United States Patent [19]

Hitchcock

[11] **3,826,453**

[45] **July 30, 1974**

[54] **GANGING CHAIRS**

[75] Inventor: **Arleigh C. Hitchcock,** Grand Rapids, Mich.

[73] Assignee: **The Shaw-Walker Company,** Muskegon, Mich.

[22] Filed: **Feb. 21, 1973**

[21] Appl. No.: **334,457**

[52] **U.S. Cl.** **297/248,** 297/239

[51] **Int. Cl.** **A47c 15/00**

[58] **Field of Search** 297/248, 239; 108/64

[56] **References Cited**

UNITED STATES PATENTS

3,159,425 12/1964 Engstrom 297/248

3,365,233 1/1968 Uyeda et al. ..... 297/248 X

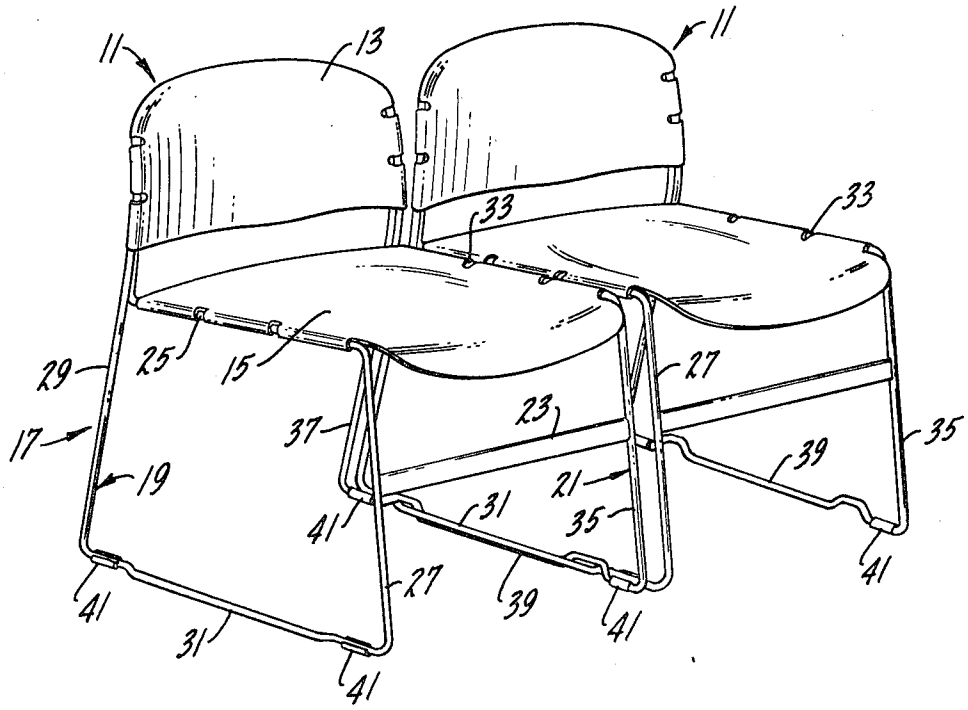
Primary Examiner—James C. Mitchell

Attorney, Agent, or Firm—Kinzer, Plyer, Dorn & McEachran

[57] **ABSTRACT**

A chair having metal rod legs and base rails with ganging members formed as integral parts of the base rails. The ganging members prevents both lateral and fore and aft movement of the chairs relative to each other yet do not interfere with stacking of the chairs.

11 Claims, 15 Drawing Figures



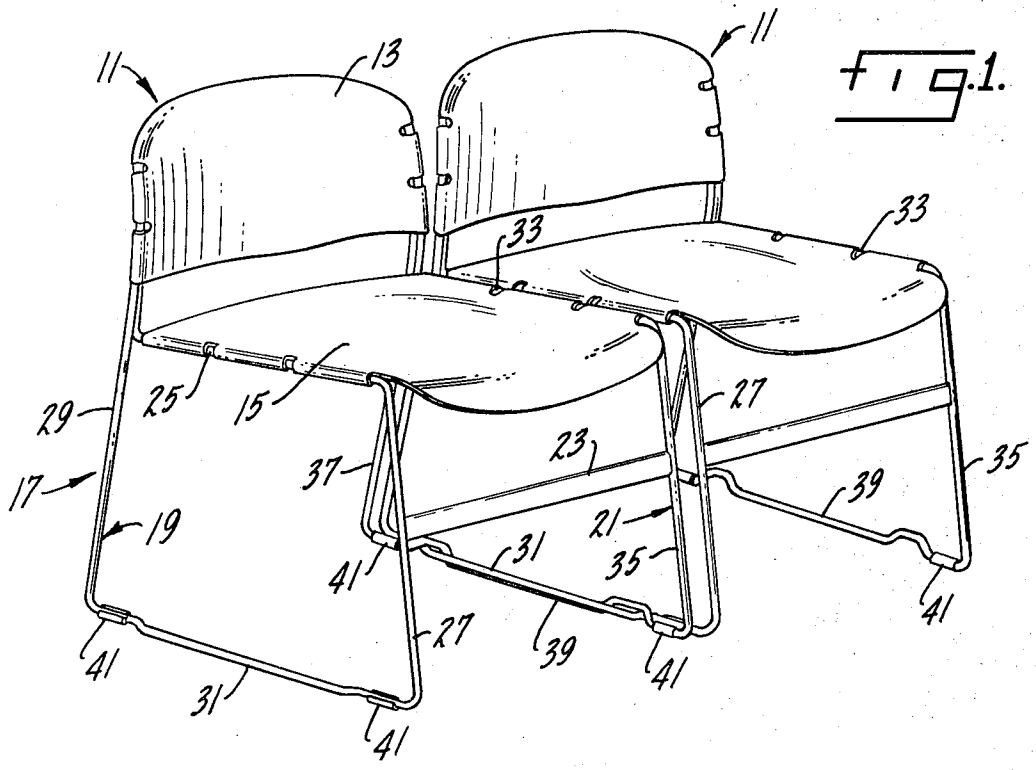

11
13
11
33
33
29
25
15
27
23
37
35
17
39
19
21
31
35
41
41
27
39
41
31
41

Fig. 1.

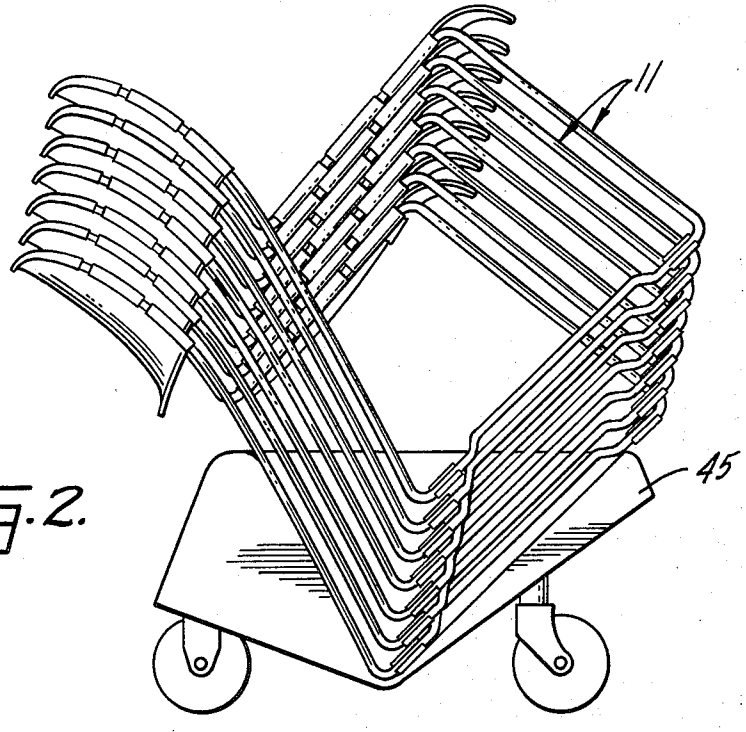

11
45

Fig. 2.

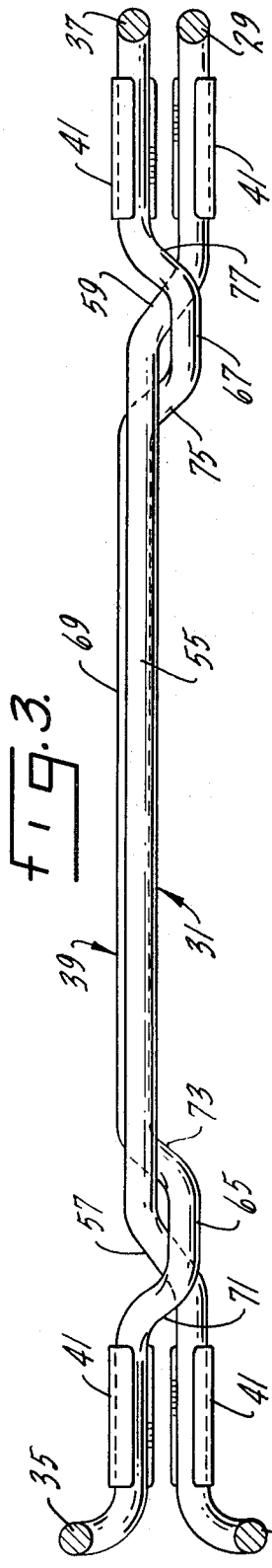


FIG. 3.

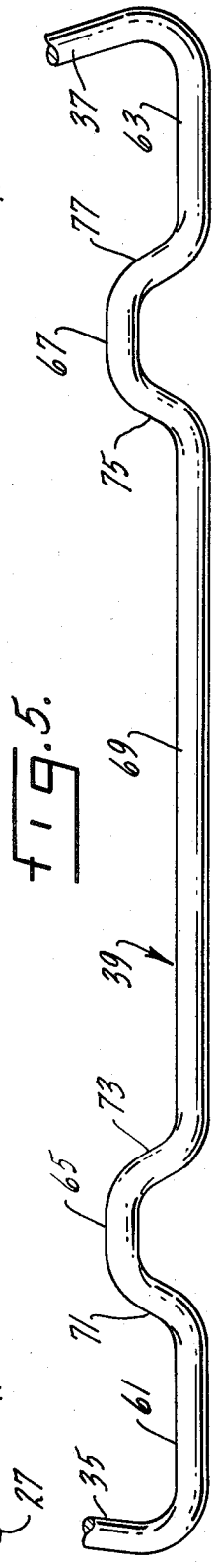


FIG. 5.

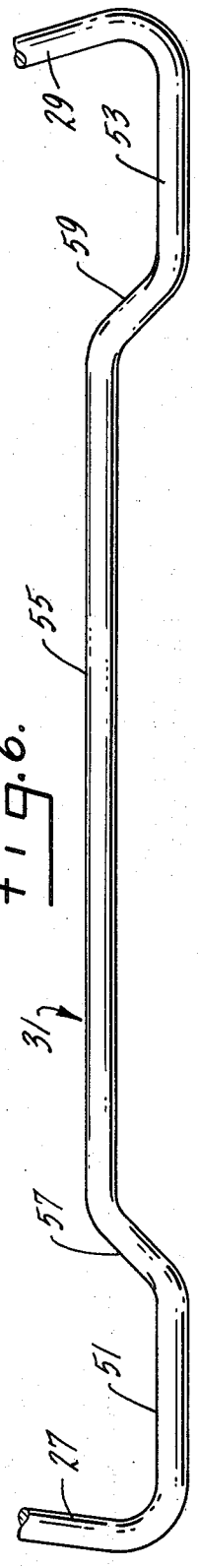


FIG. 6.

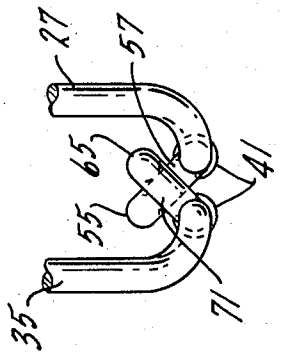


FIG. 4.

FIG. 13.

FIG. 14.

FIG. 15.

FIG. 10.

FIG. 11.

FIG. 12.

FIG. 7.

FIG. 8.

FIG. 9.

GANGING CHAIRS

BACKGROUND AND SUMMARY

This invention relates to chairs of the stacking and ganging type having integral ganging members. It is particularly concerned with a chair in which the ganging members are formed as part of the base rails. The use of ganging members attached to the chair legs and formed as integral parts of the bottom rails of chairs is known in the art. Ganging members attached to the chair legs have been objected to because they are unsightly and form obstructions to persons using the chairs, especially when the chairs are used individually and are not ganged in rows. Even when such chairs are connected or ganged in rows, the ganging members on the end chairs form projections and, therefore, can present obstructions. Previous ganging members formed as part of the chair base rails have not provided the holding power required by building and fire ordinances, especially in regard to fore and aft movement of the connected chairs relative to one another.

The ganging members of this invention are formed integrally with the base rails of a chair and resist both lateral and fore and aft movement of connected chairs relative to each other. The ganging members are relatively unobtrusive and provide minimum projections and obstructions when the chairs are not ganged. The invention may be made in several embodiments with the preferred embodiment providing maximum holding force against both lateral and fore and aft movement. Further, the ganging members do not interfere with stacking of the chairs or increase the stacked height of the chairs.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a perspective view showing two chairs of this invention ganged together;

FIG. 2 is a side elevational view of stacked chairs supported on a cart;

FIG. 3 is a partial top plan view of the ganged legs of the chairs of FIG. 1;

FIG. 4 is a partial, end elevational view of the ganged legs of the chairs of FIG. 1;

FIG. 5 is a side elevational view of one bottom rail of the chair of FIG. 1;

FIG. 6 is a side elevational view of the other rail of the chair of FIG. 1;

FIG. 7 is a partial top plan view of one end of the ganged connection of a modified form of base rails;

FIG. 8 is a partial, side elevational view of one end of one of the rails of FIG. 7;

FIG. 9 is a partial, side elevational view of one end of the other rail of FIG. 7;

FIG. 10 is a partial, top plan view of one end of the ganged connection of another modified form of base rails;

FIG. 11 is a partial, side elevational view of one end of one of the rails of FIG. 10;

FIG. 12 is a partial, side elevational view of one end of the other rail of FIG. 10;

FIG. 13 is a partial, top plan view of one end of the ganged connection of yet another modified form of base rails;

FIG. 14 is a partial, side elevational view of one end of one of the base rails of FIG. 13; and

FIG. 15 is a partial, side elevational view of one end of the other base rail of FIG. 13;

DESCRIPTION OF THE PREFERRED EMBODIMENTS

A pair of chairs embodying the novel features of this invention are shown interconnected or ganged in a row in FIG. 1. The pertinent details of the ganging members of this preferred form of the invention are shown in FIGS. 3 through 6 of the drawings. FIG. 2 shows the preferred form of the chairs in their stacked arrangement on a cart.

The chair 11 includes a molded plastic back 13 and a molded plastic seat 15 which are attached to and supported on a steel rod frame 17. The back and seat may be formed from polypropylene or other suitable high impact molded plastic.

The chair frame 17 includes a right hand section 19 and a left hand section 21 which are connected by a front cross bar 23 and by front and rear stretchers which fit under and support the seat 15, but cannot be readily seen in these drawings. Each side of the frame is formed from a single piece of rod bent to the shape generally of a trapezoid. The right hand section 19 includes a seat support rail 25, a right front leg 27, right rear leg 29 and a right base rail 31. The left hand frame section includes a seat support rail 33, a left front leg 35, a left rear leg 37 and a left base rail 39. Plastic glides 41 are mounted on the base rails to prevent marring of the supporting floor.

A number of chairs 11 are shown stacked on one another in FIG. 2. These chairs are supported on a cart 45 which is specifically designed to transport stacked chairs of this type.

FIGS. 3 through 6 show the interlocking connection or ganging of similar chairs 11 through locking engagement of their respective right and left hand base rails 31 and 39. To effect the interlocking or ganging, the right hand base rail 31 includes supporting portions 51 and 53 at the front and rear, respectively, which connect to the front and rear legs 27 and 29. These are called the supporting portions and normally are floor engaging. Of course, it is usually desirable to place the glides 41 on the supporting portions so that the glides engage the floor and marring and scraping of the floor is eliminated. Nevertheless, these portions will be referred to as supporting portions. Located intermediate of the supporting portions 51,53 is an elevated rail portion 55. The elevated portion 55 is located outwardly and upwardly from the supporting portions 51,53 and is connected thereto by connecting portions 57,59. The connecting portions 57,59 extend obliquely between the supporting and elevated portions and in this embodiment are inclined at an angle of approximately 45° with the horizontal.

The opposite or left hand leg of the chair is equipped with the base rail 39 shown in FIG. 5. This rail includes supporting portions 61 and 63 located respectively at the front and rear thereof and elevated portions 65 and 67, also located respectively at the front and the rear of the base rail. Located between the elevated portions is an intermediate supporting portion 69 which lies essentially on the same axis as the supporting portions 61,63. The elevated portions 65,67 are located outwardly and upwardly from the supporting portion 61,63 and 69. The elevated portions are connected to the supporting portions by means of connecting por-

tions 71,73 and 75,77. Portions 71 and 73 join the elevated portion 65 to the supporting portions 61 and 69 while connecting portions 75 and 77 connect the elevated portion 67 to the support portions 69 and 63. The connecting portions project upwardly and outwardly at an angle of approximately 45° with the horizontal and are inclined obliquely to the supporting portions 61,63 and 69. Connecting portions 71 and 75 are inclined towards the rear of the chair while connecting portions 73,77 are inclined towards the front of the chair. The elevated portions 65,67 and their respective connecting portions form outward loops in the base rail 39. These loops extend over or receive the connecting portions 57,59 of the base rail 31 in the manner shown in FIG. 3 so as to interlock the base rails and position the intermediate supporting portion 69 of the base rail 39 beneath the elevated portion 55 of the base rail 31. Another way to describe the base rail 39 is to call elevated portions 65 and 67 parts of a single elevated portion having an intermediate supporting portion 69. Using this definition, it can be seen that the elevated portion of this rail is longer than the elevated portion 55 of base rail 31.

The interconnection or ganging of the chairs is accomplished by tilting the left hand base rail of a chair relative to a right hand base rail of a similar chair and then sliding the left hand base rail down on the right hand base rail so that the intermediate supporting portion 69 of the base rail 39 slides beneath the elevated portion 55 of the base rail 31.

The foregoing connection is effective not only to prevent separation of the chairs laterally, but also effectively limits movement of the interconnected chairs in a fore and aft direction relative to each other. Additionally, this connection also prevents the lifting or elevation of one chair relative to the other. Separation or lateral movement is prevented by engagement of the elevated portions 55 and 65,67 as well as by contact of the connecting portions 71,77 of one rail with the connecting portions 57,79 of the other rail. Fore and aft movement of the chairs is also prevented by engagement of these connecting portions as well as by engagement with the additional connecting portions 73,75 of the rail 39. Actually, in this construction, the four connecting portions of the base rail 39 engage the two connecting portions of the base rail 31 to prevent fore and aft movement. The lifting of the chairs relative to each other is prevented by the engagement of the connecting portions as well as the engagement of the intermediate supporting portion 69 of the base rail 39 with the elevated portion 55 of the base rail 31.

A modified form of the base rails of this invention is shown in FIGS. 7 through 9 of the drawings. These base rails are identical to those shown in the embodiment of FIGS. 1 through 6 except that the connecting portions extend at right angles rather than obliquely between the supporting and elevated portions of the rails. FIGS. 7 through 9 show the rear portion of the modified base rail having a connecting portion 79 joining the elevated portion 55 of the right hand base rail with its rear supporting portion 53. While these connecting portions extend at right angles relative to the rails, they are also maintained at the 45° angle relative to the horizontal. In the left hand rail shown in FIG. 8, the rear elevated portion 67 is joined by connecting portions 81 and 83 to the end and intermediate supporting portions 63,69. These connecting portions also extend at right angles to their supporting and elevated portions. The base rails of this modified form of the invention interconnect or gang in the same manner as described for the base rail shown in the preferred form of FIGS. 1 through 6 of the drawings.

Another modified form of base rails of this invention is shown in part in FIGS. 10 through 12 of the drawings. These drawings show the rear portions of the base rails. In this form, the right and left hand base rails are almost identical except that the elevated portion 91 of the right hand base rail is shorter than the elevated portion 93 of the left hand base rail. This difference in length enables the elevated portion of the right hand base rail to fit within the elevated portion of the left hand base rail much in the nature of a tongue and slot to interlock the two base rails together. Each of these base rails has supporting portions at opposite ends. Only the supporting portions 95 and 97 of the right and left hand rails, respectively, are shown. The connecting portions 99 and 101 which connect the elevated portions 91 and 93, respectively, with their supporting portions 95 and 97 are shown in this embodiment as extending at right angles between the supporting and elevated portions. The connecting portions also are inclined from the horizontal at an angle of 45° in the same manner as shown in FIG. 4 of the preferred embodiment.

Yet another modified form of the base rails is shown in FIGS. 13 through 15 of the drawings. These base rails are similar to the base rails of FIGS. 10 to 12 except that the connecting portions 105 and 107 of the right and left hand bottom rails extend obliquely between their elevated and supporting portions 91, 93 and 109,111, respectively. In all other aspects the bottom rails are the same as those shown in the embodiment of FIGS. 10 through 12.

Whereas, several preferred forms of the invention have been described and shown, it should be understood that there are modifications, alterations and changes which may be made without departing from the teachings of the invention. Therefore, the scope of the invention should be only limited by the claims attached hereto.

I claim:

1. A chair having front and rear legs and a bottom rail on each side,

each of said bottom rails having supporting portions at the front and rear thereof, an elevated portion located between said supporting portions and connecting portions joining said supporting and said elevated portions,

said elevated portion being positioned laterally outwardly of said supporting portions,

the elevated portion on one side of said chair being longer than the corresponding elevated portion on the other side of said chair so that opposite sides of similar chairs may be interlocked with the elevated rail portion of one side of one chair interlocked with the opposite elevated rail portion of the other chair.

2. The chair of claim 1 in which said connecting portions are inclined relative to the horizontal.

3. The chair of claim 2 in which said connecting portions are inclined at angles of approximately 45° relative to the horizontal.

4. The chair of claim 1 in which said elevated portion of one rail has an intermediate supporting portion.

5. The chair of claim 4 in which said intermediate supporting portion is positioned to fit under the opposite elevated portion of a similar chair when the chairs are interlocked.

6. The chair of claim 1 in which said elevated portions of the rails are positioned at the same height.

7. A chair having front and rear legs on each side,

a first bottom rail extending between the front and rear legs of one side and a second bottom rail extending between the front and rear legs on the other side,

said first bottom rail having supporting portions at the front and rear, an elevated portion intermediate said supporting portions and connecting portions joining said supporting and elevated portions, said elevated portion being located laterally outwardly of said supporting portions and said connecting portions being inclined upwardly and outwardly from said supporting portions,

said second bottom rail having front, rear and intermediate supporting portions, a pair of elevated portions, one of said elevated portions being positioned between said front and intermediate supporting portions and another of said elevated portions being positioned between said rear and intermediate supporting portions, and connecting portions joining said elevated portions with said supporting portions, said elevated portions being located laterally outwardly of said supporting portions and said connecting portions being inclined upwardly and outwardly from said supporting portions, said elevated portions of said second rail being positioned to extend over said connecting portions of said first rail when opposite rails of similar chairs are interlocked to permit the intermediate supporting portion of said second rail to be positioned under said elevated portion of said first rail.

8. The chair of claim 7 in which said connecting portions extend at right angles to said supporting portions.

9. The chair of claim 7 in which said connecting portions extend obliquely to said supporting portions.

10. The chair of claim 7 in which said connecting portions extend at right angles to said supporting and elevated portions.

11. The chair of claim 7 in which said connecting portions extend obliquely to said supporting and elevated portions.

* * * * *