June 30, 1953 W. N. BROWN 2,643,706

TUBULAR FURNITURE CONSTRUCTION

Original Filed Feb. 10, 1948

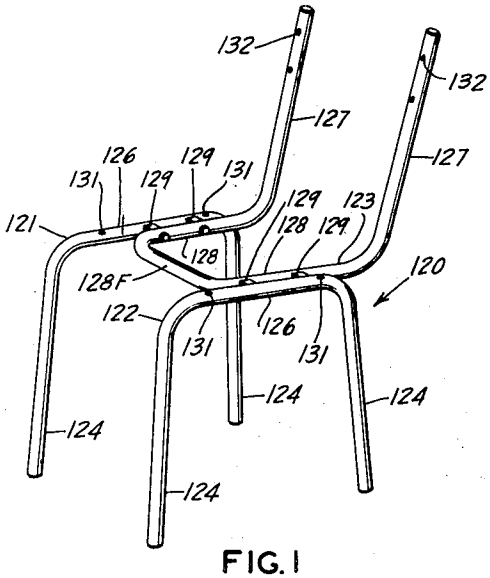


FIG. 1

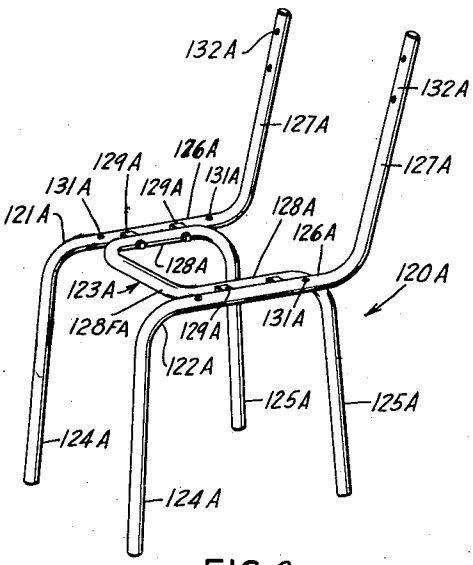


FIG. 2

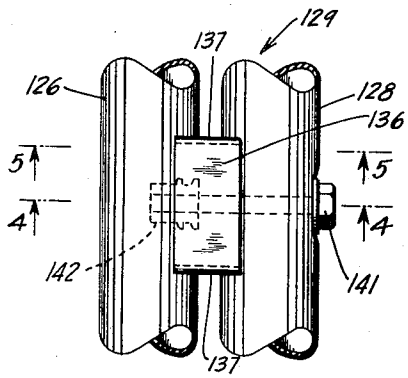


FIG. 3

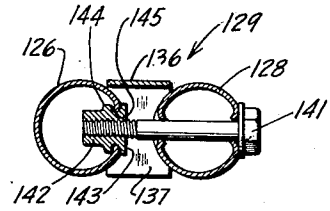


FIG. 4

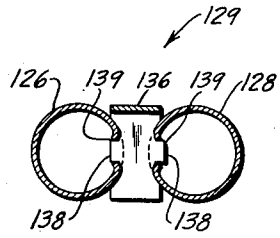


FIG. 5

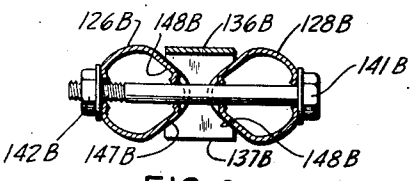


FIG. 6

INVENTOR.
WILLIAM N. BROWN
BY
ATTORNEY

Patented June 30, 1953

2,643,706

UNITED STATES PATENT OFFICE

2,643,706

TUBULAR FURNITURE CONSTRUCTION

William N. Brown, Fort Wayne, Ind., assignor to Arnolt Corporation, Warsaw, Ind., a corporation of Indiana

Original application February 10, 1948, Serial No. 7,332. Divided and this application October 6, 1949, Serial No. 119,922

5 Claims. (Cl. 155—194)

1

This application is a division of my copending application Serial No. 7,332, filed February 10, 1948, now issued as Patent No. 2,578,397, patented December 11, 1951.

The invention relates generally to the art of making furniture and has particular reference to furniture structures made of metal tubing.

Tubular metal framed furniture has long been shipped and sold in assembled condition to the ultimate retail outlet, and it has been recognized that it would be a great deal more advantageous and economical to ship and sell such furniture in knocked down or KD form to the retail outlet where it could be assembled prior to display for sale. However, such knocked down components for making up such furniture have ordinarily been difficult to assemble, particularly by workmen not possessed of special tools nor of special skills.

It is, therefore, an important object of this invention to enable tubular metal framed furniture to be shipped in knocked down form so that it may be assembled by the user or the retail outlet, such assembly being characterized by the absence of any requirement for special tools or skilled workmen.

Another object is to form the members comprising a tubular frame structure in such a fashion that the members may be readily assembled by unskilled workmen using only the simplest tools.

Still another object is to form the members of a tubular frame structure in such a fashion that they may readily be fastened together to form a structure which will be unusually rigid and able to withstand loads or forces tending to disrupt the connection between such members.

Yet another object is to form the members making up a tubular frame chair structure with certain configurations in cross-section of the tubing employed therein to the end that these configurations may be employed with clips or separating members and connecting bolts to connect the members in a rigid and firm assembly.

Still another object is to enable tubular metal frame furniture to be assembled in such a fashion that the means for such assembly will not be discernible to the user.

Other and further objects and important features of the invention will be apparent from the following description and claims and are illustrated in the accompanying drawings which, by way of illustration, show a preferred embodiment and the principles thereof and what I now consider to be the best mode in which I have contemplated applying these principles. Other embodiments of the invention embodying the same or equivalent principles may be used and structural changes may be made as desired by those skilled in the art without departing from the present invention and the purview of the appended claims.

2

In the drawings:

Fig. 1 is a perspective view of a chair frame embodying the invention;

Fig. 2 is a perspective view of a chair frame embodying the invention but employing frame members of a different shape from that of Fig. 1;

Fig. 3 is a fragmentary plan view of a portion of the frame members of Figs. 1 and 2 which lie in a substantially horizontal plane to provide a support for a seat and showing details of the manner in which the frame members are secured together;

Fig. 4 is a cross-sectional view looking in the direction of the arrows 4—4 of Fig. 3;

Fig. 5 is a transverse section taken on the line 5—5 of Fig. 3; and

Fig. 6 is a transverse section similar to Fig. 4 and showing an alternative construction.

For purposes of disclosure the invention is illustrated in Figs. 1 and 2 as embodied in a pair of differently formed chair frame structures. The chair frame structure is indicated at 120 and is provided with frame members 121 and 122 which are fastened to a substantially U-shaped frame member 123 to form a tubular frame structure. The members 121 and 122 have leg portions 124 and bridge portions 126 which lie in a substantially horizontal common plane. The substantially U-shaped frame member 123 has upstanding portions 127 and substantially horizontal spaced portions 128 which lie in the plane common to the portions 126 of the frame members 121, the spaced contiguous pairs of frame portions 126 and 128 being connected as indicated generally at 129, and as will be described presently more fully. The forward ends of the portions 128 are joined by an integral front bar 128F. In order to provide for the attachment of a seat the frame portions 126 are provided with holes 131, and in order to provide for the attachment of a back the upstanding portions 127 are provided with mounting holes 132 near their upper ends.

The tubular frame chair structure 120A of Fig. 2 consists of spaced frame members 121A and 122A and a substantially U-shaped member 123A. The members 121A and 122A have leg portions 124A and substantially horizontal portions

126A which lie in a common plane, the portions 126A being continuous with substantially vertical portions 127A. These substantially U-shaped members 123A have spaced portions 128A which are joined at their forward ends by an integral front bar 128FA. In the assembled chair the portions 128A are contiguous to the portions 126A of the frame members 121A and 122A and lie in the common substantially horizontal plane, the spaced portions 128A being continuous with leg portions 125A. Means are provided for joining the portions 128A which are contiguous to the portions 126A shown generally at 129A and which will be described more fully hereinafter. Holes 131A are provided in the portions 126A of the members 121A and 122A to the end that a chair seat, not shown, may be secured to the frame structure 128, and similar holes 132A are provided near upper ends of portions 127A to enable a chair back to be secured thereto.

Referring now to Figs. 3 to 5, the fastening means 129 of Fig. 1, which is similar to the fastening means 129A shown with reference to Fig. 2 (the description of the fastening means of Fig. 1, therefore, will suffice for Fig. 2 as well), comprises U-shaped spacer elements 136 having vertical limbs 137 adapted to follow the surface of the contiguous frame portions 126 and 128, and which are provided with lugs 138 adapted to extend into and interlock with openings 139 formed in the proximate faces of the contiguous portions 126 and 128. The frame portions 126 and 128 are adapted to be held in such interlocked relation with the spacer elements 136 by means of a bolt 141 which passes through the frame portion 128 and which cooperates with nut 142 which is of the same kind as the nut 39 so as to have a shoulder 143 on the exterior of the contiguous portion 126 and a shoulder 144 on the interior of the frame portion 126.

Alternately, the proximate faces of the contiguous frame portions 126 and 128 of Fig. 1 (and similarly the contiguous frame portions 126A and 128A of Fig. 2) may be deformed to provide contiguous frame portions 126B and 128B which are spaced by spacer elements 136B having limbs 137B formed to match the contour of the proximate faces of the portions 126B and 128B, the assembly shown in Fig. 6 being joined by means of a bolt 141B passing through the frame portions 126B and 128B and secured by a nut 142B. The rotative locking action in this form of the invention is attained by forming notches 147B in the opposite sides of the limbs 137B, and forming the adjacent side walls of the members 126B and 128B in an angular shape 148B that is complemental in part with the notches 147B. The bolt 141B serves, of course, to draw the elements 147B and 148B into a firmly interlocked relation.

The tubular frame chair or furniture structure described with reference to Figs. 1 to 6, inclusive, is conveniently and readily assembled by persons requiring no particular degree of skill, and the resultant structure is able to resist all the usual kind of loads placed thereon. With the arrangement of the fastening means shown with particular reference to Figs. 3 to 5, inclusive, the contiguous frame portions 126 and 128 are held against rotation on their axes with respect to each other, as well as against longitudinal displacement, thus insuring that the frame members making up the chair frame structure will not become misaligned. The embodiment of the

invention described with reference to Figs. 3 to 5 is further characterized by the advantage that the means for fastening the frame members together is not visible to the user, all exterior surfaces being unbroken or unmarred by the fastening means described.

From the foregoing description it will be evident that the present invention enables frames for furniture, such as chairs, to be shipped in a convenient knocked down form, the members comprising such a chair frame or the like being capable of being readily assembled by the workers in the usual retail furniture store to afford such a rigid frame.

It will be evident, of course, that the connected parts are held securely against relative longitudinal displacement as well as against relative rocking of the tubular members about the axes of the connected parts. Moreover, the parts are so formed and related as to effectually resist the crushing forces incident to the tightening of the clamping or securing bolts.

Thus, while I have illustrated and described the preferred embodiment of my invention, it is to be understood that this is capable of variation and modification, and that I, therefore, do not wish to be limited to the precise details set forth, but desire to avail myself of such changes and alterations as shall fall within the purview of the following claims.

I claim:

1. In a furniture frame structure, a pair of separately formed tubular frame members respectively affording elongated securing portions, said securing portions being disposed in spaced parallel side by side relation to each other, a substantially U-shaped spacer element having limbs lying between said portions in a transverse relation thereto, said portions being provided with spaced holes on the proximate faces thereof, said spacer element having lugs thereon adapted to fit into said spaced holes, and means clamping said portions together with the spacer element therebetween whereby the portions are prevented from rotation along their axes with respect to each other.

2. In a furniture frame structure, a pair of separately formed tubular frame members respectively affording elongated securing portions, said securing portions being disposed in spaced parallel relation to each other, a spacer member lying between said portions, at least one of said portions being provided with a hole in the proximate face thereof, said spacer member having a lug thereon adapted to fit within said hole, and means clamping said securing portions together with the spacer member therebetween whereby the portions are prevented from rotation along their axes with respect to each other.

3. In a furniture frame structure, a pair of separately formed tubular frame members respectively affording elongated securing portions, said securing portions being disposed in spaced side by side parallel relation, a substantially U-shaped spacer element having limbs lying between said portions in a transverse relation thereto, said securing portions being provided with spaced holes on the proximate faces thereof, the limbs of said spacer element having lugs thereon complemental to and fitted snugly in the respective spaced holes in both of said frame members, and means clamping said portions together with the spacer element therebetween whereby the securing portions are held against rotation about their axes with respect to each other.

4. In a furniture frame structure, a pair of separately formed tubular frame members respectively affording elongated securing portions, said securing portions being disposed in spaced parallel relation, a spacer member lying between said portions, at least one of said portions being provided with a hole in the proximate face thereof, said spacer member having a lug thereon complemental to and extended snugly into said hole, and means clamping said portions together with the spacer member therebetween whereby said one portion is held against rotation about its axis with respect to said spacer member.

5. In a furniture frame structure, a pair of separately formed tubular frame members respectively affording elongated securing portions, said securing portions being disposed in spaced parallel relation, a substantially U-shaped spacer element having limb portions lying between said portions in a transverse relation thereto, said portions being provided with spaced locating holes on the proximate faces thereof, said spacer element having lugs thereon complemental to and extended into said spaced locating holes, a nut fixed in such face of one of said frame members,

and a clamping bolt extended diametrically through the other of said frame members and threaded into said nut to clamp said portions together with the spacer element therebetween whereby the portions are held against rotation about their axes.

WILLIAM N. BROWN.

References Cited in the file of this patent

UNITED STATES PATENTS

Number	Name	Date
249,906	Dann	Nov. 22, 1881
1,854,755	Mosel et al.	Apr. 19, 1932
2,172,611	Gerhardt et al.	Sept. 12, 1939
2,346,449	Noblitt	Apr. 11, 1944
2,557,766	Ronfeldt	June 19, 1951
2,578,397	Brown	Dec. 11, 1951

FOREIGN PATENTS

Number	Country	Date
39,075	France	June 1, 1931
549,750	Germany	Apr. 30, 1932