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3,144,271

CHAIR CONSTRUCTION

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2 Sheets-Sheet 1

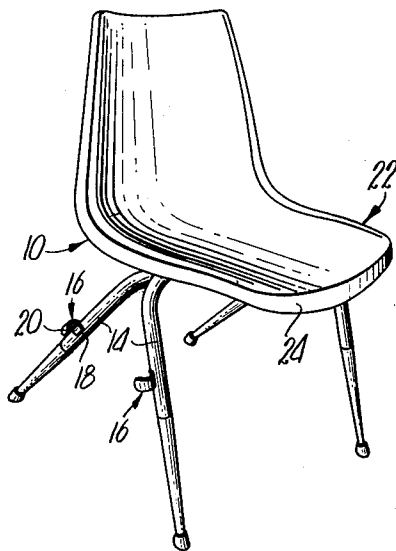


Fig. 1.

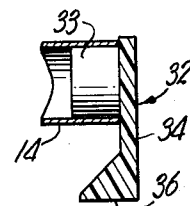


Fig. 6.

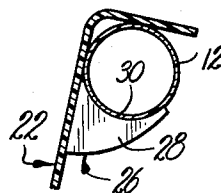


Fig. 3.

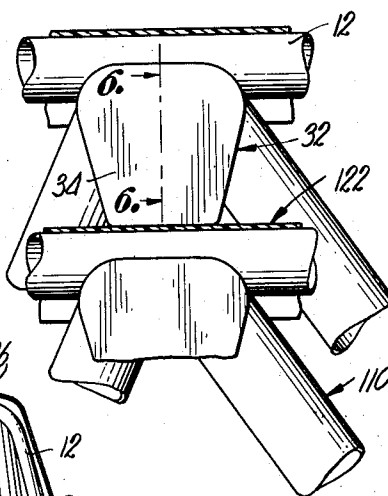


Fig. 4.

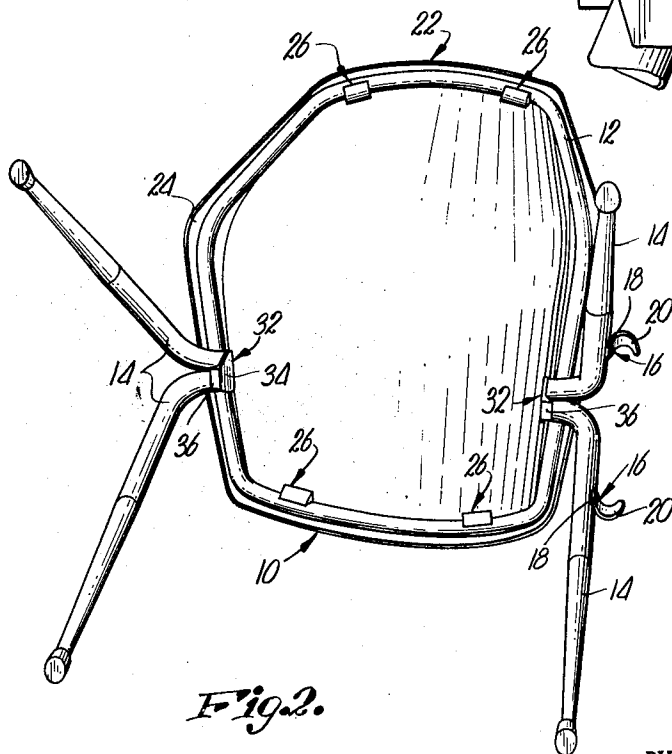


Fig. 2.

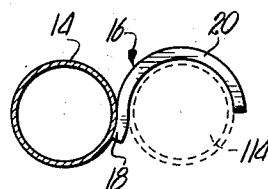


Fig. 5.

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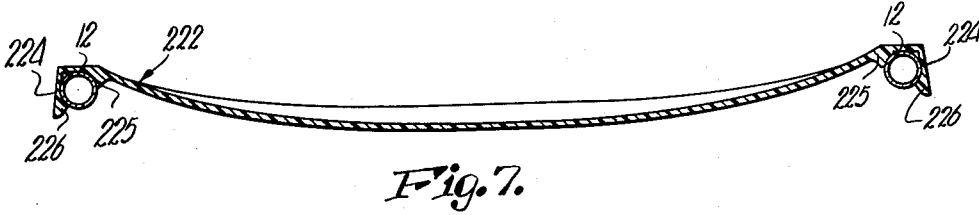
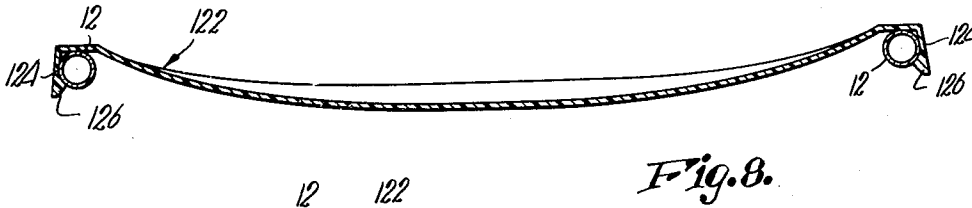
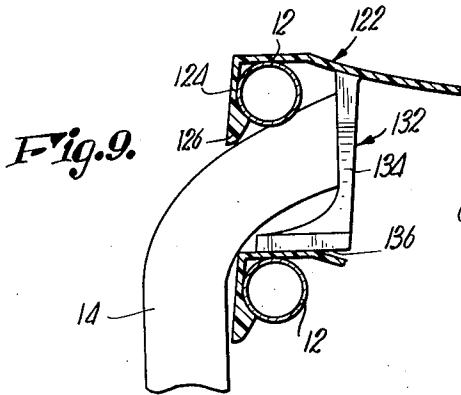
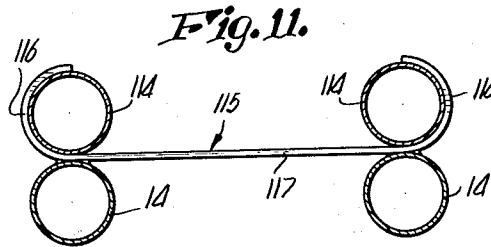
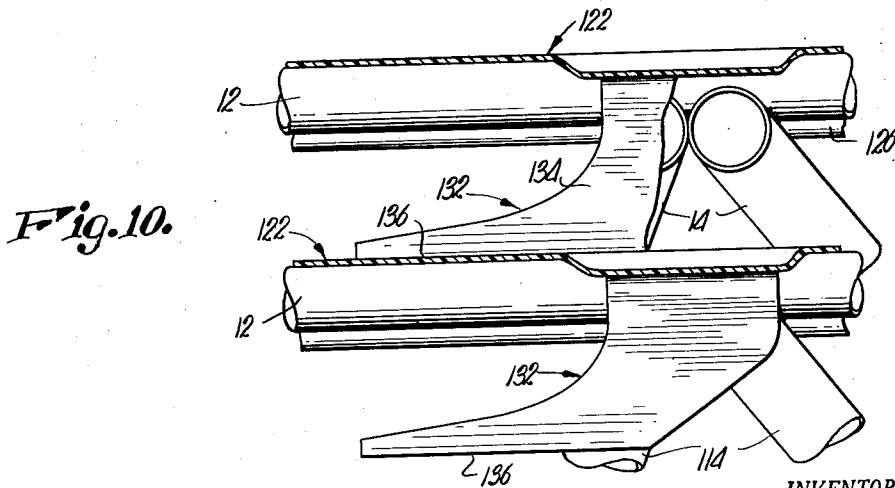
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CHAIR CONSTRUCTION

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2 Sheets-Sheet 2



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CHAIR CONSTRUCTION

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1 Claim. (Cl. 297-248)

This invention relates to chairs, and more particularly to chairs which may be selectively ganged with similar chairs for use, or stacked for storage.

It is the most important object of this invention to provide a chair constructed with novel means, permitting a plurality of chairs similarly constructed to be quickly and easily releasably secured together for side-by-side disposition.

It is another important object of our invention to provide a chair which may be easily stacked with similar chairs when not in use, yet having means for preventing damage by one chair to another which might otherwise result from such stacking.

A further object of this invention is the provision of a chair frame of simple, unitary construction, yet capable of rendering the required support for the other components of the chair.

Yet another object of our instant invention is the provision of a seat member which may be cheaply and easily formed from relatively thin, lightweight material, yet having adequate rigidity to support even heavier persons.

Still a further object of this invention is the provision of a chair having seat members which may be easily removed and replaced by other seat members, thereby permitting the substitution of differently colored members for harmonizing with various color schemes.

FIG. 1 is a front perspective view of the chair.

FIG. 2 is a bottom perspective view of the chair showing details of construction;

FIG. 3 is a fragmentary, enlarged, cross-sectional view showing the frame clamped between a gripper block and a flanged portion at the top of the seat member;

FIG. 4 is a fragmentary, enlarged, elevational view showing the disposition of a stacking foot when two chairs are in stacked relationship, parts being broken away and shown in cross section for clearness;

FIG. 5 is an enlarged elevational view of one of the ganging hooks showing the leg upon which it is mounted in cross section and the proximal leg of another chair in dash lines.

FIG. 6 is a fragmentary detailed cross sectional view taken along line 6-6 of FIG. 4.

FIG. 7 is a cross-sectional view of a modified form of seat member;

FIG. 8 is a cross-sectional view of a further modified form of seat member;

FIG. 9 is an enlarged, fragmentary, front elevational view of two chairs in stacked relationship, showing a modified stacking foot and leg guard, with the frame and seat member appearing in cross section for clearness;

FIG. 10 is an enlarged, fragmentary, side elevational view of the stacked chairs of FIG. 9 with parts thereof broken away to reveal details of construction; and

FIG. 11 is an enlarged elevational view of a modified form of the ganging hooks showing the legs upon which they are mounted in cross section with the proximal leg of another chair also appearing in cross section.

Briefly, this invention relates to chair construction wherein each chair is provided with hooks on the legs for releasably securing two chairs together, novel stacking feet depending from the frame for preventing damage to another chair when the chairs are stacked when not in use, and novel frame construction permitting the use

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of a seat member of relatively thin sheet material without adversely affecting the weight-bearing capacity of the chair. The peripheral margin of the seat member rests on the frame precluding the necessity for frame contact across much of the member which is engaged by the body, resulting in greater comfort from increased seat member flexibility. Additionally, novel gripper means permit the quick and easy interchangeability of seat members to allow versatility for color harmonizing purposes.

A chair broadly numerated 10, constructed pursuant to the instant invention, comprises a continuous, unitary frame 12 and four legs 14 secured to and depending therefrom. The legs 14 are arranged in pairs to present an inverted V with the upper ends of each pair of legs 14 rigidly secured to frame 12 on opposed sides of the latter and with the legs 14 of each pair diverging as the lower extremities thereof are approached.

Each leg 14 of one pair of the latter is provided with a hook 16, having one end 18 thereof secured to the leg, and an outwardly extending end portion 20 aligned with a respective leg 14 and extending outwardly therefrom. Each end portion 20 is shaped to complementally engage the outer surface of a leg 14 and is aligned to be parallel with the axis of the particular leg 14 upon which the hook 16 is secured. The end portions 20 of hooks 16 are thereby in position to engage corresponding legs 14 of an adjacent, similarly constructed chair illustrated in dash lines in FIG. 5.

A seat member broadly designated 22, formed from relatively thin, flexible material such as sheet plastic or the like, is shaped to conform to the comfortable posture requirements for a chair. Thus, member 22 is designed to conform sufficiently with the body of a person seated thereon to reduce contact pressures below the discomfort-causing level. The peripheral margin of member 22 is formed to rest on frame 12 substantially along the length of the latter, and is provided with a peripheral rib formed as a downturned flange 24 overlying frame 12. The rigidity imparted by flange 24 permits the use of somewhat flexible and relatively thin (therefore lightweight) sheet material in the formation of member 22 and, cooperating with frame 12 provides adequate stability for the accommodation of persons within the ninety percent adult weight group to which reference has previously been made.

It is significant to point out at this juncture that the comfort of the person seated upon a chair is related to the pressure exerted upon the body by those portions of the chair which are in contact with the body. If the pressure can be kept below the pain-producing level, then the seated person will remain comfortable, even during relatively long periods of time. If, however, the pressure exceeds that at which pain is produced, the individual rapidly becomes uncomfortable from contact with the chair. The pressure at which pain is produced in most individuals is believed to be equal or near the diastolic blood pressure. For the average person, such pressure is 80 mm. of mercury or 1.54 pounds per square inch.

The pressure exerted upon the seated body is a function of both the weight of the individual and the surface area contacted by the chair. If the weight of the person remains constant, the pressure may be reduced only by increasing the surface area of contact.

It may readily be seen that member 22 is supported by frame 12 which extends around the outer margin of the member but does not engage the central portion thereof. Additionally, both the back and seat portions of member 22 are included within the support afforded by the unitary, peripherally extending frame 12 to permit a blending of the back and seat portions without a rigid zone of demarcation between the two. Thus, frame 12 supports member 22 in a hammock-like fashion and the main body

supporting back and seat portions are free to bend to conform to the seated posture of the individual. This greatly increases the surface area of the chair in contact with the body and reduces the pressure exerted by the chair upon the body. Further, the flexibility of member 22 yields at the points of concentration of the greatest weight to distribute the weight uniformly over the entire area of contact. Any shifting of the weight by the individual while seated, is automatically compensated for by the flexible member 22.

A plurality of grippers 26, each comprising an elongated block 28 having a surface 30 shaped to conform to the outer surface of the frame member, is rigidly secured to the underside of member 22 in spaced relationship from flange 24 with surfaces 30 facing the latter. The flexibility of flange 24 allows the latter to be shifted away from block 28 far enough to receive frame 12 between surface 30 and flange 24. Further, the resiliency of member 22 urges each gripper 26 toward flange 24 and securely clamps frame 12 therebetween. Manifestly, sufficient grippers 26 are disposed around the peripheral margin of member 22 to provide adequate means for securing the latter to frame 12.

The grippers 26 serve only to secure member 22 to frame 12 and do not affect the function of chair 10 in supporting the body. Any suitable fastening means could be used for this purpose. Flange 24 is the sole means of supporting flexible member 22 on frame 12 when chair 10 is supporting a person. Grippers 26 are not used or needed for supporting member 22 in its load-bearing function.

A stacking foot 32 is secured proximal to the upper ends of each pair of legs 14 and depends therefrom. Each foot 32 includes a somewhat flexible web 34 extending from the zone of attachment to legs 14 and terminating in an enlarged surface 36. A pair of knobs 33 which may be integral with foot 32, extend outwardly from web 34 and are in alignment with the upper, inwardly directed portions of each leg 14 of a respective pair thereof. The knobs 33 may be telescoped within the tubular legs 14 and secure foot 32 to the latter. Indentations in legs 14 may be formed to secure the feet 32 in place, or other suitable fastening means such as screws or the like may be used.

The lower portion of foot 32 is enlarged to present a flat bottom surface 36 for foot 32. Surface 36 distributes the weight of the chairs which are stacked above a particular chair 10, over a substantial area of member 22 to prevent damage to the latter. The shape of foot 32 and its components, including knobs 33, web 34 and surface 36, is such that foot 32 may be easily molded or cast from material such as plastic or the like.

Surface 36 is adapted to be disposed to engage the upper surface of the seat member 122 of a second chair 110 when chair 10 is stacked thereon as in shown in FIG. 4. It will be noted from FIG. 4 that web 34 extends sufficiently far for foot 32 to hold frame 12 in spaced relationship from seat member 122 so that frame 12 does not engage the latter in a manner to damage the bottom chair.

The hooks 16 are advantageously disposed so that chair 10 may be readily and easily secured to an adjacent chair by simply aligning the legs 14 with the legs of an adjacent chair, while chair 10 is in a slightly elevated position, then lowering chair 10 so that hooks 16 engage the latter. Conversely, it is a simple matter with the chair of the present construction to disengage the two chairs by simply elevating chair 10 slightly to release hook 16 from the legs of the second chair. By utilizing hooks 16, disposed to be alignable with the legs of an adjacent chair, applicants are able to quickly and easily effect the releasable attachment of two or more chairs without the necessity for attachment means on both sides of each chair.

When not in use, the chairs made pursuant to the principles of this invention, may be safely stacked for the conservation of space while stored, with the surface 36

of stacking feet 32 engaging the seat members of the next lower chair. Web 34 is sufficiently rigid to maintain the weight-bearing portions of the frames 12 of the upper chair out of engagement with the seat member 122 of the lower chair. This prevents any possible damage resulting to the member 122 such as scarring, puncturing or the like.

The construction of the grippers 26 allows for the quick and easy removal of a respective member 22 from frame 12 and for the substitution of differently colored members 22 to allow chair 10 to be readily integrated into any color scheme. This interchangeability of members 22 provides for great versatility in the use of the chair and also allows for the replacement of any members 22 which might become damaged.

A modified form of seat member 122 is illustrated in FIG. 8. Member 122 has an enlargement 126 on the outer marginal area of peripheral flange 124 and in position to engage the outer surface of frame 12 for securing the member to the frame. It will be understood that enlargement 126 may be, but is not necessarily continuous. Extension along flange 124 far enough to adequately secure member 122 to frame 12, is sufficient.

Another form of seat member 222 is illustrated in FIG. 7. Member 222 includes an enlargement 226 on downturned flange 224 and a second enlargement 225 on the bottom surface of member 222 in position to cooperate with enlargement 226 in clamping member 222 to frame 12. The enlargement 226 may be substantially similar to enlargement 126 and it is contemplated that enlargement 225 will extend around member 222 in the same manner as enlargement 226. The enlargements 126, 225 and 226 may be molded on members 122 and 222 respectively and obviate the use of grippers 22.

Chair 10 may be provided with modified stacking feet 132 as shown in FIGS. 9 and 10. Feet 132 may be secured to legs 14 in the manner discussed with respect to feet 32, or they may not have laterally extending knobs and be secured directly to the underside of the seat member by any suitable means. The feet 132 may extend forwardly from the zone of attachment of legs 14 as shown in FIG. 10 to insure that the center of gravity of each stacked chair is to the rear of the weight-bearing bottom surface 136 of the foot. Thus, any inclination of the chairs to tilt will be toward the upright back portion of the chair upon which it is stacked. The back portion supports the upper chair and even a very tall stack of chairs will be quite stable without any tendency to tip over.

It should be noted that feet 132 are provided with a forward and downwardly extending web portion 134 which portion carries the weight of the stacked chair and also serves as a guard to cover the upper ends of legs 14. Without such a guard, the open ends would be somewhat unsightly, dangerous and open to having foreign materials enter the tubular legs 14.

A modified form of hook means 115 is shown in FIG. 11 and includes a brace 117 secured to and extending between each of the hooks 116. Hook means 115 may be formed from a unitary piece of strap metal, suitably shaped and secured to legs 14 by welding or other suitable means. The brace serves to keep legs 14 from spreading and keeps hook 116 in proper position for use in securing two chairs together.

Having thus described the invention, what is claimed as new and desired to be secured by Letters Patent is:

Structure for releasably interconnecting a pair of side-by-side chairs of the kind having opposed pairs of legs at the sides thereof with each pair of legs diverging as the lower ends thereof are approached, said structure coupling one pair of legs of one chair with the proximal pair of legs of the other chair and comprising a hook for each of said one pair of legs respectively, each hook having an inner face and an outer face, and each hook having a pair of spaced ends, the outer face of each hook adjacent one of its ends engaging the outermost surface of the

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corresponding leg and being rigidly attached thereto, the inner faces of the hooks being in looped engagement with the front and rear surfaces respectively of corresponding proximal legs, whereby the distance between the interconnected legs is equal to the thickness of the hooks at said one end thereof.

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