation of each of the forging machines patented by Daniel Noyes and Silas S. Putnam, those of Noyes having been patented in October 1853, and in August 1855, while that of Putnam was patented in May 1855. Consequently, we lay no claim to the employment of three hammers and an anvil as described in the specification of the first of the above patents of the said Noyes. Nor do we claim the employment of four hammers as described in the specification of the said Putnam, but we make use of three spring hammers and a stationary anvil, and make our nail directing tube movable up and down with respect to the anvil and the side hammers or dies. Furthermore, we operate each hammer by a cam and a scroll spring, the latter serving to throw the hammer inward toward and upon the article to be forged, the former moving the hammer in an opposite direction.

In carrying out our invention, we support the operative parts by means of a suit-

able frame A, within which we arrange (as shown in Fig. 4,) a stationary anvil B, and a driving shaft, C, said shaft being more particularly represented in Fig. 3. We also dispose within said frame, a spring hammer or die D, and two other spring hammers or dies, E, F, the office of the two latter being to reduce a nail rod or give its opposite sides the tapering form of the head and shank of a "horse shoe nail," the anvil and the vertical die D, serving to flatten the rod and reduce it to its proper form in other respects. The two hammers, E, F, play horizontally above the anvil and are simultaneously moved either toward or away from one another, and so as to strike or close together upon the nail rod during the time that the hammer, D, is elevated above them. So in regard to the hammer, D, it is caused to strike downward toward the anvil and rise above the same during the time the lateral or side hammers are opened apart to their greatest extent.

The vertical hammer D, is fixed on a horizontal shaft, *a*, whose outer end is fastened to the inner end of a coiled spring, *b*, which is arranged within and has its outer end attached to the rim of a rotary box, *c*, disposed on one side of the frame, A, as shown in Figs. 1, and 6. This box, *c*, turns on the shaft, *a*, and has a ratchet *d*, fixed to its circumference and made to engage with a holding click, *e*, applied to the side of the frame. The object of such box, holding click, and ratchet is to enable the spring to be wound up to such an extent as may be desirable in order to regulate the force of the blow of the hammer. The spring so applied to the shaft, *a*, serves to depress the hammer D, smartly, immediately after its release from the action of its cam, *f*, the said cam being formed as shown in Fig. 4, and made to operate on the tail arm, *g*, of the hammer, D. Each of the horizontal hammers, E, F, is applied to one of two vertical shafts *h*, *i*, arranged as seen in the drawings, both of said shafts being connected by geared sectors *k*, *l*, and having coiled springs applied to their lower ends and the frame, A, as shown in Figs. 3, 4 and 5, or substantially as such a spring is applied to the hammer D.

In order to operate the side hammers, cams, *o*, *p*, are used and fixed on the driv-

ing shaft C, such cams being represented in Figs. 1, 3 and 4, a top view of one of them being given in Fig. 8. During the rotation of the cams, *o*, *p*, they move the lateral hammers outward and subsequently maintain them at rest a short time and finally allow them to be forced inward by the action of their springs *m*, *n*. The shaft, *g*, of the cam, *f*, has a gear, *r*, fixed upon it, which by means of another gear, *t*, and a gear, *s*, receives rotary motion from the driving shaft, the latter gear being fixed on said driving shaft and made to engage with a fourth gear *u*, arranged upon a shaft *v*, disposed as seen in Figs. 3, and 4. On opposite ends of the shaft, *v*, are cranks, *G'*, to which connecting rods *I'*, are respectively jointed and extend from and are jointed to pins, *w'*, projecting from the sides of two rocker gears *K*, *K'*, arranged on opposite sides of the frame work *A*, as seen in Figs. 1, 2, and 6. These gears engage respectively with toothed racks *x*, *x'*, affixed to the ends of a vertical slider *L*, formed as seen in Figs. 1, and 7, it being so applied to the frame *A*, as to be capable of being moved vertically either upward or downward. A bent cam slot, *y*, is made through the slider, *L*, as shown in Fig. 7, and there extends through the said slot, a guide or guide tube, *M*, which is hinged to a lever, *N*, that turns horizontally upon a vertical fulcrum or post, *O*, (see Figs. 1, and 2). The cam slot depresses the guide tube when the latter is moved laterally. The part, *M*, serves to guide the nail rod not only between the dies for reducing it, but to move it therefrom to and between cutters *P*, *Q*, for the purpose of separating from it, a nail, after the latter may have been formed. These cutters *P*, *Q*, are arranged as shown in Figs. 1, and 4, one of them, viz, *P*, being attached to the slider, while the other is fixed to the framework *A*.

During the operation of the machine, the vertical slider, *L*, has a reciprocating vertical motion such as will raise and depress the guide, *M*, in such manner as to raise the nail rod from the stationary anvil to a position for it to be operated upon by the side hammers and subsequently to depress it upon the anvil.

In order to move the guide laterally toward and away from the cutters, we make use of machinery as follows. A latch, *R*, is jointed to one side of the rocker gear, *K'*, as shown in Figs. 1, and 2, the said latch being formed as shown in the latter figure and made to rest in the grooved periphery of an eccentric, *S*, that is fixed upon one end of a rocker shaft, *T*, which is supported and turns in a standard or post *U*, and has a hand lever, *z*, extending from it as shown in the drawings. By turning said shaft in one direction the eccentric, *S*, will be moved

so as to enable the latch, *R*, to be drawn downward by the action of a spring, *V*, which is attached to it and another catch lever, *W*, which has its fulcrum on the rocker shaft, *T*, and is arranged with respect to the lever *N*, the latch *R*, and the vertical slide, *L*, as shown in the drawings. Besides the above, the lever *N*, has a spring, *X*, extending from it to the post, *U*, as seen in Figs. 1, and 2. There is also fixed to said standard another spring, *Y*, that is coiled around the shaft *T*, and is for the purpose of moving said shaft in such manner as to elevate the latch, *R*, out of action upon the tail of the lever, *N*. This it does when the attendant lets go of the arm of the rocker shaft.

After the nail has been formed by the dies or hammers, the workman or attendant on the machine should lay hold of the hand lever, *z*, and pull it toward the lever *N*. In so doing, the catch, *R*, will be dropped upon the tail of the lever, *N*, so that when the latch is next drawn backward, it will fall upon the lever, and so as to move it on its fulcrum to such an extent as to cause the guide, *M*, to be moved laterally a sufficient distance to carry the nail rod between the cutters. In order to retain the parts in such positions during the next forward motion of the latch *R*, we employ the catch, *W*, which in the meantime and by the action of the spring, *V*, has been thrown down upon the tail of the lever *N*, and will hold said lever still, while the slider, *L*, descends far enough to cause the movable cutter to separate the nail from the nail rod. The further descent of the slider carries it, (the slider) into contact with the tail of the catch, *W*, and so moves the catch as to set free the lever, *N*, and enable the spring *X*, to return said lever, *N*, and guide, *M*, to proper positions for the nail rod to be again moved forward between the dies. By means of the coiled spring and the cam used in actuating each hammer, we can operate the hammers to much better advantage in forging a nail, than can be effected when they are thrown by the action of cranks as in the machines of Putnam and Noyes.

Having thus described our machine, what we claim as our improvement is as follows:

1. We claim that of making the nail guide *M*, movable up and down with respect to the anvil and its top and lateral hammers when said anvil is made stationary as specified, said improvement being advantageous in several respects.

2. We do not claim moving the nail guide *M* toward the cutters, *P*, *Q*, but what we do claim is the combination of mechanism for operating said nail guide or moving it from the anvil to the cutters and retaining it between the cutters during the descent of the

vertical slider, L, far enough to separate the
nail from the rod, such combination con-
sisting of the lever latches R and W, the
eccentric, S, the rocker lever, N, and the
5 springs V, and, X, applied to the guide tube.
M, and the vertical slider, L, constructed
and operated essentially as described.

In testimony whereof, we have hereunto

set our signatures this third day of July
A. D. 1856.

CHAS. PARKHURST.
CHAS. WEED.

Witnesses:

R. H. EDDY,
F. P. HALE, Jr.