

M. THIBAUT.
Machines for Cutting Nails.

No. 145,696.

Patented Dec. 16, 1873.

Fig 1.

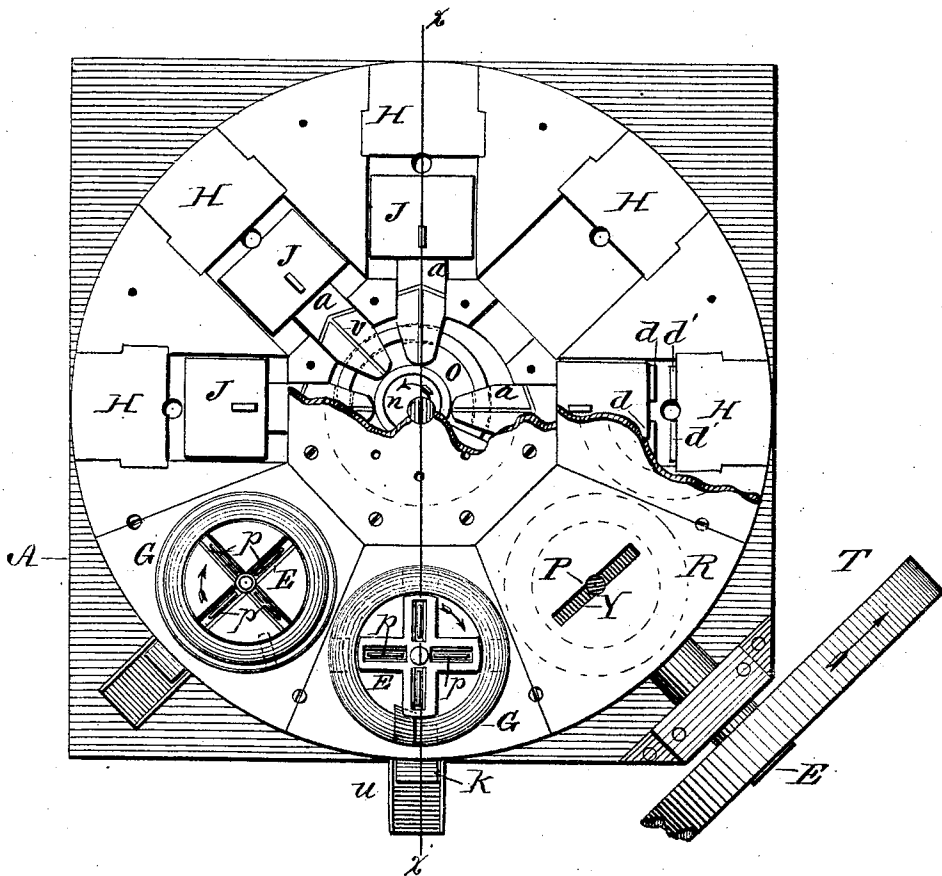
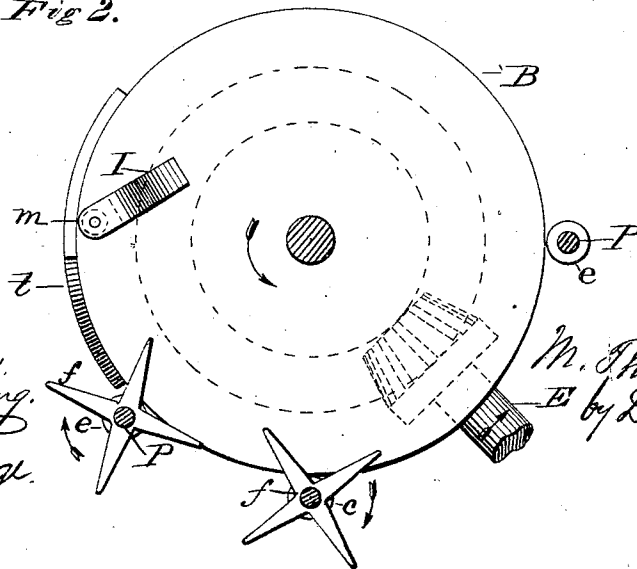


Fig 2.



Witnesses.

Harry King.
W. W. Dodge.

Inventor
M. Thibault
by Dodge & Son
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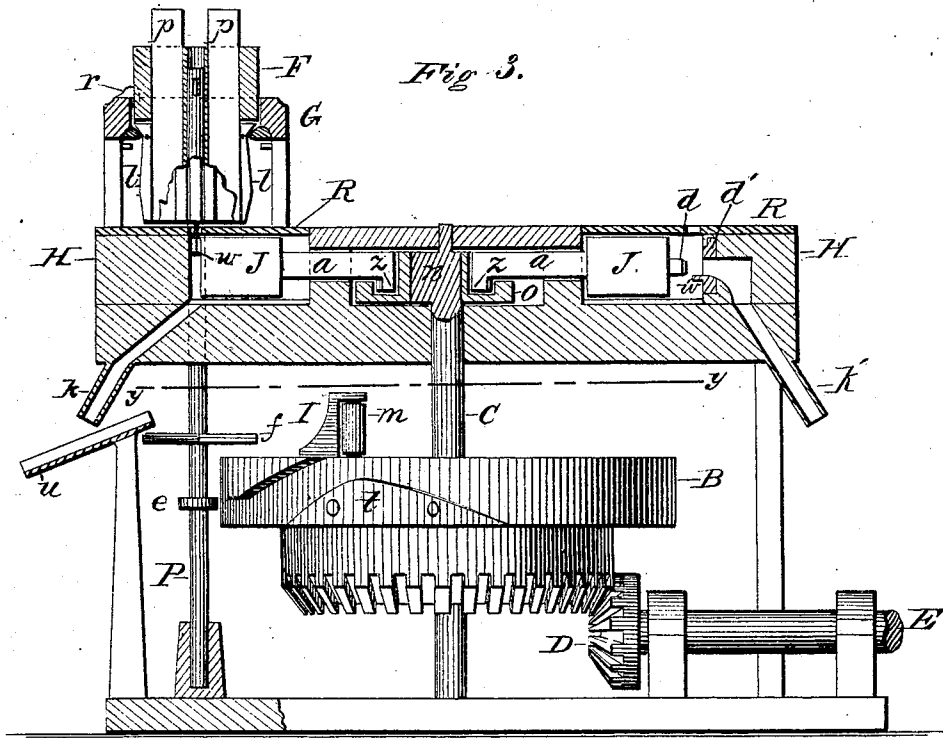
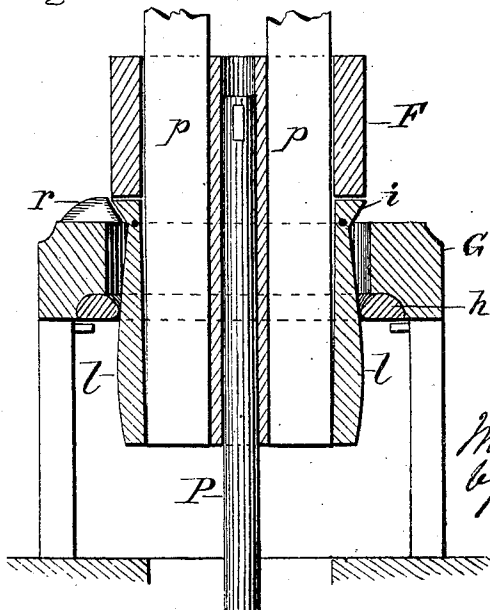


Fig. 4.



Witnesses.

Harry King.
H. H. Dodge.

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M. Thibault
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UNITED STATES PATENT OFFICE.

MAGLOIRE THIBAUT, OF HULL, CANADA.

IMPROVEMENT IN MACHINES FOR CUTTING NAILS.

Specification forming part of Letters Patent No. **145,696**, dated December 16, 1873; application filed November 17, 1873.

To all whom it may concern:

Be it known that I, MAGLOIRE THIBAUT, of Hull, in the county of Ottawa and Province of Quebec, Canada, have invented certain Improvements in Machine for Cutting and Punching Nails, &c., of which the following is a specification:

My invention relates to machines for cutting nails and similar articles from plates or sheets of metal; and the invention consists in a novel construction of the mechanism for operating the dies, and for holding and feeding the plates of metal thereto, as hereinafter more fully explained.

Figure 1 is a top-plan view of the machine, with some of the parts removed to show the construction. Fig. 2 is a transverse section on the line *yy* of Fig. 3. Fig. 3 is a side elevation, with the top portion shown in section on the line *xx* of Fig. 1; and Fig. 4 is a transverse vertical section of one of the plate holders and feeders on the line *xx* of Fig. 1.

In the accompanying drawings, A represents the bed of the machine, which is mounted on suitable supports. Upon the face of this bed-plate A I arrange in a circle stationary dies H, as represented in Fig. 1. In front of each of the dies H I form a recess, in which I place movable die-holders J, each of which has a bar or stem, *a*, extending inward toward the center, as shown in Figs. 1 and 2, these bars having grooves *v* cut in their upper surfaces, near their inner ends, as shown in Fig. 1, for receiving and conveying oil to their bearings to lubricate them. Underneath the bed A I mount a vertical shaft, C, as represented in Fig. 2, on which is secured a drum, B, having beveled gear-teeth on it, and which latter engage with a bevel-pinion, D, on a horizontal driving-shaft, E, to which motion may be imparted by the band-wheel T, or by any other suitable means. This shaft C extends up through the bed A, and on its upper end I secure a rotating eccentric, *n*, as shown in Figs. 1 and 3, and around this eccentric *n* I place a collar, *o*, which has an annular groove in its upper face, in which studs or projections *z*, on the under side of the bars *a* engage, so that, as the eccentric *n* rotates, the collar *o* is made to move laterally in a corresponding manner, and thereby impart to the die-holders J a reciprocating movement.

By this arrangement it will be seen that all the die-holders J are caused to approach successively the face of the stationary die or holder H; and then to recede therefrom; and that thus, while all are in continuous motion, only a single pair is closed at once, the others following in regular succession.

It will be seen that by using the rotating eccentric *n* and laterally-moving collar *o* instead of the ordinary grooved eccentric for moving the die-holders J, I obviate the wear which would be produced on the lugs *z* by the sliding friction of a rotating grooved cam. In this case the collar *o* does not rotate, but is simply moved laterally by the cam *n* working inside of the collar; and, as the bearing-surfaces of these two parts are much greater than that of a lug, *a*, it follows that the wear is much less, and that the lug which is the part most subject to wear is thus relieved.

To these die-holders, J and H, suitable cutting-blades, *d*, Fig. 1, are secured, there being for nail-cutting two attached to each holder J and H. The plate holder and feeder consist of a rotating head, F, secured to a shaft, P, which extends up through a hole in the bed A at a point between the face of the die-holders J and H, the blades *d* passing on opposite sides of the shaft as they close to cut the metal, as shown in Figs. 1 and 3. The head or plate holder F, which is secured to the shaft P above the bed and its dies, may be a circular block, or it may be made in the form of a cross—that is, with four wings extending laterally from the center, at right angles to each other, both forms being shown in plan in Fig. 1. Through these extend four vertical slots, in which the plates *p* are placed on end, as shown in Figs. 3 and 4, thus bringing two plates in line, one on each side of the shaft, the other pair of plates being similarly arranged, but at right angles to the first pair, as shown in Fig. 1. These holders F are surrounded by a circular frame, G, in the under face of which is secured a cam-ring, *h*, as shown in Fig. 4, and in the outer edge of each slot, which holds a plate, *p*, is pivoted a thin metal bar, *l*, the outer edge of which inclines outward, while its upper end above the pivot has an inclined projection, *i*, on it, the object of which construction will be presently explained. The shafts P, of which, with the plate-holders

and feeders F, there are as many as there are sets of die-holders, are so mounted that they can play up and down in their bearings for the purpose of raising and lowering the feeders G. For this purpose, each shaft P has secured to it a collar, *e*, (see Figs. 2 and 3,) which, as the drum B rotates, rides up on a cam, *t*, on the periphery of the drum, thus lifting the shaft P and the feeder F, the same falling again as soon as the cam *t* has passed clear of the collar *e*. Upon the top of the drum B, I secure a bracket, I, which carries in its outer end a roller or friction-wheel, *m*, as shown in Fig. 3, and this is so located in reference to the cam *t* that while the shaft P is elevated it will engage with one arm of a star-wheel, *f*, secured upon the shaft P, and impart to the latter, and thereby to the feeder F, a greater revolution. In order to prevent the feeder from moving beyond the desired point, or at any other than the proper time, a stop, *r*, is secured to the case or frame G in such a manner as to engage with the feeder when down, and hold it from turning, the feeder also dropping so as to engage with this stop *r* as soon as it has completed its quarter of a revolution. As the feeder F rises the ring *h* presses against the outer edges of the pivoted plates *l*, thereby pressing them inward against the edge of the nail-plates *p*, thus grasping and holding them fast in the feeder, and causing them to rise with it, so as to clear the dies, and leave the feeder with its plates free to rotate, thus bringing each pair of plates successively into position to be operated upon by the cutters or punches *d* as the feeder descends, and when nearly down the inclined projection *i* of the plates *l* will come in contact with the upper side of the ring *h*, by which the plates *l* will be thrown outward, thereby releasing the plates *p*, and permitting them to descend until they are arrested by the stops *w*, upon which they strike.

The holding jaws or plates *l*, instead of being pivoted, may be made to act as a spring, in which case their upper ends may be rigidly attached, they being so set that when the feeder is down their lower ends will spring outward, and thus release the plates *p*, they being also so curved, or having inclines on their outer edges, by which they will be pressed inward by the ring *h* as the feeder rises, and thus grasp the plates the same as they now do.

If a die and punch be used, as is represented in the right-hand portion of Fig. 3, the stop *w* may be formed on the removable die; or it may be attached to the die-holder H, and made adjustable vertically, so as to be set for any required size of nail or similar article that is to be cut.

It will be seen that, when a plate, *p*, rests with its end on the stop *w*, the punch *d*, as it advances, will press the plate *p* against the die *d'*, the two operating as shear-blades to cut a strip or nail-blank from the lower end of the plate, and that the piece thus cut off will be forced, through the hole in the die *d'*, into a

recess in the die-holder H, from whence it will fall, through a tube, *k'*, into any receptacle set to receive it.

In some cases it may be desirable to use simply two cutting-blades instead of the die and punch, or to use dies to press the metal into any desired form, and also a pair of cutters to sever it from the plate or sheet at the same operation, which may be readily done by placing the dies at a suitable distance above the stop *w* and the cutters still above them. In that case the severed article, instead of being pushed through the die *d'*, will simply drop down between the die-holders H and J and out through a spout, *k*, as represented in the left-hand side of Fig. 3. Underneath the spouts *k* other spouts *u* may be arranged, as shown, to convey away the articles as they fall.

When used for cutting nails, the punches and dies will be arranged in slightly-inclined positions, but in opposite directions, on opposite sides of the shaft P, so as to cut the nails with the proper slant from the plates *p*. Over each pair of die-holders I secure a plate, R, which has a slot, Y, in it of sufficient size to let the plates *p* drop through upon the stops *w* below, the shaft P passing up through the center of this slot, as shown in Fig. 1. As each feeder makes a quarter-revolution at each operation of the dies, it will be seen that, at one operation, one pair of the nail-plates *p* will descend through the slot and be operated upon by the dies, while the pair of plates standing at right angles to these will simply rest upon the face of the plate R; and at the next movement of the feeder the plates *p* that were operated upon by the dies will rest on the plate R, while the other pair will drop through the slot and be operated upon by the dies. It will thus be seen that each plate is cut from alternately, first by the die on one side of the shaft P, and then by that on the opposite side, by which means the nails are cut head and point, alternately, from the plates *p*, and thus the nails are cut with the proper bevel or slant without either tilting or turning the nail-plate over in its holder.

While the machine is intended for use mainly as a nail-machine, it is obvious that it may be used for cutting or stamping articles from sheet metal by simply providing it with suitable cutters or dies.

The machine, as a whole, is simple and compact, having but little gearing, and yet capable of performing its work with great rapidity, and that it is entirely automatic in its operation, the attendant only being required to keep it supplied with the necessary plates of metal.

In the drawing, I have represented the machine as being furnished with eight sets of die-holders, each of course having a feeder; but it is obvious that the number may be increased or decreased, at will. From the foregoing description the operation of the machine will be readily understood, and need not, therefore, be further described.

Having thus described my invention, what I claim is—

1. The combination, in a machine for cutting or punching nails and other articles from sheet metal, of a series of stationary die-holders, H, with a corresponding series of reciprocating die-holders, J, arranged radially from a common center, substantially as described, whereby the entire series may be operated by a single eccentric, *n*, as set forth.

2. The combination of the rotating eccentric *n*, laterally-moving ring *o*, and the slides or arms *a* provided with the lugs or projections *z*, all constructed and arranged to operate substantially as described.

3. The plate holder or feeder F, provided with apertures for the nail-plates, arranged at right angles, and the pivoted plates *l*, or their

equivalents, in combination with the case G for feeding the plates to the dies, substantially as described.

4. The wheel B, provided with the cam *t* and arm I, in combination with the shaft P, provided with the collar *e* and star-wheel *f* for operating the feeders or plate-holders, as set forth.

5. The combination of the rotating plate holder or feeder F, the plate R provided with the slot Y, the stop *w*, and a pair of die-holders, all constructed and arranged to operate as set forth.

MAGLOIRE THIBAUT.

Witnesses: .

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T. G. COURSOLES.