JAMES H. SWETT.

Improvement in Machines for Making Spikes.

No. 125,629. Patented April 9, 1872.

Fig. 1.

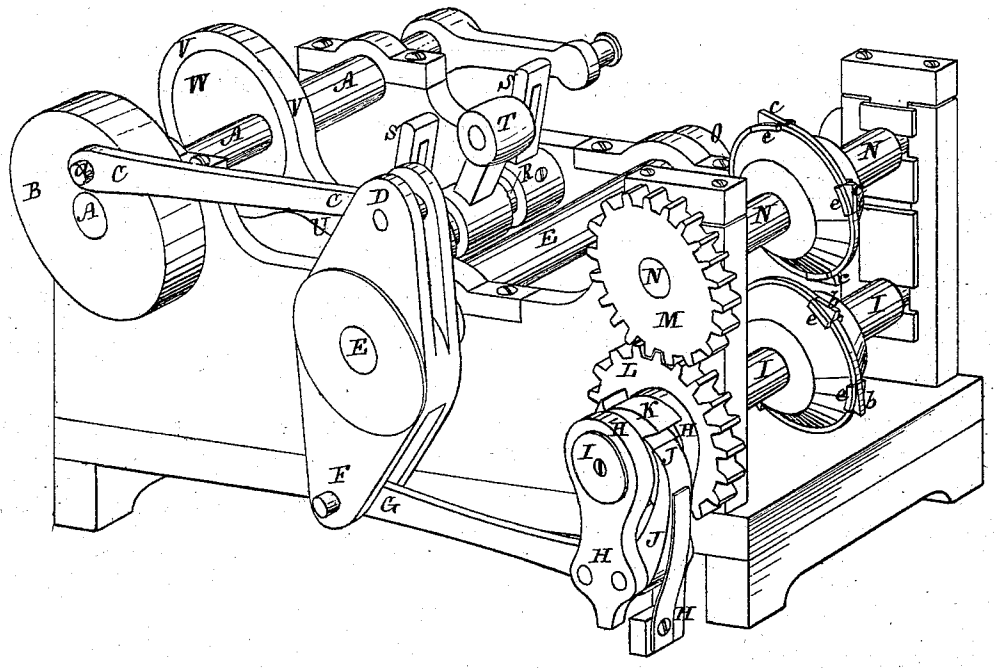
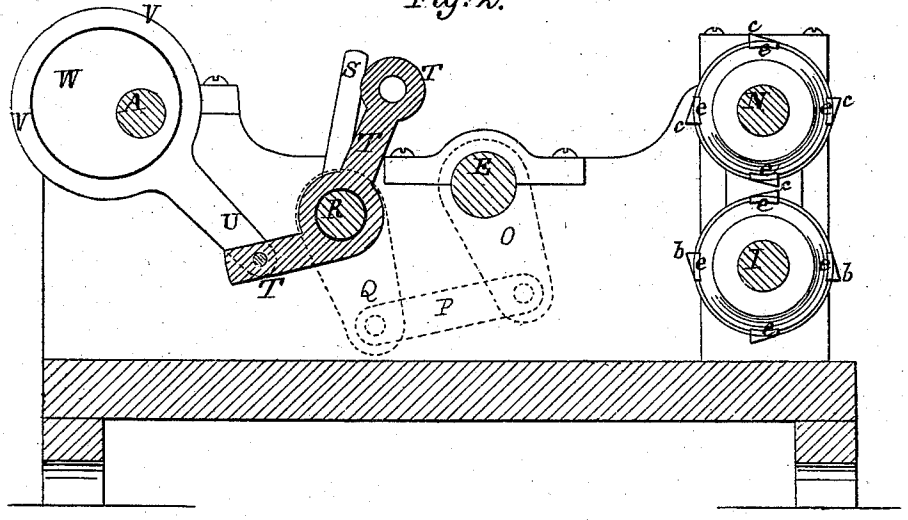


Fig. 2.



Witnesses.

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JAMES H. SWETT, OF PITTSBURG, PENNSYLVANIA.

IMPROVEMENT IN MACHINES FOR MAKING SPIKES.

Specification forming part of Letters Patent No. 125,629, dated April 9, 1872.

To all whom it may concern:

Be it known that I, JAMES H. SWETT, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented certain new and useful Improvements in Spike-Machinery; and I do hereby declare the following to be a full, clear, and exact description of the same, reference being had to the accompanying drawing making a part of this specification, in which—

Figure 1 represents a perspective of so much of a spike-machine as will illustrate my invention, and Fig. 2 represents a vertical longitudinal section through the same.

Similar letters of reference, where they occur in the separate figures, denote like parts of the machine in the drawing.

In spike-machines all the moving parts are operated from one main driving-shaft, and, though working harmoniously with each other, I have found from experience that certain of the moving parts must work in advance of those with which they co-operate, and their movements must follow in successive order, otherwise the machine, which is run at a high speed, will clog itself. The devices which must work with the greatest accuracy and certainty are the pointing-rolls, the griping-dies, and the nippers, and though they apparently move and operate at precisely the same moment, yet they do not, or rather cannot, with any certainty so move and work, but follow in an order of succession that will be explained. And my invention consists in the arrangement of mechanism by which, in making spikes, the nippers which seize and carry the blank from the pointing-rolls to the heading-dies shall move first, the griping-dies move next, and the pointing-rolls move last, and this successive order of movement be maintained.

Motion is given to the spike-machine through the shaft A. On one end of the shaft A there is a crank or wrist-wheel, B, to a wrist, *a*, in which one end of the connecting-rod C is attached, the other end of said rod being attached to the arm D on a shaft, E, supported in the main frame. To an arm, F, (which, in connection with the arm D, forms a cross-head on the end of the shaft E,) is attached a connecting-rod, G, the opposite end of which is attached to a pawl-frame, H, which is hung loosely on the neck of the shaft I which carries the under set of pointing-dies *b b*, &c. In this pawl-frame H is hung a spring-pawl, J, which works into a ratchet-wheel, K, fastened on the shaft I, and by which said shaft receives an intermittent rotary motion. On the shaft I there is also a gear-wheel, L, that gears into another similar cogged-gear, M, on an upper shaft, N, which carries the upper set of pointing-dies *c c*, &c. At the opposite end of the shaft E, and on the opposite side of the machine from the cross-head D F, there is affixed a crank-arm, O, from which extends a connecting-bar, P, that unites said crank-arm O with or to a similar crank-arm, Q, shown by dotted lines in Fig. 2, on a cross-shaft, R, giving to said shaft R an oscillating or rocking motion. On this shaft R are permanently fixed the two arms S S, which work the griping-dies or jaws, not shown. Centrally and loosely arranged upon this shaft R is a cross-head, T, to the under arm of which a rod, U, is attached, said rod being wrought on or fastened to a yoke, V, which surrounds an eccentric, W, that is on and turns with the first moving shaft A. To the arm of the cross-head T, above the shaft R, the attachment is made which operates the nippers. The cross-head T, though on the shaft R, is not operated (though supported on it) by said shaft, but is operated from the shaft A through the eccentric, yoke, and rod W, V, U, as explained.

By this arrangement and mechanism the nippers start first; and should the blank not be entirely separated(in being pointed) from the rod, the nippers will force or tear it off, and without pulling the rod through into the heading-dies. The griping-dies then close up and rest upon the steel plates or shoulders *e e* at the base of the pointing-dies *c b*, and form with said griping and pointing dies a close box, in which the pointing is done, without pinching up or forming a fin on the blank. And lastly, the pointing-rolls come into active operation. There is, of course, a period in which the nippers, griping-jaws, and pointing-rolls are all in motion, but the lead is given to the nippers, then follow the griping-dies, and lastly, move the pointing-rolls. By this succession of movements the operation of spike-making may be carried on at a high speed, and without danger to the machine.

In the spike-machines as heretofore con-

structed and patented by me the griping-jaws and nippers were moved simultaneously, being attached to and operated by one and the same shaft. This I find does not always work well, inasmuch as the nippers should start first, and the griping-jaws follow, and, lastly, the pointing-dies act. To arrange such an order or succession of movements the cross-head or arm T that operates the nippers, though on and supported by the same shaft (R) that operates the griping-jaws, is not operated by said shaft R, but from the shaft A, through the cam and yoke W V, the arm being loose on and capable of motion independent of the shaft R. This succession of movement of the nippers and griping-jaws, followed by the movement of the pointing-dies, makes the actions of the several parts and the operation under a high speed much more certain than by the former arrangement above referred to.

In relation to the steel or hardened shoulders or rests *e e* for the griping-jaws to rest upon, they are important, as forming a square shoulder of hard metal for the griping-jaws to rest upon. In my former machine, as patented, the edge of the pointing-die wheel was beveled or chamfered off, so that there was no bed on which the griping-jaws could rest; on the contrary, the bevel aided the griping-jaws to yield if they acted in conjunction with said jaws at all.

Having thus fully described my invention, what I claim is—

The combination of the cross-head T, loosely supported on the shaft R, with the cam and connecting yoke W V on the main driving-shaft A, so that the nippers may be operated from said driving-shaft independent and in advance of the movement of the shaft R that operates the griping-jaws, for the purpose set forth.

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Witnesses:

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