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C. K. ANTOINE

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CHAIR ASSEMBLY

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FIG-1

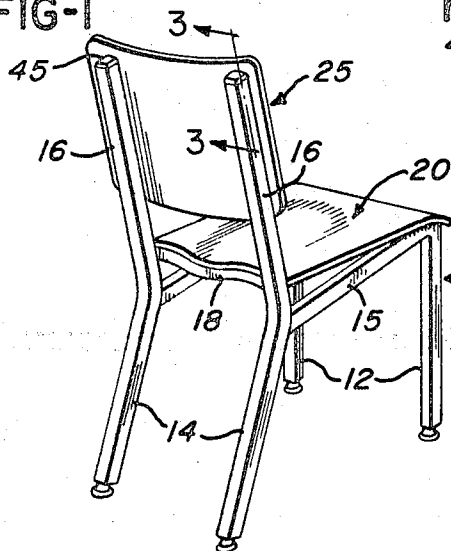


FIG-2

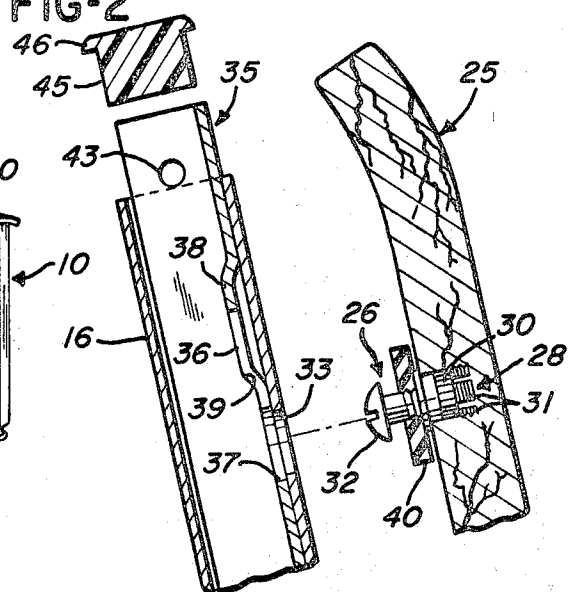


FIG-3

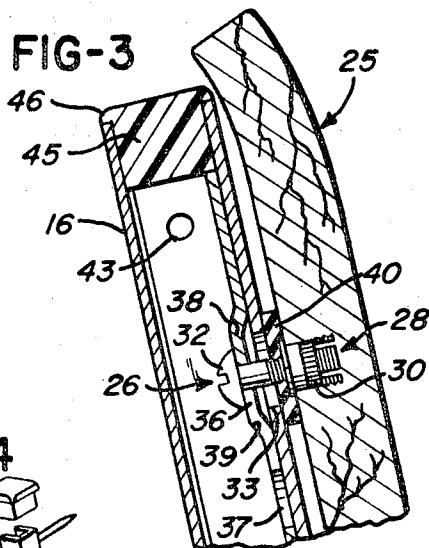


FIG-4

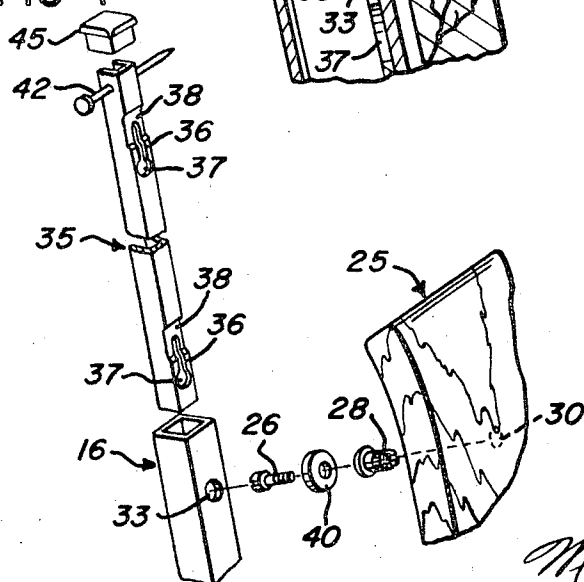
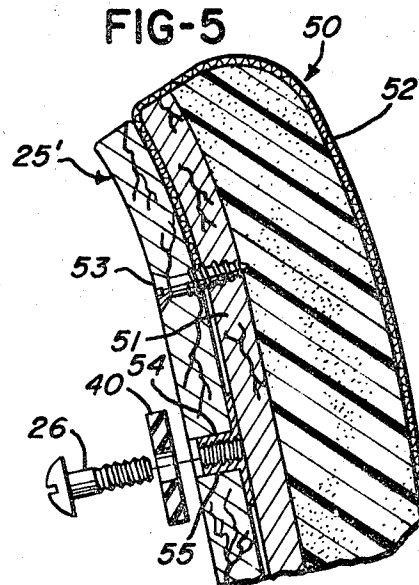


FIG-5



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1

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CHAIR ASSEMBLY

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7 Claims

ABSTRACT OF THE DISCLOSURE

A wooden back panel of a chair is attached to each of two tubular back supports by a pair of screws each threaded into an insert connected to the back panel and having a head projecting into the support for engagement by a lock member slidably disposed within the support. Resilient washers are mounted on the screws and are located between the back panel and the supports, and cam surfaces are formed on the lock members to compress the washers for positively retaining the back panel.

BACKGROUND OF THE INVENTION

In a chair having a metal frame and wooden seat and back panels, it is common to attach the seat and back panels to the frame with threaded fasteners such as screws which extend through holes within the frame and are threaded into the panels. In such an assembly, usually the heads of the fasteners or screws are exposed. It is frequently desirable, however, to eliminate the exposure to the fasteners not only from an appearance standpoint but also for purposes of eliminating areas where dirt might collect and preventing the fastener heads from scraping or scratching an adjacent chair or another object.

SUMMARY OF THE INVENTION

The present invention is directed to an improved chair assembly and particularly to the mounting of a back panel on a pair of tubular back supports of a metal frame. The chair of the invention eliminates the exposure of fasteners and provides for a simple, rigid and quick assembly.

In accordance with one embodiment of the invention, a wooden back panel of a chair is secured to a pair of upright square tubular supports of a metal frame by threading a set of four screws into expandable metal inserts projecting into blind holes formed within the rear surface of the back panel. A resilient washer is mounted on each screw, and the back panel is positioned so that the heads of the screws project through corresponding holes formed within the tubular supports. A lock channel is slidably mounted within each tubular support and has a pair of upper and lower slots each extending into an embossed portion of the channel so that longitudinal movement of each lock channel within its support is effective to cam the screw heads into the support thereby drawing the back panel firmly against the two supports with the resilient washers being compressed therebetween.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view of a chair constructed in accordance with the invention;

FIG. 2 is a partially exploded fragmentary section taken through one of the back supports of the chair shown in FIG. 1;

FIG. 3 is a fragmentary section taken generally on the line 3-3 of FIG. 1;

FIG. 4 is a fragmentary exploded view of the portion of the chair shown in FIGS. 2 and 3; and

FIG. 5 is a partially exploded view of a modification of a chair constructed in accordance with the invention.

2

DESCRIPTION OF THE PREFERRED EMBODIMENTS

In the drawing, the chair shown in FIG. 1 includes a square tubular frame 10 having a pair of front legs 12 connected to a pair of rear legs 14 by a pair of sloping brace members 15. The rear legs 14 extend upwardly to form a pair of square tubular back supports 16, and a laterally extending cross member 18 rigidly connects the lower portions of the back supports 16. A wooden seat panel 20 is mounted on the cross member 18 and a similar cross member (not shown) connecting the upper end portions of the front legs 12 and a wooden back panel 25 is supported by the two tubular back supports 16.

In accordance with the invention, the back panel 25 is secured to the tubular supports 16 by four fastener assemblies which include an upper and a lower machine screw for each support 16. Each screw 26 is threaded into a tubular metal insert 28 (FIG. 2) which projects into a blind hole 30 formed within the rear surface of the back panel 25. Each insert 28 has a plurality of ears 31 which expand into the back panel 25 when the corresponding screw 26 is threaded into the insert 28. The head 32 of each screw 26 projects through an aligned hole 33 formed within the front wall of the corresponding tubular support 16.

An elongated lock member or channel 35 is slidably mounted within each of the back supports 16 and has cross-sectional outer dimensions slightly smaller than the inner dimensions of the corresponding back support 16 to prevent rotation or significant lateral shifting of each lock channel within its support 16. Each lock channel 35 includes an upper and a lower slot 36 for receiving the two screws projecting rearwardly from the corresponding side of the back panel 25, and each slot 36 has an enlarged end portion 37. The other end portion of each slot 36 extends into an embossed or recessed portion 38 (FIG. 3) which forms a lower cam surface 39. A resilient washer 40 is mounted on each screw 26 and is located between the rear surface of the back panel 25 and the front surface of the corresponding back support 16.

To assemble the back panel 25 onto the frame 10, the screws 26 are threaded into the inserts 28 until the heads 32 of the screws are spaced a predetermined distance from the rear surface of the back panel 25. The lock channels 35 are inserted downwardly into the tubular back supports 16, and each lock channel 35 is temporarily located within the corresponding tubular back support 16 by inserting a pin or nail 42 through aligned holes 43 formed within the upper end portion of the lock channel so that when the nail engages the upper end surface of the corresponding tubular support 16, the enlarged end portions 37 of the two slots 36 formed within each lock channel 35 are aligned within the corresponding holes 33 within the adjacent back support 16.

The back panel 25 is then positioned so that the heads 32 of the four screws 26 project through the holes 33 and the correspondingly aligned enlarged end portions 37 of the slots 36. The nails 42 are retracted from the holes 43, and each lock channel 35 is pressed or driven downwardly into its corresponding back support 16 so that the heads 32 of the pair of screws 26 within each back support 16 are cammed further inwardly by the surfaces 39. This camming action causes the back panel 25 to be drawn firmly towards the front surface of the back support 16 compressing the resilient washers 40. After each channel 35 is driven downwardly until the upper ends of the slots 36 seat on the screws 26, a square plastic plug 45 is pressed into the upper end portion of each back support 16 to close the support. Each plug 45 has a peripheral flange 46 which seats upon the upper end surface of the

corresponding back support 16 to prevent the plug from being forced further into the back support.

Referring to FIG. 5 which shows a modification of the invention, a resilient cushion 50 having a wooden base panel 51 and a vinyl covering 52, is secured to a back panel 25' by a series of screws 53 with the edges of the covering 52 sandwiched between the panels 51 and 25'. A series of four holes 54 are formed within the back panel 25', and a T-nut 55 is mounted within each hole 54. The screws 26 are threaded into the T-nuts 55, and the back panel 25' and cushion assembly 50 is attached to the pair of tubular back supports 16 in the same manner as described above for attaching the back panel 25.

From the drawing and the above description, it becomes apparent that a chair constructed in accordance with the invention provides desirable features and advantages. For example, by employing the lock channels 35 within the square tubular back support 16, for engaging the heads 32 of the screws 26, the back panel 25 is positively secured to the frame 10 without exposing any fasteners. That is, the heads 32 of the screws 26 are enclosed within the tubular back support 16, and the threaded ends of the screws 26 are enclosed within the blind holes 30 formed within the back panel 25.

The lock channels 35 also provide for convenient and rapid attachment of the back panel 25 to the frame 10. For example, the screws 26 and inserts 28 are mounted on the back panel 25 as a sub-assembly which is then secured to the back supports 16 simply by pressing downwardly on the lock channels 35. The attachment of the back panel 25 or 25' also provides a positive and rigid assembly so that a lateral or vertical impact on the back panel will not release it from the back supports 16.

The specific construction of each lock channel 35 is also significant. That is, each lock channel 35 has a cross-sectional size slightly smaller than the square opening of its corresponding support 16 so that the two slots 36 within each lock channel are precisely orientated and positioned relative to the two holes 33 within each back support 16 whereby the screw heads 32 are assured of being received within the slots 36 when the back panel 25 is positioned with the screws 26 projecting through the holes 33. Moreover, the cam surfaces 39 are effective to compress the resilient washers 40 which assure that the back panel 25 or 25' will remain in fixed relation with the back support 16 and the screws 26 will not loosen.

While the forms of apparatus herein described constitute preferred embodiments of the invention, it is to be understood that the invention is not limited to these precise forms of apparatus, and that changes may be made therein without departing from the scope of the invention which is defined in the appended claims.

What is claimed is:

1. In a chair assembly including a frame having at least one elongated tubular back support, a back member and a seat member mounted on said frame, an improved attachment for said back member to said back support, comprising a fastener secured to said back member and

having a head portion, means defining an opening within said back support for receiving said head portion of said fastener, a lock member disposed within said back support for longitudinal sliding movement between a released position and a locked position and including means for engaging said head portion of said fastener, said lock member being effective to retain said back member on said back support in response to longitudinal movement of said lock member within said back support from said released position to said locked position after said head portion of said fastener is inserted within said opening, and said lock member cooperating with said fastener and said opening within said back support to prevent removal of said back member from said back support without first sliding said lock member to said released position.

2. A chair assembly as defined in claim 1 including means in said lock member defining a slot having an enlarged end portion for receiving said head portion of said fastener, and said engaging means comprises a cam surface adjacent said slot.

3. A chair assembly as defined in claim 1 wherein said tubular back support has a generally square cross-sectional configuration, and said lock member has a channel-like cross-sectional configuration forming a close sliding fit within said support.

4. A chair assembly as defined in claim 1 including a resilient spacer member disposed between said back member and said back support and being deformable in response to longitudinal movement of said lock member.

5. A chair assembly as defined in claim 1 wherein said back member comprises a wood panel, said fastener comprises a machine screw, means defining an opening within said panel, and an expanded insert disposed within said opening and having internal thread means for receiving said screw.

6. A chair assembly as defined in claim 1 including at least two said fasteners secured to said back member in spaced relation, at least two spaced said holes within said back support for receiving said fasteners, and means on said lock member for engaging both said fasteners.

7. A chair assembly as defined in claim 1 including a plug member disposed within said tubular back support adjacent said lock member and effectively retaining said lock member in said locked position.

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