# A. P. GOODHUE.

## BOX-NAILING MACHINE.

No. 187,843. Patented Feb. 27, 1877.

Fig: 1.

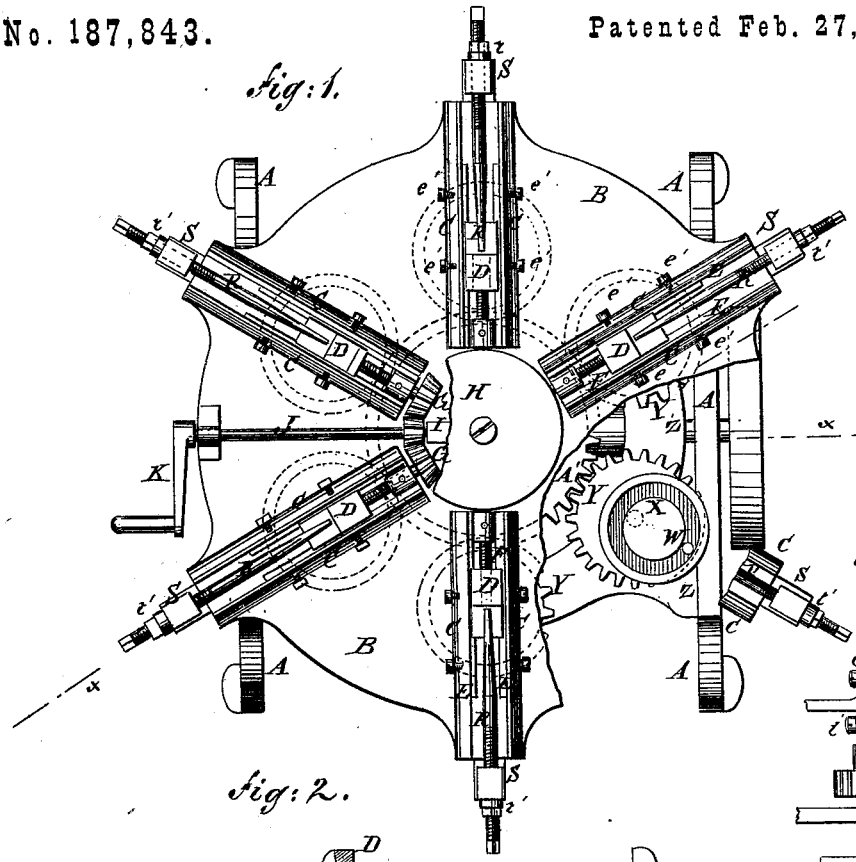


Fig: 2.

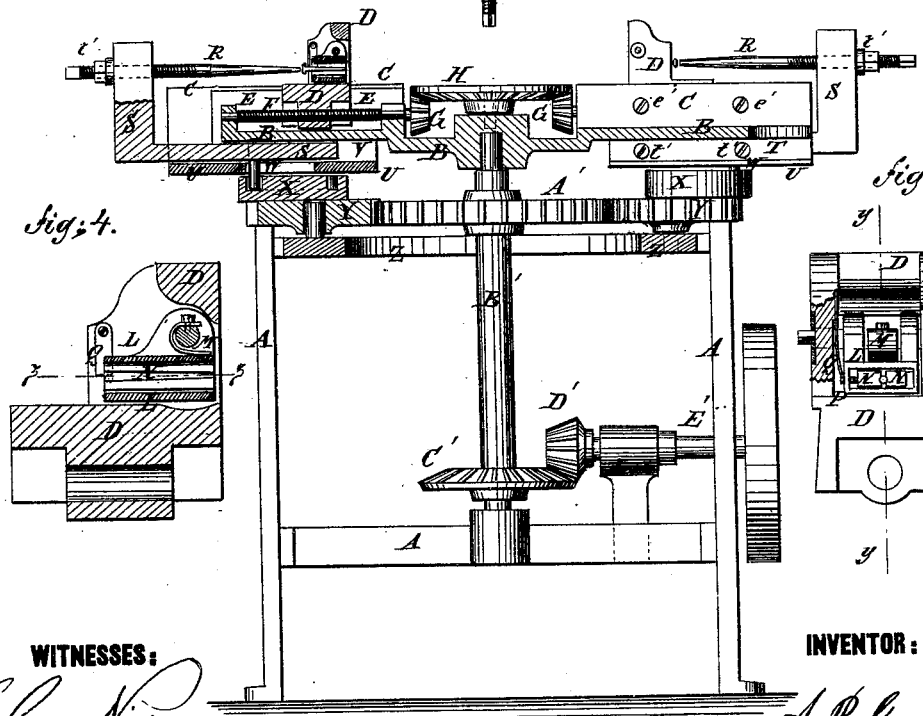


Fig: 6

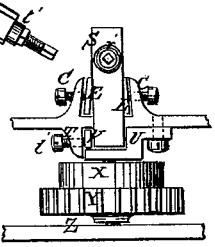


Fig: 3.

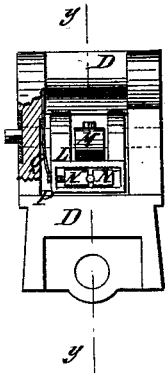
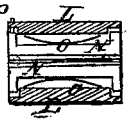


Fig: 4.



Fig: 5.



WITNESSES:

Chas. Nida.

J. H. Scarborough

INVENTOR:

A. P. Goodhue.

BY Munn & Co.

ATTORNEYS.

# UNITED STATES PATENT OFFICE.

AMOS P. GOODHUE, OF FOND DU LAC, WISCONSIN.

## IMPROVEMENT IN BOX-NAILING MACHINES.

Specification forming part of Letters Patent No. **187,843**, dated February 27, 1877; application filed January 6, 1877.

*To all whom it may concern:*

Be it known that I, AMOS P. GOODHUE, of Fond du Lac, in the county of Fond du Lac and State of Wisconsin, have invented a new and useful Improvement in Round-Box-Nailing Machine, of which the following is a specification:

Figure 1 is a top view of my improved machine, parts being broken away to show the gearings. Fig. 2 is a vertical section taken through the line *x x*, Fig. 1. Fig. 3 is a detail rear view of the slide-block. Fig. 4 is a vertical longitudinal section of the slide-block, taken through the line *y y*, Fig. 3. Fig. 5 is a longitudinal section of the dies and die-holder, taken through the line *z z*, Fig. 4. Fig. 6 is a detail view of one of the punch-holders and its supports.

Similar letters of reference indicate corresponding parts.

The object of this invention is to furnish an improved machine for nailing together the parts of round boxes, which shall be convenient in use and effective in operation, enabling the boxes to be nailed quickly and accurately.

The invention consists in the combination of the grooved eccentric wheels and the pins with the gear-wheels and the sliding punch-holders; in the combination of the flange and its adjustable gib and the adjustable angle-plate with the sliding punch-holders and the bed-plate of the machine; in the combination of the pairs of flanges and their adjustable gibs and the slide-blocks with the bed-plate of the machine; in the combination of the swiveled screws, the gear-wheels, and the crank-shaft with the slide-block and the bed-plate of the machine; in the combination of the pivoted die-holders and the dies and their springs with the slide-blocks; in the combination of the spring with the die-holder and the slide-block; and in the combination of the spring-catch and the pin with the slide-block, the die-holder, the dies, and their springs, as hereinafter fully described.

A is the frame of the machine, to the top of which is attached a circular bed-plate, B. Upon the upper side of the bed-plate B are formed six, more or less, pairs of parallel flanges, C, between which are placed the slide-blocks D, which are kept in place and are centered by gibs E, interposed between them and the flanges C. The gibs E are kept in place and are set up against the slide-blocks D by set-screws *e'*, passing in through the said flanges C. In the lower part of the blocks D is formed a screw-hole, through which passes a screw, F. The screws F are swiveled to the plate B, and to their inner ends are attached bevel-gear wheels G, the lower parts of which project into a ring-groove formed around the center of the plate B, and into the teeth of which mesh the teeth of the large bevel-gear wheel H, which is pivoted to the upper end of a hub formed in the center of the plate B, so that all the screws F may be turned at the same time and in the same direction. The gear-wheels G H are turned by a small bevel-gear wheel, I, the teeth of which mesh into the teeth of two of the gear-wheels G, between which it is placed. The gear-wheel I is attached to the inner end of the shaft J, which works in bearings attached to the plate B, and to its outer end is attached the crank K, so that by turning the said crank K in one or the other direction the slide-blocks D may be moved in or out, as desired. L is the die-holder, upon the upper side of the inner end of which are formed lugs, to receive the bolt by which the said die-holder is pivoted to the block D. The die-holders L, when left free, are raised into, and held in, an erect position by the springs M, attached to the pivoting-bolts of said die-holders L. N are the dies, which are placed within the cavity of the holders L, and the backs of which are recessed to receive the springs O, by which they are held together. To one of the dies N is attached a pin, P, which passes out through a hole in the side of the holder L, so that when the dies N are forced apart by the insertion of a nail between them the said pin P may project, to catch upon the spring Q when the die-holder L is lowered into a horizontal position, and may hold it in that position until the said pin is drawn inward by the dies being allowed to move toward each other. The nails are forced through the dies N and into the box by the punches R, the outer ends of which are screwed into the upright arms of the punch-holders S, and are secured in place adjustably by nuts *r'*, screwed upon their outer ends.

The horizontal arms of the punch-holders S are placed in radial position directly beneath the ways for the slide-blocks D, with one side resting against a flange, T, formed upon the lower side of said plate B. The punch-holders S are secured in place by angle-plates U, bolted against the plate B, and which rest against the side and bottom of the said holder S. The bolt-holes in the angle-plates U are elongated, so that the said angle-plates may be adjusted to center the punch-holders S, and to take up the wear. V are gibs interposed between the punch-holders S and the flanges T, and held in place adjustably by set-screws *t'*, passing in through said flanges T, and which, in connection with the angle-plate U, enable the wear to be taken up, and the punch-holder and punch to be accurately centered.

To the lower side of the horizontal arm of the punch-holder S is attached a pin, W, which projects downward through a slot in the lower part of the angle-plate U, and enters a ring-groove in the upper side of the wheel X, attached eccentrically to the gear-wheel Y.

All the gear-wheels Y are pivoted to a ring plate or frame, Z, attached to the frame A near its upper end, and the teeth of all of said wheels mesh into the teeth of a single central wheel, A', attached to the shaft B'.

The upper end of the vertical shaft B' revolves in the lower end of the hub in the center of the plate B, and its lower end revolves in a socket or step formed in or attached to the cross-bar of the frame A. To the lower part of the shaft B' is attached a bevel-gear wheel, C', into the teeth of which mesh the teeth of the gear-wheel D', attached to the horizontal shaft E'. The shaft E' revolves in bearings attached to the frame A, and is driven by any convenient power.

In using the machine the bottom of the box is placed upon the center of the plate B, and the sides or hoop of the box is placed upon the flanges C around the edge of the said bottom. The crank K is then turned to bring all the slide-blocks D inward to rest against the hoop of the box, and press it against the edge of the said bottom. The shaft B' is then turned until the punch-holders S have reached the limit of their forward movement, and the punches R are then adjusted so that their forward ends may strike the hoop of the box. The punches R are then drawn back, nails are inserted in the dies N, the die-holders L are turned down into a horizontal position, and the punch-driving mechanism is thrown into gear, which carries the punches R forward, and forces the nails into the box. As the punches are withdrawn their driving mechanism is thrown out of gear, and the die-holders L rise into a vertical position, so that another set of nails can be readily placed in their dies N. In this way round boxes can be quickly and accurately nailed, the punches requiring to be adjusted only when boxes of a different diameter are to be nailed.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

1. The combination of the grooved eccentric wheel X and the pins W with the gear-wheels Y A' and the sliding punch-holders S, substantially as herein shown and described.

2. The combination of the flange T and its adjustable gib V, and the adjustable angle-plate U, with the sliding punch-holder S and the plate B, substantially as herein shown and described.

3. The combination of the flanges C and their gibs E, and the slide-blocks D, with the plate B, substantially as herein shown and described.

4. The combination of the swiveled screws F, the gear-wheels G H I, and the crank-shaft J with the slide-blocks D and the plate B, substantially as herein shown and described.

5. The combination of the pivoted die-holders L, and the dies N and their springs O, with the slide-blocks D, substantially as herein shown and described.

6. The combination of the spring M with the die-holder L and the slide-block D, substantially as herein shown and described.

7. The combination of the spring-catch Q and the pin P with the slide-block D, the die-holder L, the dies N, and their springs O, substantially as herein shown and described.

AMOS P. GOODHUE.

Witnesses:
C. H. RHODES,
C. A. RIDER.