2 Sheets—Sheet 1.

J. B. WILLS.

MACHINES FOR CUTTING HORSESHOE NAILS

No. 184,812. Patented Nov. 28, 1876.

Fig. 1.

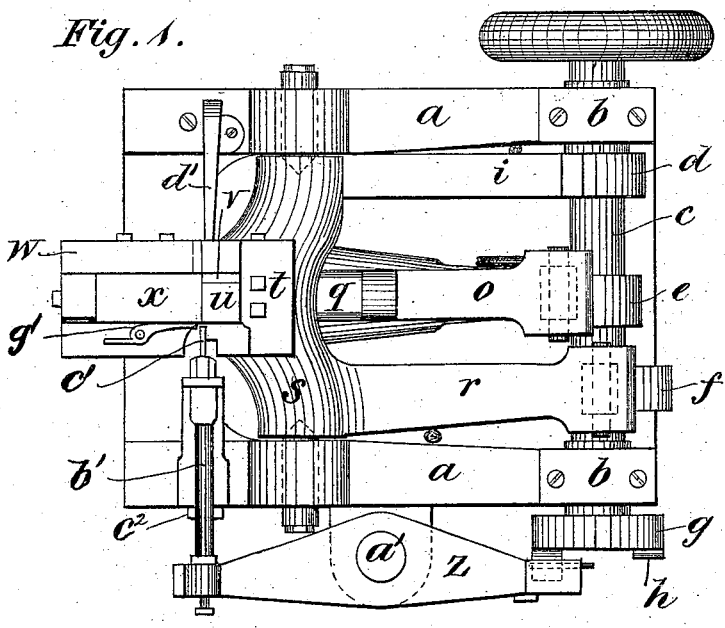


Fig. 11.

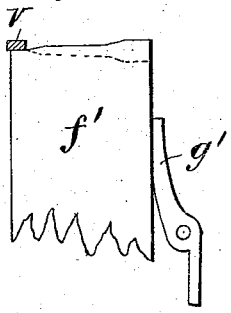


Fig. 9.

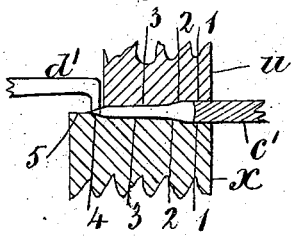


Fig. 2.

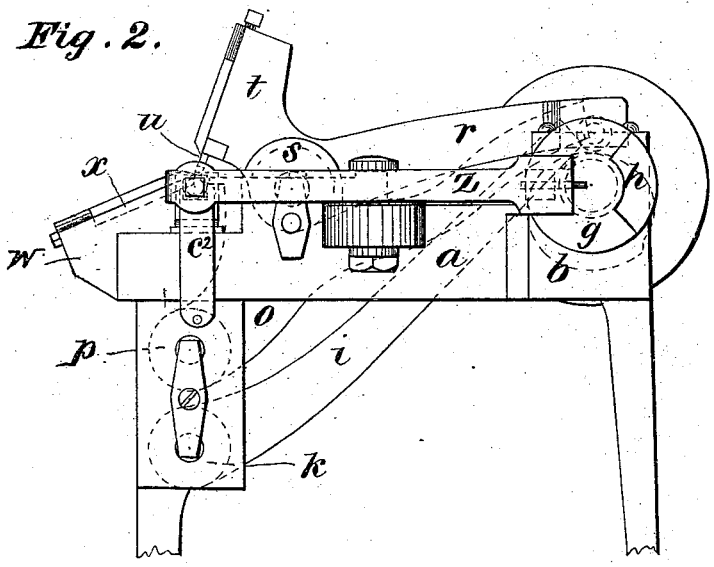
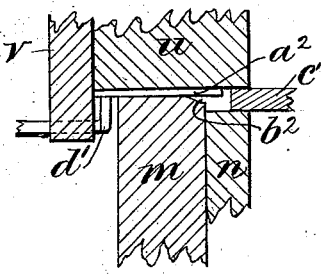


Fig. 8.



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2 Sheets—Sheet 2.

J. B. WILLS.

MACHINES FOR CUTTING HORSESHOE NAILS

No. 184,812. Patented Nov. 28, 1876.

Fig. 3.

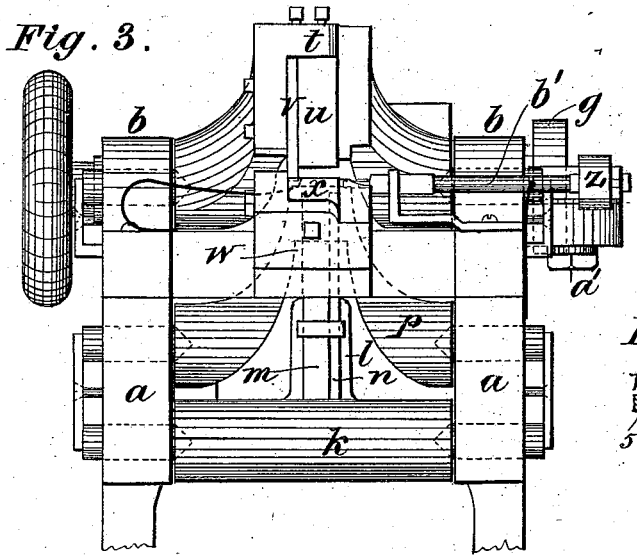


Fig. 6.

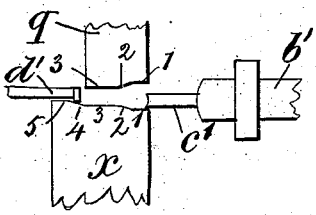


Fig. 10.

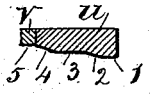


Fig. 7.

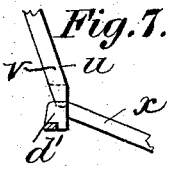


Fig. 4.

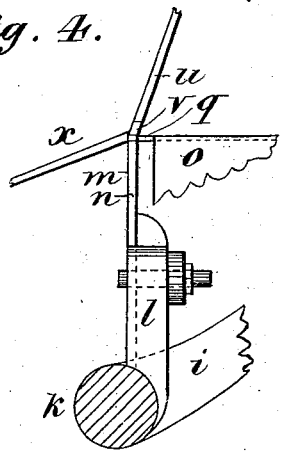
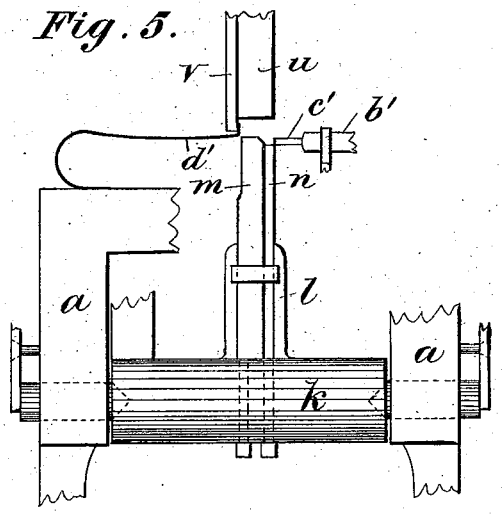


Fig. 5.



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UNITED STATES PATENT OFFICE.

JOHN B. WILLS, OF KEESEVILLE, NEW YORK.

IMPROVEMENT IN MACHINES FOR CUTTING HORSESHOE-NAILS.

Specification forming part of Letters Patent No. **184,812**, dated November 28, 1876; application filed June 8, 1876.

To all whom it may concern:

Be it known that I, JOHN BOMAN WILLS, of the village of Keeseville, in the county of Essex, in the State of New York, have invented certain new and useful Improvements in Machines for Making Horseshoe-Nails; and I do hereby declare that the following is a full, clear, and exact description of the same.

This invention has reference to improvements on the machines for which Letters Patent of the United States were granted to Jacob B. Kingham on the 11th day of October, 1864, and numbered 44,637, (which said Letters Patent were reissued on the 30th day of March, 1869, and numbered 3,353,) for the purpose of enabling the machine therein set forth to give a form to the head of the nail-blanks made by it, and further improvements enabling the machine to make a horseshoe-nail blank.

In the drawings hereunto annexed similar letters of reference indicate like parts, and Figure 1 is a plan of a machine having my improvements. Fig. 2 is a side elevation of the same. Fig. 3 is a front elevation of the same. Fig. 4 is a detail of mechanism and dies. Fig. 5 is a detail of mechanism and dies. Figs. 6, 7, 8, 9, 10, and 11 are details of dies.

The mechanism for operating the dies in this case is modified in form from that shown in the above-mentioned Letters Patent of J. B. Kingham.

Letter *a* is a frame-work, having plumber-blocks *b*, carrying shaft *c*, rotated in the ordinary way by power. On this shaft are placed cams *d*, *e*, and *f*, and on one of the extremities is secured a disk, *g*, having a cam-projection, *h*, on the face of it. The cam *d* operates the lever *i*, with the rock-shaft *k*, the rock-shaft having an arm, *l*, with it. (Shown more clearly in Figs. 3, 4, and 5.) In the arm *l* are secured, in any ordinary way, the die *m* and guide *n*. The die *m* has its upper end configurated to the form required to be given to the nail on the under side, while the guide *n* is adjusted to the required position to form a guide to the header c^1. These dies constitute the movable anvil. *e* is a cam operating the lever *o*, with the rock-shaft *p*, and having a projection forming a bed for carrying the die *q*. *r* is a lever, operated by the cam *f*, with the rock-shaft *s*, which is provided with a head, *t*, carrying the die *u* and gage *v*. To the front of the frame-work *a* is situated a rest, *w*, for carrying a bed-die or stationary cutter, *x*. The cam *h* of the disk *g* operates the lever *z*, pivoted at a^1 to a projection of the frame *a*. This operates the header-bar b^1, in which is secured the die c^1 for heading the nails. All these parts, with the exception of the dies, are constructed, arranged, and operated as in nail-making machines at present in use, my improvements being confined to the arrangement of the dies (as will be hereinafter explained, and shown clearly in Figs. 4, 5, 6, 7, 8, 9, and 10) and the arrangement of the spring *d'*.

The gage *v* serves as a feed-stop, by entering the plate *f'* against it, as shown in Fig. 11, where the dotted lines represent the next cut of the die *u* upon the plate. *g'* is a stop to bring the nail-plate to, and regulate its position laterally, and is similar to those in ordinary use, being attached to the rest *w*, and shown only in Figs. 1 and 11. The die *m* is situated, with regard to the die *u* and gage *v*, as shown in Fig. 8, so that sufficient room is left to the side of it for the end of the spring *d'* to intervene between the outer side of the die *m* and the inner side of the gage *v*, and, as shown in Fig. 7, the end of the spring *d'*, when not depressed by the descent of the die *u* upon it, comes to the level of the upper edge of the die *x*, so that when the die *u* descends upon the plate inserted between the dies *u* and *x* the spring *d'* is depressed, and holds the portion severed in the position it is in immediately that the act of severing has been accomplished, the die *u* still descending until it comes to the position shown in Fig. 8, where the die *m* and guide *n*, forming the movable anvil, (having moved into position immediately below it at the time the end of the plate was being severed,) form gripes for the nail-blank on its upper and lower sides, while the dies *x* and *q* form gripes on the sides. The die *q* advances to gripe the nail-blank on the side as the die *u* descends, first cutting off the piece from the plate, and gripes it on the top. The die *x*, being stationary, resists the thrust of the die *q*, and the die *m* resists the pressure of the die *u*.

Fig. 10 shows the horizontal section of the

die *u* clearly. This consists of two parallel surfaces, 1 and 3, and two inclines, 2 and 4. These correspond and exactly agree with similar surfaces on the end of the die *x*. (Shown in Fig. 9.) This die *x* extends somewhat farther, and has a parallel surface, 5, agreeing with the parallel surface 5 formed by the gage *v* in Fig. 10. The die *q* is provided with the surfaces 1, 2, and 3, the incline 2 being set the reverse way, and the surfaces 1 and 3 to correspond. (See Fig. 6.)

As soon as the dies *u* and *q* bear upon the nail, a box is formed, which gripes and compresses the body, and by the configuration of the dies *m*, *q*, *u*, and *x* a chamber is formed in connection with the box for holding the body the exact size and configuration it is desired to upset the extremity and compress the head into. This is done by the header c^1, which is guided on its four sides by the guide *n* and dies *u*, *q*, and *x;* and in Fig. 8 is represented the strip a^2, cut off to form the nail, and griped by the dies *u* and *m*, with the guide *n* and die *u* guiding the header c^1 in the act of coming forward to compress the end of a^2 in the head-chamber b^2.

The configuration of the cams *d*, *e*, and *f* is such that they retain the dies operated by them in the position required, griping the blank while the header passes in and compresses the head to the shape the chamber will give, the header retiring by the passing of the projection *h* and action of the spring c^2. The dies *q* and *u* also retire, and as the latter rises above the level of the inner extremity of the die *x*, the spring *d'* only rising to the level of the extremity of the die *x*, the nail is altogether released, and falls in front of the movable anvil or die *m*, which, with the guide *n*, has receded a sufficient distance for that purpose. The levers *i*, *o*, and *r* are each provided with the ordinary springs to keep their extremities pressed down upon the surfaces of their respective cams, and the gage *v*, guide *n*, and dies *m*, *u*, and *x* are each provided with set-screws at their back extremities, whereby they may be adjusted with great accuracy, and maintained in their relative positions.

What I claim is as follows:

1. The combination of the die *m*, the separate and adjustable guide *n*, with the header c^1, substantially as and for the purposes set forth.

2. The combination, as described, of the die *u* and gage *v*, for cutting the nail and for gaging the plate laterally.

3. The combination of the gage *v*, for the plate to abut against, with the guide *g'*, substantially as and for the purposes described.

Montreal, 29th day of May, A. D. 1876.

JOHN B. WILLS.

Witnesses:

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