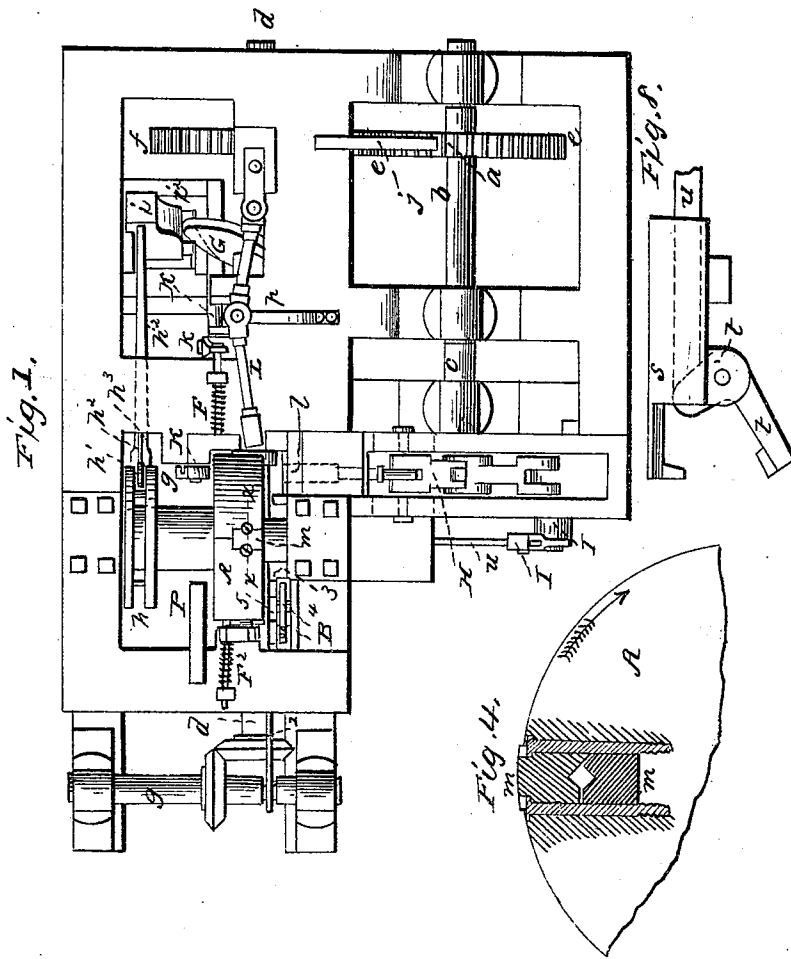


H. N. SWIFT.
Spike Machine.

No. 7,749.

Patented Oct. 29, 1850.

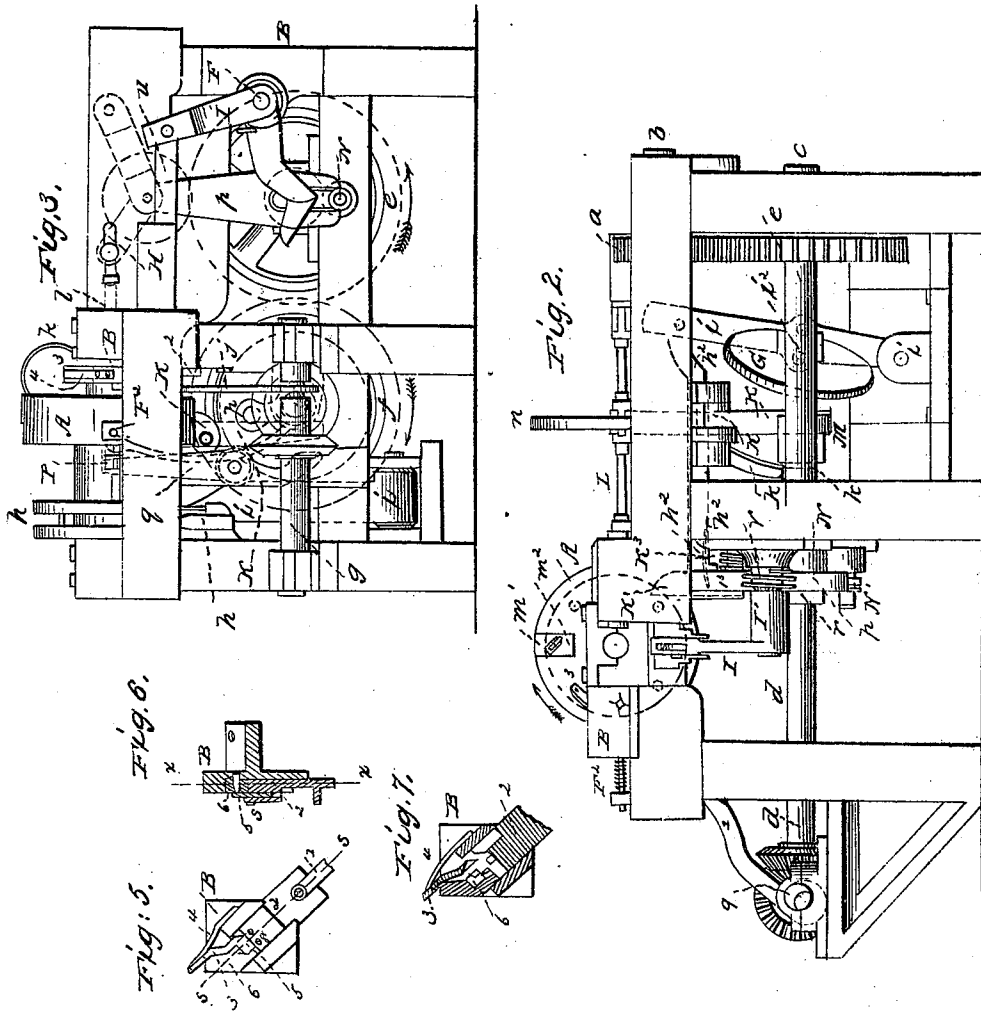


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2 Sheets—Sheet 2.

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UNITED STATES PATENT OFFICE.

HORATIO N. SWIFT, OF BOONTON, NEW JERSEY.

SPIKE-MACHINE.

Specification of Letters Patent No. 7,749, dated October 29, 1850.

To all whom it may concern:

Be it known that I, HORATIO N. SWIFT, of Boonton, in the county of Morris and State of New Jersey, have invented certain improvements in Machinery for Manufacturing Railroad or Hook-Headed Spikes, and that the following is a full, clear, and exact description of the principle or character which distinguishes them from all other things before known and of the usual manner of making, modifying, and using the same, reference being had to the accompanying drawings, of which—

Figure 1, is a top plan, Fig. 2 a side elevation, Fig. 3, an end elevation, Fig. 4 an enlarged section of the revolver (A), Fig. 5 a view of the cutter and swages B, Figs. 6 and 7 sections of the same, Fig. 8 view of the sliding clamps (*s* and *t*).

My invention consists of a machine which will manufacture railroad spikes with great rapidity and perfection of form, giving each spike the proper shaped head and insuring the bending of it at the proper angle and direction. The spikes are cut off, headed, and completed at one operation and from the construction of the machine are necessarily exactly alike in form and size. I am aware that other machines have been constructed with these views, but my machine far surpasses any with which I am acquainted in rapidity and quality of work.

The machine is constructed substantially as follows: The pinion (*a*) on the driving shaft (*b*) gives motion to the shafts (*c* and *d*) by means of their respective spur wheels (*e* and *f*) and by a pair of bevel wheels the shaft (*g*) is driven at right angles to the end of the shaft (*d*); the motion of the several shafts is in the direction of the arrows.

(A) is the revolver which carries the dies for receiving the rod to be cut into spikes, on its shaft are two flanges (*h*) between which are four pins which are acted on alternately by the arm (*h'*) projecting upwards from the sliding bar (*h²*) which is jointed at its other end to the lever (*i*) having its fulcrum at (*i'*) and two pins at (*i²*) which embrace the edge of the helichord (G) on the shaft (*d*). The arm (*h'*) when projected forward carries with it one of the pins between the flanges (*h*) and thus moves the revolver (A) one quarter round for each revolution of the shaft (*d*). The arm (*h'*) works up and down in a mortise in the end of the sliding bar (*h²*) and is

held up by the spring (*h³*) and when withdrawn and the arm (*h'*) comes in contact with one of the pins, it is pushed down like a latch bolt and rises again on the other side of the pin, ready to push it round on the next stroke.

The spring bolts (*F'* and *F²*) serve to hold the revolver (A) steady during the cutting off and heading of the spikes, and to allow of the revolver being moved around the bolt (*F'*) is withdrawn at the proper time by the lever (*k*) worked by a cam (*k'*) on the shaft (*d*) acting on its tail.

The rod from which the spikes are to be formed is introduced through the square hole in the piece (B) on the inner side of which are the dies which form the point and cut off the rod. The cutter (5) and the swage (2) slide in grooves in the piece (B) and are moved by the rod (1) worked by the eccentric on the shaft (*g*). The swage (2) forms one side of the point of the spike by pressing it against another swage (6) which is stationary and forms two other sides of the point, the fourth being formed by the swage (3) which is moved against the end of the rod or spike, simultaneously with the swage (2) thus by their combined movements forming a point to the rod, at the same time the spike, then in the revolver is cut off from the rod and its head bent in the right direction by the back of the cutter (5) which is made adjustable by the screws (8) for that purpose. The swage (3) is forced inwards by the inclined face on its edge coming in contact with the inclined face on the swage (2) and is lifted off again by the spring (4) to release the rod to allow it to be pushed through the piece (B). The cutter is made adjustable so that it may be set to give the proper degree of bend to the head of the spike. At the time of cutting off the spike it is held stationary in the dies of the revolver which is at that time prevented from turning by the spring bolts (*F'* and *F²*), which is necessary in order that the head of the spike may receive the proper bend from the back of the cutter. The revolver is also placed at such a distance from the cutter that the bent head of the spikes shall be of proper length. The swages for forming the point may be placed behind the revolver to point the spike, instead of pointing the rod previously to its entrance.

(P) is a stop to prevent the rod from being pushed too far through.

When a spike has been pushed in between the dies of the revolver (A) and has been cut off from the rod and has received a bend for the head during which operations the revolver is held stationary, it is carried round by the revolver, by two motions of the bar (h') and is brought opposite the heading punch (l) the revolver is then locked by the spring bolts (E' and E²) and the spike is held fast between the dies (m' and m²) seen in Fig. (4) the outer die being forced in by the toggle joint (L) which is acted on at its center joint by the lever (K) having its fulcrum at (K') and its tail being acted on at the proper time by the cam (M) on the shaft (d). The toggle joint (L) is kept relaxed when not acted on by the cam by the spring (n). The heading is performed by the punch (l) which is forced forward by the toggle joint (H) worked by a crank (N) on the end of the shaft (e) the pin of which works in a slot in piece (p) jointed at its upper end to the toggle joint (H). The crank (N) during the upper portion of its revolution lifts the piece (p) which acting on the toggle joint (H) forces the punch (l) against the head of the spike. After heading, the projecting end of the spike is struck by the lever (g) acted on by the cam (r) which forces the spike partly out from between the dies. The head of it is then caught between the sliding jaws of the clamp (s, t), shown enlarged in Fig. 8 and drawn out of the revolver (G). The clamp is worked by an elongation of the crank pin (N') acting on the inclined planes on the tail of the bent lever (I) having its fulcrum at (I') and its upper end jointed to the bar (u). The upper jaw of the clamp (s) slides in grooves in the frame, and the

lower jaw (t) works in it on the pin (t'), and the rod (u) being jointed to the piece (t) its first action when drawn back, is to close the jaws, on the head of the spike and then withdraw them together and with them the spike from the revolver (G) which is dropped on the return stroke of the bar (u) which releases the lower jaw (t). The lever (I) is kept forward by the pressure of the spring (V). It is obvious that the several operations are performed on different spikes, simultaneously as they are successively introduced.

Having thus fully described my improved spike machine, what I claim as new therein and which I desire to secure by Letters Patent is—

1. The adjustable cutter (5) when in such position with regard to the dies for holding the spike, that the rod forming the spike is both cut off, and the proper bend given to it to form the head, at one and the same operation during which the spike is held stationary substantially in the manner described.

2. I claim the jaw (3) of the swage, kept open by a spring in combination with the moving swage (2) and the stationary swage (6) the swage (2) having an inclined face which acting on a similar face on the back of the jaw (3) closes it for forming the point for the spike, whether placed in front of the revolver to point the rod, or behind it to point the spike, constructed substantially as described.

H. N. SWIFT.

Witnesses:

WM. G. LOTHROP,
W. R. GILBERT.