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H. PAXTON

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NAIL GUIDING MEANS

Filed July 17, 1930

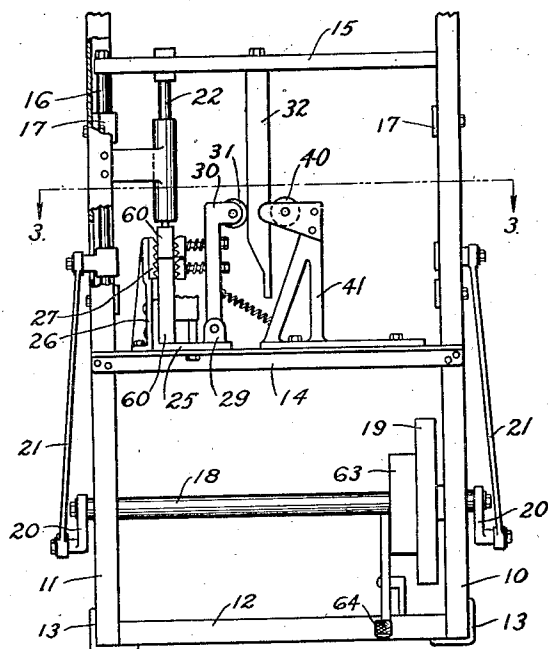


Fig. 1.

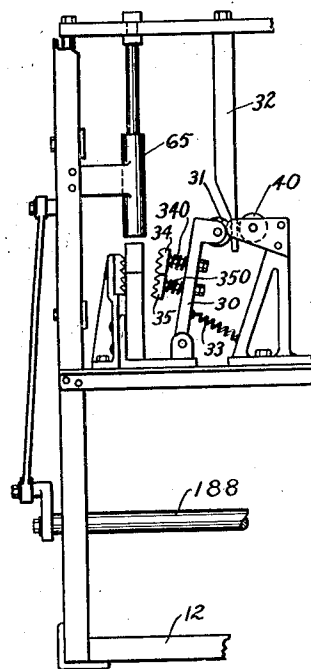


Fig. 2.

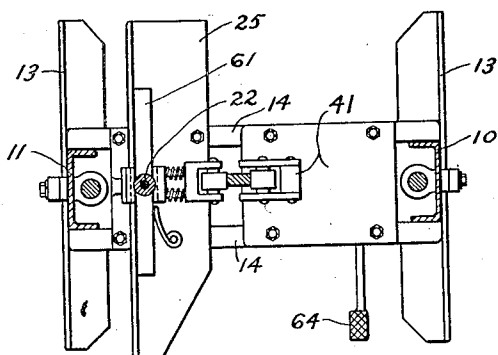


Fig. 3.

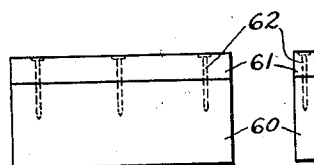


Fig. 4. Fig. 4A.

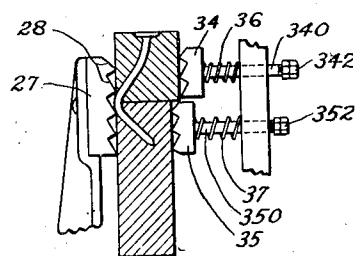


Fig. 5.

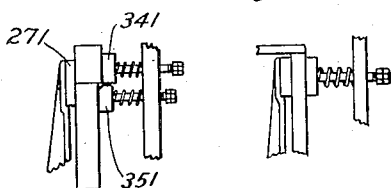


Fig. 6.

Fig. 6A.

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UNITED STATES PATENT OFFICE

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NAIL GUIDING MEANS

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My invention relates to a nailing machine and more specifically to a nailing machine for nailing boxes and for nailing cleats on the box ends. Lug boxes used for packing and shipping fruit are formed with the end boards enlarged in height by nailing cleats to the top edge of said end boards. In use, lids are nailed on the top of the cleats. The object of the cleat is the easy removal of the lid together with the cleat so that when the box is opened it has the appearance of being full even though the fruit may have settled in the box. The cleats used are usually the same approximate thickness as the thickness of the end boards although sometimes they may be slightly thicker. It has become the practice in box construction to nail the cleats on the box ends before the box is assembled and nailed. By reason of the fact that the end boards are sometimes less than three-fourths of an inch thick and because the grain in the wood is gnarled or crossed, the nail driven through the cleat into the box end frequently runs out at the side and form what boxmakers call "shiners", that is the pointed end of the nail penetrates through the side of the box end and sometimes is exposed and sometimes through the side of the cleat so that it does not enter the box end at all.

The object of my invention is to use guide means on each side of the wood to be nailed so that the point of a nail coming through the side of the cleat, or the box end, is automatically reversed and starts the point away from the outside surface of the cleat or box end. Other objects will be hereinafter disclosed.

In the drawing herewith Fig. 1 shows a front view of a part of a nailing machine showing my device clamping the end board and the cleat together for nailing. Fig. 2 is a fractional front view of the device shown in Fig. 1, showing the clamping means open and in position for receiving the box end and cleat. Fig. 3 is a top sectional view of the device as shown in Fig. 1 along the sectional line 3—3 in Fig. 1. Fig. 4 is a view of the end board with the cleat thereon showing the nails driven therein in broken lines. Fig.

4a is an end view of the end board and cleat shown in Fig. 4. Fig. 5 is an enlarged view of a cross section of the end of board and the cleat showing the clamp in operative relation with the end board and cleat, and showing a nail driven therethrough. Figs. 6 and 6a are modified forms of the clamp.

Referring to the drawing, a frame is constructed of upright posts 10 and 11, of a lateral base 12, and cross supports 13. A table 14 connects uprights 10 and 11, runs parallel with base 12, and is positioned a spaced distance from said base. A nail driving head 15 is positioned above the table 14 as hereinafter more fully set forth. To the driving head is attached sliding bars 16, which sliding bars are adapted to slide through bearings 17 attached to posts 10 and 11. A shaft 18 extends from uprights 10 to 11 and is likewise positioned parallel with table 14. The shaft can be rotated by a wheel 19. At each end of shaft 18 is a crank 20 which is pivotally connected with sliding bars 16 by connecting arms 21 so that by the rotation of shaft 18 sliding bar 16 and driving head 15 is given a vertical reciprocating motion. A nail driver 22 is attached to driving head 15. The nail driving mechanism can be of the same general character as that described in Patent No. 1,755,225, dated April 22, 1930, for a Compensating device for nail driving mechanism which was granted to me. Said nail driving device can consist of a single driver or a plurality of aligned drivers.

To the table I have attached a bracket 25 which is positioned so that the base is attached to table 14, and the upright portion 26 is adapted as a rigid guide for the sides of the end board and cleat. This guide extends slightly above the top of said end board so it likewise engages the cleat as shown. At the top of said upright portion is a block 27, said block being formed with horizontal corrugations 28 on the face adjacent to the board. Bracket 25 also supports a pivot mounting 29, on which pivot mounting is pivoted an upright arm 30. Arm 30 has a roller 31 positioned on the upper end thereof. Depending from driving head 15 is a cam

32 which is adapted on the movement of the nailing head down and up to move arm 30 toward block 27, and to hold it in that position while the cleat is being nailed to the end board. Arm 30 is pulled away from said box end when cam 32 so permits, by means of spring 33. To arm 30 are attached blocks 34 and 35. These blocks are mounted on stems 340 and 350, which stems pass through holes in arm 30 and are held therein by nuts 342 and 352. Compression springs 36 and 37 encircle stems 340 and 350, one end resting against arm 30, and the other end against blocks 34 and 35. It will be noted that by this construction when the nailing head is moved downward arm 30 will be moved toward the box end boards by the engagement of cam 32 with roller 31, and the cam will press blocks 34 and 35 toward block 27. In a proper adjustment of the parts, the end board and the cleat are clamped between said blocks.

The purpose of having two blocks, to-wit, 34 and 35 operate against block 27 is to compensate for the varying differences of thicknesses of the cleat and the end board. If the cleat were of the same thickness as the end board, blocks 34 and 35 might be replaced by one block approximately the same shape as block 27. Inasmuch as block 27 is positioned to engage both the end board and the cleat, block 34 is positioned to engage the cleat only and block 35 is positioned to engage the end board only. By this means it is noted that the cleat and board on the one side will be held flush. The springs 36 and 37 should be strong enough to hold the blocks 34 and 35 tightly against the cleat and the end board, but should yield sufficiently to permit of slight variations in the thickness of said cleat and end board.

To make the device more rigid I have supported a roller 40 on an upright support 41 in a position opposite to the roller 31 so that cam 32 passes between rollers 31 and 40.

By this device it will be noted as shown in Fig. 5 that if for any reason a nail driven through the cleat toward the box end board should emerge from the side of the cleat or board, blocks 27, 34, or 35 would tend to bend the point end of the nail so that it would re-enter the cleat or board.

As shown in Fig. 6 blocks 271, 341, and 351 can have faces plane instead of corrugated.

In the drawing, 60 is the end board of the box, 61 is the cleat. 62 represents the nails fastening the cleat to the end board, 63 is the clutch for regulating the rotation of shaft 18, and likewise for actuating the nail driving means at will, 64 is a foot pedal lever adapted to throw clutch 63 into operative relation or out of operative relation.

Because of the action of the blocks 27, 34,

and 35 these may be referred to in the claims as jaws. In a broad sense, the block 27, and the upright bracket portion 26 might be considered one jaw, while the blocks 34 and 35, and the arm 30, upon which they are mounted, might be considered a second jaw cooperating therewith.

Having described my invention, I claim as new and ask for Letters Patent:

1. In combination with a nailing machine having a reciprocating nailing head, a nailing table, and means for driving nails, of nail directing means consisting of a fixed jaw, and a cooperating jaw adapted to be moved toward and away from the fixed jaw, said jaws being positioned so that they are adapted to grasp a board and a cleat adjacent to the line of meeting of the board and cleat, said board being positioned edgewise on the nailing table, and the cleat being positioned on the top edge of the board, said jaws being positioned to adapt the nail driving means to drive a nail between said jaws, said cooperating jaw being constructed of two independent parts, one part being positioned to grasp the cleat, and the second part being positioned to grasp the upper portion of the board.

2. In combination with a nailing machine having a reciprocating nailing head, a nailing table, and means for driving nails, of nail directing means consisting of a fixed jaw, and a cooperating jaw adapted to be moved toward and away from the fixed jaw, said jaws being positioned so that they are adapted to grasp a board and a cleat adjacent to the line of meeting of the board and cleat, said board being positioned edgewise on the nailing table, and the cleat being positioned on the top edge of the board, said jaws being positioned to adapt the nail driving means to drive a nail into the cleat and board, and between said jaws, said cooperating jaw being constructed of two independent parts, one part being positioned to grasp the cleat, and the second part being positioned to grasp the board, the faces of the parts engaging the cleat and the board having corrugations thereon.

3. In combination with a nailing machine having a reciprocating nailing head, a nailing table, and means for driving nails, of nail directing means consisting of a fixed jaw, and a cooperating jaw adapted to be moved toward and away from the fixed jaw, said jaws being positioned so that they are adapted to grasp a board and a cleat across the line of meeting of the board and cleat, said board being positioned edgewise on the nailing table, and the cleat being positioned on the top edge of the board, said jaws being positioned with relation to the nail driving means to adapt the nail driving means to drive a nail between said jaws through the cleat and into the board, said cooperating

jaw being constructed with an independent faced member yieldingly attached to an arm pivotally supported on the nailing table, said arm being normally held apart from the fixed jaw by yielding means, and placed in operative relation and timed by cam means actuated by the reciprocating movement of the driving head.

4. In combination with a nailing machine having a reciprocating nailing head, a nailing table, and means for driving nails, of nail directing means consisting of a fixed jaw, and two cooperating movable jaws adapted to be moved toward and away from the fixed jaw, said jaws being positioned so that they are adapted to grasp a board and a cleat at approximately right angles to the line of meeting of the board and cleat, said board being positioned edgewise on the nailing table, and the cleat being positioned on the top edge of the board, said jaws being positioned when grasping the board and cleat for the nail driving means to drive a nail between said fixed jaw and the cooperating jaws, said cooperating jaws being positioned one above the other, so that the upper cooperating jaw and the fixed jaw are adapted to grasp the cleat, and the lower cooperating jaw and the fixed jaw are adapted to grasp the board, said cooperating jaws being yieldingly mounted on a pivoted support.

5. In combination with a nailing machine having a reciprocating nailing head, a nailing table, and means for driving nails, of nail directing means consisting of a fixed jaw, and two cooperating movable jaws adapted to be moved toward and away from the fixed jaw, said cooperating jaws and fixed jaw being adapted to grasp a board and a cleat at approximately right angles to the line of meeting of the board and cleat, said board being positioned edgewise on the nailing table, and the cleat being positioned on the top edge of the board, said jaws being positioned with relation to the nail driving means to adapt the nail driving means to drive a nail between said jaws, through the cleat and into the board, and means for moving said cooperating jaws toward the fixed jaw consisting of cam means actuated and timed by the movement of the nailing head.

6. In combination with a box making machine having a nailing table and nail driving means, of cooperating jaws positioned adjacent to the nailing table and aligned with relation to the nail driving means so that a nail driven by the nail driving means will normally pass between said cooperating jaws, upper and lower portions of one of said jaws having relative movement to compensate for varying widths of material engaged by these portions, said cooperating jaws being provided with corrugations running approximately at right angles to the normal

path of travel of the driven nail and on the approaching faces of the jaws.

7. In a nailing machine the combination of: means for supporting a piece of shook on edge with a second piece of shook contacting an upward disposed face of said first piece of shook; a pair of jaws on opposite sides of said first piece of shook; means for driving nails downwardly through said second piece of shook into said first piece of shook; and means operating in timely relation with said nailing means for clamping said jaws against opposite faces of said first piece of shook close to said second piece of shook, there being nail deflecting surfaces on shook contacting faces of said jaws which are disposed obliquely relative to side faces of said shook, one of said jaws being stationary, the other being movable, and one of said jaws being yieldably supported and including a plurality of separately yieldable shook contacting blocks.

8. In a nailing machine the combination of: means for supporting a piece of shook on edge with a second piece of shook contacting an upward disposed face of said first piece of shook; a pair of jaws on opposite sides of said first piece of shook; means for driving nails downwardly through said second piece of shook into said first piece of shook; and means operating in timely relation with said nailing means for clamping said jaws against opposite faces of said first piece of shook close to said second piece of shook, there being nail deflecting surfaces on shook contacting faces of said jaws which are disposed obliquely relative to side faces of said shook, one of said jaws including two yieldable shook contacting blocks, one of which engages one of said pieces of shook and the other block the other piece of shook.

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