May 24, 1960 R. ARNOLD 2,937,696

FABRIC-RETAINING CLIP MEANS

Filed June 19, 1958

Fig. 2.

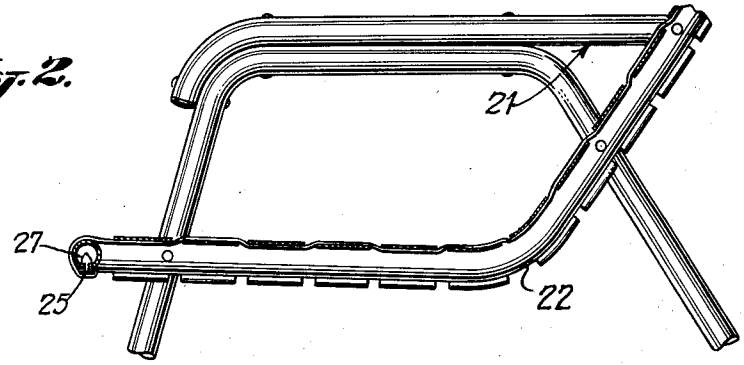


Fig. 1.

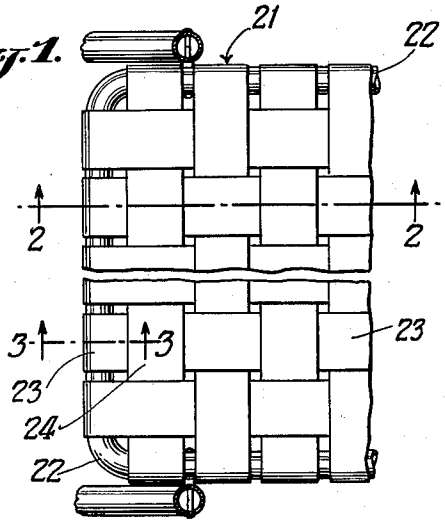


Fig. 3.

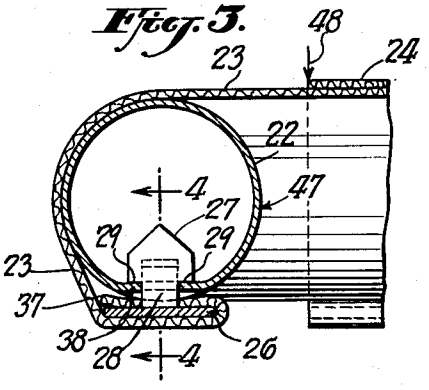


Fig. 4.

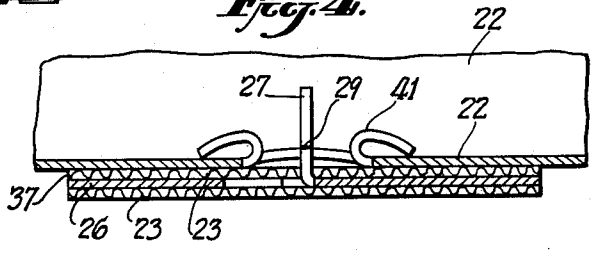


Fig. 5.

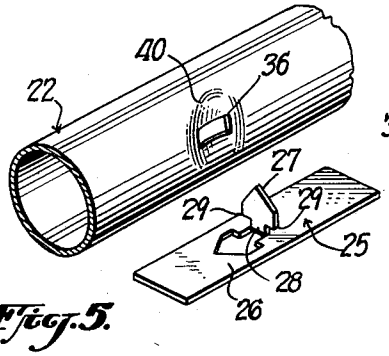


Fig. 8.

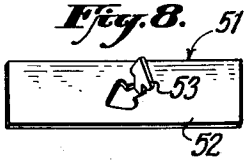


Fig. 6.

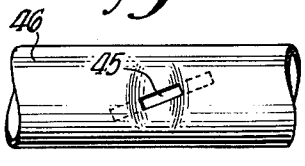


Fig. 7.



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FABRIC-RETAINING CLIP MEANS

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4 Claims. (Cl. 155—187)

This invention relates to the construction of furniture and the like or other constructions in which strips of webbing are stretched between tubular metal members and more particularly to clips for securing such webbing to the tubular members.

In the manufacture of furniture such as folding chairs made of aluminum or other metal tubing with webbing stretched across the tubular frames, much care and skill involving considerable time and the use of extra or specialized materials is frequently needed in fastening the webbing to the frame. Also, the means previously known for fastening strips of webbing to tubular metal frames have frequently been unsatisfactory due to inability to withstand repeated application of greater than normal forces such as are encountered, for instance, when children jump up on the furniture. These problems are substantially eliminated by the present invention.

In accordance with one embodiment of the invention, a webbing clip for securing webbing to a tubular frame member or the like is provided in the form of a generally rigid strip having a tongue projecting substantially transversely perpendicular to a surface of the strip. This projecting tongue has a neck of reduced width which is adjacent the surface of the strip and which terminates in shoulders of increased width. Such a webbing clip may be formed in any suitable manner, but is preferably formed by bending back a cut out portion of the strip itself to form the tongue. The tongue preferably has a pointed end to enable it to penetrate fabric webbing easily.

According to another aspect of the invention, the webbing clip, such as described above, cooperates with a tubular frame member having a slot in a wall thereof, to secure a strip of webbing to said tubular member. Such slot in the tubular member is at least as long as the width of the tongue of the clip and is wider than the neck of the tongue but narrower than the width of the tongue above the neck, so that when the tongue is inserted into the slot and the clip turned parallel to the tubular member, the tongue will engage the areas of the wall of the tubular member adjacent the mid-portion of the slot and thereby hold the clip closely adjacent the tubular member.

Various further and more specific objects, features and advantages of the invention will appear from the description taken in connection with the accompanying drawings which form a part of this specification and illustrate by way of example certain embodiments of the invention. The invention consists in such novel features and combinations of parts as may be shown and described herein.

In the drawings:

Fig. 1 is a partial plan view showing a portion of a chair constructed in accordance with the invention;

Fig. 2 is a partial sectional elevational view of the chair shown in Fig. 1, taken as indicated by line 2—2 in Fig. 1;

Fig. 3 is a sectional view taken along line 3—3 of Fig. 1;

Fig. 4 is a sectional view taken as indicated by line 4—4 of Fig. 3;

Fig. 5 is a perspective view showing in separated positions, the tubular member and webbing clip shown in Figs. 3 and 4;

Fig. 6 shows a portion of a tubular chair frame for use in a chair constructed in accordance with another embodiment of the invention;

Fig. 7 is an elevational view partially in section showing another form of webbing clip for use in a chair constructed in accordance with a modification of the invention; and

Fig. 8 is a perspective view showing another form of webbing clip for use in a chair constructed in accordance with another modification of the invention.

Referring to the drawings, a chair seat portion 21 is shown having a frame including a tubular member 22. As best shown in Fig. 1, the seat of the chair is formed by interlaced strips of webbing such as 23, 24 which are stretched between the sides of the frame. If desired the member 22 may be U-shaped with the strips of webbing such as 23 stretched between the closed end of the member 22 and a cross piece running between the sides of the member 22 at the other end thereof or at an intermediate point.

Webbing clips 25 (Fig. 5) are used to fasten the ends of webbing strips to the tubular frame members. Each webbing clip 25 comprises a strip 26 of sheet metal or other rigid material such as plastic from which a tongue 27 projects transversely, and perpendicular to the surface of the strip. The tongue may be formed from the material of the strip itself as shown or may be formed separately and attached to the strip as by welding. The tongue 27 has a neck 28 of reduced width, and which is positioned adjacent the surface of the strip and the wider upper portion of the tongue forms shoulders 29 at the termination of the neck. The end of the tongue is preferably pointed as shown in order to enable the tongue to penetrate a strip of fabric. It should be understood that the tongue may be of any suitable shape. Fig. 7, for instance, shows a webbing clip 31 similar to clip 25 and comprising a strip 32 with a heart-shaped tongue 33 projecting therefrom transversely and perpendicular the surface of the strip. The tongue 33 also has a neck 34 of reduced width terminating in shoulders 35.

As best shown in Fig. 5, the tubular member 22 is provided at spaced intervals with slots such as 36 adapted to coact with webbing clips such as 25 or 31 to secure the strips of webbing to the chair frame. This coaction is best shown in Figs. 3 and 4 from which it can be seen that the clip 25 may be positioned across an end 37 of the webbing strip and the tongue 27 may then be pushed through the webbing. Following this, the webbing is preferably wrapped around the reverse side of the strip 26 as shown and the tongue 27 is then inserted into the slot 36 with the strip 26 being held perpendicular to the tubular member 22. In order to obtain the necessary slack in the webbing strip for turning the webbing clip perpendicular to the tubular member, it may be desirable to compress the frame as by temporarily compressing free ends of the tubular member 22 when it is U-shaped. After the tongue 27 has been inserted into the slot 36, the clip is turned so that the strip 26 is parallel with the tubular member 22 as shown in Figs. 3 and 4. When this is done, it becomes impossible to withdraw the clip from the tubular member without first turning the clip so that the strip 26 is perpendicular to the tubular member, since the shoulders 29 of the tongue engage the interior wall of the tubular member adjacent the mid-portions of the slot. The tightness with which the shoul-

ders of the clip engage the wall of the tubular member depends at least in part upon the length of the neck of the projecting tongue, e.g. the distance between the shoulders 29 and the surface of the strip 26. Such length must be at least equal to the thickness of the wall of the tubular member and is preferably not much greater than that minimum. In order to secure even better locking action in this respect, it is desirable to provide the interior wall of the tubular member adjacent the mid-portions of the slot with cam-like protuberances or raised portions such as 38 (Fig. 3). This may be accomplished conveniently by dishing in a portion of the wall of the tubular member when forming the slot as shown in Fig. 5 at 40. Also, in forming the slot 36, the material removed from the wall of the tubular member may be rolled back to form protuberances such as 41 (Fig. 4) adjacent the ends of the slot to further aid in retaining the webbing clip in position. Such protuberances prevent the tongue 27 from turning parallel with the slot unless the tongue is substantially centered in the slot. As a result, the tongue must be centered in the slot not only while it is being withdrawn through the slot but also while it is being turned from its normal locking position to a position parallel with the slot prior to withdrawal. This makes accidental withdrawal of the tongue from the slot more difficult and thus helps prevent the clip from coming loose accidentally.

In the event that it is found difficult to obtain sufficient slack in the strips of webbing for insertion of the webbing clips as described above, the slots in the tubular members may be formed at an angle to the axis of the tubular members as shown in Fig. 6 in which a slot 45 is formed in a tubular member 46, the slot 45 and tubular member 46 being otherwise similar to the slot 36 and tubular member 22 described above. If the slot is formed at an angle as shown in Fig. 6, it becomes unnecessary to turn the webbing clip completely perpendicular to the tubular member in order to insert the tongue into the slot and less slack is therefore needed in the strip of webbing being attached to the tubular member. This result may also be obtained by providing clips similar to clip 31 described above but in which the tongues project at a different transverse angle from the surface of the strip. Fig. 8, for instance, shows a clip 51 comprising a strip of metal or other suitable material 52 from the surface of which a tongue 53, similar to the tongue 33 described above, projects transversely.

As shown in Figs. 3 and 4, the webbing clips such as 25 may be located on the underneath side of the tubular member 22 with respect to the entire chair frame. In some instances it may be found desirable to locate these clips at a point further inside the frame as for instance by shifting the location by up to about 90° in a counterclockwise location from the position shown in Fig. 3 to the position indicated by an arrow 47. It is also apparent from Fig. 3 that by wrapping around the strip 26 of the webbing clip and by locating the webbing clip beneath or on the inside of the tubular member, the application of weight to the chair seat, as for instance in the direction indicated by an arrow 48 in Fig. 3, will tend to clamp the end 37 of the fabric strip 23 even tighter between the webbing clip strip 26 and the wall of the tubular member 22. This substantially eliminates the possibility that upon the application of excessive forces the webbing strip might tear where the neck of the tongue passes through it.

While the invention has been described in detail with respect to certain preferred embodiments, it will be understood by those skilled in the art that various changes and modifications may be made without departing from the spirit and scope of the invention and it is intended to cover all such changes and modifications in the appended claims.

What is claimed and desired to be secured by Letters Patent is:

1. An assembly comprising in combination a tubular member having a slot in a wall thereof, a webbing clip, and a band of webbing secured to said tubular member by said clip, said clip comprising a generally rigid strip having a tongue projecting transversely from a surface thereof, said tongue having a pointed end and a neck portion of a width less than the width of said slot, said neck being adajacent to said surface of the strip and terminating at its upper end in shoulders spaced from said surface of the strip, the width of said tongue across said shoulders being greater than the width of said slot, said tongue penetrating said band of webbing near an end thereof and projecting through said slot transversely thereof with the shoulders of the tongue engaging portions of the interior wall of the tubular member at opposite sides of the slot, the interior wall of the tubular member having inwardly bulging portions adjacent the slot cooperating with the shoulders of the tongue to tighten the clip against the tubular member, said band of webbing extending around a longitudinal edge of the strip and thence across the other surface of the strip and around at least a portion of the circumference of the tubular member.

2. An assembly comprising in combination a tubular member having an inwardly punched slot in a wall thereof, the material punched in to form said slot being bent back to form inwardly projecting protuberances at either end of the slot, a webbing clip, and a band of webbing secured to said tubular member by said clip, said clip comprising a metallic strip having a tongue projecting transversely from a surface thereof, said tongue having a pointed end and a neck portion, the latter being of a width less than the width of said slot, said neck being adjacent to said surface of the strip and terminating at its upper end in shoulders spaced from said surface of the strip by a distance slightly greater than the thickness of the wall of said tubular member, the width of said tongue across said shoulders being greater than the width of said slot, said tongue penetrating said band of webbing near an end thereof and projecting through said slot transversely thereof with the shoulders of the tongue engaging portions of the interior wall of the tubular member adjacent the mid-portion of the slot, said portions of the interior wall of the tubular member having inwardly bulging cam-like portions cooperating with the shoulders of the tongue to tighten the clip against the tubular member, said projecting protuberances cooperating with the pointed end of said tongue to prevent rotation and removal thereof from said slot unless said tongue is substantially centered in said slot relatively to the longitudinal axis thereof.

3. An assembly comprising in combination, a tubular member having a slot in a wall thereof, inwardly projecting protuberances at either end of said slot, a webbing clip, and a band of webbing secured to said tubular member by said clip, said clip comprising a generally rigid strip having a tongue projecting transversely from a surface thereof, said tongue having a neck of a width less than the width of the slot and being adjacent to said surface of the strip and terminating at its upper end in shoulders spaced from said surface of the strip by a distance slightly greater than the thickness of the wall of said tubular member, the width of said tongue across said shoulders being greater than the width of said slot, said tongue penetrating said band of webbing near an end thereof and projecting through said slot transversely thereof with the shoulders of the tongue engaging portions of the interior wall of the tubular member adjacent the mid-portion of the slot, said projecting protuberances cooperating with said end of said tongue within said tubular member to prevent rotation and removal thereof from said slot unless said tongue is substantially centered in said slot relatively to the longitudinal axis of said slot.

4. A clip adapted to secure an end portion of a band of webbing strip to a hollow elongated support formed

with a slot extending lengthwise of said support, said clip comprising: an elongated strip of relatively rigid sheet material; and a tongue portion comprising an area cut from the mid-portion of said strip and deflected from the strip into a position upstanding with respect to the surface of the strip, said tongue portion extending in a plane generally transverse to the length of said strip and formed with a generally pointed area adapted to penetrate through the webbing and to enter the slot in the support, said tongue portion further having a neck integrally formed with the strip, shoulders on said tongue portion being

provided at each side of said neck and adapted to engage the interior wall surfaces of the hollow support member to hold same in position when the tongue portion is inserted in the slot and the clip is turned to extend longitudinally of the support.

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