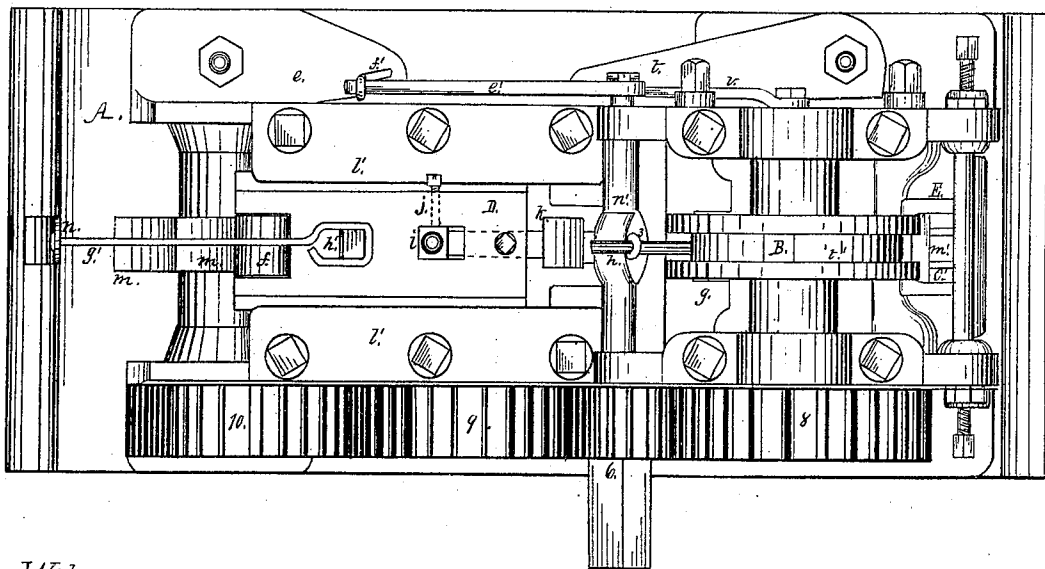
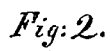
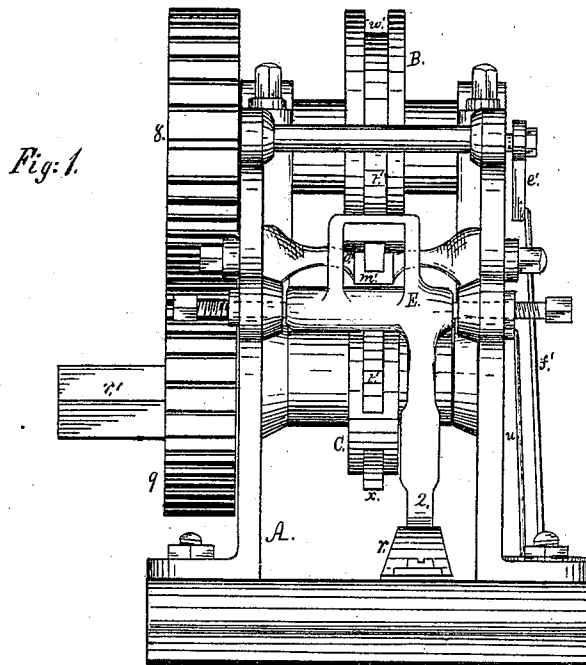


W. HADDOCK.
SPIKE-MACHINE.

No. 170,255.

Patented Nov. 23, 1875.



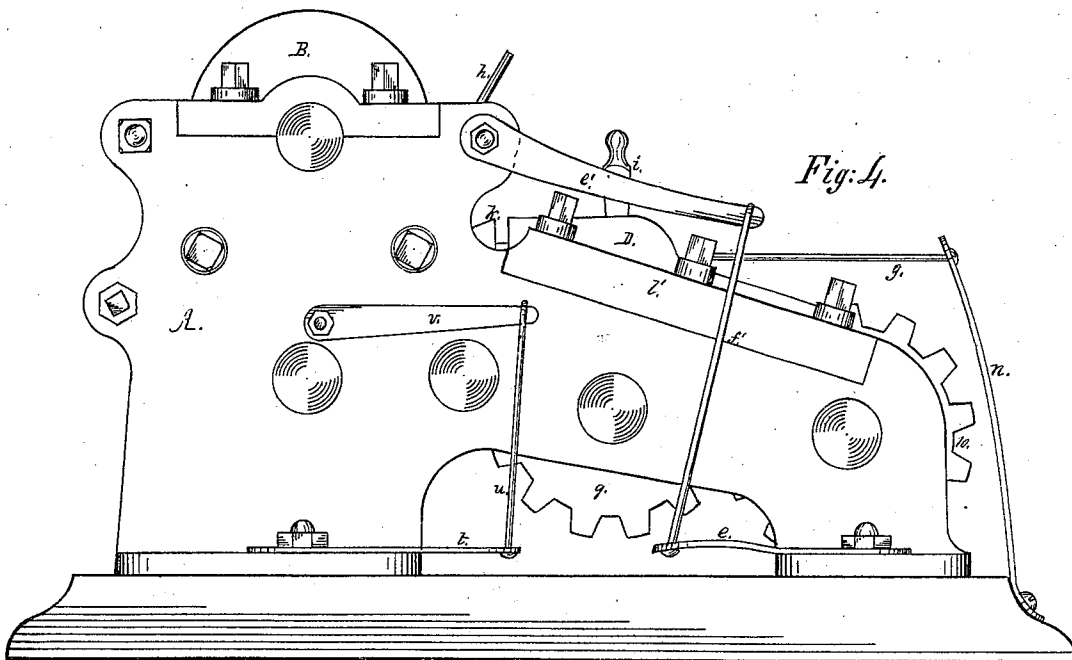
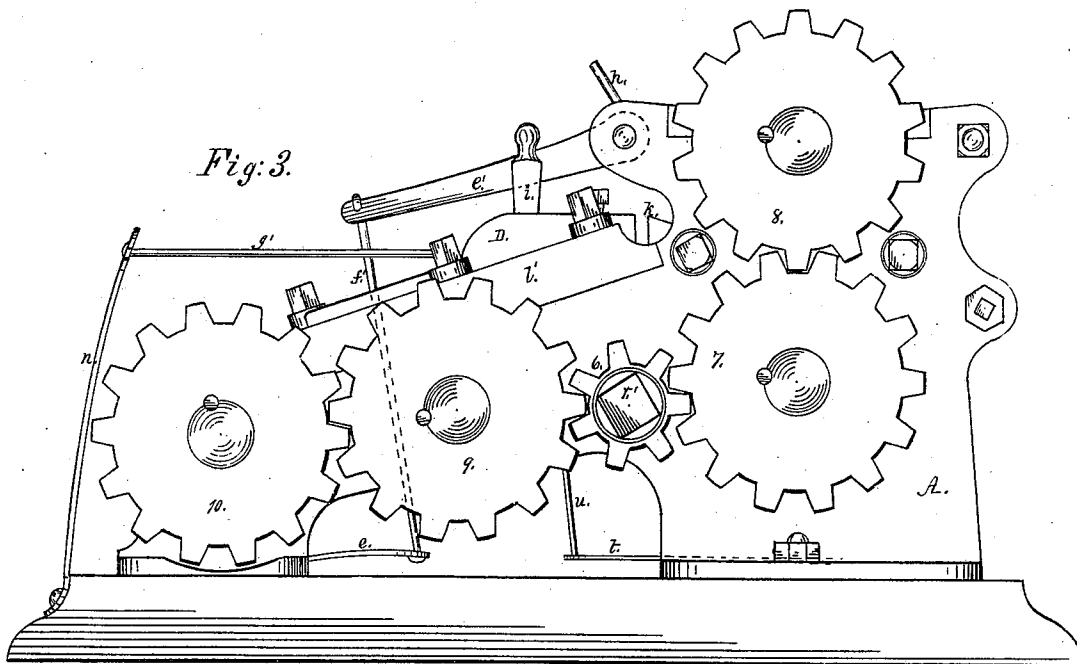
Witnesses.
James I. Johnston,
A. C. Johnston

Inventor:
Worcester Haddock

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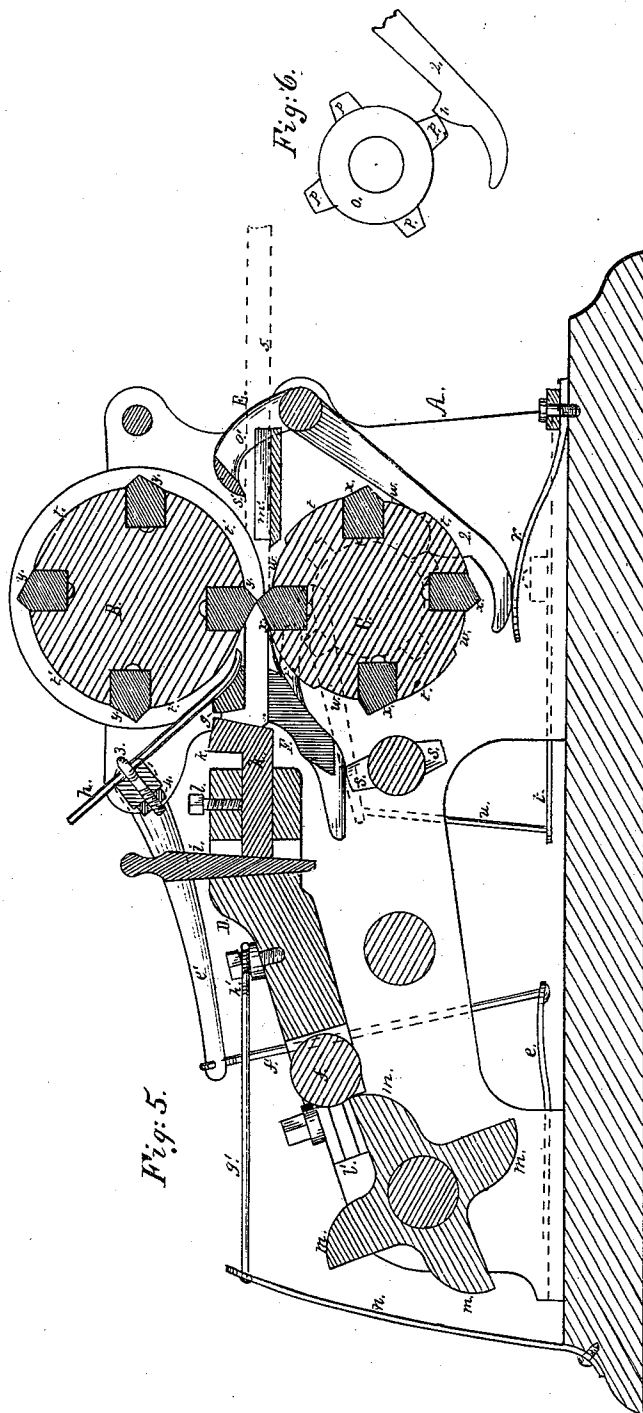
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UNITED STATES PATENT OFFICE.

WORCESTER HADDOCK, OF PITTSBURG, PA., ASSIGNOR TO HIMSELF,
HENRY GERDING, AND THOMAS JONES, OF SAME PLACE.

IMPROVEMENT IN SPIKE-MACHINES.

Specification forming part of Letters Patent No. **170,255**, dated November 23, 1875; application filed April 5, 1875.

To all whom it may concern:

Be it known that I, WORCESTER HADDOCK, of Pittsburg, in the county of Allegheny and State of Pennsylvania, have invented a new and useful Improvement in Spike-Machines; and I do hereby declare that the following is a full, clear, and exact description thereof, reference being had to the accompanying drawings and to the letters of reference marked thereon.

The nature of my invention consists in the combination of a heading-die, stationary die, pointing and severing rolls, grippers, adjustable guide and stripper, and a conductor, all arranged and operating with relation to each other, so that while the rolls have a continuous motion the spike-blank and the bar from which it is formed are held in a fixed position during the operation of forming the head upon the spike, which is subsequently forced from the machine by the iron entering it for the formation of another blank and headed spike.

To enable others skilled in the art to make and use my invention, I will proceed to describe its construction and operation.

In the accompanying drawings, which form part of my specification, Figure 1 is a front end elevation of my improvement in spike-machines. Fig. 2 is a top view or plan of the same. Figs. 3 and 4 are side views of the same. Fig. 5 is a vertical and longitudinal section of the same. Fig. 6 is a detailed section.

In the accompanying drawings, A represents the frame of the machine. B and C represent the pointing and severing rolls. The roll B is furnished with a groove, *t'*, and detachable dies *y*, and roll C is provided with recesses *w* and detachable dies *x*. On the axis of the roll B is a wheel, 8, which gears into a wheel, 7, on the axis of the roll C. The dies *y* and *x* of the rolls B and C are of such form, and so arranged in the periphery of the rolls, that they will come together, as indicated in Fig. 5, and thereby form the point on the spike-blank, and sever it from the bar indicated by dotted lines and marked 5. D represents the header, which moves in slides *l'*, and is moved up to its work by cams *m*, acting on the friction-roller *f* pivoted in the end of it, and is drawn back by means of a spring,

n, to which is attached a rod, *g'*, one end of which is connected at *h'* to the header. On the axis of the cams *m* is a wheel, 10, which gears into a wheel, 9, which meshes into the wheel 6 on the axis of the cams *s*, which operates the griper F which holds the spike-blank up against the stationary die *g* during the operation of forming the head upon it. The stationary die has a recess in its face fronting the heading-die *k*, which recess corresponds to the desired form of the under side of the head of the spike. The griper F, after it has performed its office of holding the spike-blank in the stationary die *g*, is drawn down from the formed spike through medium of the spring *t*, rod *u*, and lever *v*, the latter being attached to the axis of the griper. The header D is provided with a detachable heading-die, *k*, which is held in it by a set-screw, *l*, and is adjusted with relation to the stationary die *g* by means of the wedge *i*, which is held in a fixed position by the set-screw *j*. To the pivoted cross-bar *n'* is secured an adjustable stripper and guide, *h*, which is adjusted and held in position by means of the bolt 3 and screw-nut 4. The lower end of the stripper and guide enters the groove *t'* in the roll B, and presses against the bottom of groove, serving the purpose of the ordinary fixed stripper, and also acts as a guide for directing the iron into the stationary die *g*. The stripper and guide *h* is held to its work by means of the spring *e*, rod *f*, and lever *e'*, the latter being attached to the axis of the cross-bar *n'*. By this arrangement of the cross-bar, lever, rod, and spring, the stripper and guide *h* will yield to the contour of the bottom of the groove *t'*. The front end of the machine is furnished with a guide, *m'*, and also with a griper, E, which is held to its work by means of the projections *p* on the periphery of the wheel *o* acting on the projection 1 on the inner face of the arm 2 of the griper. The spring *r*, acting against the lower end of the arm 2, will hold the gripping-edge *s'* of the griper E up off the bar while being fed into the machine.

The wheel *o*, represented in Fig. 6, is secured on the axis of the roll C, as indicated by the dotted lines in Fig. 5. The power for operat-

ing the machine is applied to the shaft *r'* of the wheel 6, which revolves the wheels 7 and 9, which revolve the wheels 8 and 10. The gear-teeth of the several wheels correspond in number to the required movements of the several parts of the machine—that is to say, the number of teeth of each wheel must harmonize, so that all the wheels combined will give to the several parts of the machine the desired movement.

From the foregoing description, and by reference to the accompanying drawings of my improved spike-machine, the skillful mechanic will readily understand the construction and arrangement of the several parts, and the relation they bear to each other. I will, therefore, proceed to describe the operation, which is as follows: The bar 5, from which the spikes are made, as it comes from the rolls in its last pass through them, the end of the bar is placed through the opening *o'* of the griper E, and enters the guide *m'* and groove *w'* of the roll B, and the surfaces *t'* of the rolls B and C, impinging on the bar, draw and force it forward into the stationary die *g*. The points of the dies *y* and *x*, coming directly opposite to each other, (as shown in Fig. 5,) will nearly cut off the blank for the spike. At this point griper E impinges on the bar 5, and holds it firmly in the guide *m'*. At the same time, rolls B and C continue their motion, causing dies *y* and *x* to sever the blank from the bar, and carry it forward into the stationary die *g*, so that sufficient iron will project beyond the vertical face of the die to form the head of the spike. At this point the griper F forces the blank up firmly against the stationary die *g*, holding the blank in a fixed position until the header D moves up and forms the head upon the blank. The header then moves back, and simultaneous therewith the gripers E and F release their hold on the bar and formed spike, and the surfaces *t* again impinge on the bar 5, and draw it in for the formation of another blank and spike. The iron entering the stationary die *g* forces out the finished spike, which drops from the machine. The recesses *w*, in the roll *c*,

prevent the rolls B and C from impinging upon the bar, and allow the rolls to have a continuous motion, while the blank and bar are held in a fixed position during the operation of forming the head upon the spike.

Having thus described the nature, construction, and operation of my improvement, what I claim as of my invention is—

1. In a spike-machine, the combination of the pointing and severing rolls B and C, having a continuous motion, the stationary die *g*, gripers E and F, and the header D, arranged and operating with relation to each other, so that the iron is fed into the machine, the blank for the spike pointed and severed from the bar, and bar and blank held in a fixed position during the operation of forming the head upon the spike, substantially as herein described.

2. The yielding and adjustable stripper and guide *h*, in combination with the roll B and stationary die *g*, substantially as herein described, and for the purpose set forth.

3. In a spike-machine, the cams *m*, spring-rod *g'*, and header D, in combination with the rolls B C, stationary die *g*, and gripers E F, substantially as hereinbefore described and set forth.

4. In a spike-machine, the wheel *o*, spring *r*, and griper E, in combination with the rolls B C and header D, substantially as and for the purpose hereinbefore described and set forth.

5. In a spike-machine, the griper F, operated through the medium of the cams *s*, lever *v*, rod *u*, and spring *t*, in combination with the stationary die *g*, header D, and rolls B C, substantially as and for the purpose hereinbefore described and set forth.

6. In a spike-machine, the griper E, in combination with the roll C, having recesses *w* and dies *x*, and the roll B having dies *y*, said rolls having a continuous motion, substantially as and for the purpose hereinbefore described and set forth.

WORCESTER HADDOCK.

Witnesses:

JAMES JOHNSTON,
A. C. JOHNSTON.