

March 13, 1945.

F. HIRSCH

2,371,329

CORNER-BLOCK FASTENING

Filed April 3, 1943

2 Sheets-Sheet 1

Fig. 1

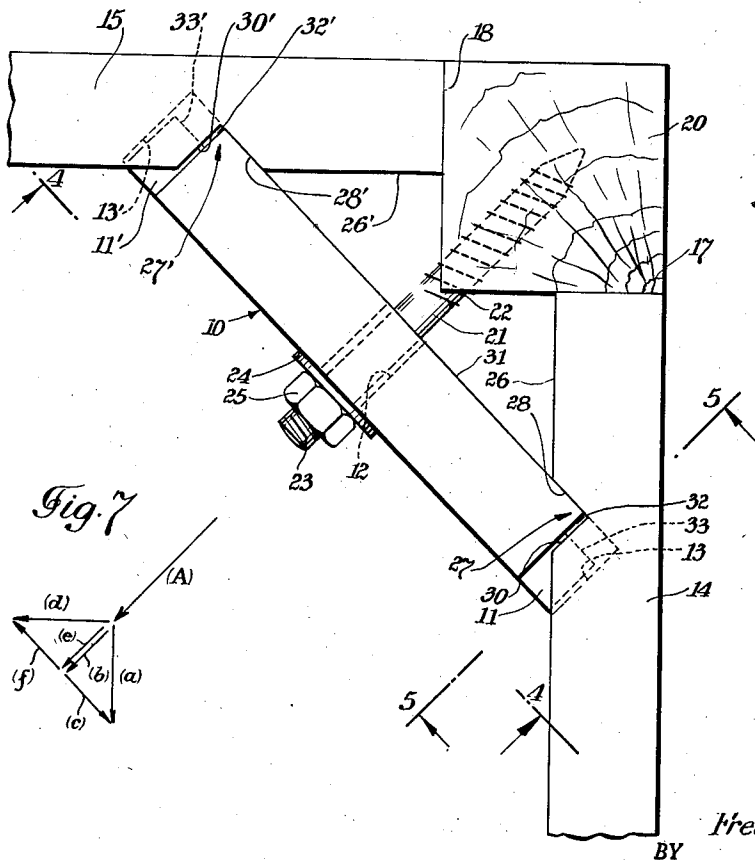
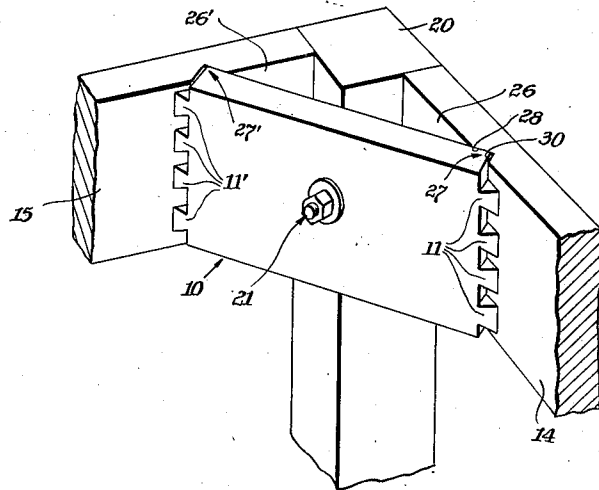


Fig. 2

Fig. 7

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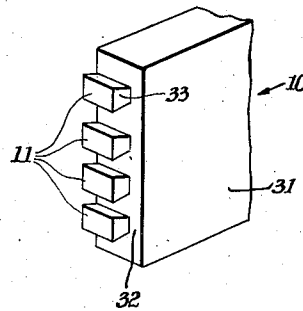
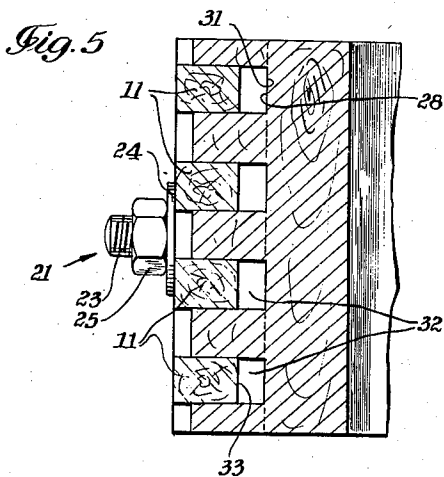
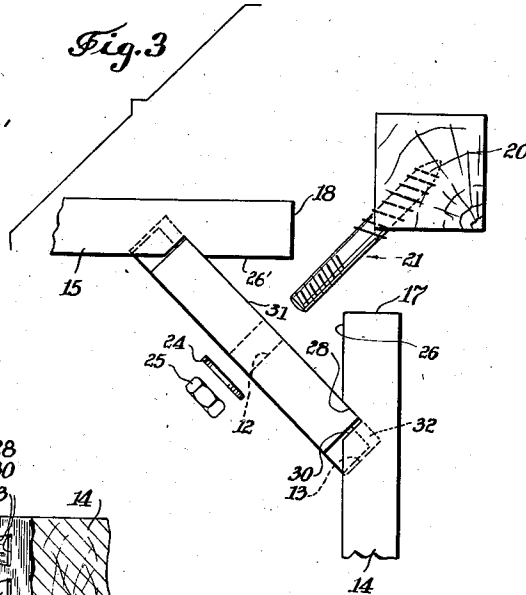
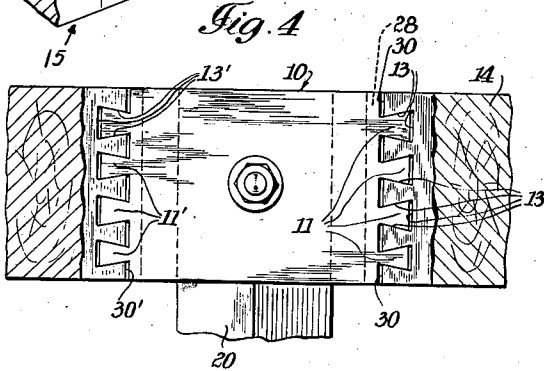
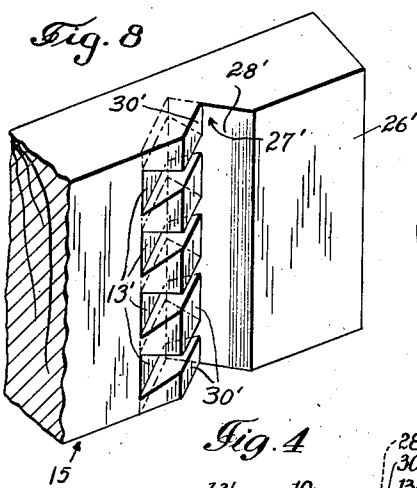
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CORNER-BLOCK FASTENING

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UNITED STATES PATENT OFFICE

2,371,329

CORNER-BLOCK FASTENING

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Application April 3, 1943, Serial No. 481,718

4 Claims. (Cl. 20—92)

The invention relates to improvements in block fastening and relates more particularly to improvements in means for fastening corner-blocks or legs to the frames of tables or of other pieces of furniture.

One of the principal objects of the invention is to provide a device for detachably fastening legs to the frames of tables or of other pieces of furniture.

Another object is to provide a device by the use of which tables and other pieces of furniture may be shipped with the legs detached, and speedily assembled at the place of destination.

Another object is to provide interchangeability between legs of frames for tables and for other pieces of furniture.

Another object is to provide a device for fastening corner-blocks that is simple in construction and can be produced at low cost.

A further object is to provide a fastening device for blocks that, with the exception of screw, washer and nut, obviates the use of metal.

A further object is to provide a brace for use in fastening corner-blocks the brace being firmly secured to the frame.

A still further object is to provide a brace for use in fastening corner-blocks the brace being firmly secured to the frame thereof and providing a firm connection between the pieces of said frame without the use of glue or other adhesive substances.

Further objects and advantages of the invention will be set forth in part in the following specification and in part will be obvious therefrom without being specifically pointed out, the same being realized and attained as pointed out in the claims hereof.

Heretofore, various forms of metal braces or brackets have been employed for connecting the side pieces of a frame for tables, or for other pieces of furniture for fastening the legs to the side pieces of said frame. These brackets are expensive and, due to existing war shortages in critical material, such as metal, extremely difficult to obtain.

Wooden braces or brackets have also been provided for this purpose using screws to fasten the bracket to the side pieces of the frame, or providing rectangular tenons on the bracket glueing the same into rectangular kerfs in the side pieces for securing the side pieces with relation to each other. The use of metal braces, however, does not provide for the shrinkage or expansion of the wood, which may take place at any time before or after the final assembly, due to the use of un-

dried wood or of conditions of storing or shipping to which wood may respond unfavorably; and the use of screws has the disadvantage of being unable properly to absorb the tension of the construction, resulting in distortion and/or breakage of the brace, as hereinafter explained.

In employing rectangular kerfs and tenons too much dependability has been placed in the glue which binds the brace to the side pieces, frequently resulting in the breakdown of the construction at the time of final assembly or even some time thereafter.

The present invention is intended to overcome all of the mentioned deficiencies by employing the use of dove-tail tenons and grooves for joining the brace to the side pieces of the frame at an oblique angle and by providing abutment surfaces therebetween, thus creating a positive connection of one side piece with relation to the other and, together, with relation to the corner-block or leg.

With the above and other objects of the invention in view, the invention consists in the novel construction, arrangement and combination of various devices, elements and parts, as set forth in the claims hereof, one embodiment of the same being illustrated in the accompanying drawings and described in the specification.

In the accompanying drawings,

Fig. 1 is a perspective view of a fastening device for corner-blocks;

Fig. 2 is a top view of the same;

Fig. 3 is an extended top view of the same;

Fig. 4 is a sectional view taken along line 4—4 of Fig. 2;

Fig. 5 is a cross section taken along line 5—5 of Fig. 2;

Fig. 6 is a perspective view of a portion of a brace;

Fig. 7 is a diagram showing the flow of force in the corner-block construction; and

Fig. 8 is a perspective view of a side piece for corner blocks.

In carrying the invention into effect in the embodiment which I have selected for illustration in the accompanying drawings and for description in this specification, and referring now particularly to Fig. 1, I provide a brace 10 made of wood or other non-metallic material having on both ends dove-tail tenons 11 and 11' integrally connected therewith and said brace also having a cylindrical opening 12 in its center. Said dove-tail tenons 11 and 11' are embedded in dove-tail grooves 13 and 13' of side pieces 14 and 15, respectively, adjacent said brace 10. The dove-tail grooves 13 and 13' of the side pieces 14 and 15

have a cross section which substantially corresponds to the base and the two adjacent oblique sides of a trapezoid (see Fig. 4) and are slantwise extending from the inside toward the inner surfaces 26 and 26' of said side pieces; said side pieces 14 and 15 are of substantially rectangular cross section and are arranged at a right angle with relation to each other. The ends 17 and 18 of said side pieces do not touch each other, however, but provide a space for a corner-block or leg 20 to be placed therebetween, in abutment.

A rectangular triangle is thereby provided by the brace 10, the side pieces 14 and 15, and the corner-block 20 after the assembly of the construction. A screw 21 carries a thread for wood 22 on one end and a machine screw thread 23 on its other end and is screwed with its thread 22 into the block 20; when the corner-block construction is assembled, the screw 21 protrudes through the cylindrical opening 12 of the brace 10 and is fastened with relation thereto by means of a nut 25, the brace being protected by a washer 24.

The inner surface 26 of said side piece 14 forms an acute angle with the groove 13 of said side piece 14, said groove extending in its longitudinal direction from the inside toward the surface 26 of said side piece 14. A V-shaped recess 27 is provided in said side piece 14 perpendicular to the groove 13 and extending from the inside toward the surface 26 of said side piece 14; the two surfaces 28 and 30 of said V-shaped recess 27 are at right angle to each other, the surface 30 coinciding with and extending from the ends of the fourth side of said trapezoid parallel to the base thereof, of the cross section of each of said grooves 13. The surface 28 of said V-shaped recess 27, being at an oblique angle to the inner surface 26 of said side piece 14, provides an abutment for the inner surface 31 of said brace 10. The surface 28 and the surface provided by the bases of the dove-tail grooves 13 also form a V-shaped and rectangular recess. The dove-tail tenons of said side piece, integral therewith, extend from said surface provided by the bases of said dove-tail grooves 13.

The side piece 15 has grooves 13' and a V-shaped recess 27' symmetrically arranged to the corresponding grooves and V-shaped recess of the side piece 14.

The tenons 11 and 11' of said brace 10 are of smaller width than the width of said brace leaving spaces 32 and 32' between the inside 33 and 33', respectively, of said tenons and the inside 31 of said brace (Figs. 5 and 6); thereby an abutment is provided between the inside 31 of the brace 10 and the surfaces 28 and 28' of the V-shaped recesses 27 and 27' of the side pieces 14 and 15, respectively, without that the insides 33 and 33' of said tenons 11 and 11', respectively, take part in the abutment, thus preventing a possible damage to the tenons when the nut 25 is tightened onto the screw 21.

The tenons 11 and 11' integral with said brace 10 extend therefrom in the longitudinal direction thereof, and when the tenons slide into said grooves 13 and 13' the brace 10 is moving in perpendicular direction to its longitudinal extension.

The operation of the above described embodiment of my invention is as follows:

The brace 10 is brought with its inside 31 into abutment with the surfaces 28 and 28' of the side pieces 14 and 15, respectively, by sliding the

tenons 11 and 11' into the grooves 13 and 13' until the surface 31 touches the surfaces 28 and 28'. The block 20, carrying the screw 21 in alignment with the opening 12 of the brace 10, is brought into position between the ends 17 and 18 of the side pieces 14 and 15, the thread 23 protruding through and beyond the opening 12 of the brace 10 being engaged by the nut 25 for holding the corner-block construction together.

By tightening the nut 25 on the thread 23 of the screw 21 towards the outer surface of the brace 10, a tension is created in said screw which, in turn, is transmitted to the corner-block 20 bringing about pressure thereof against the ends 17 and 18 of the side pieces 14 and 15; in Fig. 7 a diagram of forces is shown as appearing in the construction after its assembly. The pressure A resulting from the tension of the screw 21 brings about the pressure a in the side piece 14 and the pressure d in the side piece 15. The pressure a in the side piece 14 is split into two components b and c and the pressure d in the side piece 15 is split into two components e and f ; the components b and e are absorbed by the abutment of the surface 31 of the brace 10 against the surfaces 28 and 28' of the side pieces 14 and 15, and provide the counterpart to the tension of the screw 21. The component pressures c and f , bearing in opposite direction to each other create a tendency to disengage the side pieces from its engagement with the brace 10. These component pressures, however, and the tendency resulting therefrom are absorbed by the contact of the oblique surfaces of the grooves 13 and 13', constituting the oblique sides of the trapezoid cross section thereof, with the corresponding oblique surfaces of the dove-tail tenons 11 and 11', respectively.

The tenons 11 and 11' may be glued into said grooves 13 and 13'; the glue, however, merely serves the function of preventing the brace 10 from falling off its engagement with the side pieces 14 and 15, prior to the attachment of the block 20 onto the side pieces. For the assembled construction the adhesive quality of the glue is not needed, the construction being so arranged that the tension created in the screw 21 provides for the fastening of the block 20 to the side pieces 14 and 15.

Certain of the advantages of the invention have already been herein referred to. It may be useful, however, to allude particularly at this point to the advantage provided by the use of the dove-tail construction in absorbing the component pressures (c) and (f) which create a longitudinal stress in the brace 10 and, were it not for the slanting surfaces of the dove-tail construction, immediately would disengage the side pieces from said brace. This side component pressure has received little or no attention heretofore, resulting in the breakdown of constructions that use rectangular tenons and grooves for connecting the brace to the side pieces, held together only by friction and adhesive substance, or held together by screws resulting in the bending or breaking of the screws or splitting of the brace adjacent said screws.

I do not limit myself to the particular details of construction set forth in the foregoing specification and illustrated in the accompanying drawings, as the same refer to and set forth only one embodiment of the invention and it is obvious that the same be modified, within the scope of the appended claims, without departing from the spirit and scope of the invention.

Having thus described the invention, what I claim as new and desire to be secured by Letters Patent, is as follows:

1. A corner-block construction comprising, in combination, a corner-block, two side pieces adjacent thereto and substantially perpendicular to each other, each of which having a V-shaped recess and provided on one of the surfaces of said recess with dove-tail tenons forming dove-tail grooves therebetween, said dove-tail tenons being perpendicular to the other surface of said V-shaped recess, a diagonal brace, adapted to be moved in a direction towards said corner-block for abutting said other surface of said recess of each of said side pieces, and provided at each lateral end with dove-tail tenons arranged to engage and coact with said grooves on one of the surfaces of said V-shaped recess of each of said side pieces, for providing a positive connection between said side pieces, and means parallel to said dove-tail tenons of said recess and secured to said corner-block and with relation to said brace for causing said brace to move into abutment, and holding the corner-block construction together.

2. A corner-block construction comprising, in combination, a corner-block, two side pieces adjacent thereto and substantially perpendicular to each other, each of which having a V-shaped recess and provided with dove-tail tenons forming dove-tail grooves therebetween on one of the surfaces of said V-shaped recess, said dove-tail tenons being perpendicular to the other surface of said V-shaped recess, a diagonal brace, having a hole and adapted to be moved in a direction towards said corner-block for abutting said other surface of said recess of each of said side pieces, and provided at each lateral end with dove-tail tenons arranged to engage and coact with said grooves on one of the surfaces of said V-shaped recess of each of said side pieces, for providing a positive connection between said side pieces, a screw parallel to said dove-tail tenons of said recess and secured with one end to said corner-block and protruding with its other end through said hole in said brace and carrying a thread, and a nut engaging said thread of said screw and bearing from the outside against said brace

for causing said brace to move into abutment, and holding the corner-block construction together.

3. A corner-block construction comprising, in combination, a corner-block, a pair of substantially symmetrical side pieces adjacent thereto and arranged to form a right angle, each of said side pieces having a V-shaped recess and provided with dove-tail tenons forming dove-tail grooves therebetween on one of the surfaces of said recess, said dove-tail tenons being perpendicular to the other surface of said recess, the other surface of said recess being in alignment with the corresponding surface of said other side piece, a diagonal brace, adapted to be moved in a direction towards said corner-block for abutting said other surface of said recess of each of said side pieces with the side facing said corner-block, and provided with dove-tail tenons forming dove-tail grooves therebetween at each lateral end arranged to engage and coact with said grooves and tenons respectively of said side pieces, for providing a positive connection between said side pieces, and means parallel to said dove-tail tenons of said recess and secured to said corner-block with relation to said brace for moving and pressing said brace against said abutting surfaces and, thereby, holding said corner-block construction together.

4. In a corner-block construction comprising a corner-block, two symmetrical side pieces, a diagonal brace, and a screw connecting said brace with relation to said corner-block, two pairs of dove-tail tenons parallel to said screw, one pair of which carried by each of said side pieces on one surface of a V-shaped recess thereof, the other surface of said recess being in alignment with its symmetrical counterpart, and two dove-tail tenons each being formed on a lateral end of said brace and arranged to engage and coact with said dove-tail tenons of said side pieces for providing a positive connection between said side pieces and permitting a movement of said brace toward said corner-block, said other pair of surfaces in alignment providing an abutment for the side of the brace facing said corner-block, for limiting its movement toward the same.

FREDERIC HIRSCH.