May 21, 1940. R. F. McMAHAN 2,201,193

METHOD OF ATTACHING A HANGER

Filed March 26, 1936

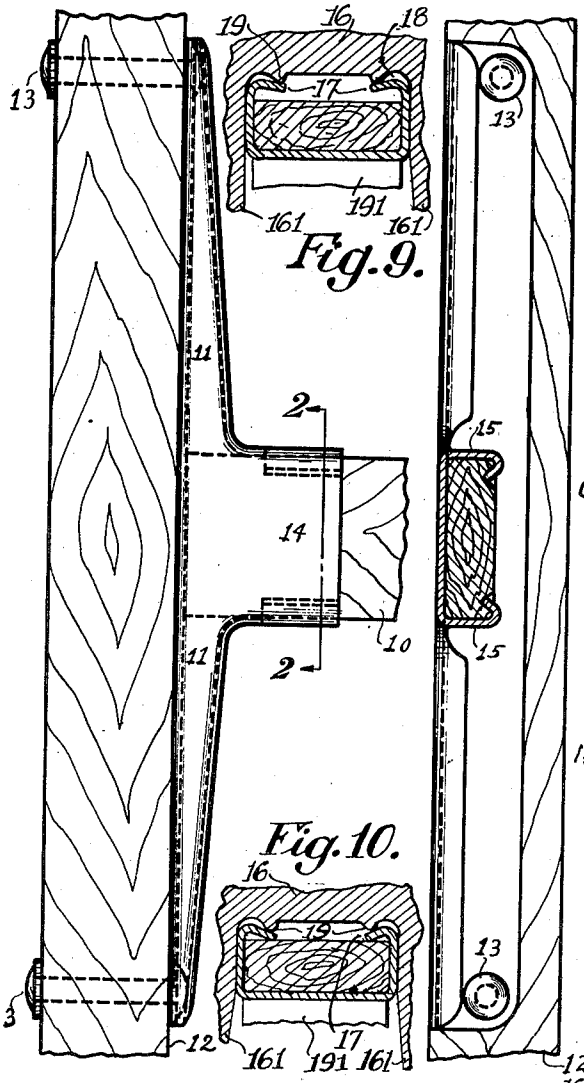


Fig. 9.

Fig. 10.

Fig 1

Fig 2

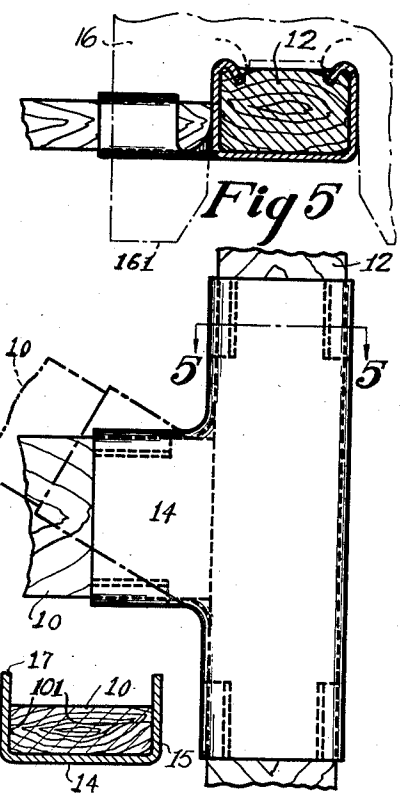


Fig 5

Fig 6

Fig 4

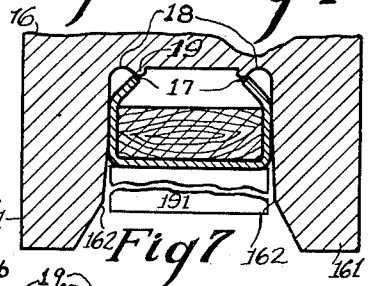


Fig 7

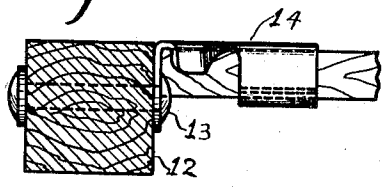


Fig 3

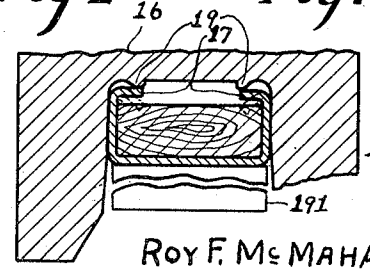


Fig 8

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Patented May 21, 1940 2,201,193

UNITED STATES PATENT OFFICE

2,201,193

METHOD OF ATTACHING A HANGER

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Application March 26, 1936, Serial No. 70,933

3 Claims. (Cl. 153—1)

The present invention relates to malleable hangers and a method for securing same to wooden members such as a chair rung to legs; table legs to rails or bars, et cetera.

The main objects are to add stability to furniture structures and reduce the cost of the product in terms of accepted practice which employs glue, screws, nails, rivets, pegs or mortise and tenon joints.

Other objects and advantages of the method, structure and combinations are hereinafter set forth in detail and will be apparent to persons skilled in the art to which this invention relates and to their advantages in-so-far as they are patentably novel, I will claim the same as hereinafter set forth.

Figure 1 is a vertical elevation of a flat rung or bar embraced by my hanger, which is secured to a section of a chair leg by rivets.

Figure 2 is a vertical end view of Fig. 1 along line 2, 2.

Figure 3 is a vertical end view of Fig. 1.

Figure 4 is a plan view of a modification of my hanger permanently uniting three rectangular bars without the use of rivets, screws, et cetera. The dotted lines of this figure are to represent an alternate disposition of the adjacent shank and bar.

Figure 5 is a sectional view of Fig. 4 along 5, 5, shown in full lines together with a dash-dot outline of a forming tool employed to secure a malleable hanger to wooden members.

Figure 6 is a sectional view of the end of a hanger with the arms before final forming for securing to a rung, leg bar or other wooden object, which is also shown in section and partially embraced.

Figure 7 is a sectional view of the hanger and rung of Fig. 6 together with a sectional view of the forming tool during an early stage of shaping the arms of the hanger preparatory to forcing the ends of the arms into the rung, which is shown in Fig. 5 at the completed stage.

Figure 8 is a further stage of Fig. 7; the sections of Figs. 2 and 5 are provided to show the ends of the arms imbedded deep in the wood which has been deformed by the last stages of the forming process.

Figures 9 and 10 are fragments of Figures 7 and 8, respectively, to show the behavior of ends 17 of arms 17 when soft material is being formed.

Numeral 10 indicates a wooden rung or bar of rectangular cross section secured to hanger 11, which in turn is secured to a major body 12 such as the leg of a chair by means of rivets 13, which are shown passing through apertures in the hanger and the leg. The projection shank 14 of the hanger is fashioned with duplicate arms 15 of sufficient length to project beyond the bar when the latter is lodged within the former as shown in Fig. 6. The face of the shanks from which these arms project is sometimes referred to hereinafter as the "base." This projection is provided for the purpose of furnishing material which can be altered at this stage of the method of assembly by curling both projections inwardly, the first stage of which is shown by Figure 7. To accomplish this a very special forming tool 16 is employed. It will be noted that the projecting ends 17 of arms 15 can be forced to travel inwardly by the arcuate contours 18 of the forming tool. It will be understood that the shank 14 of hanger 11 is placed on a rigid member or anvil 191 of a power press and that the forming tool 16 is carried by the ram or gate of same and that the two members of the press are brought together to exert a pressing action to bring about the assembling method which is being described herein.

The depending arms 161 of forming tool 16 have their inner faces 162 arranged to guide and hold arms 15 in substantially parallel relation so that the edges of ends 17 will engage contours 18 for convexly forming the said ends as shown in Figs. 9 and 10. It should be noted that the inner parallel faces (top portions) of 162 embrace and hold arms 15 in intimate contact with the outer edges 101 of rung 10, while the ends 17 are being operated upon and thereby prevent any spreading or separating of the arms from the rung. Should arms 15 not be held as described during the forming operation, and while forcing the edges of the ends 17 into the rung, a spreading or buckling from the rung would follow. This would impair or possibly defeat the main objective of completely embracing a rung so as to leave it with the definite and effective permanent outwardly exerted force necessary for producing a dependable rigid structure.

As the forming tool 16 advances on its downward stroke, the ends 17 take up the position as shown in Figure 8 where projections 19 are substantially in register with the ends 17 of the shank. It will now be apparent that as the squeegee action advances, the ends will be forced to penetrate the top surface of bar 10 as shown by the dotted lines in Fig. 8. A still further and the final stage of the travel for the forming tool 16 is shown in Fig. 5, which also shows the

final position to which these ends have been forced, and that the ends 17 have been caused to describe an arcuate path, indicated by the associated dotted lines, as they pierced the top surface of bar 10 and that bar 10 has been locally compressed and left in tension so that pressure resulting from the relatively high elasticity of the wood is being exerted directly against the embracing arms 15, especially the ends 17.

It has been found in practice that ends 17 of arms 15 behave in response to the contours 18 of the forming tool, as the latter advances or progresses on its downward travel, substantially as shown in Figures 8 and 9 of the drawing when the sheet steel that is being fabricated is slightly hard. When a full soft material is used, the said ends start a curling action to more closely conform to said contours at the beginning of the deflection, practically as shown in Fig. 9, this results in forming, directing and forcing the protruding end 17 directly into the surface to cut the wood rather than forcing it in from the side edge of the end as shown in Fig. 8. The preferred procedure being to curl the metal so as to cut the wood as it enters and travels to a fixed position. In other words the projecting portions of arms 15 have been caused to conform to said contours, as shown in Fig. 10, at the time the edges of ends 17 break through the top surface of bar 10.

A modified application of the principles adverted to herein, has been applied to a similar structure wherein only one arm has been curled to effect a permanent engagement between the bracket and a wooden bar.

This procedure is an application wherein the bar is relatively narrow and the projecting end 17 of arm 15 is much longer and the contour 18 being on a larger arc.

Other modifications and application of the principles disclosed herein are practicable, without departing from the spirit of my invention, therefore, I wish to be limited only by the attached claims.

I claim:

1. The method of securing a sheet metal stamping to a rectangular wooden bar, comprising, forming a section of the sheet metal stamping into channel shape with legs longer than the thickness of the wooden bar and a base portion substantially equal in width to that of the bar; placing the wooden bar longitudinally in the bottom of the said channel; forcing the inner face of each leg into face contacting relation with the corresponding side faces of the bar; and then, while retaining the said inner faces in face contacting relation with the said side faces of the bar, curling each free end one toward the other and pressing each free end into the outer face of the said bar longitudinally along the corresponding edges of the outer face thereof until the portions of the said bar adjacent the side faces thereof are compressed between the corresponding curled free ends and base portion of the said channel.

2. The method of attaching a wooden bar to a metal member comprising positioning said bar between relatively spaced arms of said metal member, with said arms in abutting relation with said bar, said arms being of a greater length than the thickness of said bar, bending the extended portions of said arms inwardly and downwardly over a surface of the bar at the plane of said surface, simultaneously bending the extremity of each of said arms downwardly and inwardly with respect to its arm and into approximately arch-shape while said extremity is spaced from said surface, continuing both of said bending movements until the free edges of said extremities contact with and are forced into said surface during the arch-forming operation, and retaining said portions in abutting relation with said bar during said bending operations.

3. The method of attaching a wooden member to a metal member, comprising inserting the wooden member between relatively spaced portions of said metal member, with said spaced portions in abutting relation with said wooden member, at least one of said portions being of a length to project beyond the plane of a surface of said wooden member, bending said projecting portion downwardly and inwardly toward said surface, and during said bending movements also bending the extremity of said projecting portion into arched shape as said extremity approaches said surface during the first mentioned bending movement, during both of said bending actions moving said arched extremity approximately longitudinally through the path of its arched shape until the free edge of said extremity penetrates said surface, and preventing lateral separation of said arms during the aforesaid bending movements.

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