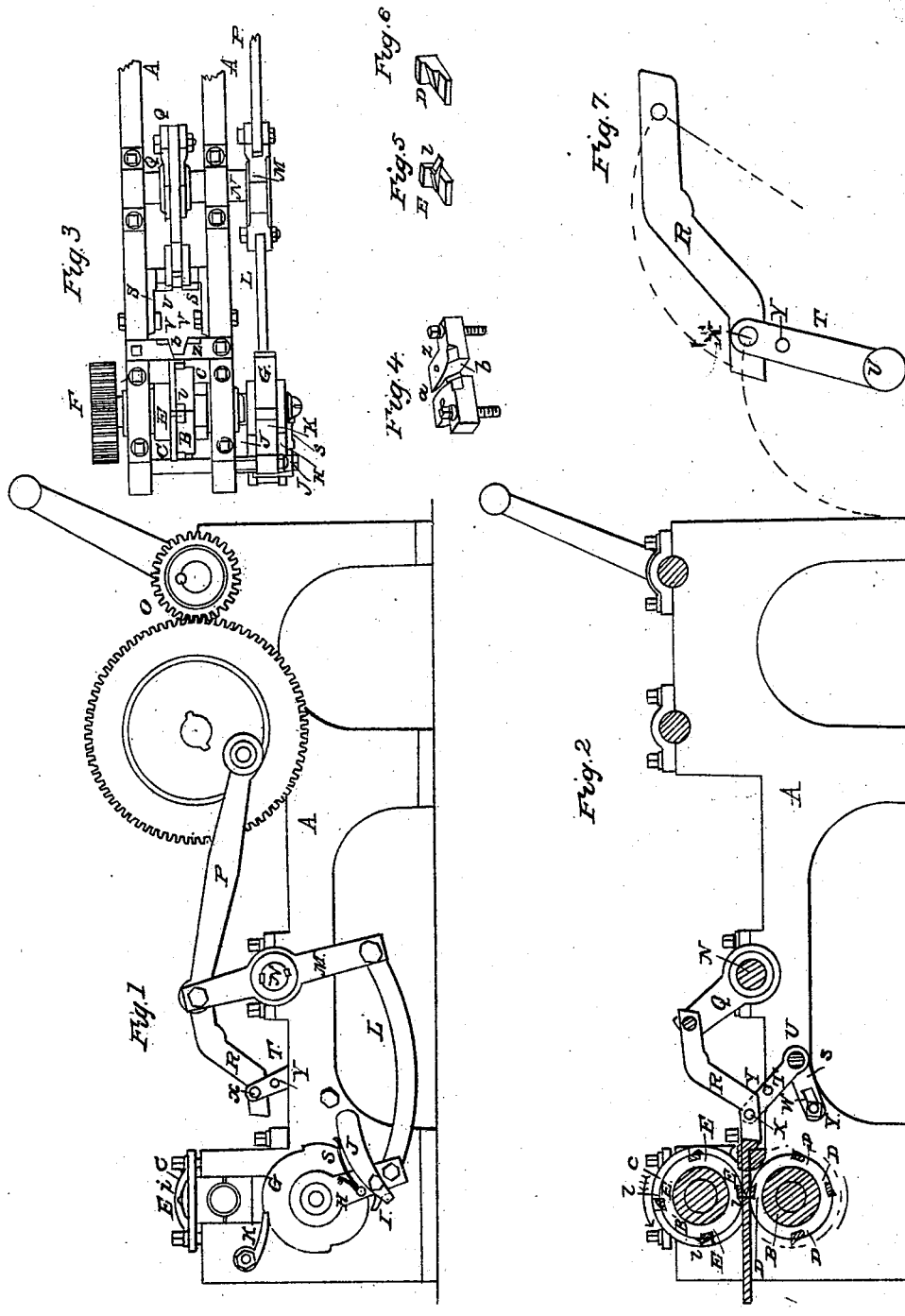


J. H. SWETT.

Spike Machine.

No. 5,843.

Patented Oct. 10, 1848.



UNITED STATES PATENT OFFICE.

JAMES H. SWETT, OF CONCORD, NEW HAMPSHIRE.

MACHINE FOR MAKING SPIKES.

Specification of Letters Patent No. 5,843, dated October 10, 1848.

To all whom it may concern:

Be it known that I, JAMES H. SWETT, of Concord, in the county of Merrimac and State of New Hampshire, have invented a new and useful Improvement in the Machine for Making Spikes, which is described as follows, reference being had to the annexed drawings of the same, making part of this specification.

Figure 1, is a side elevation of the machine. Fig. 2, is a vertical longitudinal section of the same. Fig. 3, is a top or bird's eye view of ditto. Fig. 4, is a perspective view of the heading plate. Fig. 5, is a perspective view of one of the dies of the upper roller. Fig. 6, is a perspective view of one of the dies of the lower roller. Fig. 7, is a side elevation of the headers, the circles upon which it moves being represented by dotted lines.

Similar letters in the several figures refer to corresponding parts.

A is the frame, made of cast iron of sufficient size and strength to contain and support the several parts of the machine.

B, B', are drawing rollers, arranged one above the other and secured on horizontal shafts turning in adjustable boxes inserted in the frame.

C are flanges on the peripheries of the rollers, for guiding the rod from which the spikes are formed, in its passage between them.

D are four cast steel dies, dovetailed in the periphery of the lower roller at equal distances apart, and projecting beyond the same in the form of a triangle.

E are four other dies, dovetailed in the periphery of the upper roller at equal distances apart, and projecting from the same a similar distance to those on the lower roller, and made to correspond with them in form, except that they have an additional triangular lip *l*, projecting from their radial sides, resting on the periphery of the roller.

F is a cog wheel on the shaft of the upper roller, meshing in gear with a similar cog wheel, on the shaft of the lower roller.

G is a ratchet wheel secured on the shaft of the lower roller.

H is an arm turning loosely on said shaft outside the ratchet wheel.

I is a propelling pall attached to the arm H at one end by a horizontal bolt, on which it moves.

J is a lever or dog, also attached to the arm by said bolt, having a projection or pin at one end, which is pressed against the pall by a spring *s* at its opposite end, for keeping said pall against the periphery of the ratchet wheel.

J' is an arm turning loosely on the shaft of the lower roller inside of the ratchet wheel, and secured to the arm H at its lower end, by a bolt.

K is a holding pawl secured above the ratchet wheel, and resting on the top of the same.

L is a segment connecting rod, that connects the end of the loose arm H on the axle of the lower roller, and ratchet wheel, and to which the propelling pawl is attached—and the lower extremity of a vibrating beam M on the end of a horizontal shaft N, turning in suitable boxes in the frame.

O is the propelling gearing.

P is a connecting rod that connects the upper end of the vibrating beam to a wrist *w* on the face of one of the propelling wheels.

Q is a crank on the horizontal shaft N, midway between the sides of the frame.

R is the header, being a crooked bar, bent so as to form obtuse angles near its extremities as represented in Fig. 7, and connected at one end to the crank Q.

S, T, are two adjustable arms for altering the position of the header R.

U is a joint bolt for connecting the arms S, T, together.

V is a bolt for securing the arm S to the frame.

W is a slot, in the arm S, to admit of the aforesaid adjustment.

X is a pin or bolt for connecting the header to the arm T.

Y is an additional hole in the arm T, into which the pin X is inserted when the position of the header is required to be changed.

Z is the heading plate secured firmly to the frame immediately opposite the drawing rollers. This plate has a channel or groove *a* formed in its upper surface to admit and guide the heated rod, and hold it in its place during the operation of forming the head, and has a depression *b* on its edge of the form of a section of a wedge, the inner side of said depression being in-

clined or sloped as represented in Figs. 2 and 3, in which the head of the spike is formed.

c' is a cap plate, secured on the upper surface of the heading plate for preventing the heated rod from rising during its passage through the channel a , or during the operation of forming the head of the spike.

The operation of this machine is as follows,—Motion being communicated to the propelling wheels O, by band, or cogged gearing, leading from any convenient power, a vibratory motion is given to the crank Q, shaft N, vibrating beam M, and arm H, by the connecting rod P, attached to the upper end of said beam, and the wrist w on the face of the large propelling wheel, and the segment connecting rod L,—which causes the propelling pall I, attached to said arm, and held against the ratchet wheel G by the spring dog J, to alternately enter the notches in the ratchet wheel, and, in its forward oscillating motion, to turn the rollers B B' a quarter of a revolution and in its return motion toward the rear of the machine to slip over the periphery of the ratchet wheel, until it enters the next succeeding notch, when its motion is again reversed and the rollers turned another quarter of a revolution—the rollers being held and prevented from turning during the return motion of the oscillating arm and pall, by the holding pall K. The wrought iron rod from which the spikes are to be formed is introduced between the rollers, being previously heated to a red heat, and is forced by them through the channel a in the upper surface of the heading plate z until the cutting edge of one of the dies E, on the upper roller, and the cutting edge of one of the dies D, on the lower roller come together, (the dies on the upper and lower rollers being arranged in the proper relation to each other to ensure this result) and cut the rod, and by their corresponding inclined surfaces sharpen the end of the part of the rod cut off, and by the inclined surface of the triangular lip l of the upper die, cause a corresponding inclination on the end of the rod, as shown in Fig. 2, when the holding pall falls in one of the notches of the ratchet wheel and keeps the rollers in that position. The motion of the vibrating beam M, loose arms H, J', and crank Q, is then reversed, which causes the crooked bar, or header R to be forced downward, and toward the heading plate; and its lower end (which is inclined in a counter direction to the inclination of the depression in the heading plate) to strike against the end of the part of the rod cut off by the dies, which projects over the depressions b , a sufficient distance to form the required size

of the head, and turn said projecting end downward in the depression, at right angles, and press it with sufficient force between the inclined side of the depression, and the counter inclined end of said crooked bar, or header, to form the head, as represented in Fig. 2—the part of the rod cut off, and formed into a spike; as above stated, being prevented from moving from its position, during the operation of forming the head, by the cap plate c' confining it in the channel a , in the heading plate—the flanges C, on the peripheries of the rollers, and the inclined surfaces of the dies, between which its end is confined. The motion of the several parts are then again reversed, so as to cause the header to recede from the heading plate, and the arm and propelling pall, in contact with the next succeeding notch on the ratchet wheel, to turn the rollers another quarter of a revolution and bring the rod forward to form another spike, and at the same time discharge the one already formed from the machine.

I do not claim the drawing rollers B B', nor the frame A, in which they are placed, nor the cogged gearing F, by which they are propelled, as these are made like those of ordinary rolling mills for rolling iron, but,

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

1. Holding the piece of iron to form the spike with the point against the dies D, E fastened in rolls while the head is being turned and shaped at the same time by the header R upon the heading plates Z as described.

2. I claim the crooked header in combination with the arms T, Q, to which it is attached, and the gearing O, P, for giving it the required movements, by which the spike is hook headed by one motion, as described.

3. I claim the combination and arrangement of the arms S, T, joint bolt U, bolt V, for adjusting the crooked header, as aforesaid.

4. I claim constructing the upper die with an additional triangular projection l for shaping one side of the end of the piece of iron that is to form the spike so as to produce the proper slope, preparatory to its being bent down over the heading plate by the inclined end of the crooked header, as described.

In testimony whereof I have hereunto signed my name before two subscribing witnesses this first day of January 1848.

JAMES H. SWETT.

Witnesses:

WM. P. ELLIOT,
LUND WASHINGTON, Senr.