No. 882,001. PATENTED MAR. 17, 1908.

J. L. GILMAN.

METHOD OF AND MEANS FOR MAKING MORTISE JOINTS.

APPLICATION FILED JUNE 7, 1907.

2 SHEETS—SHEET 1.

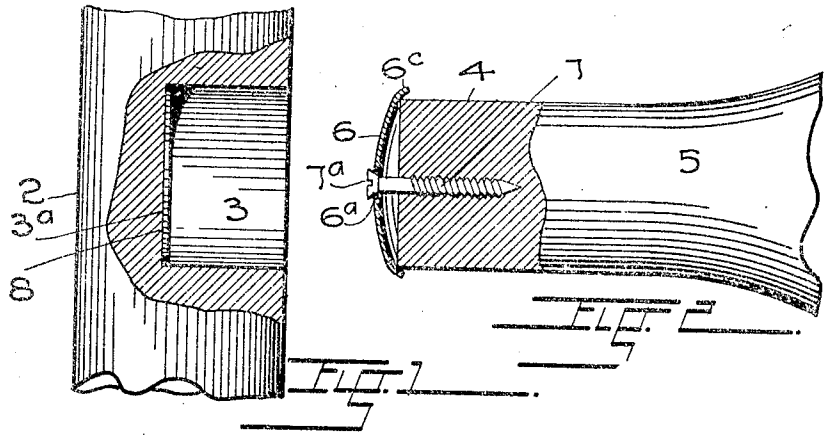


FIG. 1.

FIG. 2.

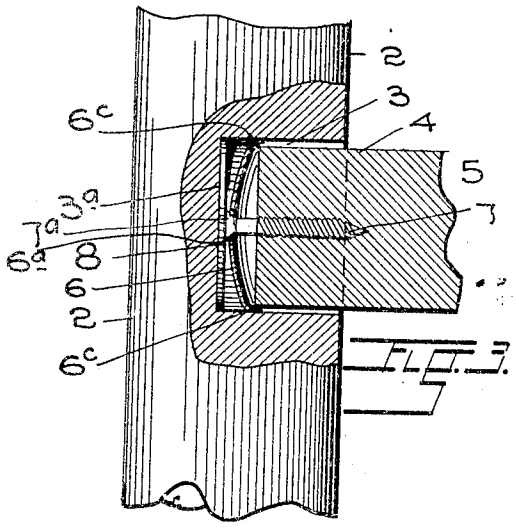


FIG. 3.

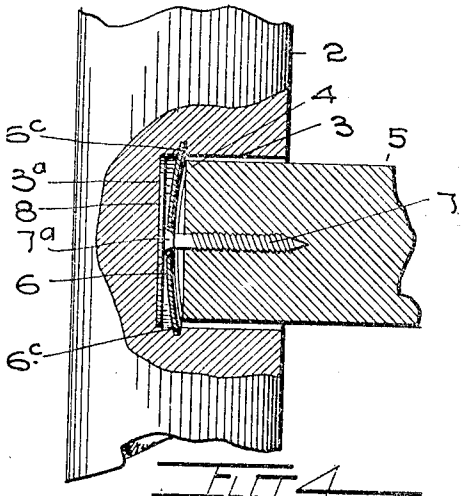


FIG. 4.

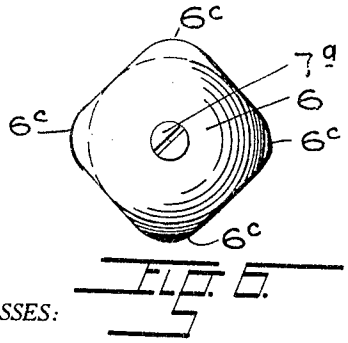


FIG. 6.

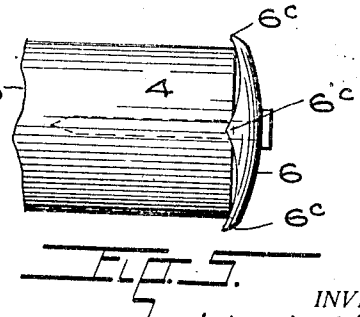


FIG. 5.

WITNESSES:

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2 SHEETS—SHEET 2.

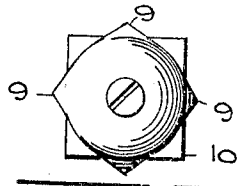


FIG. 8

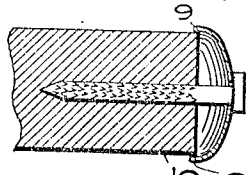


FIG. 7.

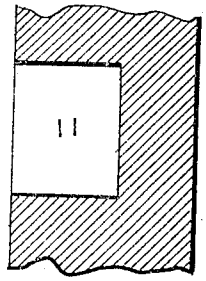


FIG. 9

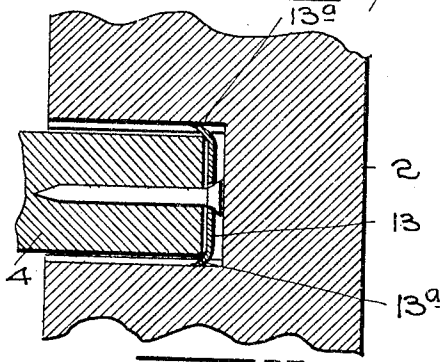


FIG. 10.

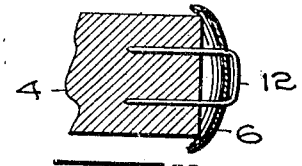


FIG. 11

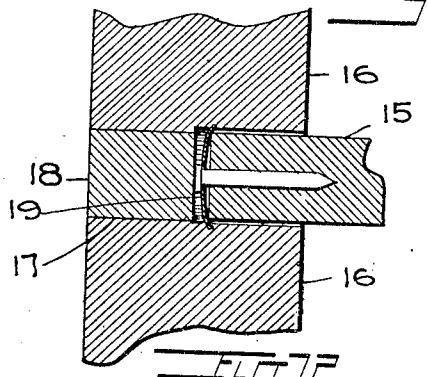


FIG. 12

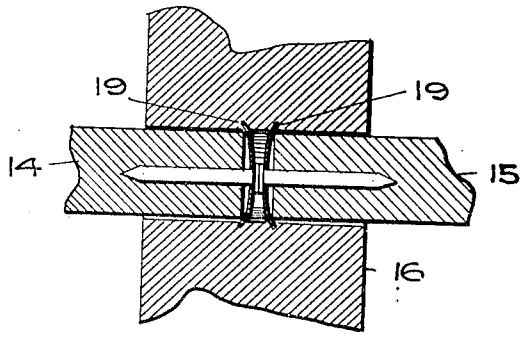


FIG. 13.

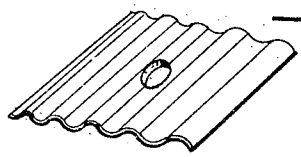


FIG. 14

WITNESSES:

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UNITED STATES PATENT OFFICE.

JOHN L. GILMAN, OF BOULDER, COLORADO, ASSIGNOR OF ONE-THIRD TO THEODORE L. STRAWN AND WALTER E. WHITACRE, OF BOULDER, COLORADO.

METHOD OF AND MEANS FOR MAKING MORTISE-JOINTS.

No. 882,001. Specification of Letters Patent. Patented March 17, 1908.

Application filed June 7, 1907. Serial No. 378,039.

To all whom it may concern:

Be it known that I, JOHN L. GILMAN, a citizen of the United States of America, residing at Boulder, in the county of Boulder and State of Colorado, have invented certain new and useful Improvements in Methods of and Means for Making Mortise-Joints, of which the following is a specification.

This invention relates to a novel method of making mortise joints and the means employed thereto and is especially adapted for use in fastening the rounds of a chair into its posts, in securing the latter into the seat or into the rockers of a rocking chair, in fixing wooden spokes into the rim of a wheel, in fastening ladder rounds and mallet handles or briefly in firmly securing the projecting end of any article into a corresponding cavity or mortise in another piece so as to form a firm and permanent joint.

The objects of my invention are to attain the above result without the use of wedges, glue or other adhesive substance and without marring or defacing the articles which are thus united and to provide means for producing the joint, which are simple and inexpensive, readily applied and effective in use. I attain these objects by the means illustrated in the accompanying drawings in the various views of which like parts are similarly designated and in which

Figure 1—represents a partially sectional elevation of a mortised article, Fig. 2—a similar view of a tenoned object adapted to be inserted and secured into the cavity of the first named member, Fig. 3—a similar view showing the one object inserted into the other, Fig. 4—a view of the two objects permanently secured together, Fig. 5—an elevation of the end of an object provided with my fastening means, Fig. 6—an end view thereof, Figs. 7 and 8—respectively a sectional elevation and an end view of a modified form of the appliance especially adapted for securing square or angular parts, Fig. 9—the mortised object adapted to receive the article illustrated in Figs. 7 and 8, Fig. 10—a sectional view of two united objects showing a modified form of the fastening means, Fig. 11—a sectional view of a tenoned object illustrating a different manner of securing the washer employed in my improved method, Figs. 12 and 13, sectional views illustrating the steps taken in the method of securing two objects inserted from opposite ends into an opening in a third article, and Fig. 14—a perspective view of a modified construction of the washer used in the practice of my invention.

Referring to the drawings let the reference numeral 2 designate an article such as the post of a chair, provided with a cylindrical mortise 3, and 4 the correspondingly formed extremity or tenon of a round 5. The means employed to secure the last named member into the other, consist of an expansible cap or washer 6 secured upon the end surface of the extremity 4 by means of a suitable fastening device 7, such as a nail or screw which being driven or screwed into the extremity of the member 5 in longitudinal and central relation thereto, projects loosely through a correspondingly shaped aperture 6^a in the element 6.

The washer 6 is preferably composed of a cupped or concave square piece of pliable or flexible metal, the sharp corners 6^c of which form teeth which project, in practice, over the edge of the tenon and in close proximity to its peripheral surface as shown in Fig. 2 of the drawings.

The method employed to firmly and permanently secure the end of the member 5 within the cavity of the post 2 is as follows. The tenoned object having been equipped with the expansible washer, as shown and described, is driven into the mortise 3 until the head 7^a of the screw or nail which projects beyond the outer or convex surface of the washer, engages the bottom surface of the cavity, as illustrated in Fig. 3.

Further inward movement of the member 5 induced by the percussive action of a tool upon its opposite or outer extremity or in some instances, by the application of a clamp or similar instrument, will cause the nail or screw to be driven deeper into the tenon, with the result that the washer 6, engaged by its head, dilates and its sharp corners 6^c pierce the circumferential surface of the cavity and thus securely lock the member against withdrawal as illustrated in Fig. 4 of the drawings.

To prevent the head 7^a of the screw or nail from indenting the bottom surface 3^a of the cavity in member 2 which may occur when the material of which the latter is composed, is very soft, a metal plate or washer 8 may be employed, which being placed inside the mortise upon the said sur-

face, is engaged by the head of the nail and the convex surface of the washer when the member 5 is driven home.

I wish it understood that variations in the form and application of the locking means employed in my method of joining two articles, may be availed of within the spirit of my invention, to suit varying circumstances. The washer, for instance, may be made round with projecting points or teeth 9 as illustrated in Figs. 7, and 8, a form especially adapted for use on articles having a square or angular tenon 10 and mortise 11; or the number of peripheral projections may be increased to give the cap a starlike appearance or when the material of which the mortised object is composed is soft and easily yields to pressure, the projections may be omitted and the washer made circular in which case its entire circumferential edge is driven into the circumferential surface of the mortise or cavity.

The means employed to secure the washer or cap upon the end of the tenon should be adapted to readily penetrate the material into which it is driven and to hold firmly against withdrawal. Among those best suited to the purpose, are the so called drive screws or screw nails, shown in Figs. 1, 2 and 3, and electrified, coated, barbed or otherwise roughened nails while in some instances staples may be employed, as designated by the reference character 12 in Fig. 11, in which case the washer is provided with two apertures.

Under certain conditions the washer used to lock the male member within the cavity of the female member may be made flat and non-expansible as illustrated in Fig. 10, in which case the material of which it is composed should be sufficiently flexible to permit its projections 13^a to straighten and by engagement with the wall of the mortise, resist the withdrawal of the inserted object when it is attempted to draw the latter out of the cavity.

In Figs. 12 and 13 is illustrated a method of securing two objects 14 and 15 driven from opposite ends into a bore 17 in a third member 16 and which consists in temporarily providing the said member with a plug 18, which when inserted in the opening, forms an abutment for one of the tenoned objects 15 to be withdrawn after the said object is secured. The second member 14 is subsequently inserted in the opening and locked by impinging upon the washer 19 of the opposite member.

Fig. 14 illustrates a washer having a plurality of corrugations which render it expansible without being concave or curved.

Having thus described my invention what I claim and desire to secure by Letters Patent is:—

1. The means for securing a mortise joint comprising an expansible plate and a fastening device adapted to secure the said appliance upon the end surface of an object so as to allow its dilation by forcible engagement with an opposing surface.

2. The means for securing a mortise joint comprising a concave washer and a fastening device adapted to secure the said washer upon the end of an object so as to allow its dilation by forcible engagement with an opposing abutment.

3. The means for securing a mortise joint comprising a circumferentially toothed, expansible washer and a fastening device adapted to secure the said washer upon the end of an object so as to allow its dilation by forcible engagement with an opposing abutment.

4. A mortise joint comprising a male member and an expansible plate held upon its end surface so that its perimetric parts will project beyond the edges thereof when dilated by forcible engagement with an opposing surface.

In testimony whereof I have affixed my signature in presence of two witnesses.

JOHN L. GILMAN.

Witnesses:
JAMES COWREY,
GERTRUDE HAYWARD.