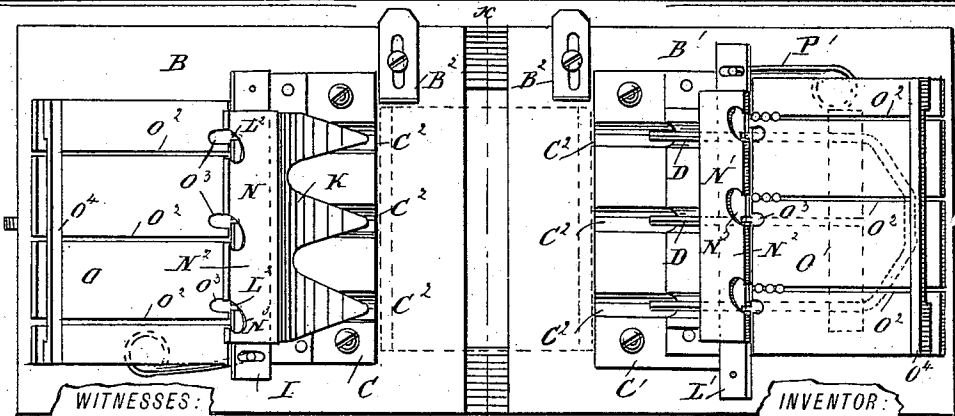
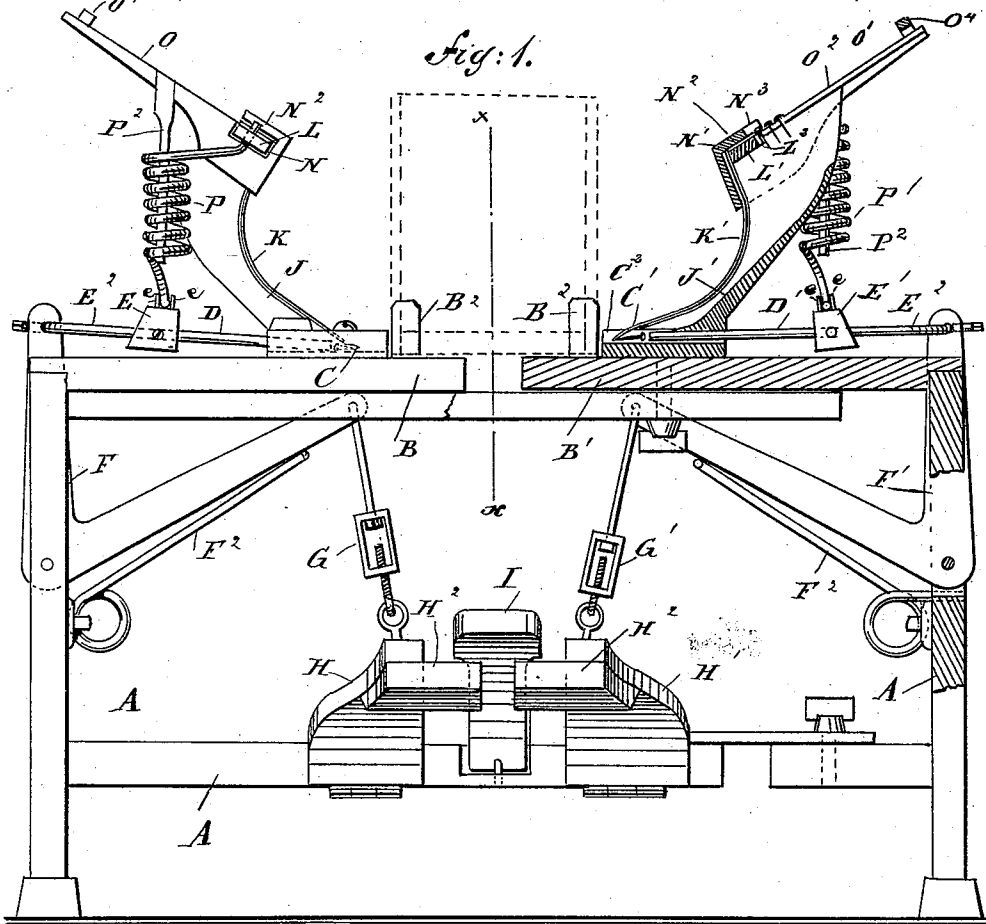


F. J. HAWLEY.
BOX NAILING MACHINE.

No. 469,139.

Patented Feb. 16, 1892.



WITNESSES:
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C. Sedgwick

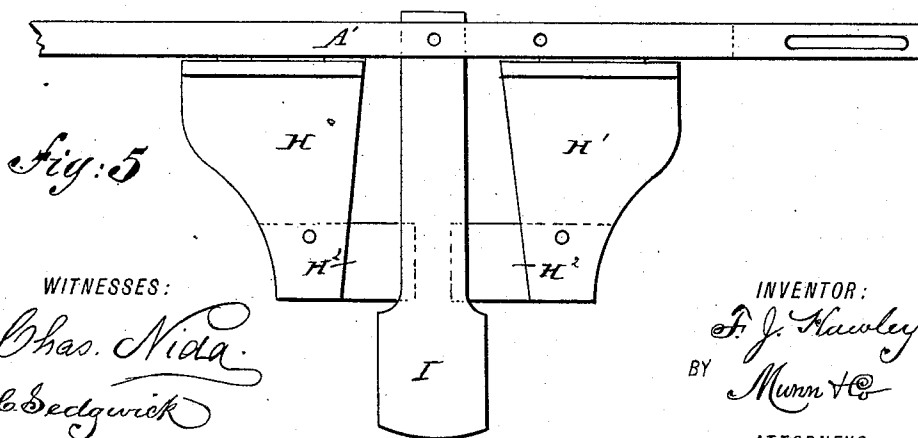
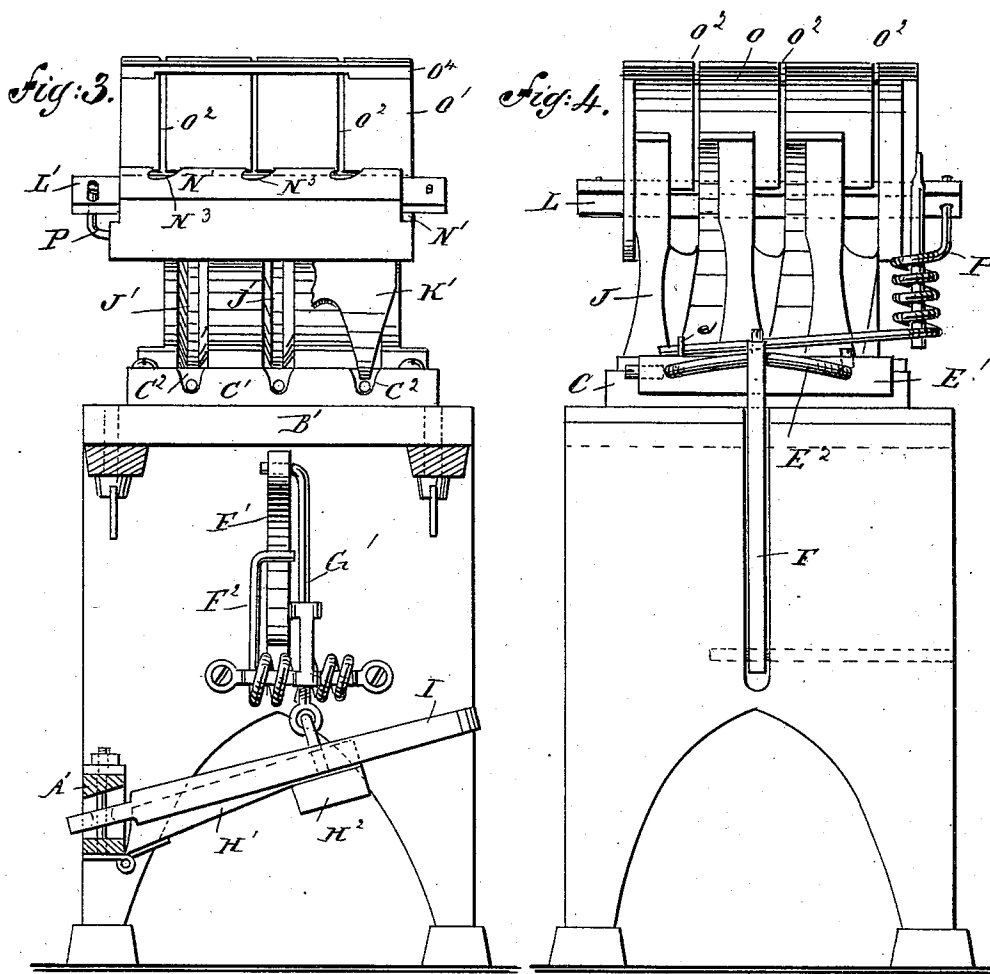
Fig. 2.

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UNITED STATES PATENT OFFICE.

FRANK J. HAWLEY, OF PHELPS, NEW YORK.

BOX-NAILING MACHINE.

SPECIFICATION forming part of Letters Patent No. 469,139, dated February 16, 1892.

Application filed November 13, 1890. Serial No. 371,271. (No model.)

To all whom it may concern:

Be it known that I, FRANK J. HAWLEY, of Phelps, in the county of Ontario and State of New York, have invented a new and improved Box-Nailing Machine, of which the following is a full, clear, and exact description.

The object of the invention is to provide a new and improved machine specially designed for rapidly and conveniently nailing the sides and bottom or cover together to form a box.

The invention consists in certain parts and details and combinations of the same, as will be described hereinafter, and then pointed out in the claims.

Reference is to be had to the accompanying drawings, forming a part of this specification, in which similar letters of reference indicate corresponding parts in all the figures.

Figure 1 is a front view of the improvement with parts in section. Fig. 2 is a plan view of the same, with one of the nail-chute guides removed. Fig. 3 is a transverse section of the same on the line xx of Fig. 1, parts being broken out. Fig. 4 is an end elevation of the improvement, and Fig. 5 is a plan view of the treadles.

The improved box-nailing machine is provided with an extension-frame A, arranged so as to be lengthened or shortened for different-sized boxes to be nailed. The table of the extension-frame A is made of two sections B and B', adapted to support at their joint the box to be operated on. On top of the table-sections B and B' are secured transversely-extending abutments C and C', respectively, each provided with a series of longitudinally-extending channels C², into each of which passes one nail at a time to be driven into the sides and bottom of the box held on top of the double sections B and B' between the abutments C and C', respectively. At the rear of the table-sections B and B' are arranged transversely-extending adjustable stops B², serving to hold the box in the proper position. The nails in the several channels of the abutments C and C' are driven inward by a corresponding series of plungers D and D', connected at their outer ends with each other by a transversely-extending bar E or E', respectively connected by links E² with bell-

crank levers F and F', respectively fulcrumed on the ends of the extension-table A. The lower arms of the bell-crank levers F and F' are pivotally connected by adjustable links G and G', respectively, with the free ends of treadles H and H', respectively fulcrumed on the lower connecting-bar A' of the main frame A.

The treadles H and H' are provided with inwardly-extending lugs H², adapted to be engaged either simultaneously or singly by a treadle I, also fulcrumed on the connecting-bar A' between the fulcrums of the treadles H and H'. The pivot of the treadle I is so arranged as to permit the latter to swing up and down and sidewise, so as to either hold the treadle I in contact with both lugs H² at a time, as is plainly illustrated in Figs. 1 and 5, or the treadle I is moved sidewise onto one of the lugs H² on the treadle H or H', so as to move or actuate only one of the treadles at a time. The links G and G' are so arranged as to be lengthened or shortened, according to the size of the box to be nailed at opposite sides. Springs F², secured on the ends of the extension-frame A, press on the bell-crank levers F so as to return the same, the plungers D and D', respectively, and the treadles H and H', respectively, to their normal position. (Shown in Fig. 1.)

Into the channels C² of the abutments C and C' lead the upwardly and rearwardly curved chutes J and J', respectively formed integral with the said abutments or separately fastened thereon, if desired. The chutes J and J' are covered at their front opening by guards K and K', respectively extending at their lower ends over and into the channels C², so as to prevent a nail from sliding too far forward in the said channels by the momentum obtained on sliding down the chutes J and J'. The ends of the guards K and K' projecting into the channels are of a flexible nature, so that the plungers D and D' can pass the nails forward freely into the sides of the box.

On the upper ends of the chutes J and J' are formed transversely-extending guideways N and N', respectively, in which are fitted to slide transversely the nail-delivery bars L

and L', respectively, each provided with a series of notches L² corresponding in number to the respective chutes J and channels C², and adapted to register with slots O², formed in the inclined supply-tables O and O', respectively. The notches L² are also adapted to register with larger notches O³, formed in the said tables O and O' directly above the chutes C² and to one side of the slots O².

In the top plates of the guideways N and N' are formed curved notches N³, acting as cams to push the nail-head resting on top of one of the bars L, so as to displace the nail from the notch and permit said nail to drop through the notch O³ into the corresponding chute J or J'. The upper end of each nail-supply table is provided with a transversely-extending bar O⁴, which holds the several sections of the table formed by the slots O² together.

The bars L and L' are each connected at one outer end with the levers P and P', respectively fulcrumed on a suitable pivot P², extending from the nail-tables O and O', respectively. The lower free ends of the levers P and P' are pivotally connected with the transversely-extending bars E and E', respectively, by means of the pins e on the said bars, so that when the plungers are moved inward the said levers P and P' are set in motion by being connected with the bars E and E', so that the said bars L are moved transversely and the notches L² register with the slots O² in the nail-tables O and O', respectively.

The operation is as follows: The frame A is extended so as to bring the abutments C and C' a sufficient distance apart to place the end of the box to be nailed, as well as the sides of the same, in position, so that the sides rest against the said abutments. (See dotted lines in Fig. 1.) The slots O² in the nail-tables O and O' are filled with nails, the heads of which rest on top of the table, the heads of the nails being somewhat larger than the width of the slot. Now when the operator presses the treadle I the treadles H and H' are actuated and by their links G and G' actuate the levers F and F', respectively, so that the transverse bars E and E' and the plungers D and D' are moved inward. The levers P and P' are thus set in motion, so that the bars L and L' move transversely and bring their notches L² opposite the slots O² in the tables O and O' to permit the lowermost nails in the said slots to pass into the notches L², it being understood that one nail passes into a notch at a time. As soon as the operator releases the pressure on the treadle I the springs F² cause a return movement of the several parts, so that the bars L and L' in sliding back to their former position carry the nails opposite the openings O³, the nails being pushed out of the notches L² during this movement by the

heads of the nails striking against the cam-notches N³. The nails now drop through the notches O³ into the several chutes J and J', and from the latter pass into the channels C² in front of the plungers D and D', respectively. The forward movement of the several nails in the channels, however, is limited by the projecting ends of the guards K and K', respectively. By the next movement of the treadle I the plungers D and D' force the nails forward past the guards K and K' into the sides of the box and the ends of the same until the nail is firmly driven home. During this movement nails have again moved into the notches L², and when the treadle I is released the plungers D and D' and the bars L and L' return to their former position, a new set of nails being thus deposited through the chutes J and J' into the channels C², and by the next movement of the treadle I the above-described operation is repeated.

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

1. In a box-nailing machine, the combination, with a supporting-frame having oppositely-arranged nail-channels, of a plunger at each side of the center of the frame, treadles connected with the plungers, and an auxiliary treadle for operating the first-named treadles simultaneously or separately, substantially as described.

2. In a box-nailing machine, the combination, with transversely-arranged abutments provided with longitudinal channels, of plungers fitted to slide in the said channels, spring-pressed bell-crank levers connected with the said plungers, adjustable links connected with the said bell-crank levers, treadles connected with the said links, and an independent treadle adapted to actuate the said first-named treadles simultaneously or separately, substantially as shown and described.

3. In a box-nailing machine, the combination, with a frame having oppositely-arranged nail-channels and chutes leading to said channels, of reciprocating plungers working in the channels, nail-delivery bars on the chutes, connections between the plungers and nail-delivery bars, and means for operating the plungers simultaneously or separately, substantially as herein shown and described.

4. In a box-nailing machine, the combination, with the frame having oppositely-arranged nail-channels and chutes leading to said channels, of reciprocating bars provided with plungers working in said channels, nail-delivery bars on the chutes, and pivoted levers connected to the reciprocating bars and to the delivery-bars, substantially as and for the purpose set forth.

5. In a box-nailing machine, the combination, with an extension-frame provided with

oppositely - arranged channels and chutes leading to said channels, of bars provided with plungers working in the channels, bell-crank levers connected to the bars, treadles
5 connected to the bell-crank levers, nail-delivery bars on the chute, and pivoted levers having one end connected to the nail-deliv-

ery bars and the other to the plunger-bars, substantially as herein shown and described.

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Witnesses:

JOHN W. HAWLEY,
JOSEPH CLAYTON.