

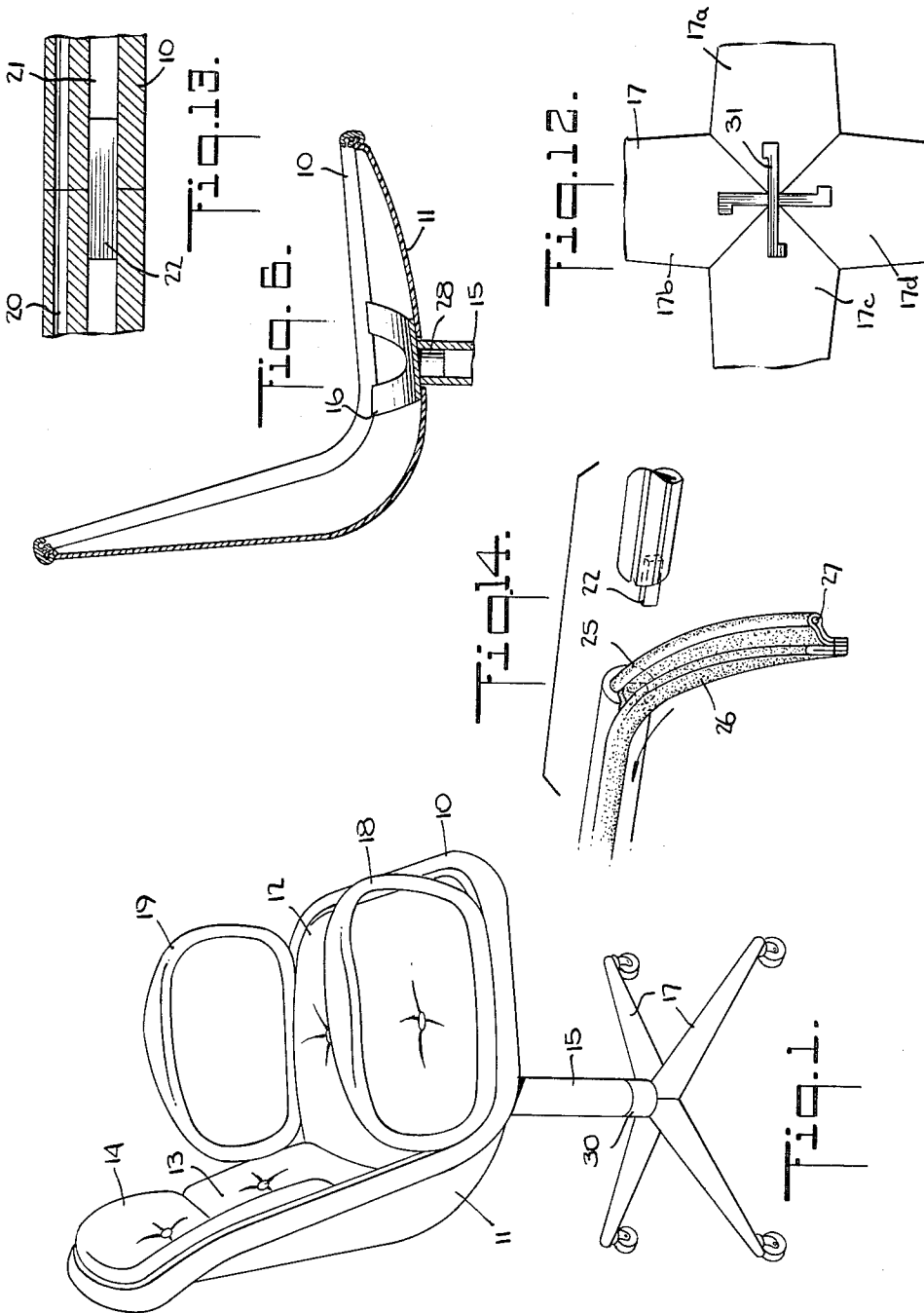
Dec. 14, 1965

C. R. POLLOCK
UPHOLSTERED FURNITURE

3,223,450

Filed Nov. 23, 1964

5 Sheets-Sheet 1



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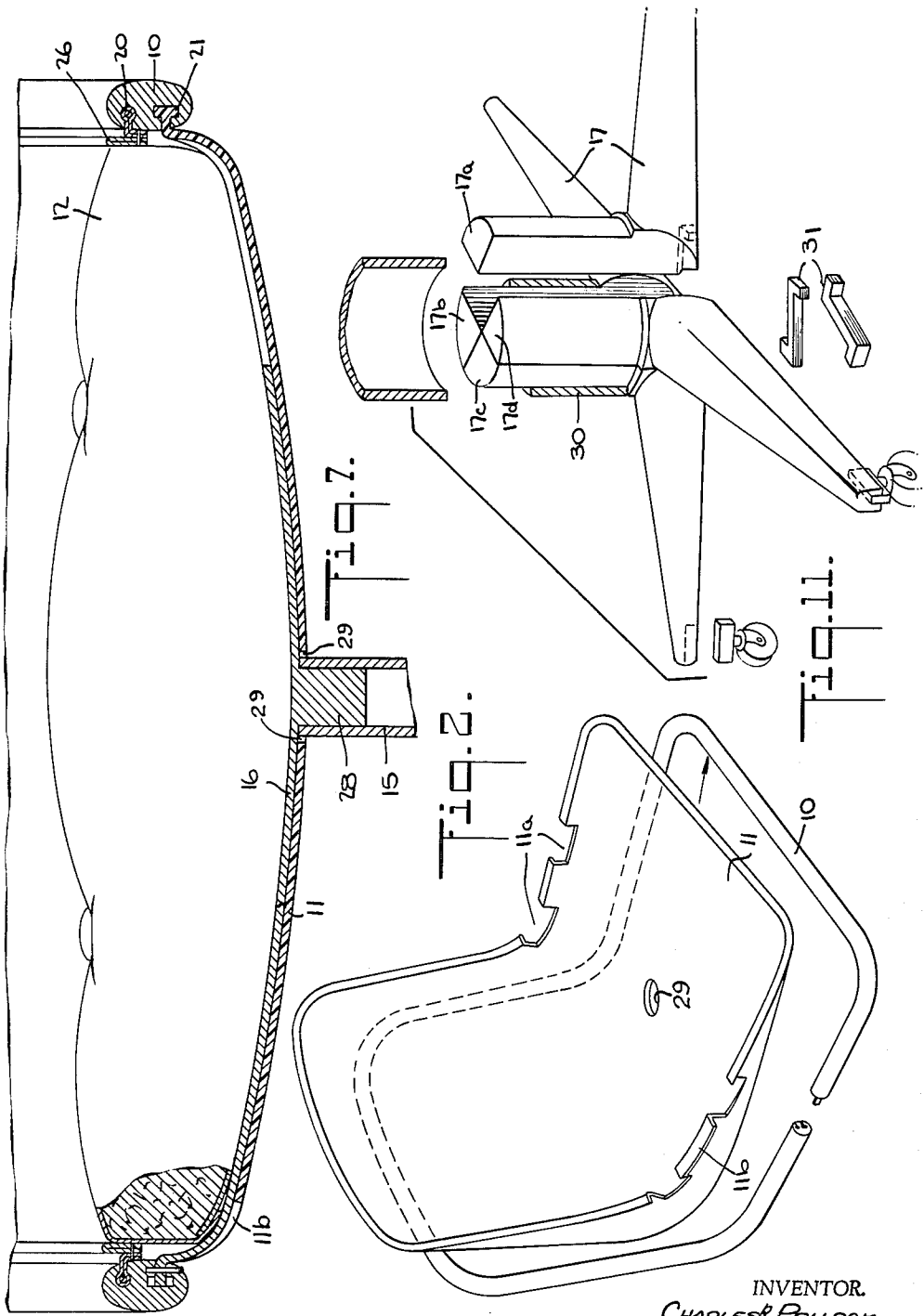
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5 Sheets-Sheet 2



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5 Sheets-Sheet 3

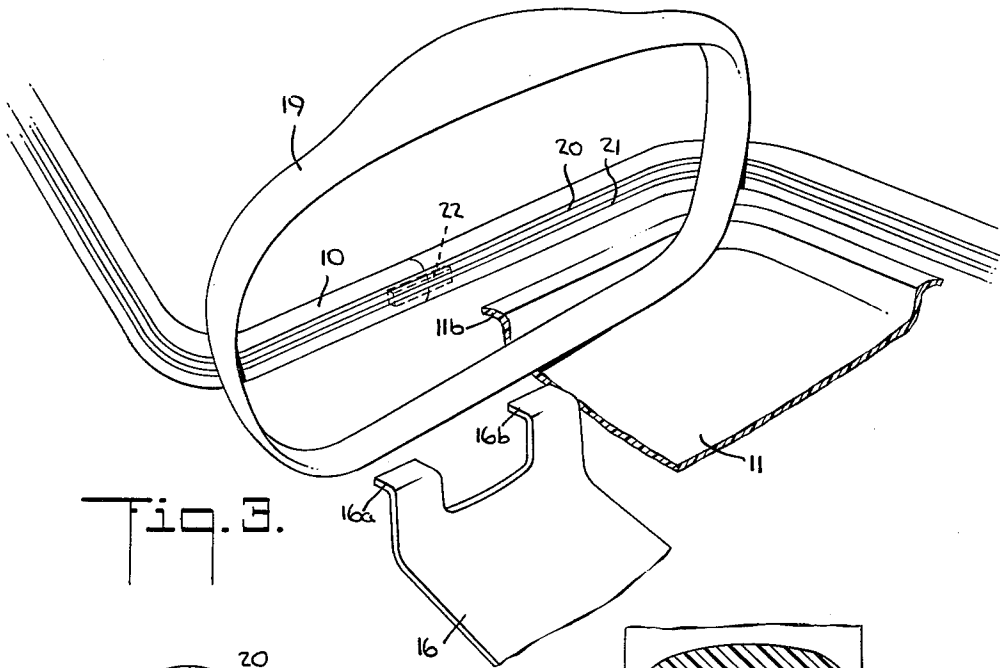


Fig. 3.

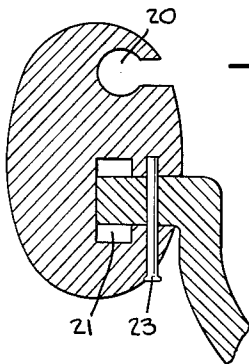


Fig. 4.

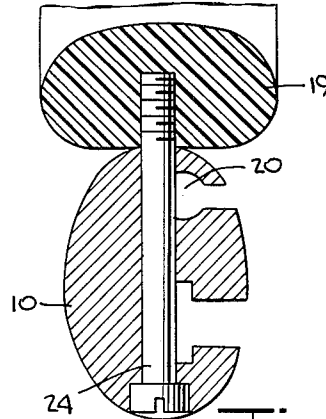


Fig. 10.

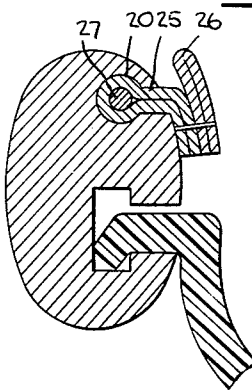


Fig. 9.

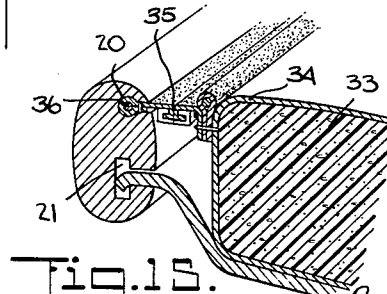


Fig. 15.

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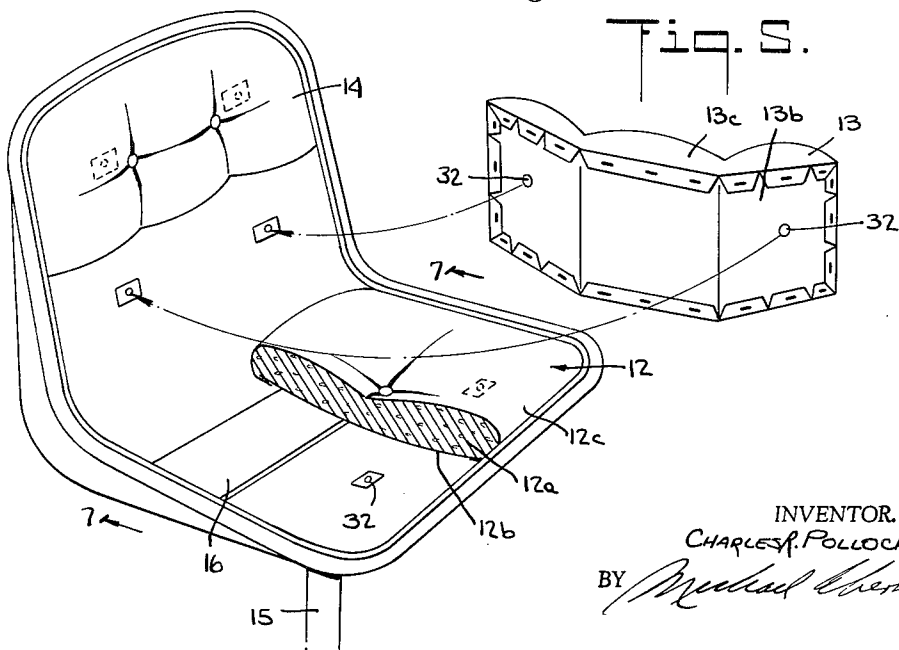
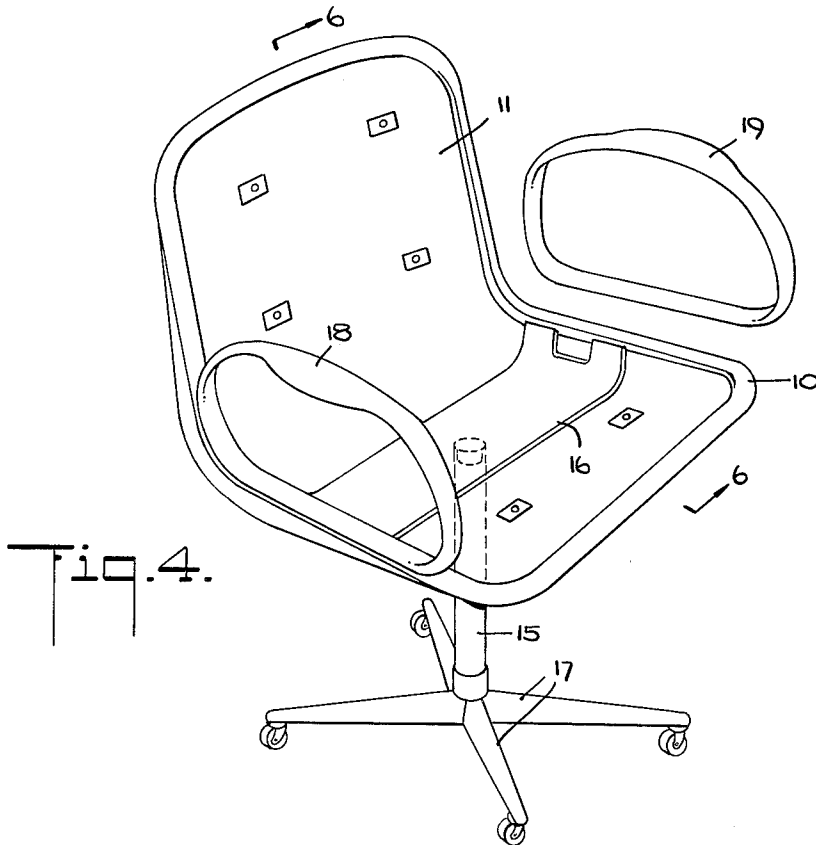
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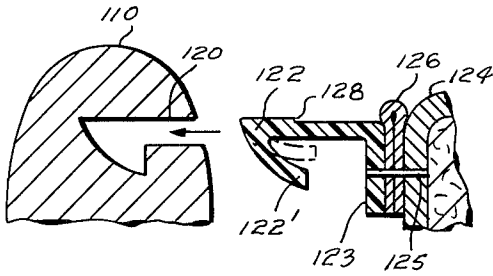


FIG. 17

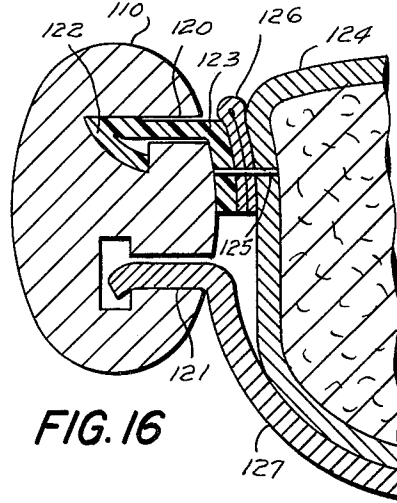


FIG. 16

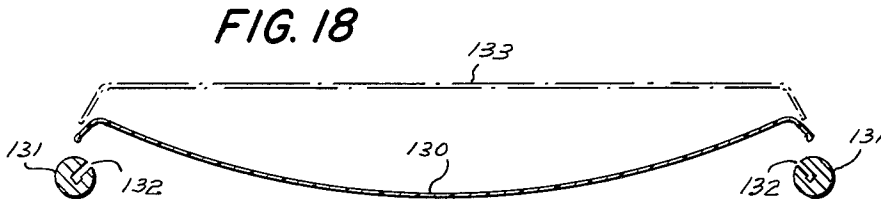


FIG. 18

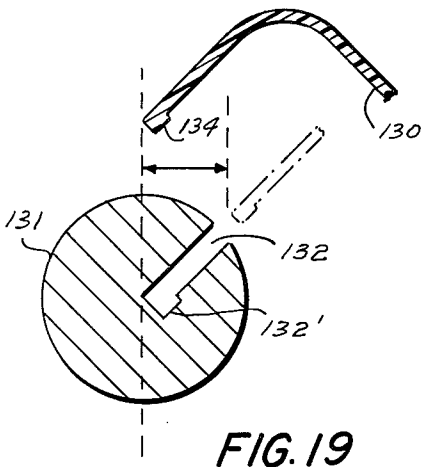


FIG. 19

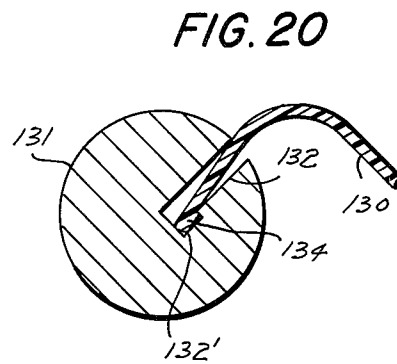


FIG. 20

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UPHOLSTERED FURNITURE

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Filed Nov. 23, 1964, Ser. No. 414,516

11 Claims. (Cl. 297-445)

This application is a continuation-in-part of applicant's now abandoned application Serial Number 214,722, filed August 3, 1962 and entitled, "Upholstered Furniture."

The present invention relates generally to furniture construction and more particularly to upholstered structures of simple functional design and of exceptional strength.

In upholstered furniture of traditional design, an elaborate framework is provided having legs attached thereto, with covered cushioning members being fitted into the frame and being supported thereby. Such furniture is inherently heavy and cumbersome. Moreover, its construction is relatively complicated and its manufacture entails a high order of manual skill. Traditional upholstered furniture of good quality is therefore quite expensive.

In the design of modern furniture, among the qualities sought for are lightness and simplicity combined with structural strength. Designers also seek to impart to modern pieces a sculptured effect wherein the contour of the furniture is expressive of its function. It has heretofore been difficult to attain these qualities with upholstered furniture and yet provide an adequate supporting structure. Thus with contoured furniture having cushioning it has been necessary to provide a contoured backing of high strength for the cushions, made for example of molded plastic reinforced with fiberglass. Such molded backings add substantially to the overall cost of the furniture.

Accordingly, it is the principal object of this invention to provide a furniture structure of simple design and high strength, the structure being based on a concept which is applicable to a variety of articles such as chairs, beds and couches.

More specifically it is an object of the invention to provide a furniture structure wherein a plastic shell having a desired contour or configuration is supported peripherally by a continuous frame of high strength whereby load stresses imposed on the shell are effectively distributed throughout the frame, rather than concentrated or localized in one section thereof, the frame in turn being securely mounted on a stanchion or other supporting means independent of the shell.

A significant feature of this invention is that all components of the furniture structure which require rigid anchoring, such as the arm rests, are attached to the frame and not to the shell, whereby the load imposed on the shell will in no way stress said attachments.

Also an object of the invention is to provide a structure of the above-described type which may be quickly assembled and manufactured at relatively low cost.

Yet another object of the invention is to provide an upholstered article of furniture in which a shell is peripherally supported on a frame and wherein the upholstery is constituted by several cushioned sections which individually may be snapped into place on the shell and readily removed therefrom for cleaning or replacement.

Briefly stated, these objects are accomplished in a structure wherein the frame is constituted by a continuous aluminum extruded rod bent to conform to the peripheral contour of a shell, the rod having a longitudinally extending slot for receiving the peripheral lip of the shell, the frame being connected to a cross-brace independent of the shell. The legs or other pedestal means are coupled to the cross-brace.

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For a better understanding of the invention, as well as other objects and further features thereof, reference is made to the following detailed description to be read in conjunction with the accompanying drawings wherein like elements on the several views are identified by like reference numerals.

In the drawings:

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

FIG. 2 is a perspective view of the shell of the chair prior to its connection to the frame;

FIG. 3 shows the arm rest, the shell and the cross-beam members separated from the frame;

FIG. 4 illustrates the chair with the cushions omitted and an arm rest removed;

FIG. 5 illustrates the manner in which the cushions are attached to the shell;

FIG. 6 is a section taken in the plane indicated by lines 6-6 of FIG. 4;

FIG. 7 is a section taken in the plane indicated by lines 7-7 in FIG. 5;

FIG. 8 is a section taken in the frame of the chair indicating one way of securing a brace or shell thereto;

FIG. 9 is a section taken in the frame of the chair indicating how the bead is secured thereto;

FIG. 10 is a section taken through the frame indicating how the arm rest is secured thereto;

FIG. 11 illustrates, in perspective, the manner in which the legs are attached to the stanchion of the chair;

FIG. 12 is a bottom plan view of the legs;

FIG. 13 is a section taken through the frame showing how the ends thereof are interconnected;

FIG. 14 illustrates how the beading is attached to the frame;

FIG. 15 shows another embodiment of the invention for cushioning the chair;

FIG. 16 is a segmentary cross-sectional view similar to FIG. 15 illustrating another method of attaching the upholstery;

FIG. 17 is a segmentary cross-sectional view of the embodiment disclosed in FIG. 16 with the upholstery removed from the frame;

FIG. 18 is a cross-sectional view of another embodiment of the invention illustrating the shell being clamped into position in the frame;

FIG. 19 is a segmentary cross-sectional view of the embodiment disclosed in FIG. 18 illustrating the periphery of the shell being received in the frame; and

FIG. 20 is a segmentary cross-sectional view similar to FIG. 19 illustrating the periphery of the shell within the frame.

Referring now to the drawings and more particularly to FIGS. 1, 4 and 5, a chair in accordance with the invention comprises a continuous frame 10, adapted to support a suitably contoured shell 11 to which are attached cushioning elements 12, 13 and 14—element 12 being a seat, element 13, a lower back rest and element 14, an upper back rest. The frame is mounted on a stanchion 15 by means of a cross-brace 16 connected to the frame, the stanchion being anchored in star legs 17. Also attached to the frame are a pair of arm rests 18 and 19.

As best seen in FIGS. 3, 8 and 9, the frame is constituted by a single elongated extruded aluminum rod having two longitudinally extending parallel slots 20 and 21 formed therein. The extruded rod is bent to conform continuously to the periphery of the shell, the ends of the rod being joined by means of a suitable juncture plug 22, tightly inserted in slot 21 and serving to hold the terminals together.

Slot 20 has a key-hole sectional shape to receive a beading or a welt, whereas slot 21 has a T-shaped configura-

tion to receive tongues, rivets and screws in a manner to be later described.

It will be best seen in FIGS. 3, 4 and 6 that the ends of the cross-brace member 16, which may also be of aluminum, are bifurcated and terminate in tongues 16a and 16b. The tongues 16a and 16b are received within slot 21 of the frame and the brace, as shown in FIG. 8, is securely attached thereto by means of pins 23 which are inserted through small holes in the rod into the tongues. The brace may be formed by a casting, a stamping or a wire assembly.

Alternatively, instead of pins, components may be attached to the frame by means of so-called Sofco type rivets which comprise a steel pin which when driven inwardly, forces the fingers of the rivet outwardly into the enlarged channel of slot 21 to effect a locking action. It is to be understood that this attachment can also be made by means of screws which can be turned into the slot, the screw acting to cut a thread into the aluminum extrusion.

As best seen in FIG. 2, the shell of the chair is made from a single sheet of plastic which is formed or molded to the desired shape of the chair. The shell may be vacuum formed or injection molded and may be made of polystyrene or other suitable material.

Because of the fact that the shell is peripherally hung from the frame in the manner described, it need not be reinforced in any way. The periphery of the shell is provided with cut-outs 11a to allow for the insertion of the cross-brace tongues into the supporting frame, the periphery having an outwardly extending lip 11b which is received within the narrow opening of slot 21 in the frame.

In assembling the shell and frame, the peripheral lip on the edge of the shell is inserted while the frame is open, as shown in FIG. 2, and after the shell is in place, the ends of the frame are brought together and joined with the juncture plug 22. The shell may then be further locked into place by means of pins, rivets or screws in the manner previously described.

The arm rests, one of which 19 is shown in FIG. 3, are constituted by continuous loops of a suitable plastic material or aluminum and having a generally rectangular configuration, the lower side being secured to the frame 10 by means of screws 24 in the manner shown in FIG. 10.

Slot 20, which runs above slot 21 in the frame and parallel thereto, is used to receive a decorative and protective beading which may be formed of leather, simulated leather or fabric, or as shown in FIGS. 9 and 14, this beading is constituted by two parallel strips 25 and 26 of folded material which are stitched together at their lower edge, folded strip 25 having a cord 27 therein to form a circular head portion conforming to the cross-sectional shape of the key-hole slot. Thus the beading is applied simply by passing strip 25 into slot 20, the other strip 26 thereby being caused to lie against the inner surface of the frame.

The upper end of hollow stanchion 15 is received snugly within a circular boss 28 centrally fastened to the underside of the cross-brace 16 and extending through a hole 29 in the shell 11, as best seen in FIG. 7. Thus the stanchion is independent of the shell and firmly supports the frame through the cross-brace.

The four star feet 17 of the chair, as seen in FIG. 12, are respectively provided with quadrant pieces 17a, 17b, 17c and 17d, which fit together to form a cylinder which telescopes within the lower end of the stanchion pipe 15 and is locked therein by means of a collar 30. The quadrant pieces are further held together by means of cross staples 31, as shown in FIG. 12.

Each cushion element, as illustrated by cushion 12, FIGS. 5 and 7, is constituted simply by a resilient foam rubber body 12a supported on a pressboard base 12b and covered by a sheet 12c of cloth or leather whose folded in edges are stapled to the pressboard. The cushion is an independent element and is removably held in place

by snap buttons 32, one member of which is secured to the shell and the complementary member on the pressboard backing on the cushion. Thus the cushion elements may be quickly snapped into position and just as quickly removed for cleaning or replacement.

In FIG. 15, there is shown another embodiment of the invention which does away with the need to snap in cushioned sections on the shell of the chair. In this arrangement, cushioning pads 33 may be made self-sufficient and merely laid in place on the shell 11 of the chair, the pads being covered and secured to the chair by an upholstery material 34 which is contoured to the shape of the frame. The material 34 is peripherally bound to the frame by means of a continuous zipper 35, one side tape of which is sewed or otherwise connected to the material, the other side tape of which is connected to a beading 35 received within slot 20 of the frame.

The zipper is preferably of the hidden type manufactured by Y.K.K. (Japan), in which the metal parts of the fastener elements are completely hidden from view, leaving a seam line when closed, only the tab for the slider being exposed. It is also possible with a hidden zipper of this type to make one of the zipper tapes with a welt or bead on it which will be directly received in slot 20, so that there will be no need to sew the zipper tape to a separate bead. The invention is useable also with other types of zippers or slide fasteners, such as those of the continuous helical type.

In FIGS. 16 and 17, an alternate means of attaching the upholstery to the frame is disclosed and the frame 110 is similar to frame 10 described earlier being constituted by a single elongated extruded aluminum rod having two longitudinally extending parallel slots 120 and 121 formed therein. Slot 121 is identical in configuration to slot 20 described earlier. However, slot 120 is in the form of an arrowhead and designed to receive therein the arrow-shaped head 122 of plastic extruded piece 123 which is fastened to upholstery 124 by suitable stitching 125 through welt 126. Slot 121 is similar to slot 21 to receive therein the edge of frame 127. The arrow-shaped plastic piece 123 is provided with shoulder 128 above head 122 so that the member can be inserted within slot 120 by application of pressure at shoulder 128 by means of a suitable tool and the lower portion 122' of head 122 being plastic will collapse upwardly as head 122 is moved in the direction of the arrow as indicated in FIG. 17 and expands the position shown in FIG. 16 when it has been received in the slot. Thus, member 123 will not be withdrawn from slot 120. For certain applications it may be found desirable to provide either of slots 120 and 121 or both at an angle with the horizontal.

FIGS. 18-20 disclose another form of the invention wherein shell 130 constituting the chair seat is provided with a normal dimension in the horizontal plane greater than the similar dimension of frame 131 containing slot 132. The slot 132 is the only slot in frame 131 and is disposed angularly so that upon stressing shell 130 inwardly by a suitable clamp such as 133, slot 132 can receive therein the periphery of shell 130. Upon withdrawal of clamp 133 and release of shell 130, the shell attempts to achieve its normal dimension in the horizontal plane providing outwardly directed forces which maintain the shell within slot 132. In FIGS. 18-20, it is noted that a bead 134 is formed at the lower peripheral edge of frame 130 and received within enlarged portion 132' of slot 132, thus insuring the continued maintenance of the periphery of the shell within the slot. Although bead 134 is shown integral with the frame it may be provided by a separate element such as a separately added bead or a series of clips. Also under certain circumstances it may be necessary to provide a peripheral bead attached to the shell within the slot while maintaining the shell wholly without the slot.

It may be found desirable in certain applications to omit bead 134.

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It will be appreciated that while the construction of the chair is of the utmost simplicity, its basic framework is exceptionally strong, all attachments being made to the continuous frame of extruded aluminum. While I have disclosed a chair to illustrate the principles underlying the invention, it will be evident that the same combination of suspended shell and frame may be used for other articles of furniture. It is intended therefore in the appended claims to cover all such changes and modifications as fall within the purview of the invention.

I claim:

1. An article of furniture comprising an elongated rod bent to a desired contour to form a continuous frame, said rod having a longitudinally extending slot formed therein, a relatively rigid shell suspended within said frame and supported thereby, said shell having a continuous peripheral lip received within said slot to suspend said shell from said frame and to cause load stresses imposed thereon to be effectively distributed throughout said frame, a cross-brace attached to said frame and provided with extremities received in said slot, said extremities extending through cut-outs in said shell, and means coupled to said brace to support said article above floor level.

2. An article of furniture as set forth in claim 1, further including a second slot extending longitudinally along said frame in parallel relation to said first slot, and a beading strip constituted by one section received in said second slot and other section stitched to said one section to lie against the outer surface of said frame.

3. A chair comprising an elongated rod curved to form a continuous chair frame, said rod having a longitudinally extending slot therein, a relatively rigid contoured shell suspended in said frame to define both the seat and the back of said chair and provided with a continuous peripheral lip received in said slot to suspend said shell from said frame and to cause load stresses imposed thereon to be effectively distributed throughout said frame, a cross-brace connected to opposing arms of said frame adjacent the seat portion of said shell and including tongues receivable in said slot through cut-outs in said frame, and a leg support for said chair coupled to said cross-brace, and fastening means insertable in said slot to lock the chair elements received therein.

4. An article of furniture comprising an elongated rod bent to a desired contour to form a continuous frame, said rod having first and second slots in parallel relation extending longitudinally therein, a shell suspended within said frame and supported thereby, said shell having a continuous peripheral lip received within said first slot to suspend said shell from said frame and to cause load stresses imposed thereon to be effectively distributed throughout said frame, cushioning pads lying against said shell, and an upholstery material covering said pads and removably connected to the second slot of said frame.

5. An article as set forth in claim 4 wherein said second slot is formed with an enlarged section and restricted opening, and a resilient member is attached to the periphery of said upholstery material, said resilient mem-

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ber being formed with a collapsible protruding portion whereby said protruding portion can collapse for passage through said restricted opening and expand into said enlarged section maintaining said upholstery material in position with respect to said frame.

6. An article as set forth in claim 4 wherein the connection between said material and said frame is avoided by a continuous zipper of the hidden type in which the teeth thereof are hidden from view to present a seam line when closed, one side tape of which is secured to said upholstery material, the other side tape of which is secured to a beading received in said second slot.

7. An article of furniture comprising a rigid shell adapted to be stressed by a seated person and having a peripheral outwardly extending lip forming an angle with the remainder of said shell, a frame including an elongated frame member extending along the periphery of the shell and having a slot extending throughout the length of the frame member, said slot facing inwardly toward said shell and receiving said lip which extends there-through in the plane of said slot throughout the length thereof so that load stresses imposed on the shell are effectively distributed throughout the frame member, and means supporting said frame.

8. An article of furniture as defined in claim 7, in which said frame includes a cross-brace connected between opposing portions of the frame, and said supporting means includes leg means attached to the cross-brace.

9. An article of furniture as defined in claim 7, wherein said frame member is formed with a second longitudinal slot extending throughout the length of the frame member and parallel to the first mentioned slot, said article of furniture including a cushion pad formed with a peripheral lip received within the second slot and effective to retain the pad against the shell.

10. An article of furniture as defined in claim 7 in which said shell is provided with a normal dimension in the horizontal plane greater than the similar dimension of said frame member and said shell is compressible inwardly for insertion of said peripheral lip in said slot whereby said shell attempting to achieve its normal dimension provides outwardly directed forces maintaining said shell within said slot.

11. An article of furniture in accordance with claim 7 in which said slot is provided with an enlarged portion and said lip is provided with a bead whereby said bead is received within said slot.

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