Jan. 7, 1936. R. F. ONSRUD 2,026,650

WOOD JOINT AND CORNER CONSTRUCTION

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Fig. 1

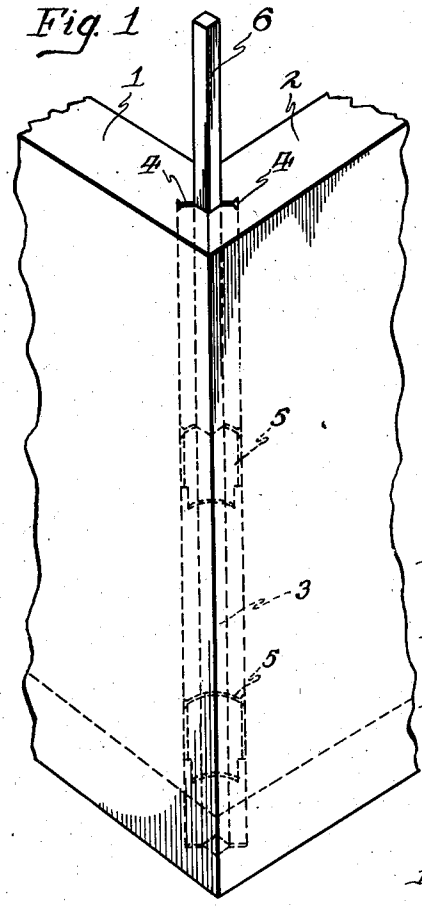


Fig. 2

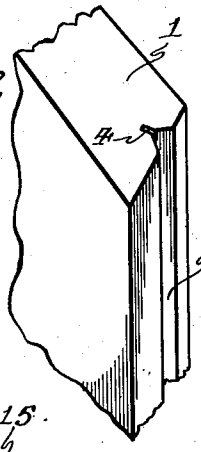


Fig. 3

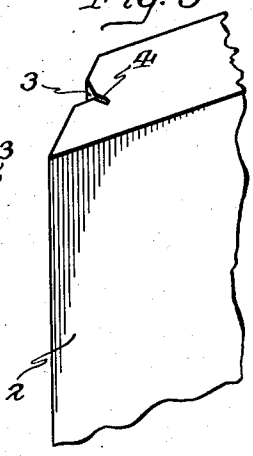


Fig. 4

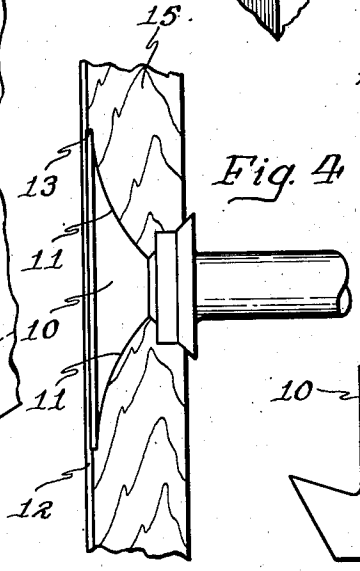


Fig. 5

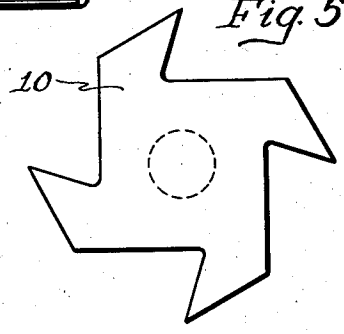


Fig. 7

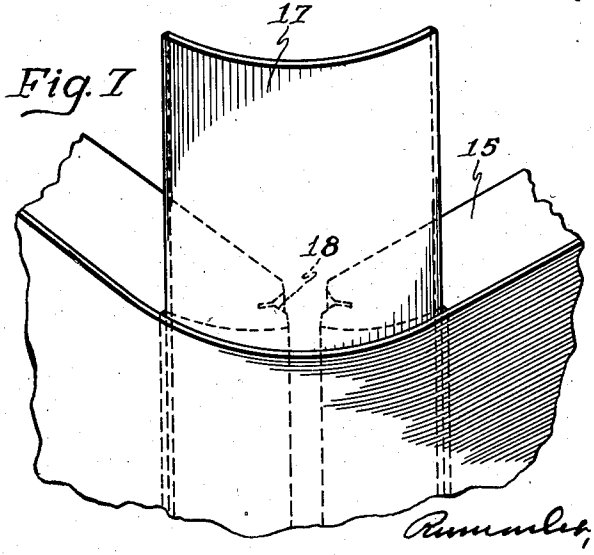
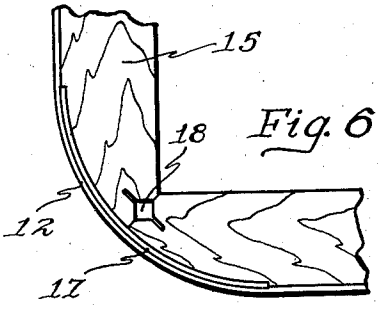


Fig. 6



Inventor
Rudolph F. Onsrud

Rummler, Rummler & Woodworth
Attys.

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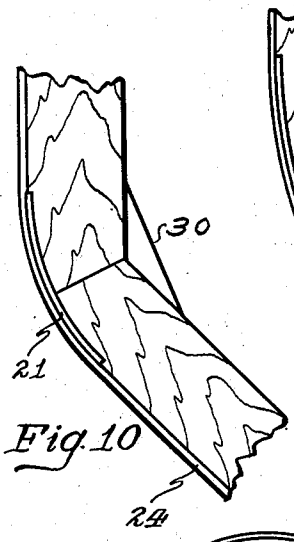


Fig. 10

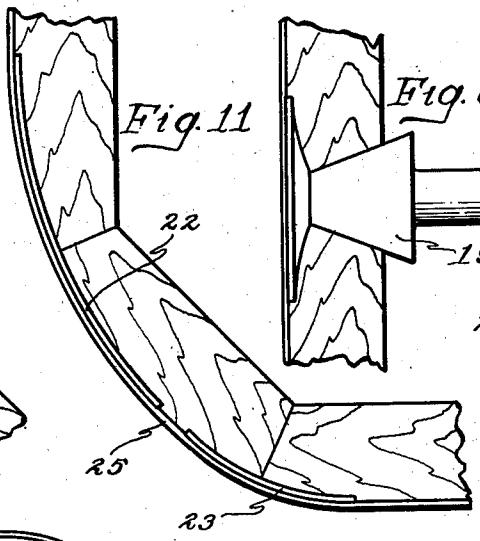


Fig. 11

Fig. 8

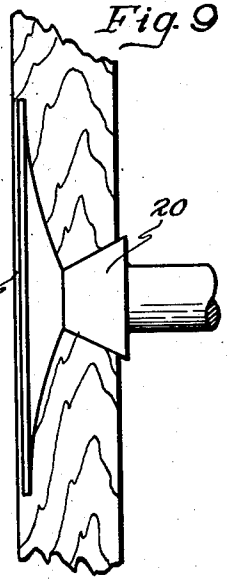


Fig. 9

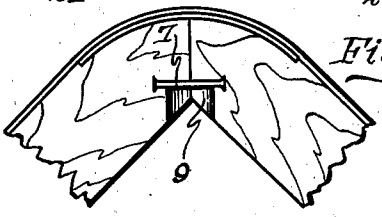


Fig. 15

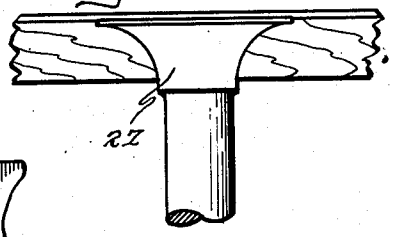


Fig. 13

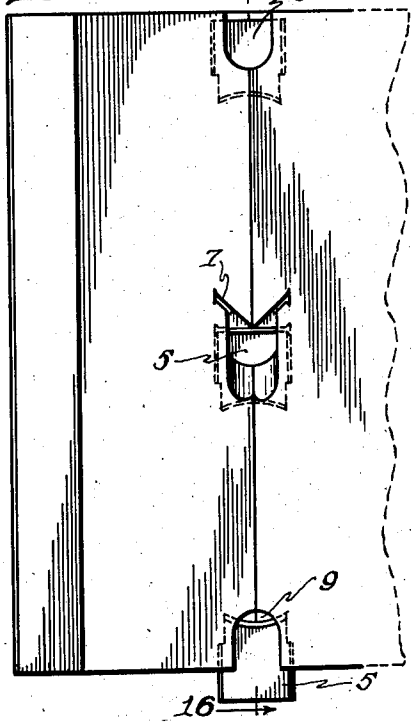


Fig. 14

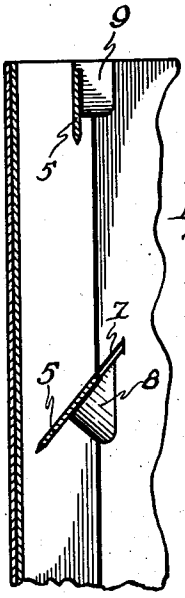


Fig. 16

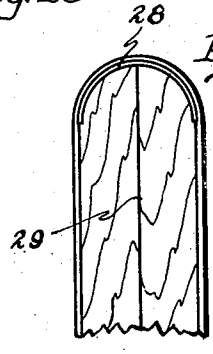


Fig. 12

Inventor
Rudolph F. Onsrud
Rummler, Rummler & Woodworth
Attys.

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UNITED STATES PATENT OFFICE

2,026,650

WOOD JOINT AND CORNER CONSTRUCTION

Rudolph F. Onsrud, Chicago, Ill.

Application January 5, 1935, Serial No. 541

3 Claims. (Cl. 20—92)

This invention relates to round corner bends and to corner or butt joints for wooden boards. The corner connections may be rounded or sharp and at various angles.

An object of the invention is to improve such corner bends and joints by making possible the use of spaced hidden metal fasteners in the joint for holding abutting surfaces together and to reinforce the gluing, which is not sufficiently effective alone for end grain connections.

A further purpose of the invention is to improve the construction of rounded corners formed in solid or veneered boards to bring about a perfectly smooth and unbroken surface curve and to reinforce, by means of curved bonding bands, the joint in the stock which is grooved to allow for the bend.

The objects of the invention are accomplished by means of a construction as illustrated in the drawings, in which:

Figure 1 is a perspective view illustrating a corner joint and the method of inserting clamp fasteners for deep joints.

Figs. 2 and 3 are perspective views illustrating the formation of the ends of boards before joining.

Fig. 4 is a plan view of a cutter for forming a groove in a veneered board to enable bending the board to form a rounded corner while the veneering remains intact and the cut is so formed to enable the backing and reinforcing of the veneering by means of an inserted cross band. In this view a veneer board is shown in position to be grooved by the cutter.

Fig. 5 is a face view of the cutter.

Fig. 6 is a top view of a finished joint, the board having been grooved by a cutter such as illustrated in Fig. 4.

Fig. 7 is a perspective view illustrating the bonding means being inserted before the joint is completed.

Figs. 8 and 9 show cutters for use in making less than 90° rounded corners, the stock operated on by these cutters being shown therewith.

Figs. 10 and 11 are details showing top views of rounded corners as made respectively by the cutters shown in Figs. 8 and 9.

Fig. 12 is an end view of veneer stock having a 180° bend therein.

Fig. 13 is a detail showing the cutter and a veneer faced board used in forming the bend illustrated in Fig. 12.

Fig. 14 is an inside view of a corner bend such as shown by Fig. 15. The purpose of this view is to illustrate the application of inclined clamp nails.

Fig. 15 is a plan view of the corner shown in Fig. 14.

Fig. 16 is a section on line 16—16 of Fig. 14.

The improvements are applicable to solid boards, laminated boards, or boards having a facing of veneering in cases where a corner is to be formed, and particularly when the corner is curved and presents without seam only the uninterrupted surface of a single board. The resulting advantages in strength and appearance of the finished products enable the use of the improved rounded corner in cases where in the past sharp corners were employed although it would have been preferable to use rounded corners for safety and appearance. Also because of the difficulties in successfully making rounded corners with veneered stock, posts, legs and cross pieces in veneer furniture were often formed from stock which was not laminated or faced with veneering.

Therefore a purpose of the present invention is to allow for more freedom in the design of furniture by providing a practical means for making arcuate bends up to a full 180° bend in a board faced with veneer so that such board may be bent back upon itself with a true half round end and make a serviceable partition supporting element or table top. Desks, etc., are frequently made with sharp corners merely to accommodate manufacturing limitations in the use of veneered stock.

Such sharp corners can be avoided by means of the present method of forming bends in veneered boards and the face veneering may extend without a break from one surface to another surface at right angles therewith.

It is necessary to cut away or groove the inner surface of the boards in order to accomplish the bend and as end grain gluing does not make a secure joint, the joint is reinforced by either or both bonding strips and metal clamp nails. The manner in which the nails are used in the improved joint is also useful for connecting the abutting ends of boards in the same plane or at a sharp angle.

Figure 1 illustrates the use of the metal clamp nails for securing the abutting ends of boards together without other reinforcing. The ends of the boards 1 and 2 which are to be joined together have grooves 3 running the full length of the meeting surfaces of the boards. Saw cuts 4 are made at the bottom of each groove and at such angle with reference to the end surface of

each board in the case of a corner joint so as to be in line with each other when the corner is formed. The ends of the boards are then brought together and clamp nails 5 of a standard form, except that their end flanges are cut down somewhat more than customarily, are driven into the grooves by means of a driving rod 6 and a hammer. The clamp nails are placed at intervals along the joint as illustrated in Figure 1 and are invisible from either side of the corner.

The above-mentioned manner of reinforcing a joint by the use of metal clamp nails is made use of in the rounded corners formed from a single piece of veneered stock, as illustrated for example in Figure 6, or according to the manner of reinforcing such joints by means of clamp nails, as illustrated in Figure 14. In the latter case inclined cuts 7 are made from the inside of the corner for receiving clamp nails diagonally.

The cuts for the clamp nails are made by a rotary tool similar to that shown in Figure 5 but smaller and of a form for making recesses 8 and 9 as shown in Figure 16.

To bend a wooden board which may be quite thick and irrespective of whether the board is one solid piece of wood or veneered or laminated, it has long been the practice to scarf the inside of the board at the point of the bend or to groove it out somewhat in the manner performed by the tool 10 shown in Figs. 4 and 5. This leaves a thin surface layer of the board uncut and the board may then be bent. The curved surfaces 11 thereof roll into contact with the surface layer 12 to which the surfaces 11 are glued, but that is not a wholly satisfactory job. The tool must have sufficient body to withstand wear and therefore, if it comes to a sharp edge at the point 13, it requires frequent resharpening particularly when performing the work of cutting the glue between surface veneering and the body 15 of the board. However finely tapered the tool may be at the edge 13, there is still likelihood of there being too much space between the surface veneering and the body of the board when it is bent into the form illustrated by Fig. 6 and irregularities become apparent in the veneering at the bend.

In order to make this type of bend commercially practicable and to bring about a true curve and a good bonding and reinforcement of the joint, the tool 10 is not tapered to a sharp edge at the point 13 but is given sufficient thickness to allow for the insertion of a bonding and reinforcing curved strip 17 between the surface veneering and the body 15 of the board. This bonding strip is formed of wood in most cases but sometimes is a curved metal reinforcement. It is glued in place and before the glue is set, the bend is further reinforced and permanently held as shown in Fig. 6 by the insertion of clamping nails previously described in connection with Fig. 1.

The tool 10 in Fig. 4 is formed to cut the grooves 18, Fig. 6, at the same time when cutting the curved surfaces 11. The cutting tools 19 and 20, shown in Figs. 8 and 9, are used for making bends or rounded corners such as respectively illustrated in Figs. 10 and 11. These figures show curved bonding strips 21, 22 and 23 just inside of the surface veneering 24 and 25. Clamping nails are omitted from these forms and the gluing of the meeting surfaces including fillet 30 is relied upon for retaining the elements of the bent board as shown.

When such bends are made in surface veneered boards, it is preferable to make the cut slightly into the veneer in order to remove all glue therefrom at surfaces which are to be reglued when the bend is formed. But the process is not limited to veneered boards as the cut may be made in a solid board to the same depth if desired, leaving a surface layer 26 about the thickness of veneering, as indicated in Fig. 9.

Fig. 13 shows the outline of a tool 27 used for making a full 180° bend as shown by Fig. 12, and this tool is formed for allowing space for a curved bonding strip 28, the same as described in connection with bends of lesser degree. This bonding strip is not so much needed in this form for reinforcing the joint as the entire meeting surfaces 29 of the bent board are glued together; but it is important for maintaining a true rounded end for the double board so formed. A satisfactory appearance results as the grain may be followed around the curve and the edge of a partition, table top, etc., may be rounded nicely, even though veneered stock is used.

The customary way of using sharp corners in order to obtain a good appearing joint for surfaces extending at an angle to each other is thus improved for many purposes, such as providing rounded corners in furniture for safety and pleasing design.

The improved construction allows for practically carrying out simpler and what is believed to be more beautiful designs than the angular constructions which are commonly produced, merely to facilitate customary manufacturing processes.

I claim:

1. The process of forming a corner bend in a board which consists in cutting a groove on the inner surface of the board, which groove is formed to provide surfaces which abut when the board is bent inwardly along such groove and to leave a thin bendable layer on the outer surface of the board with a space between said bendable layer and the body of the board, filling said space with a flexible reinforcing element for the thin bendable layer of the board, and then bending the board inwardly along the groove and securing together the meeting surfaces of the groove.

2. A board which is internally grooved from side to side thereof, said groove being of such form as to leave a thin bendable layer on the outer surface of the board and a space between said bendable layer and the body of the board for the reception of a reinforcing and bonding strip, a bonding strip in said space, and said groove being otherwise formed to provide meeting surfaces in back of the bonding strip when the board is bent along said groove.

3. A board which is internally grooved from side to side thereof, said groove being of such form as to leave a thin bendable layer on the outer surface of the board and a space between said bendable layer and the body of the board for the reception of a reinforcing and bonding strip, a bonding strip in said space, said groove being otherwise formed to provide meeting surfaces in back of the bonding strip when the board is bent along said groove, and a clamping nail driven diagonally into the board through said meeting surfaces thereof opposite the bonding strip.

RUDOLPH F. ONSRUD.