

June 15, 1965

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CARPENTER'S WOOD FRAMING TOOL

Filed Aug. 17, 1961

2 Sheets-Sheet 1

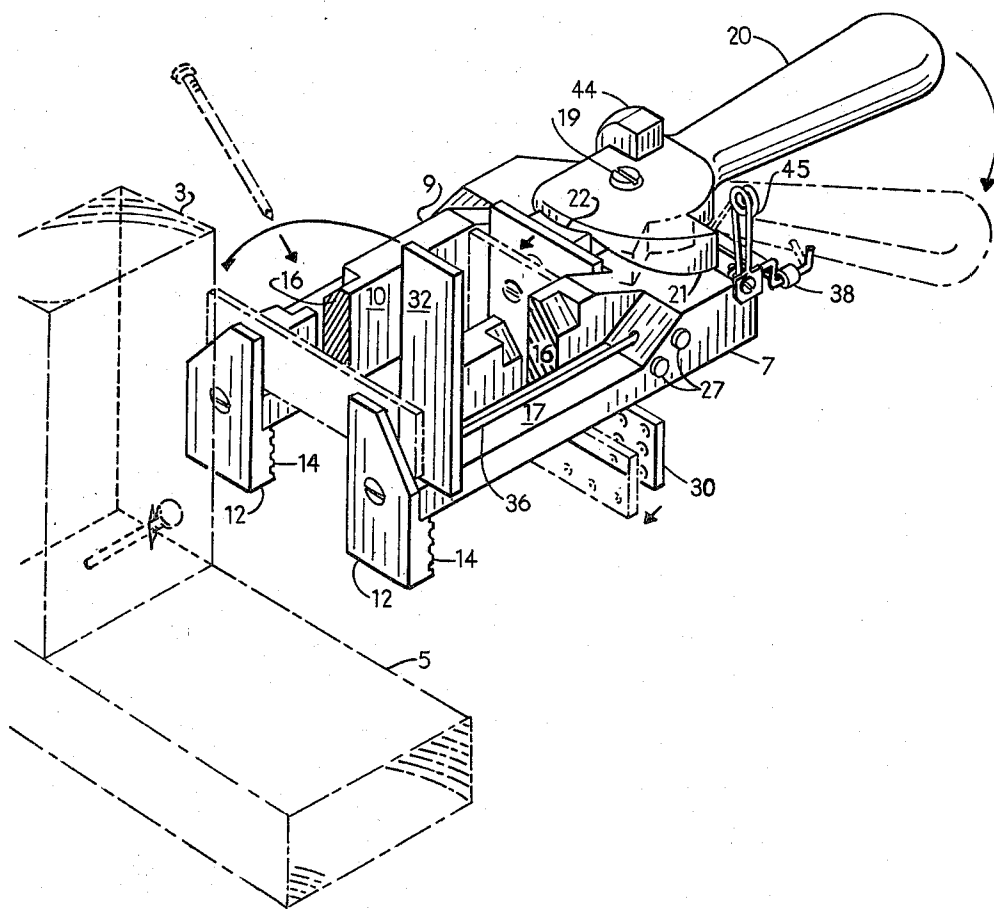


Fig. 1

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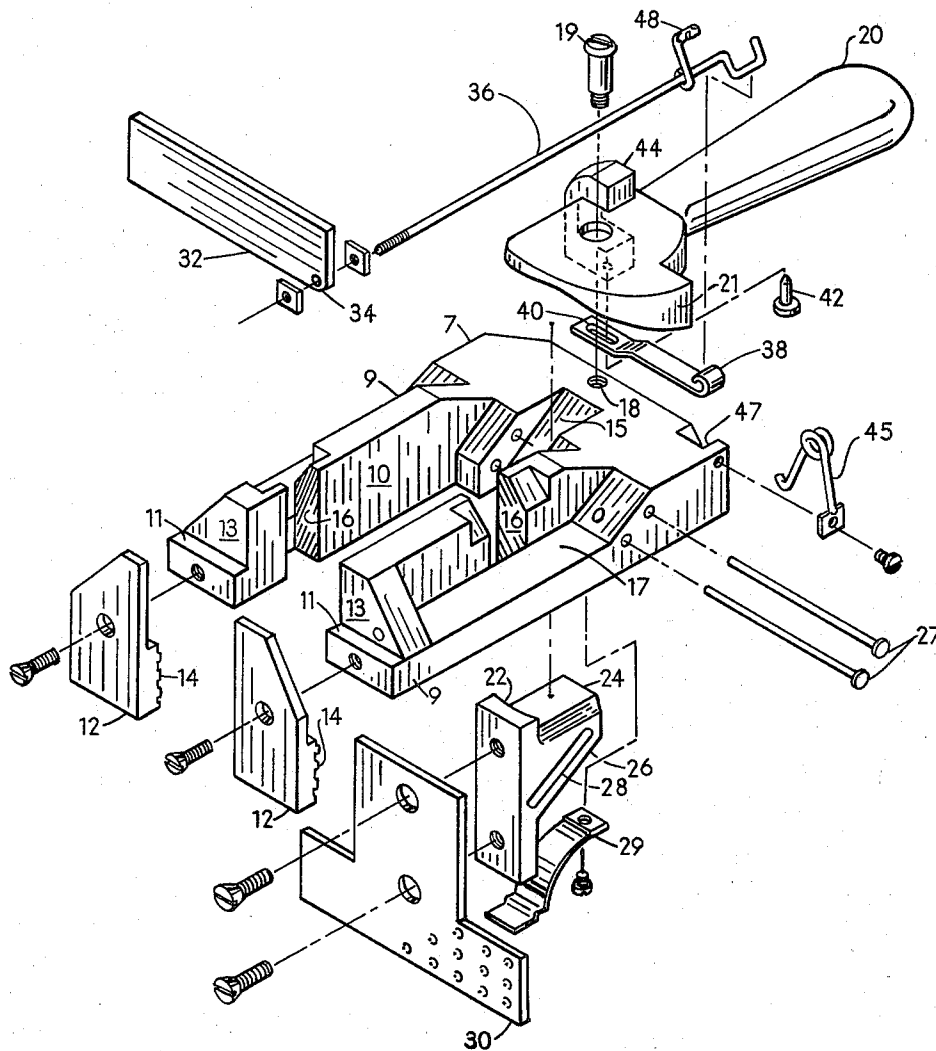


Fig. 2

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3,189,341

CARPENTER'S WOOD FRAMING TOOL

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Filed Aug. 17, 1961, Ser. No. 132,106

9 Claims. (Cl. 269-153)

This invention relates to an improved carpenter's wood framing tool.

The principal object of the present invention is the provision of an improved tool of the type mentioned which is characterized by its novel construction making it extremely useful in carpentry operations known as toe-nailing. By virtue of such construction it may be rapidly applied to clamp 2 x 4 framing members together to hold them solidly in accurate position until they are toed-in by nails. The tool may be released as quickly and easily as it is applied so that the time and effort involved in such operations, particularly also in overhead toe-nailing, is considerably lessened.

The above and related objects of the present invention will become apparent during the course of the following description taken in conjunction with the accompanying drawings.

In the drawings:

FIG. 1 is a perspective view of a carpenter's wood framing tool embodying the present invention shown in association with 2 x 4 framing members on which it is used; and

FIG. 2 is an exploded view of said tool showing separately its several parts. Referring to the drawings in greater detail, the embodiment of the invention shown is used for toe-nailing a pair of wood framing members at a joint formed by the members such as that formed by the 2 x 4's designated 3 and 5 in FIG. 1. The tool comprises structure which frames the four walls of one member, such as member 3, while applying a clamping force on opposite sides of the joint. The frame of the tool, designated 7, is bifurcated as shown so that the framing member 3 will pass between the pair of arms 9 of the frame. The face 10 of each arm and the underside adjacent face are disposed at right angles to each other for use with the most common joint encountered in practice which is right angled. The free end of each arm 9 is formed with a shoulder 11 by which is attached a member 12 as shown and each such member has an upper part which is spaced from the end face 13 of the respective frame arm as determined by the width of the shoulder 11 and also has a depending lower part provided with a corrugated surface 14 for non-slip gripping of the side wall of the framing member 5. The structure of the frame 7 joining the arms 9 has a cam surface 15 for purposes which will later appear and along the length of each frame arm is an access slot 16 with a cut-away portion 17 behind it allowing for a hammer and nail in toe-nailing the members 3 and 5 while they are rigidly jointed by the tool. The nail is applied at an approximately 45 degree angle as shown in FIG. 1 and the access slot 16 is a through-slot over the full height of the face 10 so that the frame can be lifted up the framing member 3 in removing the tool in order that the bottom edges of the members 12 can clear the projecting head of the nail.

Behind the cam surface 15 on the frame is a threaded aperture 18 which receives a bolt 19 for swivably mounting a handle 20. The handle 20 is provided with a cam surface 21 on its inner end which cooperates with a cam surface 22 on a wedge-shaped part 24 which also has another cam surface 26 for co-acting with the frame cam surface 15 already mentioned. The part 24 is retained on the frame 7 by a pair of rods 27 which extend between the arms 9 across the cam surface 15 and through the

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slot 28 in the part 24 as best shown in FIG. 2 whereby the part 24 is free to move up and down the frame cam surface 15 being actuated downward by the single-action handle 20 against the urging of a spring member 29 which returns the part upward upon release of the handle. Another part 30 is affixed as shown by its upper section to the inner face of the part 24 and has a transverse lower section that extends beneath the arms 9 so as to apply the clamping force simultaneously against the side walls of both members 3 and 5. The parts 24 and 30 constitute the movable element in clamping to which the clamping force is directly applied and it moves toward the free ends of the arms 9 and also away from the frame 7 in a downward direction as shown in transmitting the clamping force to its respective side of the joint. Another element 32 which is movable prior to and fixed during application of the clamping force is operative at the free end of the arms in the space between the faces 13 and the parts 12. It is pivotally mounted above the shoulder 11 of one of the arms 9 and for this purpose is provided with a rounded corner 34 to clear the shoulder in its movement in an arc about the axis of a rod or crank 36 to which it is affixed as shown in FIG. 2. The rod 36 extends through the structure of one of the arms 9 and on its outer end is provided with an offset portion which allows it to operate as a crank for transmitting movement of the handle 20 into movement of the element 32. This is accomplished through a link 38 which has a loop on one end closed over the offset portion of the rod 36 and a slot 40 on its other end. A pin 42 extends through the slot 40 into a member 44 attached to the handle 20 as shown and is eccentrically located with reference to the turning axis for the handle defined by the bolt 19. As the handle 20 is moved to clamp-position the pin 42 moves in the slot until it engages one of its ends and then actuates the link 38 which rotates about its axis to pivot the element 32 to clamp position. Rotation of the rod 36 is against the urging of a spring member 45 which is affixed to the rear of the frame 7 and operates in a recess 47 therein as shown and which connects with a member 48 affixed to the rod 36 so that upon release of the handle 20 the element 32 is returned to its non-clamp position and the linkage is set up for the next closing action of the handle.

In operation of the device which should be apparent from the foregoing, the tool is applied to a joint formed by the 2 x 4 framing members by forking one of the members with the frame and drawing them tightly together upon application of force to the handle 20 which first closes the gate or element 32 across the arms 9 and then moves the movable element in clamping toward the fixed element.

This action firmly secures the members 3 and 5 while nails are driven into them at the access slots 16 and the tool is then raised above the nails and removed from the joint. The tool is equally useful for overhead joints and is operative in any position. It will thus be seen that there has been provided by the present invention a carpenter's wood-framing tool in which the object hereinabove set forth together with many other thoroughly practical advantages has been successfully achieved. It will be understood that various changes, modifications and variations may be made without departing from the spirit of the present invention or the scope thereof as defined by the appended claims.

What is claimed is:

1. A carpenter's wood framing tool for toe-nailing a pair of wood-framing members at a T-joint formed by said members, said tool comprising a bifurcated frame which is closed at one end and open at the other for extending said frame across said joint when the tool is applied

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to said members for toe-nailing them together, one of said members passing between the bifurcations when the tool is so applied, the bifurcations disposed in a common plane so that the frame rests in the plane of junction between said members when the tool is so applied, a force-applying means fast on the free end of each bifurcation, said force-applying means extending below said one plane for individually and commonly applying a force to the other of said members on one side of said joint, a force-applying means swingable transversely of the frame across the free ends of the bifurcations, said swingable force-applying means extending above said one plane for applying a force to said one member on said one joint side, and a force-applying means at the closed end of the frame movable axially thereof toward its open end, said axially movable force-applying means extending above and below said one plane for applying a force on the opposite side of said joint simultaneously to both of said members.

2. The tool claimed in claim 1 and in which the axially movable force-applying means includes a sliding wedge which slides on the closed end of the frame.

3. The tool claimed in claim 1 and in which the swingable force-applying means has a non-clamping position perpendicular to said one plane.

4. The tool claimed in claim 2 and which includes a handle and means by which the axially movable force-applying means and the swingable force-applying means are simultaneously actuated.

5. The tool claimed in claim 4 in which the handle is swingable on the frame at its closed end between open and closed positions about an axis perpendicular to said one plane.

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6. The tool claimed in claim 5 in which the swingable force-applying means is swingable on the frame between clamping and non-clamping positions about an axis parallel to said one plane.

7. The tool claimed in claim 6 in which the swingable force-applying means is swingable about the axis of one of said bifurcations.

8. The tool claimed in claim 6 which includes mechanism interconnecting the handle and the swingable force-applying means by which the former is swung between its clamping and non-clamping positions and vice versa by the handle in moving between its closed and open positions and vice versa.

9. The tool claimed in claim 4 which includes a spring return for the sliding wedge by which the handle is swung to its open position upon release from its closed position.

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