(No Model.) 2 Sheets—Sheet 1.

J. McALLISTER & W. H. HAYES.

CLENCHING DEVICE FOR BOX NAILING MACHINES.

No. 593,232. Patented Nov. 9, 1897.

Fig. 3.

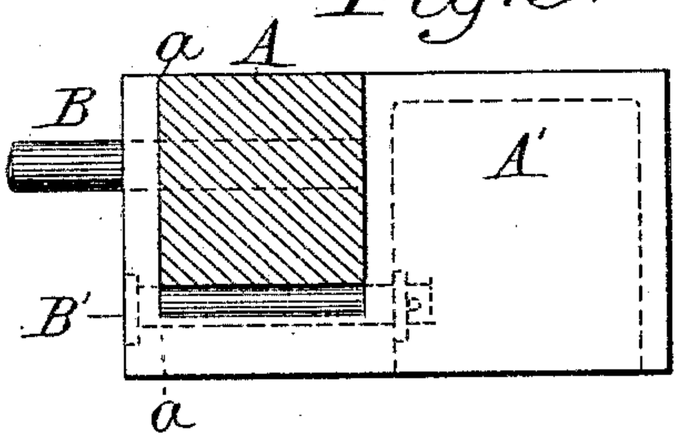


Fig. 4.

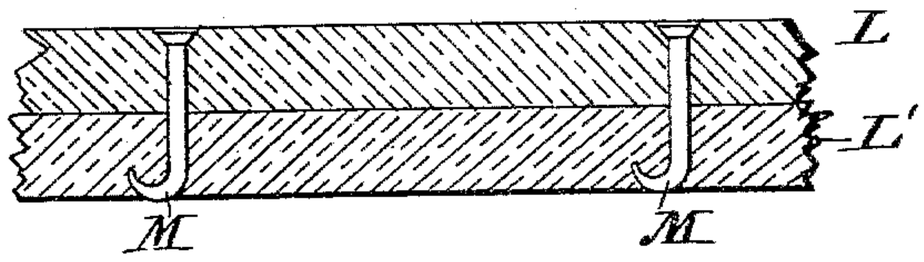


Fig. 1.

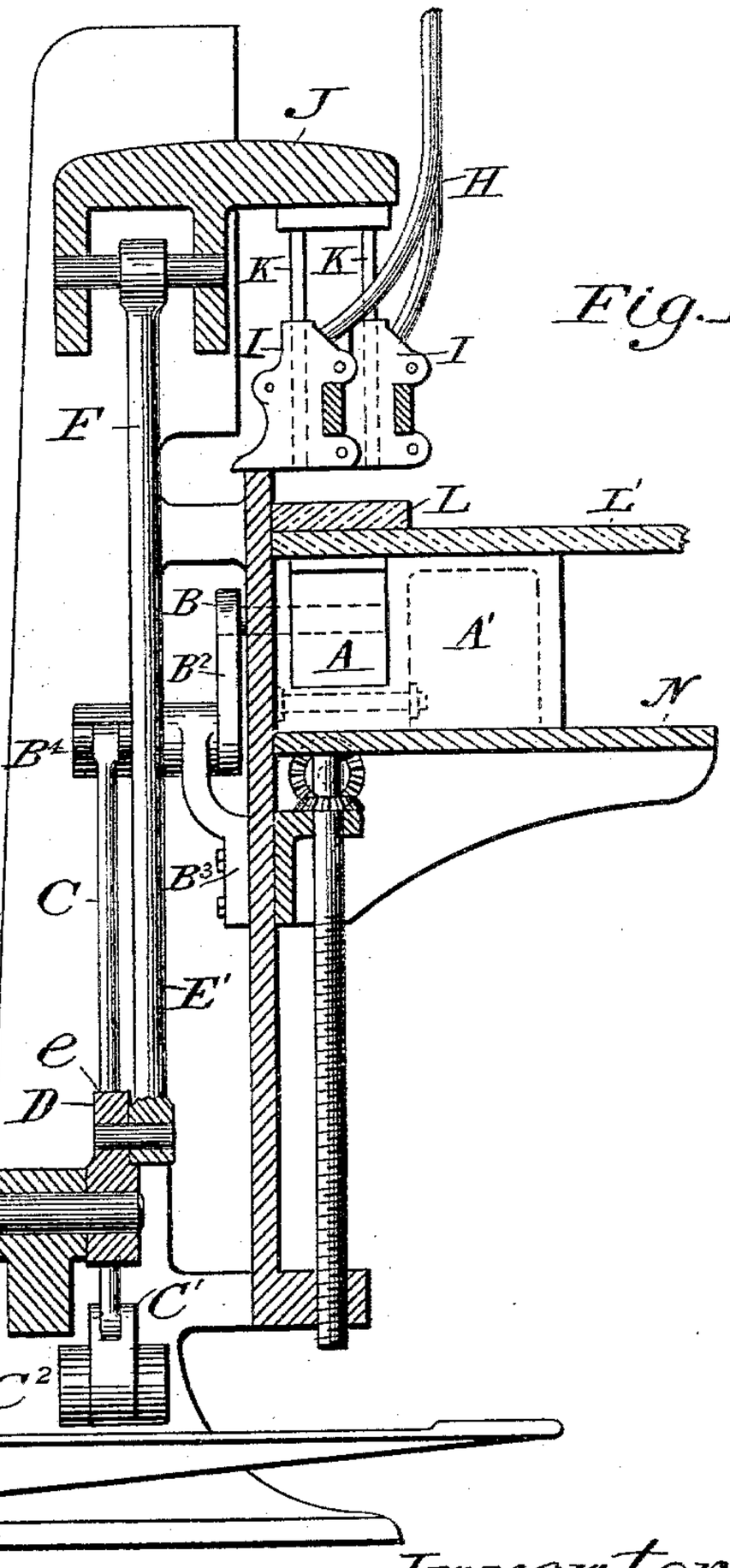
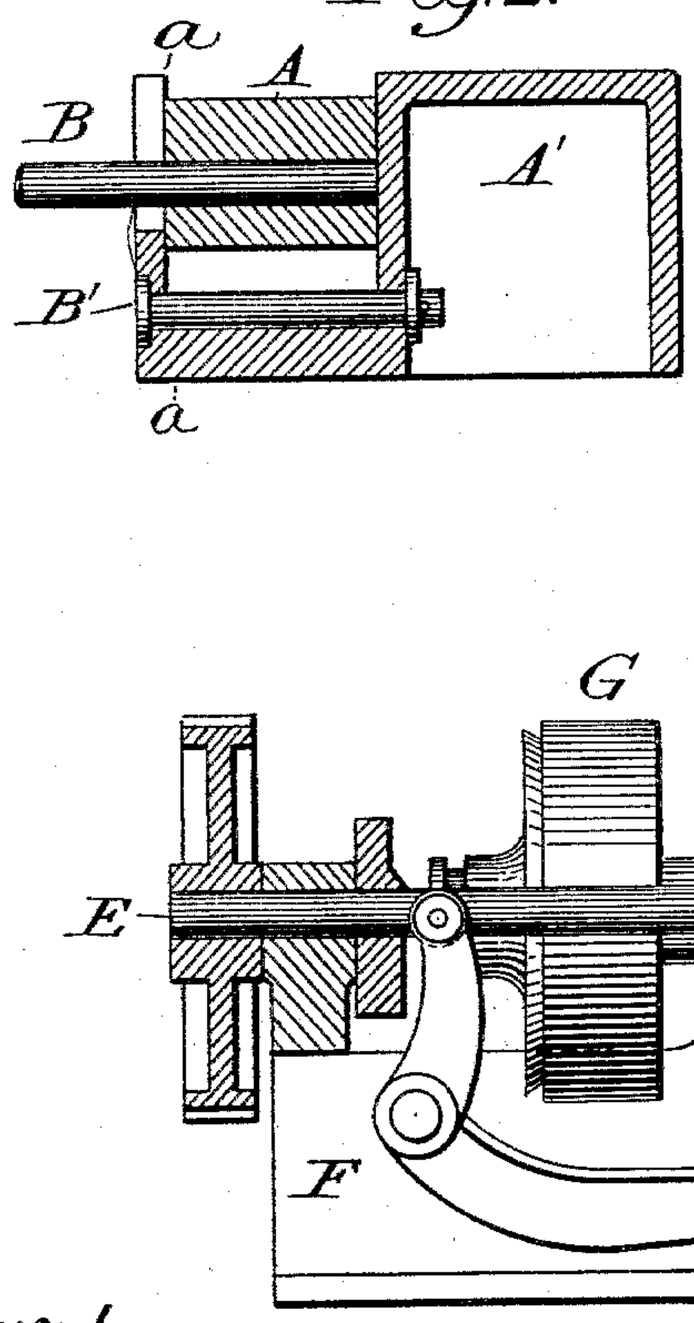


Fig. 2.



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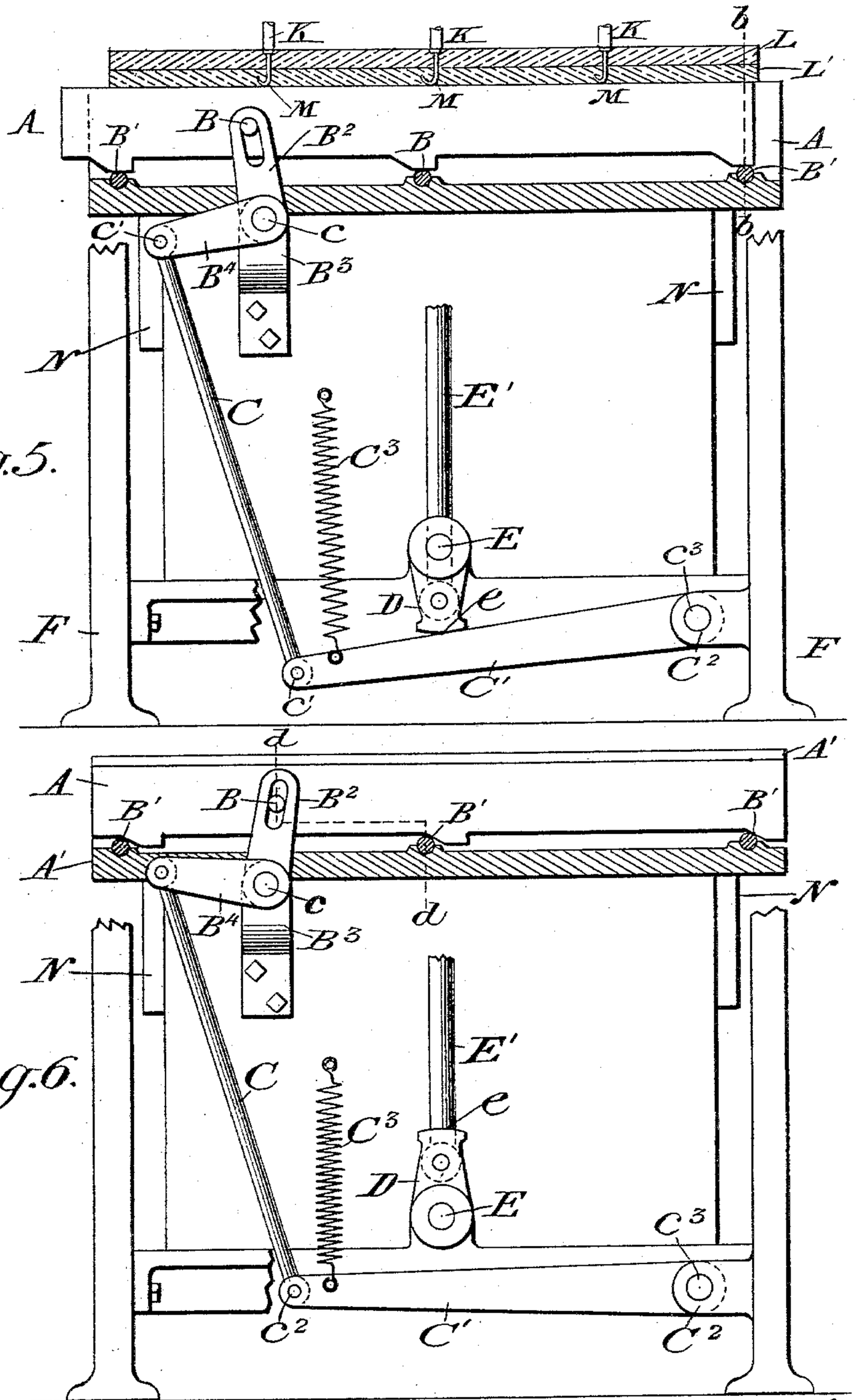

Fig. 5.

Fig. 6.

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UNITED STATES PATENT OFFICE.

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CLENCHING DEVICE FOR BOX-NAILING MACHINES.

SPECIFICATION forming part of Letters Patent No. 593,232, dated November 9, 1897.

Application filed January 28, 1897. Serial No. 621,056. (No model.)

To all whom it may concern:

Be it known that we, JOHN MCALLISTER, a resident of Kings county, and WILLIAM H. HAYES, a resident of Queens county, in the State of New York, citizens of the United States, have invented certain new and useful Improvements in Clenching Devices for Box-Nailing Machines, of which the following is a specification.

Heretofore in all clenching devices used in box-nailing machines the points of the nail, after being driven through the material to be operated upon, strike the anvil perpendicularly and are crushed into the wood irregularly and ofttimes are riveted at their points or have their shanks crooked into the wood through which they have been driven. This has been the result whether the anvil moves vertically upward or the table drops and allows the nails to strike their points upon a firm anvil. This consequently causes a large amount of wear and tear on the nailing-machine, and, instead of clenching the nails, tends to crush or rivet them, and therefore necessitates the expenditure of a large amount of power.

The object of the present improvement is to economize in power, to prevent undue wear on the machine, and to clench each nail perfectly and have their points turned upward into the wood, so as to present a smooth surface. To attain this object, we provide a bed upon the table of a nailing-machine in which a deflecting pressure-bar operates by means of a cam or wiper, fitted to the main shaft of the nailing-machine, which communicates motion to a lever at the base of the nailing-machine. This lever, by means of a connecting-rod and bell-crank, transmits motion laterally to the deflecting pressure-bar.

Upon the under surface of the deflecting pressure-bar we provide a series of lugs having inclined faces which ride upon rolls journaled within the bed, and (by reason of the lateral motion imparted to the deflecting pressure-bar are forced against these rolls) and cause the deflecting pressure-bar to have an upward angular motion.

The cam or wiper working upon the lever, which, by means of a connecting-rod and bell-crank, operates the deflecting pressure-bar, is the continuation of or a face provided upon the crank fitted to the main shaft of the nailing-machine. This crank also reciprocates the cross-head and nail-punches of the box-nailing machine.

The position of the cam or wiper with reference to the crank-pin of the connecting-rod determines how much of the nail will project beneath the material before being acted upon by the deflecting pressure-bar.

The cam or wiper, before referred to, should be set so that the points of the nails are intercepted (as they project through the wood), by the deflecting pressure-bar, and then by the continued downward motion of the nail-punches and the angular upward motion of the deflecting pressure-bar the nails are caused to curl upward at their points into the material in the direction of the lateral motion.

When the nail-punches have completed their downward motion and the deflecting pressure-bar has reached its highest point, a squeeze upon the nails takes place, insuring a smooth surface to the wood.

In the accompanying drawings, Figure 1 is an elevation and vertical section of a nailing-machine with clenching attachment and mechanism in position. Fig. 2 is a section of bed and deflecting pressure-bar, on an enlarged scale, through the line *d d*, Fig. 6, showing the deflecting pressure-bar in its normal condition. Fig. 3 is a section of deflecting pressure-bar through line *b b*, Fig. 5, on an enlarged scale, showing bar at its highest position. Fig. 4 is a section of material after having been operated upon. Fig. 5 is a rear elevation of the mechanism employed and also of the deflecting pressure-bar and a section of bed through lines *a a*, Fig. 3, showing bar at its highest position, having clenched the nails, the nail-punches, crank, and wiper being at their lowest positions. Fig. 6 is the same view as Fig. 5, with the difference that crank and wiper are at their highest positions and deflecting pressure-bar at its lowest or normal position.

Referring by letters to the drawings, F represents the side frame of a nailing-machine; G, the driving mechanism; J, the cross-head;

N, the table; E, the main shaft; E′, the connecting-rod; K K, the nail-punches; I I, the nail-boxes; H, the nail-chutes. These parts are common to all nailing-machines and need no further description.

We will now describe the mechanisn employed in our improvements.

A is a deflecting pressure-bar, fitted to work freely in the bed A′, which is placed on the table N of the nailing-machine in the position shown in Fig. 1.

B is a carrier-pin projecting from the deflecting pressure-bar A through the front wall of the bed A′ and slot in lever B^2, the hub of which is keyed to the shaft *c*, which is journaled in the bearing B^3. The shaft *c* projects through the bearing B^3 to allow the lever B^4 to be keyed thereon. The levers B^3 and B^4 being set at ninety degrees become a bell-crank, with the bearing B^3 between them for a fulcrum.

C is a connecting-rod the upper eye of which connects to the arm B^4 of the bell-crank at *c*′, and the lower eye connects at c^2 to the lever C′, which is pivoted in the lugs C^2 on the frame F of the nailing-machine.

C^3 is a spring which is employed to recover the normal condition of the deflecting pressure-bar after an operation and can be placed as well on the slotted arm of the bell-crank B^2.

B′ B′ B′ are steel rolls journaled within the bed A′ and upon which the inclined projecting lugs on the under surface of the deflecting pressure-bar ride to give the proper angular upward and lateral motion to the bar A.

D is a crank keyed to the main shaft E of the nailing-machine and (connected to the cross-head by the rod E′) has a projection beyond the hub of the crank-pin, which forms a surface which acts as a cam or wiper, and at each revolution of the main shaft E depresses the lever C′, and by its connection to the connecting-rod C and slotted arm of the bell-crank B^2, working on the carrier-pin B, imparts motion to the deflecting pressure-bar A.

L and L′ indicate the batten and boards used in boxes, and M indicates the clench.

The operation is as follows: The end of a box L′ is placed upon the clenching-table and a batten L being placed on top in its proper position, as shown in Fig. 1, the nailing-machine is started by means of the foot-lever and the nails come down the nail-chutes into the nail-boxes I I, and out of which they are forced by the nail-punches K K into and through the batten and box ends L and L′. The points are intercepted by the deflecting pressure-bar A and are deflected in the direction of the lateral motion of the deflecting pressure-bar and by the continued downward action of the nail-punches K K and upward angular motion of the deflecting pressure-bar A. The points of the nails curl or turn upward, and when the nail-punches K K have reached their lowest position a squeeze takes place, by reason of the form and position of the wiper *e*, which forces the clench even with the surface of the wood, thus insuring a perfect clench to the nail and a smooth surface to the wood.

We do not by this specification intend to confine ourselves to the particular mechanism as set forth; but,

Having described our invention, what we claim, and desire to secure by Letters Patent, is as follows:

1. The combination with a box-nailing machine of a clenching device, consisting of a bed and a deflecting pressure-bar, fitted to slide therein, in a plane parallel to the face of the nailing-machine, of a carrier-pin thereon a bell-crank, with one of its arms slotted to engage with the carrier-pin, to cause with the rolls and inclined-plane support an upward and lateral motion to the deflecting pressure-bar; a lever pivoted to the side of the nailing-machine, a connecting-rod, connecting said lever to bell-crank, a cam or wiper on crank of the nailing-machine fitted to the main shaft of the nailing-machine so as to engage with the lever at each revolution of said main shaft substantially as specified.

2. The combination with a box-nailing machine of nail-punches, with a deflecting pressure-bar, and mechanism for causing an angular upward motion to the deflecting pressure-bar, timed with the downward motion of the nail-punches, so that the deflecting pressure-bar shall deflect the points of the nails as they are forced through the material, substantially as specified.

3. In a clenching device the combination of a bed and bar with roller and inclined-plane support, the inclined plane on the one and the rollers on the other, substantially as specified.

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WM. H. HAYES.

Witnesses:
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FREDERICK KNOTHER.