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(54) **Title:** CARPENTRY TOOL

(57) **Abstract:** A carpentry tool is provided for securing a framing square to a workpiece such that the framing square can be used to measure and mark angles to be cut into said workpiece. The tool comprises a framing square member and a support member slidably engaged to one another. The support member comprises two parallel rectangular bars held together in a manner that allows the tongue and body of said framing square to be positioned therebetween. Such an arrangement creates a framing square having dual transverse edges, allowing for use of the square on either side of the workpiece without requiring disassembly.



WO 2004/109221 A2

Title of the Invention

Carpentry Tool

Related U.S. Application Data

Provisional application No. 60/384,377, filed May 30, 2002

Field of the Invention

The present invention relates to a carpentry tool and, more particularly, to a tool that may be used to measure and mark angles on a piece of lumber or similar workpiece during the construction of roof rafters, stair stringers and similar angled structures.

Background of the Invention

During construction projects, carpenters are frequently required to precisely measure angles on a piece of lumber or similar material. One such task is laying out a stringer for a set of stairs. A stringer is the outer supports of a staircase that holds the stairs' risers and treads.

Every set of stairs is defined by the rise and run in which it will be installed. The rise is the vertical distance that the stairs will cover, and the run is the horizontal length occupied by the stairs. Initially, the carpenter must determine the respective lengths for the risers and treads of the stairs. Defined in terms of each other, the length of the riser is the vertical distance between the individual treads, and the length of the tread is the horizontal distance between the individual risers. The determination of these lengths involves consideration of building codes and architectural preferences.

Once the lengths of the treads and risers have been determined, the carpenter must physically lay out the stair stringer on the lumber workpiece. This task is complicated by the necessity of repeated orthogonal measurements that must be made to mark the correct boundaries of the risers and the treads. Stringers are generally marked for cutting, using the

outside right angle surface of a framing square. One leg of the right angle is the riser, the second leg of the triangle is the tread, and the hypotenuse is situated at the edge of the workpiece.

After marking the position of the riser and the tread, the carpenter needs to mark on the edge of the workpiece the end point of one step to start the layout of the next step. This leads to a source of error due to the fact that the edge of the workpiece will not be perfectly square. The mill run construction grade lumber typically used for stringers has a significant radius of curvature. This radius means that the hypotenuse of the triangle used to lay out the steps, instead of being on the surface of the workpiece, is in actuality located in open space. The carpenter will therefore mark the end point of the step by sighting along a line that is perpendicular to the square, and that passes through the end of the hypotenuse. Because the carpenter must make this sight at arm's length, the marking and repositioning of the framing square is subject to significant accumulated error.

In order to avoid such problems, a carpenter will frequently attach "bugs" to the framing square to aid in proper placement of the square on the stringer for marking the cut lines. Bugs are small structures that are attached to the framing square using C-clamps, locking screws or similar devices to aid in proper placement of the square on the workpiece. The bugs are secured to the square at positions such that, when the square is brought into position on the top face of the lumber to be cut, they abut the side of the lumber, thus properly positioning the square to make the desired marking. While the use of bugs on the framing square is a definite improvement over unaided hand placement of the square at each marking location on the stringer, the bugs have several disadvantages that preclude fully error-free marking.

The bugs are small, for purposes of convenience. As such, however, they are frequently lost or not easily located in a tool box. The bugs are also susceptible of being loosened and/or

knocked off the square, and must then be reattached, or, if lost in the process, replaced. Further, the lumber that is generally employed to make stair stringers, for example, does not have sharp edges, rather the edges are somewhat rounded. This can lead to an imprecise abutment of the bugs against the lumber, and can lead to slippage of the bugs up and over the edge of the lumber. Considerable time can be lost in having to continually reposition the square when this occurs, and if care is taken to avoid this problem, the work process as a whole is generally slowed down.

More significant, however, the use of bugs does not allow for effective and efficient use of the square when the carpenter cannot consistently measure a piece of lumber from just one side, as in during repair of a rafter which requires "sistering" a second rafter to an original rafter. In this situation, framing squares must be flipped 180 degrees to measure the second piece of lumber. Furthermore, the currently available framing square aids, such as retaining brackets or bugs, do not allow for measurement of angles from either side of a piece of lumber without disassembly of the aids, because the bracket or bug only serves to mark one side of the square.

The prior art has sought to address these problems in a variety of ways.

United States Patent No. 6,070,334 ("the '334 Patent") discloses a retaining bracket for a carpenter's square that is adapted to releaseably lock the square at a given position. The bracket (10) includes a pair of locking elements (16) slidably positioned in a channel (14) within the bracket. Each of the locking elements contains a locking arm (22) having a clamping screw (26). Once the bracket is positioned on the work piece, the screws are tightened, holding the framing square in place. In order to use the retaining bracket of the '334 Patent as an aid in cutting or marking lumber, the square is secured to the retaining bracket by abutting a side of the bracket to the side of the piece of lumber and then securing the square to the bracket via the locking elements.

In use, the retaining bracket of the '334 Patent may be used to secure the framing square, the assembly must be disassembled if it becomes necessary to reposition the framing square, such as when the square must be shifted from right hand to left hand use, or vice versa. Such disassembly and reassembly is inefficient in that valuable time is lost. Further, such manipulation can lead to incorrect markings.

United States Patent No. 6,233,835 ("the '835 Patent") discloses a scribe/guide tool to be used as a compass in laying out stair stringers. The guide tool (10) is designed for use in connection with a measuring device such as a framing square. The main body (12) of the guide tool contains a central opening (121) designed for receiving a clamping element (14). The clamping element attaches the guide tool to a cooperating tool (24) such as a straight edge or framing square. The cooperating tool can be affixed to the workpiece and adjusted to properly mark off the rise and run. As with the invention of the '334 Patent, this device must be disassembled when it is necessary to reposition the cooperating tool. Further, the guide tool is not designed to be permanently affixed to the cooperating tool, allowing for it to be unable when the cooperating tool is used.

Accordingly, it is an object of the present invention to provide a carpentry tool having means for securing a framing square against a workpiece.

It is another object of the present invention to provide a carpentry tool that is able to measure the same angle on either side of a workpiece without disassembly of the tool.

It is yet another object of the present invention to provide a carpentry tool that can accurately measure the same angle on both a piece of wood that is sistered and the original piece of wood without disassembly or flipping of the tool.

It is a further object of the present invention to provide a carpentry tool that compensates

for the slight rounding of the edges of a piece of lumber when measuring angles from either side of the piece of wood.

It is yet another feature of the present invention that the tool is able to mark the same angles on one piece or two parallel pieces of wood without disassembly of the tool.

Summary of the Invention

The present invention is a carpentry tool that is used to measure and mark angles on a piece of lumber such as a roof rafter or a stair stringer. The tool comprises a framing square having longitudinal slots extending substantially the entire length of and a support member. The support member is comprised of two identical flat-faced, rectangular structures, each having at least one longitudinal slot extending substantially the full length of the structure. The rectangular structures are attached to one another in such a manner as to leave a gap between the structures for insertion of the framing square. The framing square is inserted into the gap between the structures and the slots of the framing square are aligned with the slots of the structures. The framing square is held to the support member through engagement means such as a nut and bolt assembly or a retaining pin. As constructed, the framing square can be slidably positioned with respect to the support member when the support member is held in place against the outer edge of the workpiece. The use of two structures in forming the support member allows the tool to be flipped without disassembly.

Brief Description of the Drawings

Figure 1 is an isometric view of the carpentry tool of the present invention.

Figure 2 is a top view of the carpentry tool of the present invention showing the framing square adjusted at various angles with respect to the support member.

Figure 3 is a top view of the carpentry tool of the present invention.

Figure 4 is a side view of the carpentry tool of the present invention.

Detailed Description of the Invention

The present invention relates to a carpentry tool used in the construction of stair stringers, roof rafters and other structures requiring the measurement and marking of angles on a workpiece, as will be apparent to those skilled in the art.

According to the preferred embodiment of the invention, as detailed in Figures 1-4, a carpentry tool (1) is provided consisting of a framing square member (2) and a support member (3). The framing square member (2) is typical of similar devices known in the art and is comprised of a body (4) and a tongue (5) set in perpendicular relation to one another so as to form a 90° angle. Generally, the body (4) of the framing square member (2) is both longer and wider than the tongue (5).

In the preferred embodiment, both the body (4) and tongue (5) of the framing square member (2) are formed with at least one longitudinal slot (6) extending substantially the entire length of each.

The support member (3) is formed by a pair of identical rectangular structures (7, 8) superimposed upon one another. Each rectangular structure (7, 8) is formed with at least one longitudinal slot (14) extending substantially its entire length. The rectangular structures (7, 8) are held separate from one another in such a manner so as to leave a gap (9) therebetween. The gap is created by using spacers (10) commonly known in the art.

The framing square member (2) is inserted into the gap formed in the support member so that the body and tongue of the framing square are disposed between the rectangular structures. The framing square member (2) is slidably affixed to the support member (3) via engagement means (13). The engagement means, such as a nut and bolt assembly, a retaining pin assembly

or other similar devices known in the art slidably affixes the slots of the tongue and body of the framing square with slot of the support member.

Upon fixture to one another, the framing square member (2) and support member (3) form a first surface (11) and a second surface (12), as illustrated in Figure 4. These surfaces perform the function of the bugs used in the prior art. Either surface can be placed upon the edge of a workpiece when measuring and marking angles. The engagement of one of the surfaces with the edge of the workpiece holds the carpentry tool in affixed position, allowing the carpenter to work more efficiently. The use of the two surfaces allows the tool of the present invention to be used on the opposite side of the workpiece without disassembly of the tool.

WHAT IS CLAIMED IS:**1. A carpentry tool comprising:**

a support member formed by a first rectangular bar and a second rectangular bar joined in parallel relation to one another, said first and second bars each having at least one longitudinal slot, said longitudinal slot extending substantially the entire length of said first and second bars;

a framing square member having a first leg and a second leg perpendicular aligned to one another, said first leg and said second leg each having at least one longitudinal slot, said longitudinal slot extending substantially the entire length of said first and second legs;

wherein said first and second legs of said framing square member are disposed between said first and second rectangular bars of said support member; and

means for slidably engaging said framing square member to said support member via said slots in said first and second legs and said slot in said support member.

2. The tool according to Claim 1, wherein said engagement means is a wing nut and screw assembly.

3. The tool according to Claim 1 wherein said engagement means is retaining pin assembly.

4. The tool according to Claim 1 wherein said first rectangular bar and said second rectangular bar are fixedly separated by spacing means.

5. A method of measuring and marking an angle on a piece of lumber to be used as a stair stringer using the tool according to Claim 1 comprising configuring the tool to measure a desired angle and abutting a non joined transverse edge of said first member of the tool against an edge of said piece of lumber.

6. A method of measuring angles on a piece of lumber to be used as a roof rafter using the tool according to Claim 1 comprising configuring the tool to measure a desired angle and abutting a non joined transverse edge of said first member of the tool against an edge of said piece of lumber.

FIG. 1

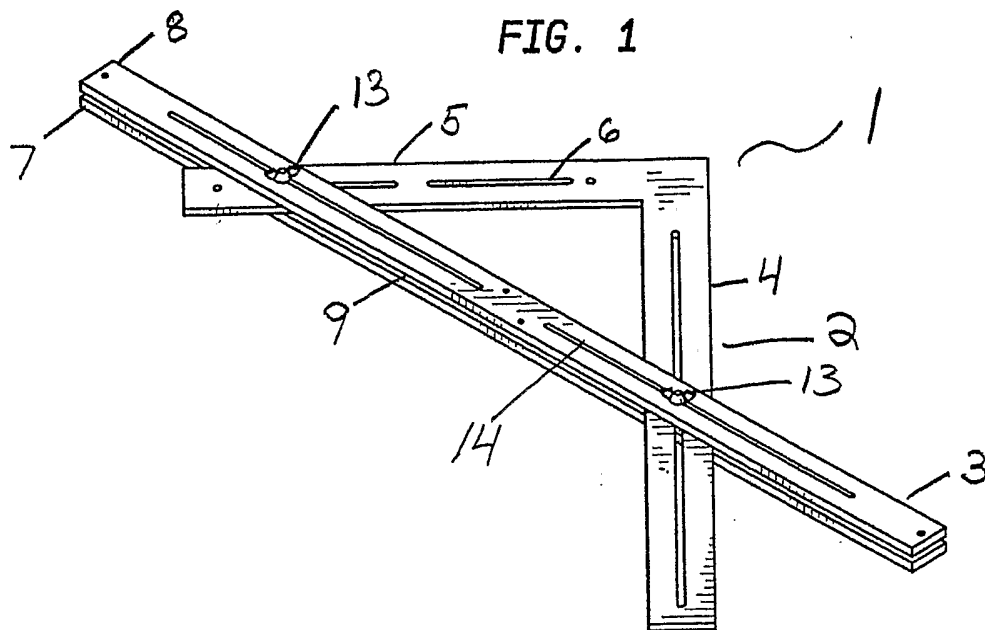


FIG. 2

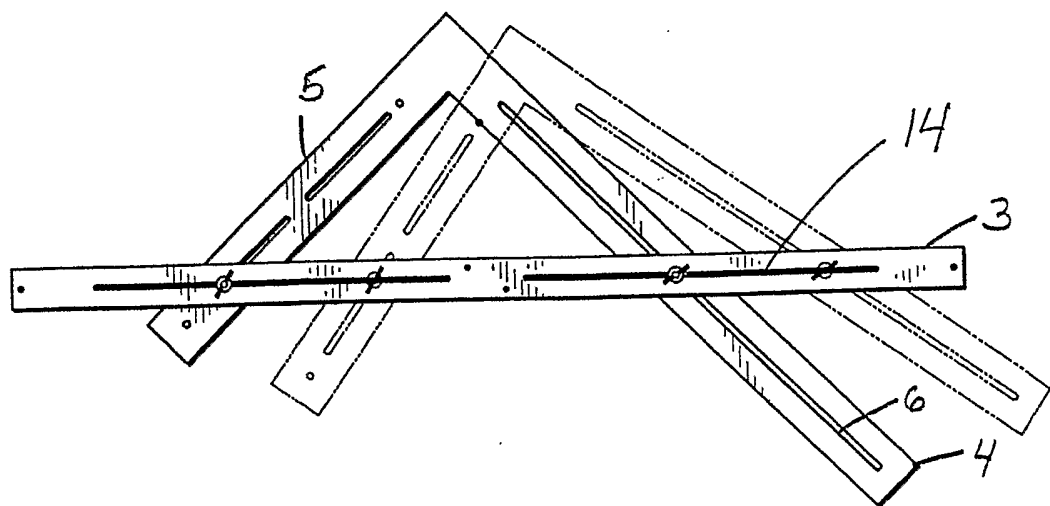


FIG. 3

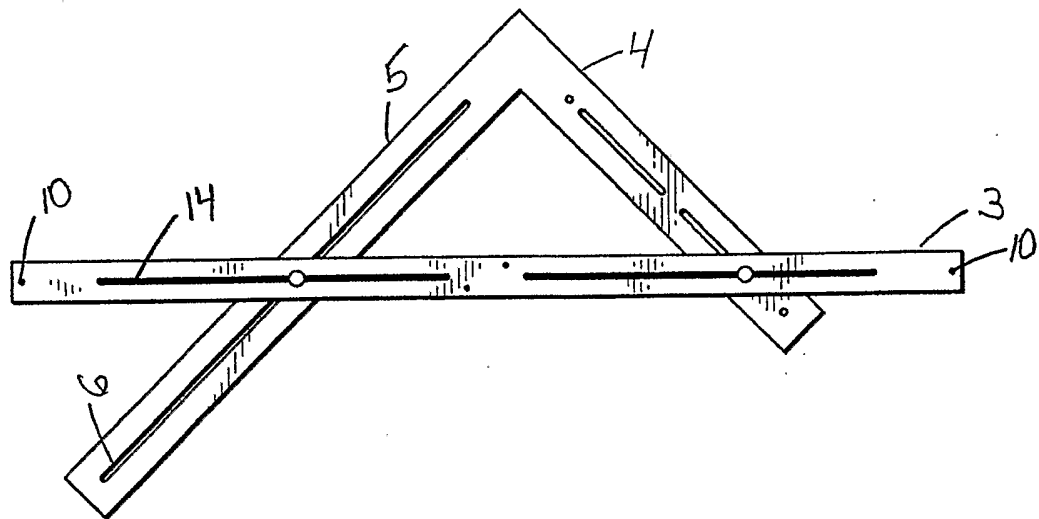


FIG. 4

