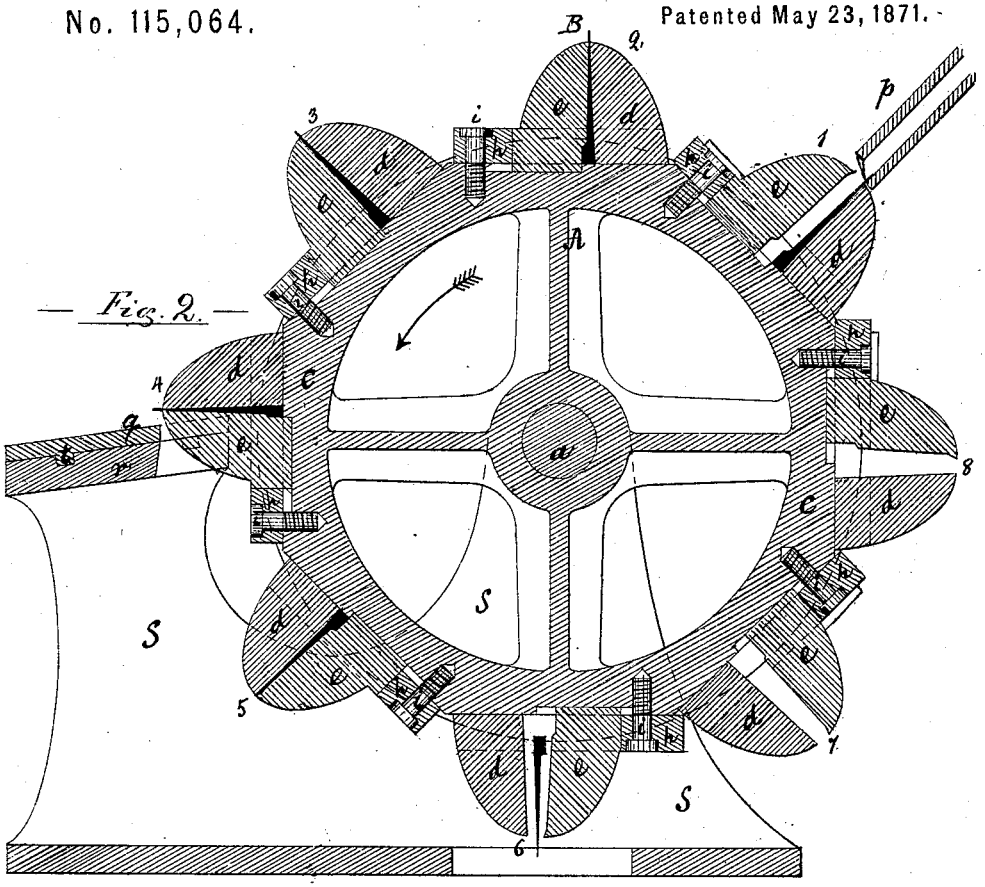
E. W. KELLEY.

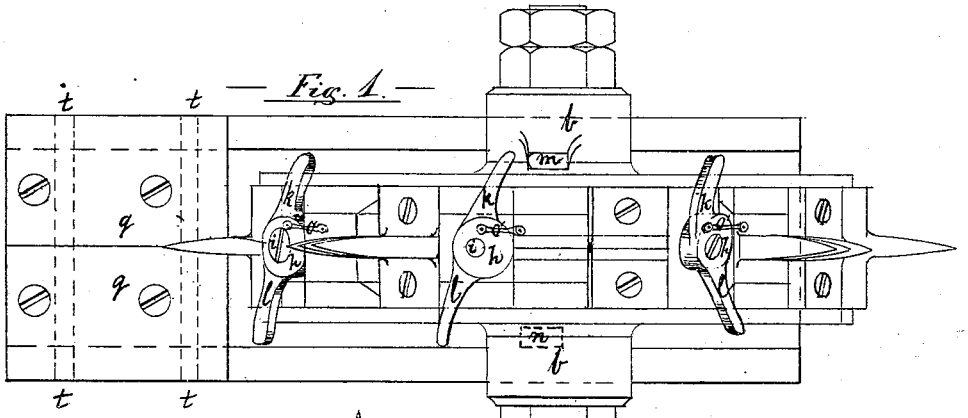
Improvement in Machines for Making Horseshoe Nails.

No. 115,064. Patented May 23, 1871.

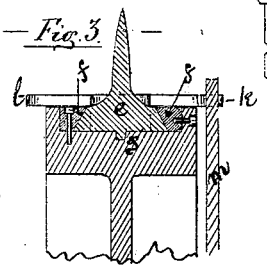
— Fig. 2. —




— Fig. 1. —




— Fig. 3. —

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# UNITED STATES PATENT OFFICE.

EDWARD WATSON KELLEY, OF HAMILTON, SCOTLAND.

## IMPROVEMENT IN MACHINES FOR MAKING HORSESHOE-NAILS.

Specification forming part of Letters Patent No. 115,064, dated May 23, 1871.

I, EDWARD WATSON KELLEY, of Hamilton, Scotland, have invented certain Improvements on Horse-Nail Clippers, of which the following is a specification:

*Nature and Objects of the Invention.*

The nature of my invention relates to certain improvements on machines for clipping horse-nails cold, for the purpose of giving to each nail a sharp point, so as to be easily driven through the foot of the horse.

I employ for this purpose movable male dies, attached to the circumference of a revolving cylinder. The male dies are made to open and close automatically, and to pass between a stationary female die, as will herein now be fully shown and described.

On the drawing, Figure 1 is a ground plan; Fig. 2 is a central longitudinal section; and Fig. 3 is a cross-section over the line A B taken on Fig. 2.

Similar letters refer to similar parts wherever they occur on the drawing.

The horse-nails, when manufactured and rolled cold, leave the machine with blunt edges and of an uneven shape, wherefore it is necessary to clip the nails, when a sharp point as well as a uniform shape is given to each nail.

The machines heretofore in use for this purpose have been of a very costly and complicated nature, which required a great deal of care and attendance; besides, the work was done very slowly. To obviate these difficulties, I construct my machine as follows:

*a* on the drawing is a shaft, moved by any desirable arrangement, and resting in suitable bearings *b b*. On the shaft *a*, and between the bearings *b b*, is secured a wheel, *c*, the circumference of which is made as a uniform polygon with any suitable number of sides. On the drawing is shown eight sides, but more or less may be used, as may be required. Onto the faces of the wheel *c* is attached, firmly, male dies or jaws *d d d d*, as shown. Corresponding male dies or jaws *e e e e* are also attached to the faces of the wheel, but in such a manner as to move forward and backward on the said faces. The section of the male dies *e e* is fully shown in Fig. 3. The extreme outer end of the male dies *d d* and *e e*, corresponding to about one-half, more or less, of the whole length of a nail, is made of a section precisely the same as the shape of the nail when clipped and pointed. The lower part or base of the male dies *e e e* is made in a manner as shown in Fig. 3, and provided with gibs *f f* that may be adjusted by means of set-screws from the top and the sides, as shown. In the center of the base of the movable male die *e* is a feather, *g*, fitting into a corresponding groove on the face of the wheel *c*, to insure a perfect linear motion of the die *e*.

The dies *e e e* are operated in the following manner: Behind each die *e e e* is an eccentric, *h h h*, movable around a pin, *i i i*, as shown. Each eccentric is provided with two projecting arms, *k* and *l*; *k* is the locking-arm, and *l* is the unlocking-arm. The arms *k k k* are operated by means of a stationary arm, *m*, pointing upward, as shown in Fig. 3. As the wheel *c* is moved in the direction of the arrow, shown in Fig. 2, so must each arm *k k k* strike the stationary arm *m*, and by this means turn the eccentrics *h h h*, and thus lock the male jaws *d* and *e* together. In the same manner are the unlocking-arms *l l l* operated by striking a similar stationary arm, *n*, (shown in dotted lines on Fig. 1,) attached to the frame *b*. A connecting-rod, *o*, connects each male die *e* positively to the eccentric *h*, whereby the male die *e* will be operated as soon as the eccentric is turned for the purpose of unlocking the dies *e* and *d*.

The nails are fed to my machine from a feeder, P, as shown.

After a nail has been fed into the jaws *e d* 1, the wheel *c* passes onward continually, and when arrived at 2, the male dies *e d* close together automatically by means of the arms *m* and *k* and the eccentric *h*, when the horse-nail will be held firmly between said male dies. The male dies then pass onward to 3, and further to 4, where they pass between a female die made in halves *q q*, as shown. This female die is made of exactly the same form and shape as the outer end of the dies *d* and *e*. Thus it will be understood that when the dies *d e* and the unclipped nail pass between the female die *q q*, the nail will be clipped and pointed of a shape exactly like the female die *q q*. The dies *q q* are screwed onto the table *r*, supported by the frame *s*, as shown. The die-plates *q q* have on their under sides projections *t t*, fitting into corresponding grooves

$t'$, on the table $r$. When the dies $e$ $d$ have passed the dies $q$ $q$, after the nail is clipped, they pass onward to 5, and further to 6, where the dies $e$ $d$ are automatically opened, in a manner as described, and the now finished nail drops out to some receptacle below. The dies $e$ $d$ now remain open and pass on to 7 8, and again to 1, where a new nail is fed into the dies $e$ $d$, and so on continually.

A pair of bellows or a blower may, to advantage, be employed to blow away the chips from the die-plates $q$ $q$ automatically as they accumulate on said plates $q$ $q$.

Having thus described the nature, construction, and operation of my invention, what I wish to secure by Letters Patent is—

1. The construction and arrangement of the stationary female dies $q$ $q$ and the revolving male dies $e$ $e$ $e$ $d$ $d$ $d$, in the manner and for the purpose set forth.

2. The combination, with the revolving dies $e$ $d$, of the device for operating the dies $e$ $e$ $e$, consisting of the eccentric $h$, with the fingers $k$ and $l$, and the stationary operating-arms $m$ $n$, as fully set forth.

EDWARD WATSON KELLEY.

Witnesses:
ALBAN ANDRÉN,
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