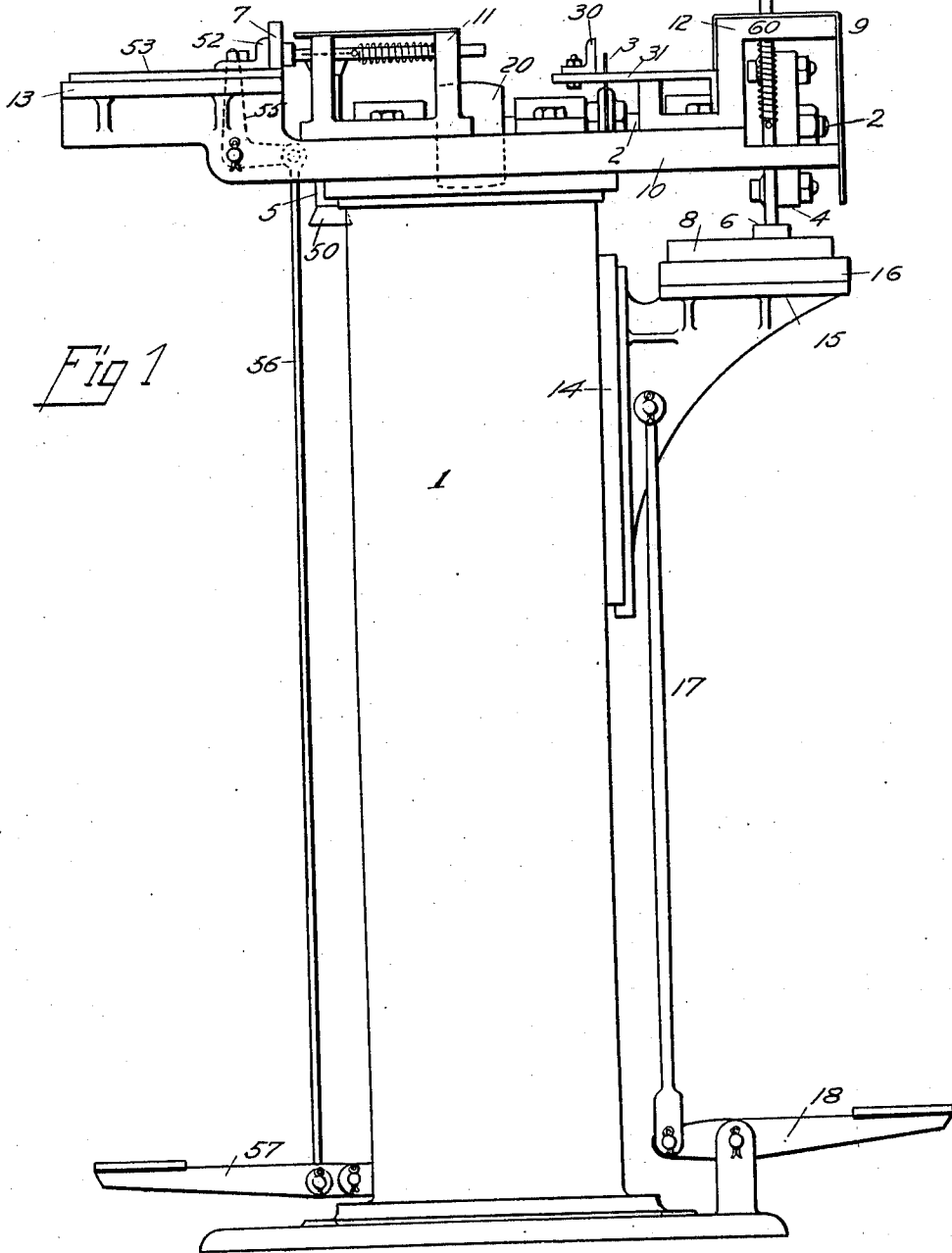


T. ROBINSON.
MACHINE FOR PATCHING LUMBER.
APPLICATION FILED AUG. 10, 1911.

Patented Dec. 31, 1912.

1,048,886.

4 SHEETS-SHEET 1.



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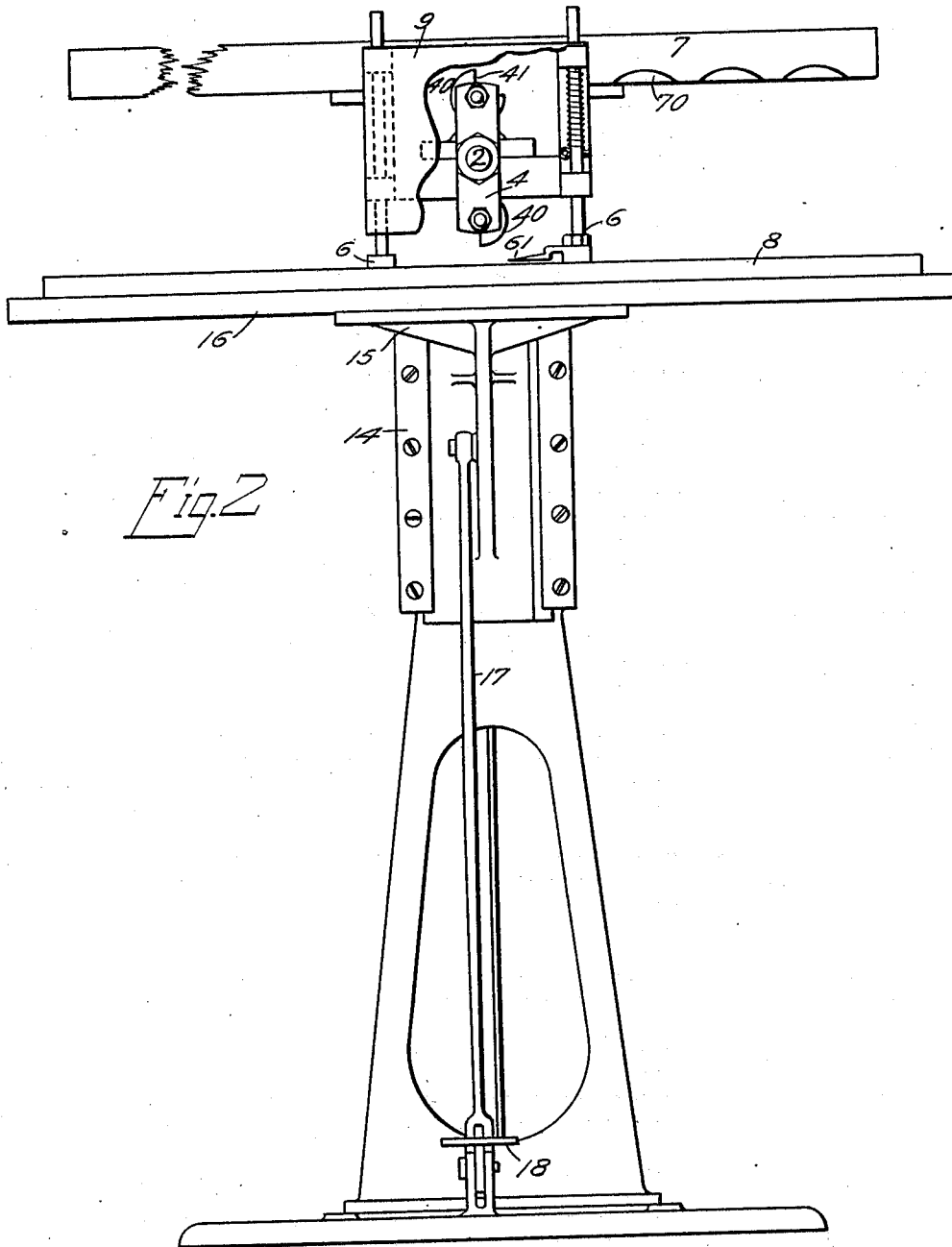


Fig. 2

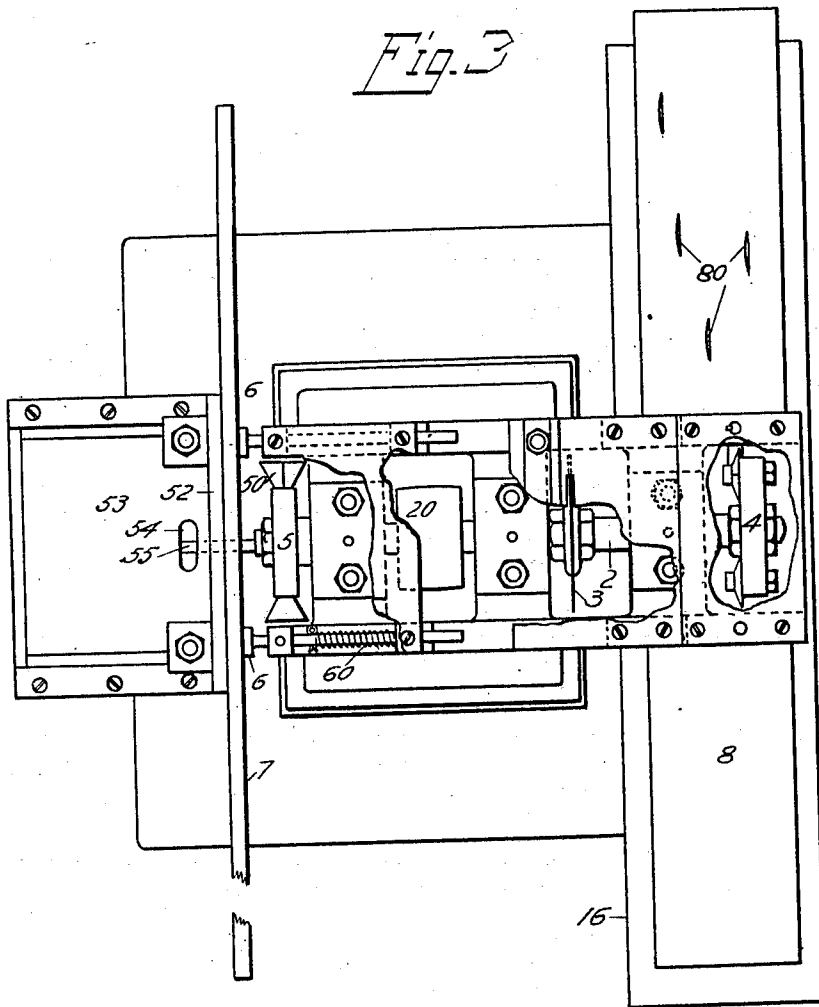
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4 SHEETS—SHEET 3.



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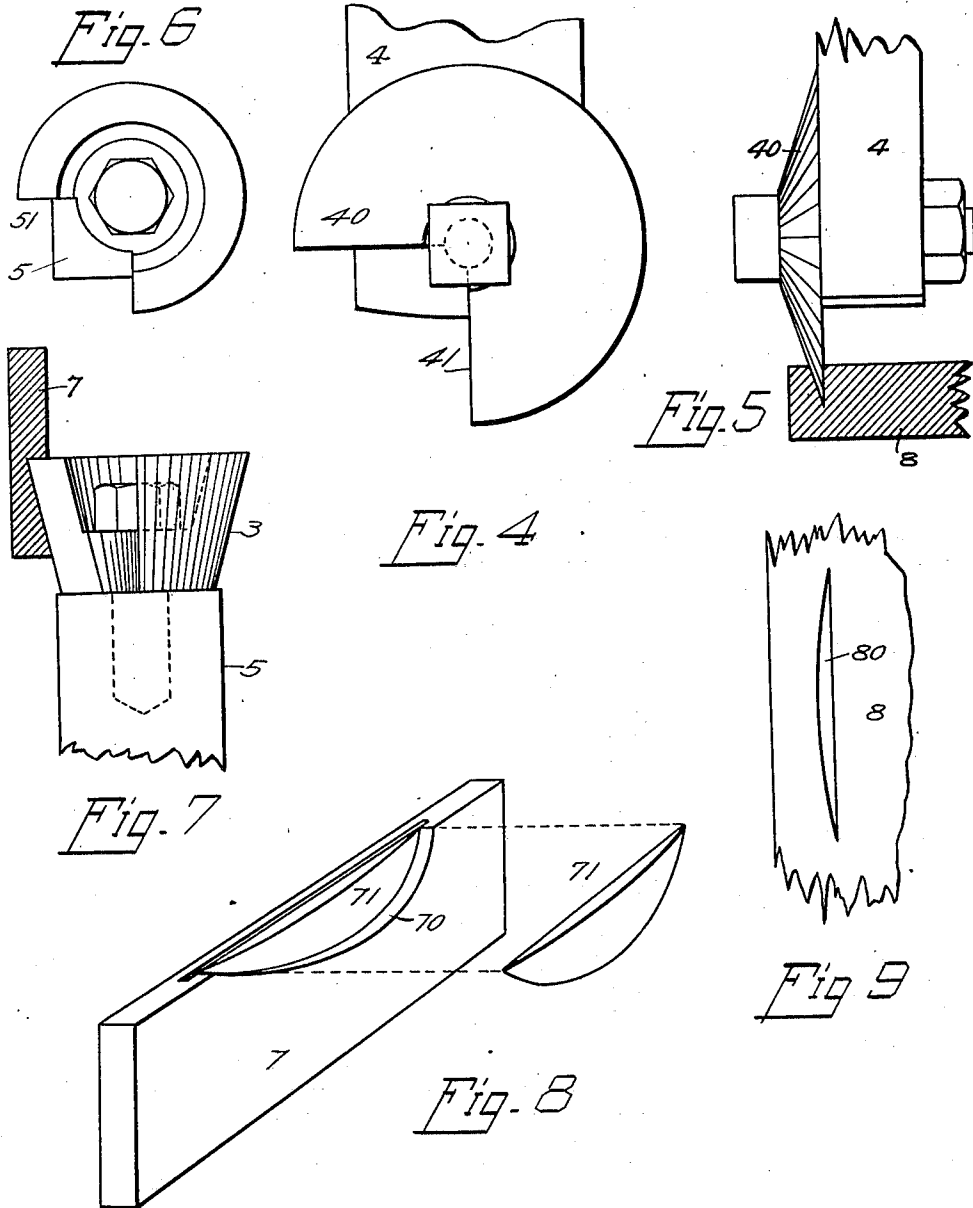
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4 SHEETS—SHEET 4.



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UNITED STATES PATENT OFFICE.

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MACHINE FOR PATCHING LUMBER.

1,048,886.

Specification of Letters Patent.

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Application filed August 10, 1911. Serial No. 643,370.

To all whom it may concern:

Be it known that I, THOMAS ROBINSON, a citizen of the United States, residing at Everett, in the county of Snohomish, State of Washington, have invented a new and useful Improvement in Machines for Patching Lumber, of which the following is a specification.

My invention relates to machines for patching lumber and comprises the novel parts and combinations of parts which will be hereinafter described and particularly pointed out in the claims.

The object of my invention is to provide a machine or apparatus which may be used to remove defects in lumber, such particularly as pitch seams or pockets, and also to make filling blocks or wedges which may be inserted in the holes formed in the lumber by the removal of these defects, whereby the face of the lumber may present a solid and smooth surface. By treating the lumber in this manner much of it which would otherwise have to be discarded because of the defects mentioned, is put in condition for general use thereby effecting a very great saving of material. And when treated by my method the lumber may be used where perfectly sound lumber is often required, for when placed in a building and the surface finished, the patches are scarcely discernible for the grain thereof parallels, and usually coincides with, the grain in the lumber repaired.

In the accompanying drawings I have shown my invention in the form which is now preferred by me.

Figure 1 is a side elevation of my machine. Fig. 2 is a front elevation of the same. Fig. 3 is a top plan view with parts of the cover plates or shields removed. Figs. 4 and 5 are, respectively, face and edge views of a cutter and end of the cutter head used for removing the defect in the lumber preparatory to receiving the patch. Figs. 6 and 7 are, respectively, top and side views of the cutter used in making the patch pieces. Fig. 8 shows in perspective a piece of board from which a patch piece has just been cut, said patch piece being shown as removed toward one side. Fig. 9 shows the face appearance of the board where a patch is to be inserted.

It is quite common in all kinds of lumber, and particularly in resinous lumber, to find small imperfections which disqualify boards

for anything except the cheapest uses, when these boards are otherwise of good quality. The most common defect of this kind in resinous lumber consists of pitch seams or pockets, which are often of small extent but of frequent occurrence. My machine has been especially designed to remove this type of defect and to prepare the lumber for the insertion of a patch, and also for the preparation of the patch which is to be inserted.

My machine includes a cutter head adapted to remove from the face of the board a small section which shall include the pitch seam or pocket, forming a groove in the lumber having a regular geometrical form and adapted to receive a filling wedge of like form; a second cutter head adapted to shape the face of a board so as to form therefrom a section adapted, when severed along one side, to form a wedge of shape and size to fill the groove formed by the other cutter head; and a saw which may be used to separate said section from the board. Such wedge piece or filler is then glued in the groove and the surplus projection thereof removed and the surface of the board properly dressed, whereupon it presents a smooth, continuous surface of sound wood.

In the drawings, 1 represents a frame upon which the apparatus is mounted. This has an upper part 10 forming the base for the operating parts. In this base is journaled a shaft 2 upon which is secured the two cutter heads and the saw referred to. The cutter head 4 is preferably secured to one end of the shaft. This head has thereon cutters 40 which consist of flat cones having a notch 41 removed therefrom to form a cutting edge or surface. These cutters 40 are mounted so as to project radially beyond the head, whereby they may be sunk into the face of a board, thereby forming a groove having surfaces of revolution true in outline and geometrical form. To do this there must be relative movement between the board and cutter head transversely of the axis of the shaft. I have mounted a bracket 15 to slide vertically in guides 14 on the frame, securing to this a board 16 to form the table or support for the board being operated upon. This table is moved by a rod 17 actuated by a treadle 18. Brackets 12 secured to the base 10 have guide holes therein receiving the stems of presser feet 6 which are held down by springs 60 and

engage the surface of the board to assist in keeping it in proper place while being operated upon. One of these presser feet has a pointer or indicator 61 secured thereto, whereby the point which will be cut by the cutter may be indicated before the board is raised into contact with the cutter. I have also provided a shield 9 covering this cutter head. Upon the opposite end of the shaft is mounted the cutter head 5 which is used to shape the filler wedges or patches. The cutters used on this head are shown in Figs. 6 and 7 secured to the head. These cutters 50 consist of frustums of cones having their sides forming an angle which is complementary to that of the cutters 40; that is the sum of the angles of the two cutters is 90°. These cutters have a notch 51, the edge of which forms the cutting surface. They are secured on the outer ends of the heads 5 with their sides projecting laterally from the head. A slide 53 is mounted on the base to slide in guides parallel with the axis of the shaft, and has a supporting bracket 52 adapted to locate and support the board from which the filler wedges are being made. This may be any convenient small piece of board which would be of no value for anything else.

The slide 53 may be moved toward the cutter head 5 in any suitable way. I have shown a bell-crank lever 55 engaging the slide by a slot 54 and actuated from the treadle 57 by rod 56. I have also shown two presser feet 6, similar in construction and purpose as those used in connection with the cutter head 4, adapted to engage and support in position the board 7.

In a central position upon the shaft 2 is a small saw 3, a table 31 therefor, and a guide bar 30. The board 7 after being operated on by the cutter head 5 has a groove or recess formed in its side extending from its edge inward, the outline of this recess, when viewed in side elevation, being a segment of a circle, the side face within this recess being a segment of the surface of a cone of low angle. When the board is operated upon by the saw 3 this conical-segment wedge is severed from the board and may be removed, as is shown at the side in Fig. 8. The angles and radial positions of the cutters 40 and 50 should be chosen to correspond, so that this wedge or filler will exactly fit the recess formed by the cutter 4. This filler wedge may then be placed in the groove 80 and secured therein by glue so as to make a neat fit. It is not necessary that the grooves 80 be of uniform size, as the filler wedge will fit the groove accurately whatever its size so long as the groove is not larger than the filler. The shaft 2 may be turned by a belt placed upon a pulley 20 and, preferably extended downward within the standard of the frame 1.

What I claim as my invention is:

1. In a machine for patching lumber, in combination, a shaft having thereon a cutter head and cutters thereon having opposite side cutting or forming surfaces, one radial to the shaft and the other converging thereto with the apex outwardly, a work holding table movable transversely of the axis of rotation of said shaft, a second cutter head on said shaft with cutters thereon having side cutting surfaces of the same inclination to a radial plane as the inclined surfaces of the cutters on the first head, the path of said cutting surfaces forming a cone with its base toward the work holder, and a work holder mounted to move parallel to the axis of the shaft to present its work to the second cutter head.

2. In a machine for use in patching lumber, in combination, a frame, a rotative horizontal shaft, a cutter head with cutters thereon having two edges, one radial and one inclined, meeting circumferentially and projecting beyond the outer radius of the head, a work holder movable upward toward said head, a second cutter head on the shaft with cutters thereon having side forming surfaces inclined at an angle complementary to that of the inclined edges of the other cutters, a work holder movable toward said second head parallel with the axis of the shaft, a saw mounted on said shaft and a work guide for presenting the material to said saw.

3. In a machine for patching lumber, in combination, a shaft having thereon a cutter adapted to cut a conoidal groove, a work holding table and means for moving it to present the piece to be patched to said cutter head by movement transversely of and toward the shaft, a second cutter head on said shaft having cutters thereon which form conoidal surfaces agreeing with those of the first cutter head and having the base of the cone toward the end of the shaft, a work holder adapted to hold and present the patch making stock from a point beyond the end of the shaft to said cutter head by movement parallel with the axis of the shaft.

4. In a machine for patching lumber, in combination, a shaft having thereon a cutter adapted to cut a conoidal groove, a work holding table and means for moving it to present the piece to be patched to said cutter head by movement transversely of and toward the shaft, a second cutter head on said shaft having cutters thereon which form conoidal surfaces agreeing with those of the first cutter head and having the base of the cone toward the end of the shaft, a work holder adapted to hold and present the patch making stock from a point beyond the end of the shaft to said cutter head by movement parallel with the axis of the shaft, a saw upon said shaft between the said cut-

ter heads, and a carriage for the patch making stock adapted to present said stock endwise to the saw.

5 In a machine for patching lumber, in combination, a shaft having, on one end, a head having cutters adapted to cut a groove in stock presented thereto by a movement radial of the cutter, which has one side a plane and the other a section of the surface of a cone of which the other side is the base, and having on the other end a cutter head provided with cutters adapted to form a conoidal surface agreeing with that formed by the other cutter head, said cutters of the 15 second head lying entirely without said cone, and a saw mounted upon the shaft between said cutter heads.

6. In a machine for patching lumber, in combination, a rotative shaft having thereon 20 two separated cutter heads, each having thereon cutters, the cutting edges of which describe like surfaces of identical cones, the said cutters on one head lying within said conical surface and upon the other lying without said conical surface, means for presenting the face of the piece to be patched to the former cutter head by a movement radial of the shaft, means for presenting a patch forming stock to the other cutter head 25 by movement in a direction parallel with the shaft and from the direction of the base of the cone formed by said cutters, a rip saw

upon said shaft and a carriage for presenting the patch forming stock to said rip saw to sever a section of the conoidal surface 35 formed by said second cutter head.

7. The method of patching lumber which consists in cutting from the lumber a section whose outer face formation is practically semi-elliptical, the straight side paralleling 40 the grain of the wood, said section having side walls which converge and meet at the bottom, and securing in said cavity a block of like conformation.

8. The method of patching lumber which consists in cutting in the face thereof a 45 groove having converging side walls which are surfaces of revolution and straight in radial section and securing in said grooves wedges having side surfaces which are like 50 surfaces of revolution.

9. The method of patching lumber which consists in cutting a groove in the face of the lumber having one side wall a plane and the other a converging section of the surface 55 of a cone, and inserting and securing therein a wedge block having plane and conoidal side surfaces corresponding in shape and relation to those of the groove.

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Witnesses:

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