(No Model.)

F. W. EDWARDS.

BOX NAILING MACHINE.

No. 342,788. Patented June 1, 1886.

Fig. 1.

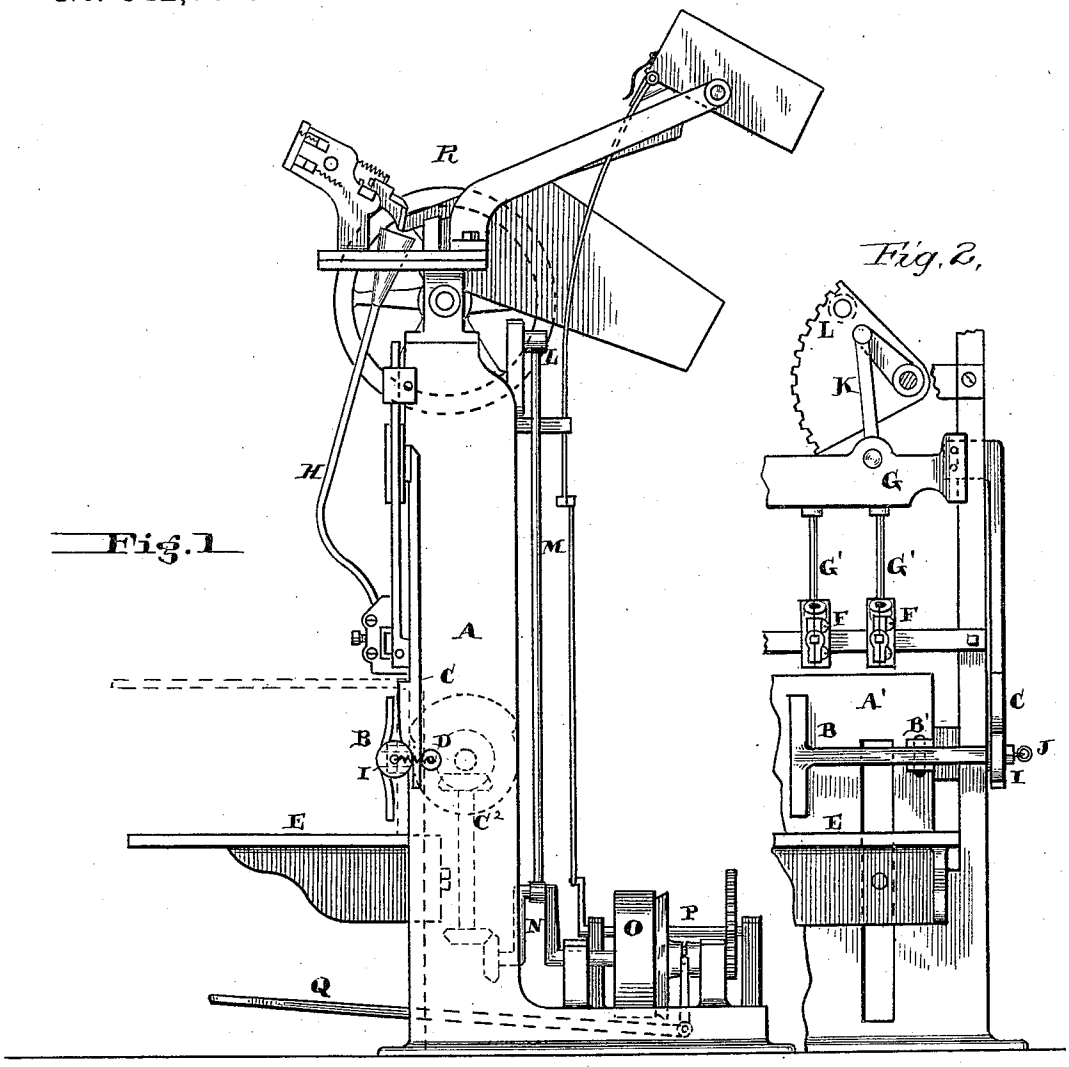
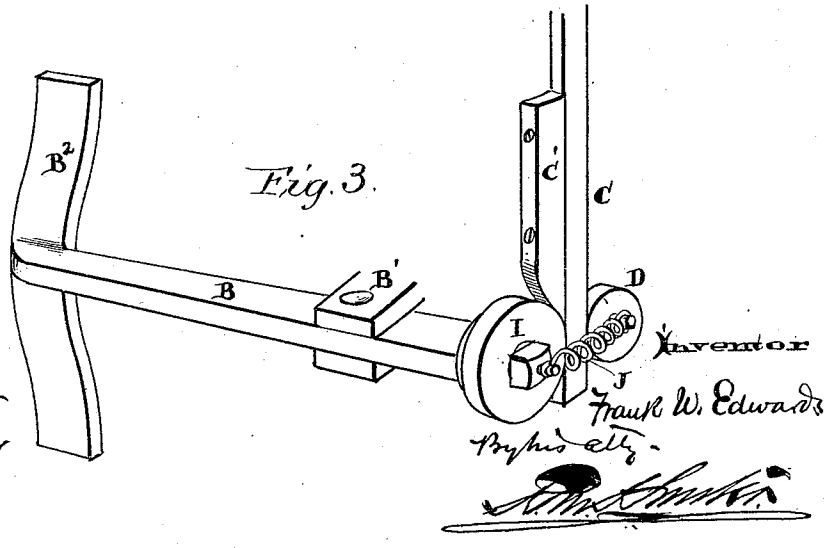


Fig. 2.

Fig. 3.



Witnesses:
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UNITED STATES PATENT OFFICE.

FRANK W. EDWARDS, OF THURLOW, PENNSYLVANIA.

BOX-NAILING MACHINE.

SPECIFICATION forming part of Letters Patent No. 342,788, dated June 1, 1886.

Application filed January 5, 1885. Serial No. 152,027. (No model.)

To all whom it may concern:

Be it known that I, FRANK W. EDWARDS, of Thurlow, in the county of Thurlow and State of Pennsylvania, have invented a new and useful Improvement in Box-Nailing Machines, of which the following is a specification.

My invention has reference to box-nailing machines; and it consists in certain improvements in automatic clamps for holding the boards in position during the nailing operation, all of which is fully set forth in the following specification, and shown in the accompanying drawings, which form part thereof.

The object of my invention is to so construct the machine that it shall automatically clamp or hold the board, and thus insure the action of the clamp being more positive both as regards its time of action and power exerted, and at the same time overcoming any necessity of the operator devoting particular attention thereto. The same mechanism which forces the nails into the wood preferably actuates a cam, which in turn actuates the clamp so as to make it hold the end board (to which the side boards are to be nailed) firmly just before the nails reach such boards.

I am aware that prior to my invention nailing-machines have been made with automatic clamps; but in such cases the clamp has been secured to a vertically-reciprocating table, upon which the boards to be nailed are placed, and which, when forced upward by a foot-pedal, causes the clamp to hold the boards in position for nailing, and when this action has taken place the nailing operation proper comes into play, the clamping action being one of foot-power alone. In my invention the clamp is supported upon a fixed pivot, and does not move vertically, and is automatically and positively clamped through the action of the nailing mechanism proper, the depression of the plungers and their frame causing the clamping effect.

Considerable advantage is had in making the clamping device automatic with the nail-driving mechanism, for in this case the operator is free to move, and is not required to press heavily upon a pedal to keep the boards in position.

In the drawings, Figure 1 is a side elevation of a box-nailing machine embodying my improvements. Fig. 2 is a front elevation of the central portion of same. Fig. 3 is a perspective view of the clamp proper.

The box-nailing machine illustrated is that of a well-known construction, and is only shown that my improvements may be more clearly defined and claimed, for they are equally adapted to any other kind of box-nailing machine, as the movements of the various parts are simple and easily attained on any construction of box-nailing machine now in use.

A is the main frame of the machine, and E its adjustable supporting-table.

R is the nail-feeding device, which distributes the nails to the tubes H, by which they are fed one at a time to the receivers F and driven into the boards by means of plungers G′, which are actuated by a cross-head, G, receiving its reciprocations from crank K and crank L, which latter is operated by a rod, M, and a crank, N, secured to the driving-shaft, upon which the driving-pulley O is loosely supported.

P is a clutch, which may be operated by foot-lever Q, and is adapted to connect or disconnect the band-wheel O with the crank-shaft upon which the crank N is secured.

The frame A is provided with a vertical guide-plate, A′, arranged at right angles to the table E, and against which the latter is adjusted vertically.

B is my improved automatic clamp, and is pivoted at B′ to the plate A or part of the frame A′, forming a lever, one end of which is provided with extended surface B^2, and the other end of which is provided with a loose anti-friction wheel, I.

Secured in line with the anti-friction wheel I and to the frame A is a guide-wheel, D, and toward which the end of the clamp-lever and its wheel I is drawn by a spring, J. Working between the said wheels I and D is a vertical reciprocating cam-plate C, which is secured to the cross-head G or to any other reciprocating portion of the machine by which it may receive a properly-timed movement. When the plungers G′ are raised, one of the end boards of the box is thrust in back of the clamp-lever B and a side board placed upon the end thereof, as indicated in dotted lines in Fig. 1, and upon pressing the foot-lever Q the

nailing-machine is set into action, and as the plungers G′ are forced down the cam C is thrust between the rollers D and I, instantly clamping the end board by causing the lever B to be oscillated, and after the nails have been driven home, and as the plungers G′ rise, the nailed portions of the box are automatically freed, for as the cam C is raised the spring J comes into action, removing the pressure of the clamp from the board. From this it is seen that the operator is in nowise required to watch or manipulate the clamp proper, for its action is controlled and governed automatically by the ordinary running or operation of the box-nailing machine itself, and the power of the clamp can be made as great as desired without increasing the labor of the operator; hence a far more perfect and uniform action is not only attained, but it is accomplished in a simpler and more effective manner, and that, too, with a reduction of labor on the part of the operator. It will be observed that the cam C being movable and not fixed is therefore always operative for different sizes of box-boards. This would not be the case if the cam were fixed.

If desired, the cam C may be made with an adjustable or removable surface, C′, which may be made greater or less for different thicknesses of box ends; or, if desired, the roller I may be removed and a larger or smaller one placed upon its journal; or the fulcrum B′ may be made adjustable, if so desired.

Instead of the roller D, a flat guide may be used, and, if found more desirable, in some machines the reciprocating cam C may be changed to a rotating one, as indicated in dotted lines in Fig. 1 and marked C². Therefore, while I prefer the construction shown, I do not limit myself to the details thereof, as they may be modified in various ways without departing from my invention.

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

1. In a box-nailing machine, a reciprocating nail-driving frame, in combination with the pivoted clamp, a cam to actuate said clamp, the said cam being actuated by said nail-driving frame or one of its connecting parts, substantially as and for the purpose specified.

2. The combination, in a nailing-machine, of the frame A of the machine, having the rigid face-plate A′, with the adjustable table E, the pivoted clamp B, hinged to the immovable frame face-plate A′, and having a roller, I, the nail-driving frame G, the cam C, spring J, and roller D, the cam C being secured to and operated by the frame G, whereby the position of the clamp remains constant and is actuated automatically by the nail-driving frame, substantially as and for the purpose specified.

3. The combination, in a nailing-machine, of the frame A of the machine having the rigid face-plate A′, with the adjustable table E, the pivoted clamp B, hinged to the immovable frame face-plate A′, and having a roller, I, the nail-driving frame G, the cam C, having a removable hardened wearing part, C′, as shown, spring J, and roller D, the cam C being secured to and operated by the frame G, substantially as and for the purpose specified.

In testimony of which invention I hereunto set my hand.

FRANK W. EDWARDS.

Witnesses:
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