C. BAUER & W. C. MUNDER.

Machine for Nailing Boxes.

No. 44,929. Patented Nov. 8, 1864.

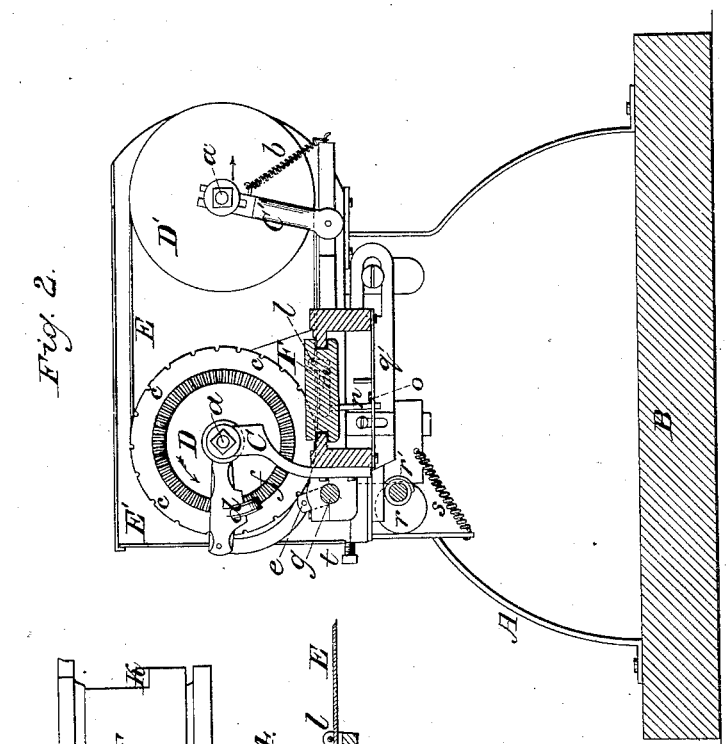

Fig. 2.

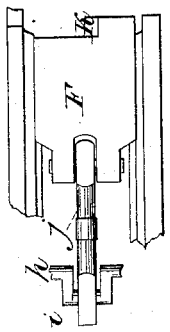

Fig. 3.

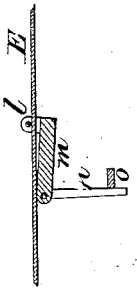

Fig. 4.

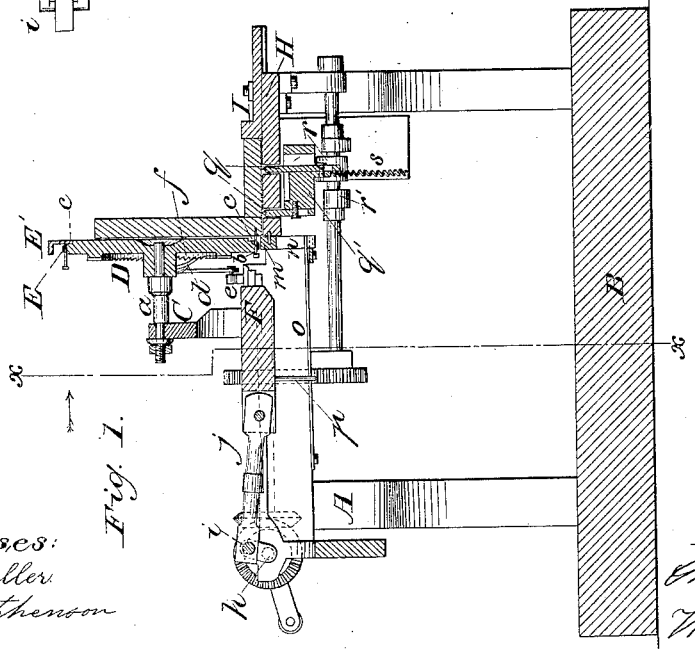

Fig. 1.

Witnesses:
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UNITED STATES PATENT OFFICE.

C. BAUER AND W. C. MUNDER, OF NEWARK, NEW JERSEY.

IMPROVEMENT IN MACHINES FOR NAILING BOXES.

Specification forming part of Letters Patent No. 44,929, dated November 8, 1864.

To all whom it may concern:

Be it known that we, C. BAUER and W. C. MUNDER, both of Newark, in the county of Essex and State of New Jersey, have invented a new and Improved Machine for Nailing Boxes; and we do hereby declare that the following is a full, clear, and exact description of the same, reference being had to the accompanying drawings, forming a part of this specification, in which—

Figure 1 represents a longitudinal vertical section of our invention. Fig. 2 is a transverse vertical section of the same, taken in the plane indicated by the line *x x*, Fig. 1. Fig. 3 is a detached plan of the nail-driver. Fig. 4 is a detached elevation of the mechanism for depressing the carrying-belt.

Similar letters of reference in all the figures indicate corresponding parts.

This invention consists in the employment or use of a rotating nail-carrier in connection or combination with a reciprocating nail-driver, and with a gage or other equivalent device to hold the boards or box to be nailed in position in such a manner that the nails introduced into the carrier are successively brought opposite said boards or box, and one after the other is driven into the wood at the proper intervals. The nail-driver is provided with a shoulder, so that the nails are first driven partially into the wood, allowing them to be withdrawn from the carrier, and that they are finally driven home by the finishing-face of the nail-driver. The boards or boxes to be nailed are arranged on a table and held in position by an adjustable gage, and they are fed automatically by a reciprocating feeding mechanism, which can be adjusted according to the desired distance of the nails one from the other.

A represents a frame made of metal or any other suitable material, and secured down to a bed-plate, B, or to the ground. Said frame supports the two standards C C′, which form the rigid bearings for the pivots *a a′*, on which the wheels D D′ rotate freely. These wheels are connected by a belt, E, and the standard C′, which supports the pivot of the wheel D′, is hinged and arranged so that it is rendered yielding, and that the belt can be readily depressed to make room for the nail-driver, as will be presently explained. A spring, *b*, has a tendency to pull the standard C′ in the direction of the arrow marked near it in Fig. 2, so that the belt is always exposed to the requisite strain.

The wheel D is that part of our machine which we term the "nail-carrier." It is provided with a series of notches, *c*, corresponding in size and shape to the shank of ordinary nails, such as are generally used for nailing boxes. For nails of different size the size of the notches has to be altered. An intermittent rotary motion is imparted to this wheel by the action of a spring-pawl, *d*, which is hinged to the pivot *a*, and to which an oscillating motion is imparted by a crank, *e*, with which it connects, as clearly shown in Fig. 2. Said spring-pawl engages with the teeth of a ratchet-wheel, *f*, which is cast solid with or otherwise rigidly connected to the nail-carrier D. The crank *e* is mounted on the end of a shaft, *g*, which has its bearings in suitable boxes on the side of the frame A, and to which a rotary motion is imparted by a suitable bevel-gear from the driving-shaft *h*, or in any other desirable manner. The nail-carrier D works in close proximity to the shield E′, which is so arranged that the nails cannot be pushed back into the notches any farther than desirable. The nails on being introduced into the notches *c* of the nail-carrier are held in position by the belt E, and as the said carrier rotates in the direction of the arrow marked thereon in Fig. 2, the nails are successively carried down in front of the hammer or nail-driver F. This nail-driver is guided by suitable ways in the frame A, and a reciprocating motion is imparted to it by a crank, *i*, in the driving-shaft, connecting with it by the pitman *j*, or in any other suitable manner.

The face of the nail-driver is formed with a shoulder, R, as clearly shown in Fig. 3, and as the same comes forward the lowest part of its face strikes the head of the nail in the notch, which at that moment is in its lowest position, and the point of the nail is driven into the board placed behind the shield E′. As soon as this nail has thus been fastened in the board, the feed mechanism carries said board forward, withdrawing from its notch in the nail-carrier the nail which has been partially driven into the wood, and bringing it opposite the highest part or finishing-face of the nail-driver, and on its subsequent stroke said nail-driver drives the nail home.

In order to allow the nail-driver to act on the nails without coming in contact with the belt, the lower section of said belt passes through a loop, *l*, attached to the horizontal arm *m* of a bell-crank lever, *m n*, and a cam-lever, *o*, which is acted upon by a tappet, *p*, projecting from the lower surface of the nail-driver, strikes the vertical arm *n* of the bell-crank lever and depresses its horizontal arm, together with the section of the belt passing through the loop *l*. In order to render this depression of the belt practicable, it is necessary that the bearing of the wheel D′ shall be made yielding, as above described.

The boards or boxes to be nailed are fed to the machine on the table or platform H behind the shield E′, and they are held in position by an adjustable gage, I. They are fed along automatically on this table by the feed mechanism, which consists of two (more or less) prongs, *q*, which project upward through slots in the table from a slide, *q′*, to which a reciprocating and rising-and-falling motion is imparted by the combined action of cams *r r′* and a spring, *s*. On being pushed upward by the action of the cam *r*, the points penetrate the wood and cause the same to move forward on the table for the desired distance. This distance, or the amount of feed, depends upon the length of the intervals at which the nails are to be driven, and, it is adjusted by a screw, *t*, similar to the feed of a sewing-machine. It is obvious, however, that the construction of the feed mechanism can be changed in various ways, and we do not wish to confine ourselves to the previous mechanism shown in the drawings.

By this machine the operation of nailing boxes can be performed almost entirely automatically. It requires one boy or girl to feed the nails to the notches of the nail-carrier, and another one to place the boxes to be nailed in the proper position on the table H. The nails are driven as fast as the same are supplied to the carrier.

Having thus fully described our invention, what we claim as new, and desire to secure by Letters Patent, is—

1. The employment or use of a rotating nail-carrier in combination with a reciprocating nail-driver, and suitable table supporting the boards or boxes to be nailed, substantially in the manner and for the purpose specified.

2. Making the nail-driver with a shoulder, *k*, substantially as and for the purpose set forth.

3. Depressing the belt E by the automatic action of the machine, substantially as and for the purpose described.

4. The automatic feed mechanism, in combination with the nail-carrier and nail-driver, constructed and operating in the manner and for the purpose substantially as herein specified.

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