2 Sheets—Sheet 1.

H. REESE.

NAIL MACHINE.

No. 112,280. Patented Feb. 28, 1871.

Fig. 1

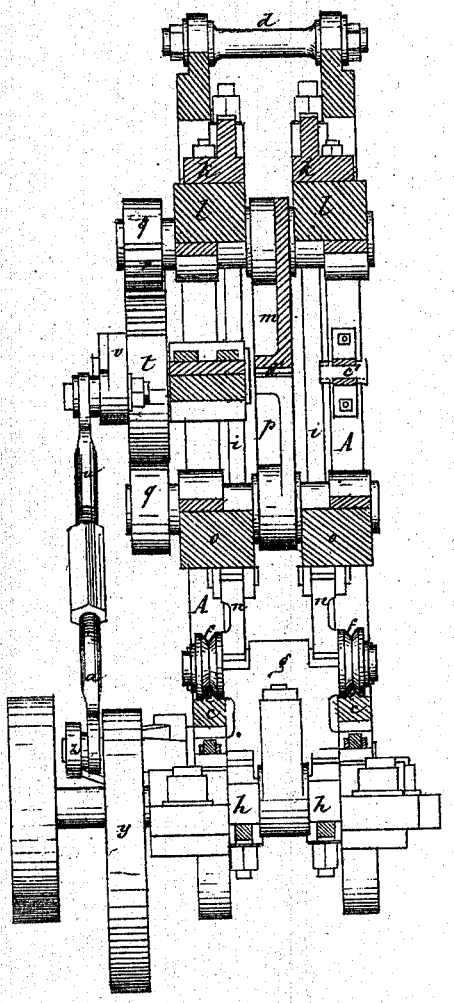
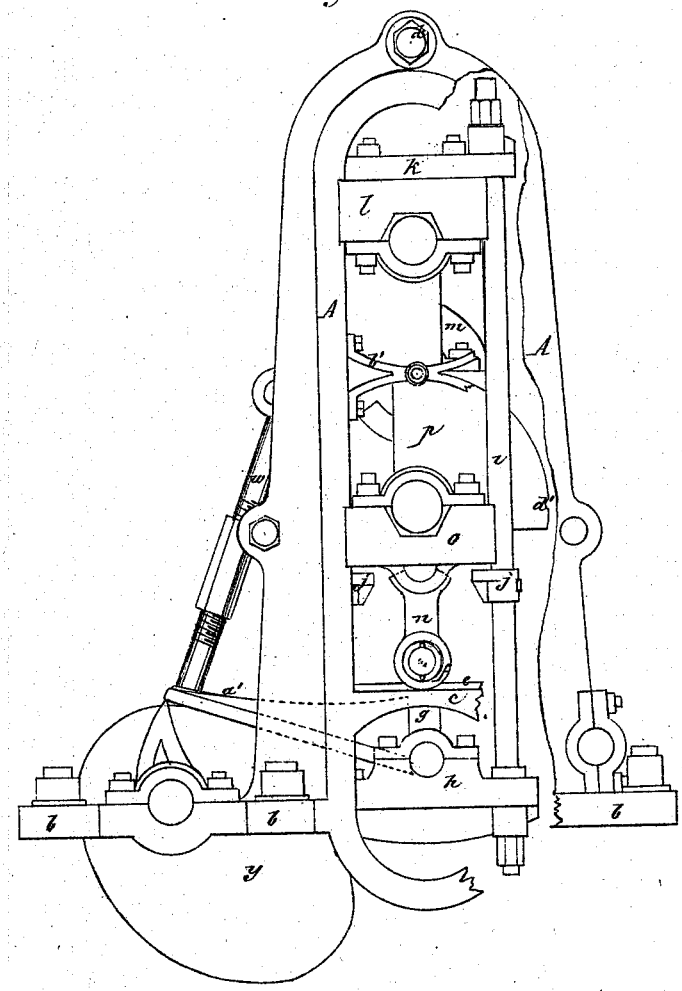


Fig. 2



Witnesses:

H. J. Stretz

Thos. D. W. Quinan

Inventor:

Henry Reese.

PER

Attorneys.

Scale 1½ inch to 1 Foot

2 Sheets—Sheet 2.

H. REESE.

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Fig 3.

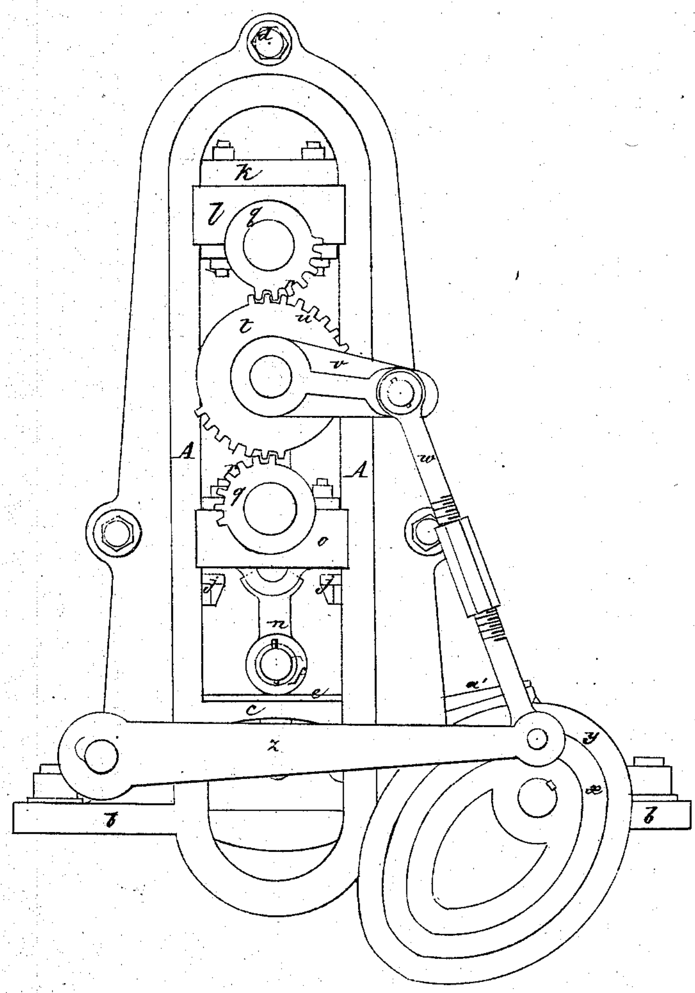

Fig 6

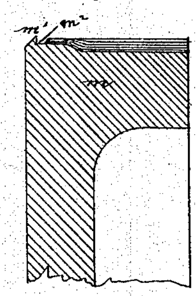

Fig. 4.

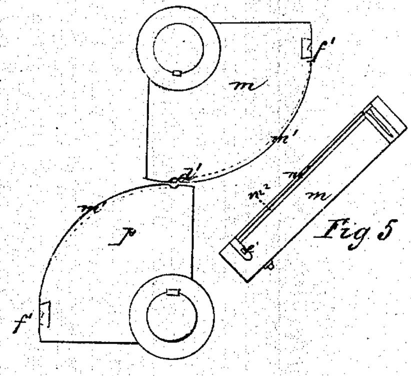

Fig. 5

Witnesses:

H. G. Aretz

Solon C. Kemon

Inventor:

Henry Reese.

Per Munn & Co

Attorneys.

Scale 1½ inch to 1 Foot

United States Patent Office.

HENRY REESE, OF BALTIMORE, MARYLAND.

Letters Patent No. 112,280, dated February 28, 1871.

IMPROVEMENT IN NAIL-MACHINES.

The Schedule referred to in these Letters Patent and making part of the same.

To all whom it may concern:

Be it known that I, HENRY REESE, of Baltimore, in the county of Baltimore and State of Maryland, have invented a new and improved Nail-Machine; 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 is a sectional elevation.

Figures 2 and 3 are elevations of opposite ends of the machine.

Figure 4 is a side elevation of the two quadrant-blocks, showing the concentric cutting-edges, and, in dotted lines, the eccentric faces.

Figure 5 is a plan of the periphery of one of the quadrant-blocks; and

Figure 6 is an enlarged sectional elevation of one of the quadrant-blocks.

This invention relates to a machine in which a heated iron rod is introduced into grooves formed crosswise of the peripheries of two adjacent quadrant-blocks, the rod being partly in the groove of each block, which blocks, after the introduction of the rod, receive a rolling motion in opposite directions, while the rod is held in the same position, but of course rotating from the motion of the said quadrant-blocks, from which it results that the rod is compressed between the peripheries of said blocks, which gradually approach each other as the blocks rotate, drawing the rod out thinner until it is of the size of the nail desired until the two dies, each with the impression of one-half of the nail sunk in its face, formed crosswise of the blocks, come opposite each other by the rotation of the blocks, after which the blocks are drawn together, and by means of knife-edges on the blocks and on the outer edge of one of the dies, that part of the rod that is in the dies is cut off from the rest, and becomes a perfect nail.

Referring to the drawing—

A is the framing, in two parts, one on each side of the machine, each consisting of a vertical casting, with suitable strengthing-webs and base-plate, and each casting provided with a wide vertical slot nearly its entire height, in which slot, the two sides of which act as guides, slide the two journal-boxes *l* and *o* of the quadrants *m* and *p*.

Near the base of each side-framing, and cast with it, is a strong rail, *c*, running across the said vertical slot, its upper surface forming a track shaped like an inverted V, on each of which tracks rolls one of the two grooved rollers or wheels *f*.

The said rollers are on the outer ends of the journals that extend horizontally in opposite directions from the upper end of a toggle-lever, *g*.

Similar journals extending from the lower ends of said toggle-lever, enter and are supported in horizontal boxes formed in the cross-bars *h*, one at each side of the lever *g*.

Each one of the said cross-bars is connected by a pair of rods, *i*, with a cross-bar, *k*, bolted to the upper side of and supporting the journal-box *l*, whose ends are grooved so as to fit the guides on each side of the slot in the framing, and enable it to slide up and down always in exactly the same vertical plane.

The boxes *l* receive and sustain the journals that extend horizontally from each side of the upper quadrant-block *m* at the corner of the same, as shown. The quadrant-block is suspended midway between the guides forming the sides of the vertical slot aforesaid.

The lever *g* is connected by two levers, *n*, with boxes *o* similar to the boxes *l*, and likewise placed one between the legs of each standard A.

Seats *j*, secured (all at the same height) to the rods *i* beneath the boxes *o*, serve to support the latter when not raised above the seats by the operation of the toggle-levers *g n*.

The boxes *o* receive and sustain the journals that extend horizontally from each side of the lower quadrant-block *p* at the corner of the same, so that this block, like the other, is suspended midway between the standards A.

The journals of both quadrant-blocks extend at one side beyond the adjacent standard A, and bear, outside of the latter, fixed collars *q*, which are armed with cogged sectors *r*.

From a box secured between the legs of the standard A, next to the cogged sectors *r*, extends horizontally, midway between the projecting journals, a shaft that bears a collar, *t*, armed on opposite sides with cogged sectors gearing into *r*.

To the same shaft, outside the collar *t*, is attached an arm, *v*, the outer extremity of which, by a rod, *w*, is connected with a cam-groove, *x*, in the eccentric *y*, whose shaft is mounted in the bed-piece of the machine, and is connected with any suitable motor.

The lower end of the connecting-rod *w* is jointed to a connecting-rod, *z*, that has its pivot in the bed-piece.

On the rim of the cam *y* rests an arm, *a'*, which is rigidly attached at its inner end to the toggle-lever *g*.

To the front standard A, between the legs of the same, at a suitable height, a horizontal cross-bar, *b'*, is secured, which cross-bar has a central orifice, *c'*, through which the iron rod from which the nails are formed is inserted.

Grooves *d'* are cut transversely of the peripheries of the quadrant-blocks, one groove to each block.

Prior to inserting the nail-rod in the orifice *c'*, the quadrant-blocks are brought, by the operation of the

eccentric *y* connecting rod *w* and cogged sectors *r u*, to such a position that the grooves *d'* coincide, and the nail-rod passes into them until it meets a stop, *e'*, fig. 5, located in one of the grooves, and controlled by a screw, so that its position may be changed in order to produce nails of various lengths.

On the front corners of the peripheries of the quadrant-blocks projecting knife-edges *m'* are formed, which are also grooved to admit of the passage of the nail-rod.

Motion in opposite directions being communicated to the quadrant-blocks by the above-mentioned means, the knife-edges cut into the nail-rod, partially severing it, and the peripheries of the blocks compress it laterally and extend it longitudinally.

The blocks are not curved on a true arc, but are eccentric, so that, as they rotate, their peripheries gradually approach each other and reduce the size of that part of the nail-rod that is between them more and more, the nail-rod, it being understood, remaining stationary, but of course rotating.

Near the opposite corners of the quadrant-blocks from the grooves *d*, transverse dies *f'* are placed, between which the partially-formed nail projects when the dies reach it both at the same time. Previous to this the nail remains cylindrical in shape, but the dies *f'* are of a form to make the nail four-sided.

Just as the nail enters between the dies the eccentric *y* raises the arm *a'*, and thereby causes the toggle-levers *g n*, which up to this time have stood inclined toward the eccentric, to assume a perpendicular position, the rollers *f* running horizontally forward toward the center of the rail *c*. This movement raises the boxes *o* and with them the lower quadrant-block, and at the same time depresses the boxes *h*.

The latter, as they descend, draw down with them, by means of the rods *i*, the boxes *l*, and consequently the upper quadrant-block. Thus the two quadrant-blocks are drawn toward each other, and their mutual approach continues until the knife-edge on one of the dies aforesaid has severed the nail-blank, and the latter is fully pressed.

That part of the cam-groove *x* in the eccentric *y* through which the pin of the connecting-rod *w* travels during the time of the movement of the quadrant-blocks toward each other, is formed concentric with the axis of the eccentric, in order that there may be no rotation of the blocks while they are traveling vertically.

By the time the cutting and pressing operations are completed the eccentric *y* begins to reverse the motion of the quadrant-blocks, and also to lower the arm *a'*, which movements are continued until the grooves *d* once more coincide so as to be ready to receive another blank, and the toggle-levers *g n* again are inclined backward, the boxes *h* and *l* raised to their original position, the boxes *o* lowered to the seats *j*, and the quadrant-blocks separated as before.

In figs. 5 and 6, m^2 is a groove formed lengthwise of the face of each quadrant-block next within the cutting-edge m^1. The office of the grooves m^2 is to form a collar on the nail-blank as the quadrant-block rotates, which collar, by the action of suitable cavities in the dies *f'*, is formed into a head at the same time the rest of the nail is pressed.

The article, therefore, that drops out of the lower dies *f'* as the block *p* rotates downward, is a perfect nail.

Having thus described my invention,

What I claim as new, and desire to secure by Letters Patent, is—

1. The combination of the quadrant-blocks provided with transverse grooves *d'*, the dies *f'*, and knife-edges m^1, substantially as shown and described.

2. The combination of the quadrant-blocks, provided with sliding-boxes, the toggle-levers *g n*, connecting-rods *i*, arm *a'*, and eccentric *y*, as specified.

3. The combination of the quadrant-blocks, collars *q t*, cogged sectors *r u*, crank *v*, connecting-rod *w*, and eccentric *y*, as described.

4. The arrangement of the toggle-levers *g n*, ties *c*, ribs *e*, rollers *f*, and boxes *h o*, as set forth.

Witnesses: HENRY REESE.

C. A. PETTIT,

THOS. D. D. OURAND.