Feb. 15, 1966 R. C. FOSTER ET AL 3,235,309

CHAIR

Filed Dec. 23, 1963

Fig. 4.

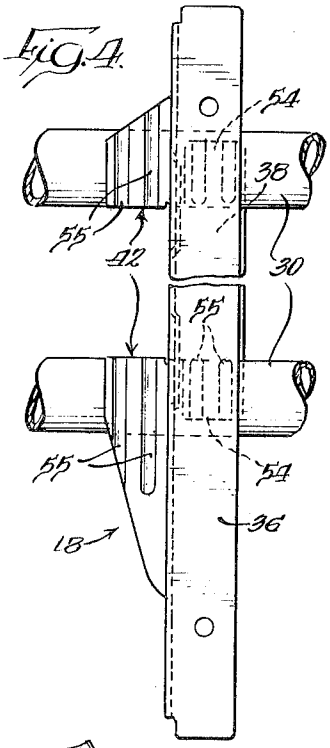


Fig. 1.

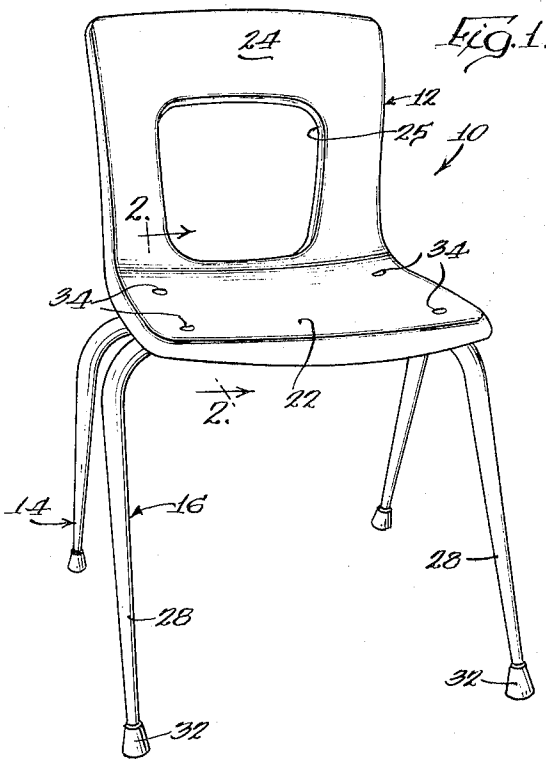


Fig. 2.

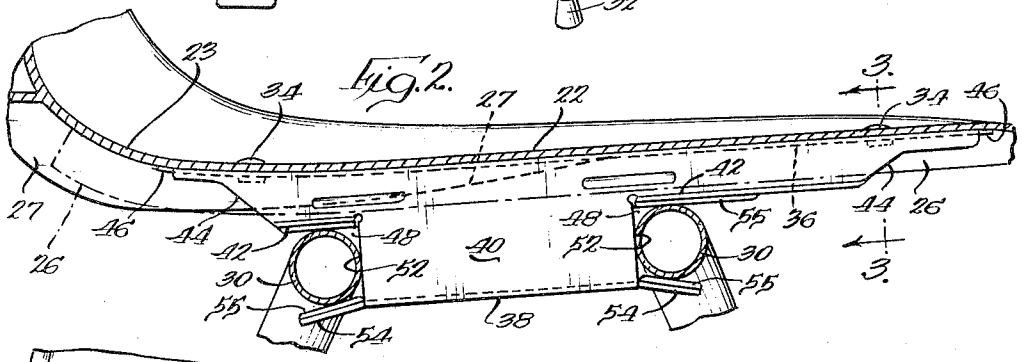
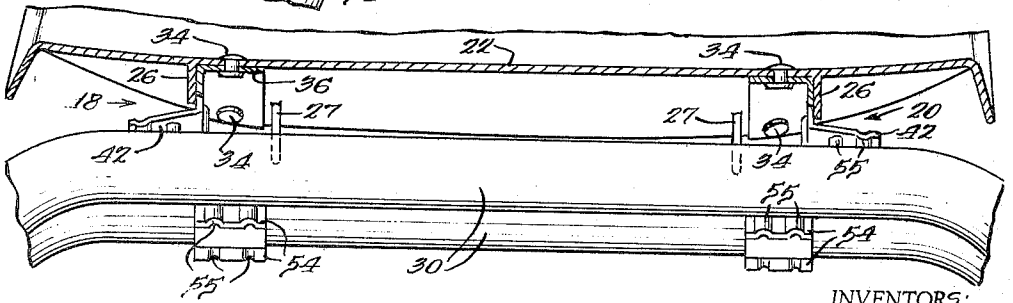


Fig. 3.



INVENTORS:
Robert C. Foster
Dean S. White
By Hofgren, Wagner, Allen, Stellman & McCord
Attys

United States Patent Office 3,235,309 Patented Feb. 15, 1966

3,235,309

CHAIR

Robert C. Foster, Kalamazoo, and Dean S. White, Portage, Mich., assignors to Brunswick Corporation, a corporation of Delaware

Filed Dec. 23, 1963, Ser. No. 332,410
7 Claims. (Cl. 297—451)

This invention relates to a chair structure or the like and particularly to a chassis for such a structure and a bracket for use in such a structure.

Brackets of the type in general use today for supporting plastic seat units usually engage the bottom of the seat over a limited area by means of projections extending upwardly from the bracket. Because of the brittle nature of the seat unit materials, and especially that of the unreinforced plastics, the localized contact between seat and bracket results in excessive stress on the seat material causing chipping and cracking which eventually results in failure of the seat. Some manufacturers have attempted to solve this problem by inserting rubber pads between the seat and bracket. This may tend to reduce the shock load but does not significantly reduce the stress concentration after repeated loadings.

It is a general object of this invention to provide a new and improved bracket of the type described which is inherently resilient for reducing localized stress concentration on the seat around the edges of the upper supporting surface of the bracket.

Another object is to provide a bracket having an upper surface conforming in contour to the bottom of a contour-molded seat to distribute the load on the seat over a substantial surface of the bracket.

An extension of the previous object is to provide the upper surface of the bracket with an improved support by improving the resilience of a side or upright wall support particularly near the ends of the upper seat-contacting wall.

A more specific object is to provide a bracket of yieldable material that does not require a resilient cushion mounted between it and the seat and thereby providing an economic advantage as well as long life.

A further object is to provide a new and improved seat and bracket combination including brackets as described above and a preformed plastic seat forming a unit readily mountable on suitable transversely extending supports.

Another object is to provide a new and improved chair or the like including a combination of the type described in the preceding paragraph and a pair of leg members having cross pieces supporting the seat and bracket assembly.

Other objects and advantages will become readily apparent from the following detailed description taken in connection with the accompanying drawings, in which:

FIG. 1 is a perspective view of a chair incorporating a pair of brackets embodying the principles of the present invention;

FIG. 2 is an enlarged fragmentary cross section taken at about the line 2—2 of FIG. 1;

FIG. 3 is a fragmentary cross section, taken at about the line 3—3 of FIG 2; and

FIG. 4 is a fragmentary top view of one of the brackets.

While an illustrative embodiment of the invention is shown in the drawings and will be described in detail herein, the invention is susceptible of embodiment in many different forms, and it should be understood that the present disclosure is to be considered as an exemplification of the principles of the invention and is not intended to limit the invention to the embodiment illustrated herein. The scope of the invention will be pointed out in the appended claims.

Referring now to the drawings in more detail, a chair 10 incorporating the principles of the present invention includes a seat unit 12, a pair of leg units including a rear one 14 and a front one 16, and a pair of brackets, a left one 18 as viewed in FIG. 3, and a right one 20 as viewed in FIG. 3, which are welded to the leg units 14 and 16 and to which the seat unit 12 is attached.

In the preferred embodiment of the invention as illustrated herein, the seat unit 12 comprises a single unitary member molded of plastic. Seat units of this type may be easily manufactured in a single molding operation according to principles now well established, and may be attractively colored in a variety of shades as desired. Unit 12 includes a seat portion 22, contoured as at 23 as shown in FIG. 2, and an integral back portion 24 joined thereto and preferably provided with an opening therethrough as at 25 for purposes of economizing on material, providing a pleasing design, and for the comfort of the person using the chair. Reinforcing ribs or webs 26 and 27 molded integrally with the seat and disposed respectively outwardly and inwardly at opposite sides of each of the brackets serve to strengthen the seat 22 and facilitate lateral positioning of the brackets 18 and 20.

Chairs of this type may include suitable inclinations and tapers in the seat units 12 and in the leg units 14 and 16 to facilitate stacking of one chair upon another, if desired.

Leg units 14 and 16 are alike in all respects except that one is used in front of the other as will be readily understood upon viewing FIGS. 1 and 2. Each of the leg units preferably is comprised of a single piece of tubular metal, preferably steel, which has been bent into an inverted U-shape to include a pair of laterally spaced upright legs 28 having upper ends connected by a transverse cross member 30 integral therewith. Preferably, the legs 28 taper diminishingly downwardly toward smaller lower floor engaging end portions which are desirably provided with suitable feet 32 of rubber or other composition.

The leg units 14 and 16 are connected together by the brackets 18 and 20 which are also of metal and preferably resistance welded to the transverse members 30 of the leg units to provide a chassis for supporting the seat unit 12. Seat unit 12 is then secured to the chassis by rivets 34. The brackets 18 and 20 are identical in construction except that one is left-hand and the other right-hand, as will be understood, and accordingly, only the left-hand bracket 18 will be described in complete detail herein.

The bracket 18 comprises a single sheet metal member of elongate form which, as seen in FIGS. 2 and 4, is bent into a generally C-shaped cross-section at its mid-portions. Referring to FIG. 2, the bracket includes a top wall 36, a bottom wall 38 spaced from the top wall, an upright side wall 40 connecting outer side edges of the upper and lower walls, and a pair of longitudinally spaced, outwardly turned support flanges 42 which engage the upper surface of the transverse leg portion 30. The upper wall 36 of the bracket extends substantially from the front to the rear of seat 22 and is curved slightly concavely, as seen in FIG. 2, to mate throughout with the contoured bottom 22 of the seat unit 12. This insures that the load placed on the seat unit will be evenly distributed over the entire upper surface of the bracket's upper wall 36. The upright wall 40 of the bracket has end portions 44 tapering longitudinally upwardly and outwardly to the upper wall 36 thereby feathering out the stiffness of upright wall 40 and also the upper wall 36 at its end portions 46. This tapering allows the end portions 46 of upper wall 36 to deflect downwardly in the event the load placed on the seat unit is not centered thereby diminishing concentrated stress on the seat unit around the edges of the upper wall 36 at the end portions 46.

Indentations **48** are provided at each end of upright wall **40** to receive the transverse members **30** of the leg units. The upper edge of each indentation **48** is defined by a laterally extending support flange **42** transverse to upright wall **40** and extending longitudinally of the bracket. Support flange **42** is preferably turned outwardly to facilitate welding to transverse member **30**. It will be understood that support flanges **42** and indentations **48** are formed by bending portions of a blank piece of material outwardly and upwardly from the plane of upright wall **40**. This method of forming supports **42** and indentations **48** will also form and define the end edges of wall **40** which are the longitudinally inward edges **52** of indentations **48**. The lower edges of indentations **48** are defined by portions **54** of the lower wall **38** bent slightly downwardly and extending longitudinally beyond edges **52** of the indentations **48**. In mounting the leg unit to the bracket, the cross piece **30** of the leg unit is properly positioned transversely of the bracket between supports **42** and portions **54** of the lower wall, and welded thereto. Welding is facilitated by projections **55** formed on flanges **42** and portions **54**.

Each support flange **42** acts both as a support between a leg unit and the bracket and as a surface to which the leg unit is easily welded. These flanges are spaced below the upper wall to allow lateral flexing of the upright walls **40** above the level of the flanges when a load is centered on the bottom **22** of the seat unit as will be understood by an examination of FIG. 3. This flexing of upright walls **40** is due to the resiliency of the bracket material and acts as a cushion in absorbing shock loads placed on the seat unit.

Preferably, the brackets of this invention as well as the bracket and seat assembly, are usable with a chair as illustrated in FIG. 1 and also with other chair-like structures such as chair desks including a table for writing and optional shelves beneath the seat portion for storage of books and the like.

We claim:

1. A chair, comprising:
(a) a preformed seat;
(b) a pair of leg members each having a generally horizontal crosspiece
(c) a pair of channel-shaped brackets each including,
(c–1) an upper wall,
(c–2) a shorter lower wall spaced below the upper wall, and
(c–3) a generally planar upright resiliently yieldable wall connecting the upper and lower walls with
(c–3a) end portions tapering in height upwardly and outwardly to the upper wall,
(c–3b) said upright wall having an indentation at its lower portions at each end thereof spaced below the tapering end portions receiving the horizontal crosspiece of a leg member,
(d) said upper wall having a shape conforming in contour and mating throughout its extent with the lower surface of the seat;
(e) means connecting the seat to the brackets; and
(f) means connecting the brackets to the leg members.

2. A chair, comprising:
(a) a seat unit including a preformed back and seat of plastic material;
(b) a pair of spaced front and rear leg members of inverted generally U-shape, each having two upwardly extending leg components connected by a crosspiece;
(c) a pair of laterally spaced brackets of generally C-shaped cross section each including
(c–1) a lower wall,
(c–2) an upper wall spaced above the lower wall and engaging the seat, and

(c–3) an upright of resiliently yieldable material connecting the upper and lower walls,
(d) said lower wall having end portions extending longitudinally beyond the lower portions of the upright wall,
(e) said upright wall having a pair of longitudinally spaced support flanges extending therefrom below the upper wall and above said end portions of the lower wall forming a recess in the upright wall opening longitudinally outwardly and receiving the crosspiece of a laterally extending leg member,
(f) the upper portions of the upright wall diminishing in height longitudinally upwardly and outwardly from each flange to the upper wall,
(g) said upper wall having a shape conforming in contour and contacting throughout its extent the lower surface of the seat member;
(h) means connecting the seat to the brackets; and
(i) means connecting the brackets to the leg members.

3. A chair as defined in claim **1** wherein said generally planar upright wall extends above said indentations a sufficient distance to provide laterally resilient yieldable portions of the upright wall between said indentations and the upper wall.

4. A chair as defined in claim **1** wherein said tapering end portions diminish in height longitudinally upwardly and outwardly from the indentations toward the upper wall a sufficient amount to yield in the plane of the upright wall thereby providing resiliently yieldable support for the end portions of the upper wall of increasing yieldability towards the ends thereof.

5. A chair, comprising:
(a) a preformed seat;
(b) a pair of leg members each having a generally horizontal crosspiece;
(c) a pair of channel-shaped brackets each including
(c–1) an upper wall,
(c–2) a shorter lower wall spaced below the upper wall, and
(c–3) a generally planar upright wall connecting the upper and lower walls with
(c–3a) end portions tapering in height upwardly and outwardly to the upper wall,
(c–3b) said upright wall having an indentation at its lower portions at each end thereof spaced below the tapering end portions each receiving the horizontal crosspieces of the leg members,
(d) said upper wall extending longitudinally beyond said indentations a sufficient distance to yield resiliently in a generally vertical direction, and
(d–1) substantially conforming in contour with the lower surface of the preformed seat, and
(d–2) engaging the lower surface of the preformed seat throughout a substantial portion of the length of the upper wall;
(e) means connecting the seat to the bracket; and
(f) means connecting the brackets to the leg members.

6. A chair, comprising:
(a) a preformed seat;
(b) a pair of leg members each having a generally horizontal crosspeice;
(c) a pair of channel-shaped brackets each including
(c–1) a generally continuous upper wall,
(c–2) a shorter lower wall spaced below the upper wall, and
(c–3) a generally planar upright wall connecting the upper and lower walls with
(c–3a) the lower portions of the upright wall having at each end of the wall an indentation opening longitudinally outwardly for receiving transverse leg members to be secured in the indentations, and with
(c–3b) end portions tapering in height longitudinally upwardly and outwardly from

the indentation toward the upper wall a sufficient amount to yield resiliently in the plane of the upright wall,

(d) said upper wall underlying and having a shape conforming in contour with a substantial portion of the front to rear length of the lower surface of the seat, and

(d–1) engaging the lower surface of the seat throughout a substantial portion of said upper wall;

(e) means connecting the seat to the bracket; and

(f) means connecting the brackets to the leg members.

7. A bracket for a chair assembly or the like, comprising, a generally elongate channel-shaped member including

(a) a lower wall,

(b) an upper wall spaced above the lower wall,

(c) a generally planar upright wall connecting the upper and lower walls,

(d) said lower wall having end portions extending longitudinally beyond the lower portions of the upright wall,

(e) said generally planar upright wall having a pair of generally horizontal support flanges extending therefrom below the upper wall and above said end portions of the lower wall forming recesses in the

upright wall opening longitudinally outwardly adapted to receive the crosspieces of laterally extending leg members,

(e–1) said support flanges being longitudinally spaced,

(e–2) said generally planar upright wall having end portions extending longitudinally beyond said recesses,

(e–2a) said end portions tapering in height longitudinally upwardly and outwardly to the upper wall,

(f) said upper wall having a substantially continuous elongate upper surface adapted to engage and fit a preformed complementary contour seat and

(f–1) having a contour substantially corresponding with the lower surface of the preformed seat.

References Cited by the Examiner

UNITED STATES PATENTS

2,588,417	3/1952	Schladermundt et al.	297—445
2,747,654	5/1956	Chapman et al.	297—445
2,999,662	9/1961	Lappin et al.	297—445 X
3,000,669	9/1961	Sliverman	297—451
3,032,375	5/1962	Lalandre	297—440

FRANK B. SHERRY, *Primary Examiner.*