Dec. 28, 1948. P. G. BRAUNSCHWEIGER 2,457,343

MEANS OF SECURING WEBBING STRIPS TO FURNITURE FRAMES

Filed Dec. 23, 1946

FIG. 10

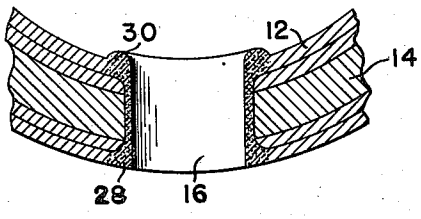


FIG. 1

FIG. 4

FIG. 5

FIG. 6

FIG. 2

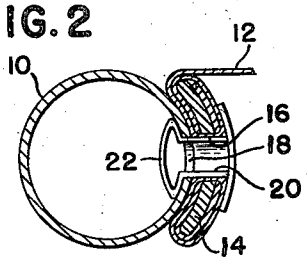


FIG. 3

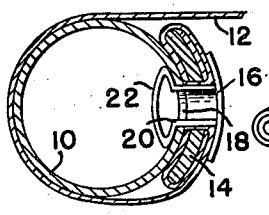


FIG. 7

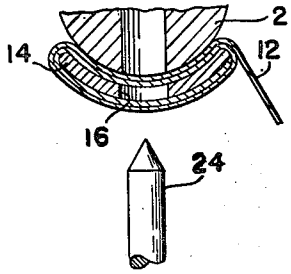


FIG. 8

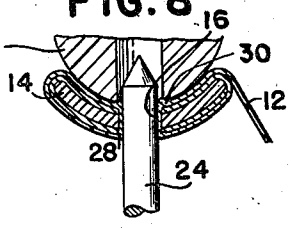
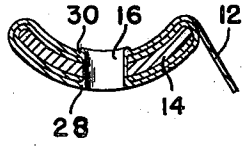


FIG. 9



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MEANS OF SECURING WEBBING STRIPS TO FURNITURE FRAMES

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3 Claims. (Cl. 155—187)

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This invention relates to a method of and means for attaching articles together, and particularly relates to such methods and means in connection with heat plasticizable materials.

In the construction of certain articles such as chairs, lounges, etc., there is often employed a covering or construction material consisting of strips, webs or sheets of fabrics formed of a heat plasticizable material such as rayon, nylon and similar synthetic material. The securing of such materials to their support is often attended with difficulty in making the connection secure and in distributing the load over sufficient area to prevent tearing or stretching of the material.

The particular object of the present invention is to provide an improved means and method for securing such materials to their supporting members.

Another object of the present invention is to provide a method of, and means for, utilizing the heat plasticizable characteristics of materials such as rayon, nylon and the like in securing them to a supporting member.

A further object of the present invention is to provide an improved method of and means for securing synthetic fabric covering material to the framework of articles of furniture and the like.

Still another object of this invention is to provide an improved means and method of attaching strips of webbing to supporting members, the said webbing to be used in articles of furniture and the like.

These and other objects and advantages will become more apparent upon reference to the following description taken in connection with the accompanying drawings in which:

Figure 1 is a perspective view of an article of furniture having webbing attached thereto according to this invention;

Figure 2 is a section indicated by the line 2—2 on Figure 1 and shows the attachment of the webbing to the frame of the article of furniture at the end thereof;

Figure 3 is a similar view which shows the webbing attached to one of the side members of the frame and is indicated by the line 3—3 on Figure 1;

Figure 4 is a perspective view of the supporting member to which the webbing is secured before it is attached to the frame of the article of furniture;

Figure 5 is a perspective view showing the

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webbing wound around the supporting member and before it is secured thereto;

Figure 6 shows another manner of wrapping a strip or web around a supporting member;

Figures 7 and 8 show the steps in the securing of the webbing to its supporting member;

Figure 9 is a view showing the material after it has been secured to its supporting member; and

Figure 10 is an enlarged fragmentary view of the connection of the webbing material and supporting member.

Referring to the drawings, Figure 1 illustrates an article of furniture which has a frame 10 thereon consising of members substantially cylindrical in cross-section. The frame is open and carries a plurality of strips of overlapping webbing as at 12. Each of the strips of webbing 12 is preferably prefabricated to the proper length and is detachably secured to the frame of the article of furniture by screws, rivets or the like. By prefabricating the strip and forming integrally therewith supporting members on the ends of the strips, the assembly of the articles of furniture is greatly speeded up and both the frame and the webbing strips can be produced by mass production methods which substantially reduce the cost of the finished article while insuring that the said article will be of the highest standard of uniform quality.

In Figure 2, which is a section through the frame 10 at one end of the article of furniture, there is illustrated one means of attaching the preformed webbing strips to the said frame. The webbing 12 is passed several times, as shown, two, around a supporting member 14 which is preferably shaped to conform to the configuration of the frame 10. For reasons of economy, strength and appearance, the frame 10 is preferably made of cylindrical tubing and thus the member 14 is arcuately shaped. The member 14 and the layers of webbing which pass thereabout are pierced as at 16, and the frame 10 has an aperture 18 in alignment therewith. A rivet member 20 extends through the pierced portion 16 and aperture 18 and the end thereof within the frame 10 is spread out as at 22 in order to attach the frame 10 and member 14 together with the webbing strip 12 securely together.

In Figure 3 a similar arrangement is shown and similar numerals are employed except that the webbing 12 passes around the frame 10. It

will be apparent that the attaching means in Figure 3 are identical with those in Figure 2.

Referring to Figures 4 and 5, there is illustrated one manner of connecting the webbing with its supporting member or clip. The supporting member or clip 14 is an arcuately shaped metallic member, punched or pierced as at 16 and of substantially the same width as the webbing 12. Preferably, the member 14 is narrower at its upper edge than its lower for permitting the folding of the fabric webbing therearound to improve the appearance and to give a stronger connection.

In Figure 5 there is shown the webbing material 12 after it has been placed on its supporting member 14 and it will be noted that the corners of the webbing have been folded down to conceal the clip 14 and also to insure a good bearing of the web on the clip. After the webbing has been wound around the clip member 14 as shown in Figure 5, the pierced hole at 16 is then made as shown in Figures 7 and 8.

The piercing is done by a pointed punch 24 which is heated to a temperature at which the webbing material 12 will become plastic and which is slightly smaller than the hole 16. For making the hot punch effective it is essential that the webbing material be formed from a thermo plastic material. Accordingly, rayon, nylon and other synthetic materials which are heat plasticizable may be employed for the webbing material. The webbing material is preferably a woven fabric but it will be apparent that the present invention is not necessarily limited to a woven material but could be practiced in connection with sheet material, if desired.

Returning to Figures 7 and 8, the assembly shown in Figure 5 and consisting of the supporting clip member 14 and the webbing 12 wrapped therearound, may be placed against a die member 26 and the heated punch 24 is passed through the assembly into the position shown in Figure 8. As the punch passes through the hole 16 in the clip 14, it softens the material of the webbing 12 and carries a portion of the said material through the hole. This material is softened by the heat of the punch 24 and welds with the material on the opposite side of the said member. This welding is best indicated in Figures 9 and 10 at 28 and 30.

After the punch has completely traversed the assembly of webbing and supporting member, it is withdrawn and the resulting article is as shown in Figure 9 with a smooth surfaced aperture 16 extending therethrough. It will be apparent that the punch 24 must be heated sufficiently to soften the webbing to a weldable condition and to a degree of plasticity which will permit the said material to become slightly fluid. The particular temperature at which the punch must be carried will vary for different substances and for nylon webbing, the preferred material because of its high strength and resilience.

In Figure 6 there is shown the manner of placing the webbing around a straight clip, this type of support being employed at the foot of the article of furniture in Figure 1 so the webbing does not pass around the end bar of the frame and is thus protected from undue wear.

It will be seen that this invention provides for a ready method and means for securing supporting members to the ends of strips or webs, or for securing supporting members at different portions along the periphery or surface of sheet material, the strip, webbing or sheet material in each case being a thermo plastic substance and the supporting member being sufficiently structurally strong to serve the purpose of a load carrying anchor.

By utilizing the means and method of this invention the sheet, strip or webbing material can be prefitted with its supporting anchors on a mass production basis thus insuring maximum uniformity and minimum cost.

The detachable connection between the preformed webbing and the frame to which it is secured permit ready replacement of the said webbing by anyone and with a minimum of equipment.

It will be understood that this invention is susceptible to modification in order to adopt it to different usages and conditions and, accordingly, it is desired to comprehend such modifications within this invention as may fall within the scope of the appended claims.

I claim:

1. In an article of furniture having a frame and a plurality of strips of thermo-plastic material carried by said frame with means for attaching the ends of said strips to said frame, comprising a plurality of laminations forming the end of each strip, a clip, said laminations forming windings about said clip, a hole in each clip, holes extending through the laminations in registration with the hole in said clip, said lamination holes being on opposite sides of said clip, the edges of the holes in the laminations being welded together whereby the holes in the laminations and clip are coated with material which lines the walls of the holes in said laminations and said clip, and means passing through the hole in each clip and the laminations on the opposite sides thereof and connecting the same with said frame.

2. In an article of furniture having a frame and a plurality of strips of thermo-plastic material carried by said frame with means for attaching the ends of said strips to said frame, comprising a plurality of laminations forming the end of each strip, a clip, said laminations forming windings about said clip, a hole in each clip, holes extending through the laminations in registration with the hole in said clip, said lamination holes being on opposite sides of said clip, the edges of the holes in the laminations being welded together whereby the holes in the laminations and clip are coated with material which lines the walls of the holes in said laminations and said clip, and means passing through the hole in each clip and the laminations on the opposite sides thereof and connecting the same with said frame, said means having a head thereon adapted for being expanded within said frame.

3. In an article of furniture having a frame and a plurality of strips of thermo-plastic material carried by said frame with means for attaching the ends of said strips to said frame, comprising a plurality of laminations forming the end of each strip, a clip, said laminations forming windings about said clip, a hole in each clip, holes extending through the laminations in registration with the hole in said clip, said lamination holes being on opposite sides of said clip, the edges of the holes in the laminations being welded together whereby the holes in the laminations and clip are coated with material which lines the walls of the holes in said laminations and said clip, and means passing through the hole in each clip and the laminations on the

opposite sides thereof and connecting the same with said frame, said means having a head thereon adapted for being expanded within said frame, said clip being of trapezoidal shape.

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