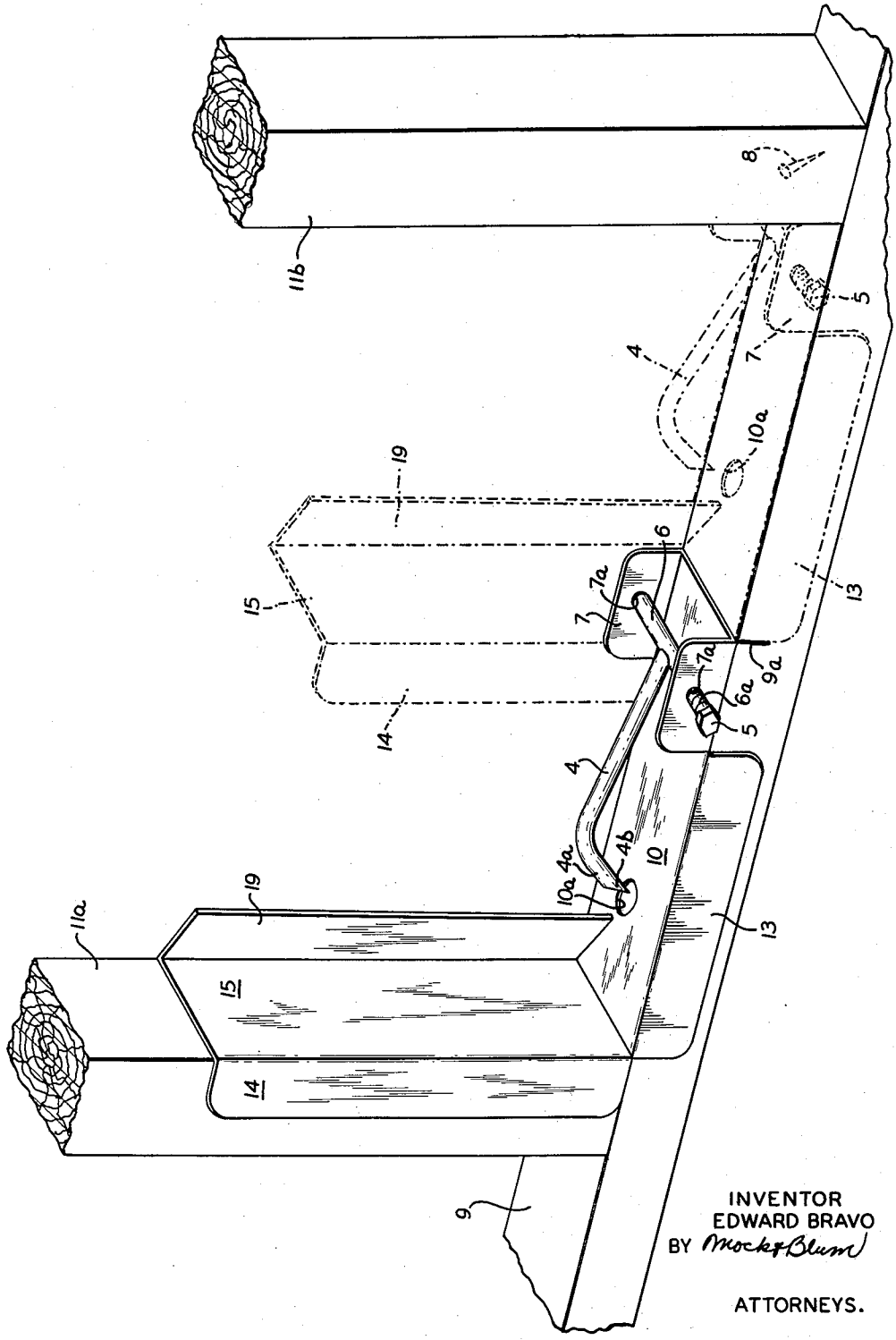
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STUD ALINEMENT TOOL

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STUD ALINEMENT TOOL

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This invention relates to improvements in a tool for holding wooden members in selected position relative to each other while they are being toe-nailed together. The tool is particularly suitable for use in the carpentry operations involved in securing a stud to a sill or header.

In accordance with a preferred embodiment of the invention, the tool comprises a flat plate which is adapted to be placed upon the upper plate of the sill as an example. This plate has a first depending flange which is adapted to abut one side of the sill.

A second plate extends upwardly from the first plate at right angles thereto and also extends cross-wise of the sill. The stud is adapted to be placed against the second plate, in proper position to be toe-nailed to the sill. A further alining flange connects with the second plate at right angles thereto, so that said second plate and said second flange about adjacent faces of the stud.

An important object of this invention is to provide improved means for releasably anchoring the first plate to the sill so as to prevent the tool from shifting its position while the stud is being toe-nailed to the sill.

Another important object of my invention is to provide an improved tool of the above-described type which is adapted for measurement of a selected standard distance between successive studs.

Another important object of my invention is to provide improved means for bracing the second plate at right angles to the first plate.

In accordance with a preferred embodiment of my invention, a pair of upstanding ears having alined openings extend upwardly from the sides of said first plate at the end thereof which is remote from said second plate. A cross rod extends turnably through said alined openings. A further rod is affixed to the cross rod and extends generally from said first rod toward the second plate. The free end of the second rod is bent downwardly and is provided with a sharp pointed bottom end. A hole is provided in the bottom plate, and the point of the second rod is adapted to be extended through the hole and forced into the sill, thereby releasably anchoring the tool in place.

It is easy to secure the pointed end of the anchoring rod in place in the sill with one or two sharp blows of a hammer. It is also extremely simple, by means of a hammer or lever, to raise the second rod so as to with draw its point from the sill when the tool is to be released.

As an important feature of the invention, the anchoring rod assembly is releasable and replaceable from the tool when the point of the anchoring rod becomes dull.

Other objects and advantages of the invention will become apparent from the following description, in conjunction with the annexed drawings, in which a preferred embodiment of the invention is disclosed.

The drawing is a perspective view of my improved tool, showing the tool in full lines with respect to a sill and a stud. The tool is also shown in broken lines in a position for measuring purposes. The drawing is substantially to scale of a working model of my invention, and reference

is made to the drawing to complete the disclosure herein.

Upon reference to the drawing in detail, it will be noted that it shows the tool used, by way of example, to secure spaced studs **11***a* and **11***b* to a sill **9**. Stud **11***b* is shown toe-nailed to sill **9** by means of nail **8**, and the tool and stud **11***a* are shown in position for toe-nailing stud **11***a* to sill **9**.

The tool includes a flat base plate **10** which is adapted to rest upon sill **9** and which is preferably elongated in the direction of length of sill **9**. The major axis of plate **10** is defined as its longitudinal axis. Optionally, the width of plate **10** is selected to be the same as the width of standard 2" x 4" sills.

Flange **13** extends longitudinally and depends from base plate **10** at right angles thereto. Flange **13** is preferably integral with plate **10**. Flange **13** is adapted to abut a side face of sill **9**.

Alining plate **15** extends laterally and also extends upwardly from base plate **10** at a first end edge thereof. Alining plate **15** is at right angles to base plate **10** and is preferably integral therewith and of the same width. A further flange **14** connects with plate **15** at one vertical edge thereof and is preferably integral therewith. Preferably, flanges **13** and **14** are co-planar. Said flange **14** and said plate **10** extend in opposite longitudinal directions from plate **15**. Stud **11***a* is adapted to be placed upon sill **9** with respect adjacent faces of stud **11***a* abutting alining plate **15** and flange **14**. It will be apparent without further discussion that my improved tool alines stud **11***a* in its generally accepted nailing position with respect to sill **9**.

As an important feature of the invention, plate **15** and flange **14** are of relatively great height. In the working model, the length of these elements was approximately eight inches. Accordingly, as an important feature of the invention, means are provided for ensuring in a positive manner the alining plate **15** will remain at right angles to base plate **10** while stud **11***a* is being toe-nailed to sill **9**. In this connection, a further vertically extending flange **19** connects with the vertical edge of plate **15** opposite to the edge to which flange **14** is connected. Flange **19** is preferably integral with plate **15**. Flange **19** extends at approximately a forty-five degree angle with respect to plate **15** and also extends over base plate **10**. The lower edge of flange **19** preferably abuts base plate **10**.

As a further important feature of the invention, improved means are provided for releasably anchoring base plate **10** to sill **9**. Upstanding and opposing ears **7** extend upwardly from the longitudinal side edges of base plate **10** at the second end thereof (the end which is remote from alining plate **15**). A laterally extending rod **6** extends turnably through alined bearing apertures **7***a* in the respective ears **7**. The respective ends of rod **6** protrude outwardly of ears **7** and are screw-threaded at **6***a*. A threaded cap nut **5**, shown in exploded position in the drawing, is screwed to each threaded portion **6***a* of rod **6**.

Anchoring rod **4** is fixed to the center of rod **6**, by any suitable means (not shown) and extends at right angles thereto. Said rod **6** is adapted to be turned so as to dispose rod **4** in the position of the drawing in which said rod **4** extends generally longitudinally and extends from rod **6** toward base plate **15**. The free end portion **4***a* of rod **4** is turned at approximately right angles thereto and extends downwardly therefrom in the position of rod **4** shown in the drawing. Said rod portion **4***a* has a sharpened point or tip **4***b*. In the position of the drawing, this point or tip **4***b* is alined with a hole **10***a* in base plate **10**.

In operation, with the tool placed upon sill **9** in selected position one or two sharp blows of a hammer are struck upon rod **4**, preferably at a point thereof in ap-

proximate alinement with rod portion 4*a*, so as to drive point or tip 4*b* into sill 9 with rod portion 4*a* extending through hole 10*a*. With stud 11*a* alined in its previously described manner and as shown in the drawing, one or more nails 8 may be toe-nailed through stud 11*a* and into sill 9, on the side of stud 11*a* which is opposite plate 15. The drawing shows stud 11*b* thus toe-nailed by means of nail 8 to sill 9 prior to the toe-nailing of stud 11*a* in place.

The provision of flange 19 prevents alining plate 15 from being bent toward base plate 10 during the toe-nailing operation. The position of rod 4*b* in sill 9 prevents any shifting of position of the tool during the toe-nailing operation.

As an important feature of the invention, if point 4*b* becomes dull, it is only necessary to remove cap nuts 5 from the ends of rod 6 and to remove the rod assembly. A new rod assembly may then be mounted upon the tool in the manner shown in the drawing.

As an important feature of the invention, the rod point 4*b* may be readily removed from sill 9 by inserting the claw of a hammer, a lever or the like, under the main portion of rod 4 and by prying it away from plate 10.

As another important feature of the invention, it does not matter if there is normally a slight amount of play between rod 6 and the edges of the bearing openings 7*a*. This is because the rod portion 4*a* is at a slight obtuse angle with respect to the vertical when tip 4*b* rests loosely upon sill 9, so that the rod portion 4*a* tends to be moved forwardly as well as downwardly when it is hammered into position. This tends to move rod 6 forwardly into frictional engagement with the forward portions of the edges of openings 7*a*, thereby eliminating any play of rod 6 within the openings 7*a* while stud 11*a* is being toe-nailed to sill 9.

As a further important feature of the invention, since the anchoring means is not secured in any way directly to the underside of plate 10, any distortion of rod 4 or of point 4*b* does not effect the accuracy of the tool as an alining device.

As a further important feature of the invention, since the anchoring rod 4 and plate 10 are entirely different pieces, plate 10 may be made of any suitable material for alining purposes without concern as to the appropriateness of the material for anchoring purposes. On the other hand, rod 4 may be made of any suitable hardened material which is appropriate for maximum sharpness of point 4*b* and for minimum distortion of rod 4 when it is hammered into sill 9 or when it is removed from engagement with sill 9.

As a further important feature of the invention, the length of plate 10 is optionally and preferably equal to one-half of the desired distance on centers between studs 11*a* and 11*b*, less the thickness of these studs. In other words, if in the construction of a particular house or the like, the desired standard distance on centers between studs 11*a* and 11*b* is sixteen inches, and if the thickness of studs 11*a* or 11*b* is 1⅝ inches (the usual thickness of a so-called 2" x 4"), then the length of the tool is 7$\frac{3}{16}$ inches. After stud 11*b* has been secured in place, it is possible to place plate 10 upon sill 9, with the second lateral end edges of plate 10 (adjacent ears 7) abutting the face of stud 11*b* which is proximate to the next stud which is to be secured in place.

A pencil line may then be drawn on sill 9 along the first lateral end edge of plate 10. Plate 10 may then be placed in the position shown in the drawing on sill 9 with its second lateral end edge abutting the pencil line. Stud 11*a* is then automatically spaced the standard distance from stud 11*b*. The device is thus readily suitable for use for measuring purposes, while still being of appropriate length for use under conditions when the distance between studs must be less than sixteen inches on center.

While I have disclosed a preferred embodiment of my invention, and have indicated various changes, omissions and additions which may be made therein, it will be apparent that various other changes, omissions and additions may be made in the invention, without departing from the scope and spirit thereof.

I claim:

1. A tool for positioning a stud on a sill, comprising a base plate having a longitudinal axis and lateral ends and adapted to be supported on a sill with said longitudinal axis extending in the direction of length of said sill, an alining plate connected to a first lateral end of said base plate and extending laterally and also upwardly from said base plate and adapted to receive a stud against the outer face thereof, a bracing plate fixedly connected to one of the upright edges of said alining plate and extending at an acute angle to said aligning plate over said base plate, said bracing plate and alining plate being substantially coextensive, the lower edge of said bracing plate substantially abutting said base plate, an anchoring rod, and means mounting said anchoring rod upon the upper face of said base plate adjacent the second lateral end thereof so that said anchoring rod is turnable about a lateral axis and extends transversely to said axis, said plate having a hole between said alining plate and said mounting means, said anchoring rod being adapted to be turned so as to extend from said mounting means toward said hole, said anchoring rod having a free end portion which is inclined relative thereto for extension through said hole when said anchoring rod extends from said anchoring means toward said hole, said rod free end portion having a sharpened tip which is adapted to be driven into said sill to anchor said tool upon said sill.

2. A tool for positioning a stud on a sill, comprising a base plate having a longitudinal axis and lateral ends and adapted to be supported on a sill with said longitudinal axis extending in the direction of length of said sill, an alining plate connected to a first lateral end of said base plate and extending laterally and also upwardly from said base plate and adapted to receive a stud against the outer face thereof, a bracing plate fixedly connected to one of the upright edges of said alining plate and extending at an acute angle to said alining plate over said base plate, said bracing plate and aligning plate being substantially coextensive, the lower edge of said bracing plate substantially abutting said base plate, an anchoring rod, and means mounting said anchoring rod upon the upper face of said base plate adjacent the second lateral end thereof so that said anchoring rod is turnable about a lateral axis and extends transversely to said axis, said mounting means comprising upstanding and longitudinally extending ears mounted upon said base plate adjacent the sides thereof, said ears having laterally alined apertures, a cross rod turnably received within said apertures, said anchoring rod being connected to said cross rod between said ears, said plate having a hole between said alining plate and said cross rod, said cross rod being adapted to be turned so that said anchoring rod extends from said cross rod toward said hole, said anchoring rod having a free end portion which is inclined relative thereto for extension through said hole when said anchoring rod extends form said cross rod toward said hole, said rod free end portion having a sharpened tip which is adapted to be driven into said sill to anchor said tool upon said sill.

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