March 31, 1964 R. H. BENNETT, JR 3,127,221

CHAIR

Filed July 16, 1962

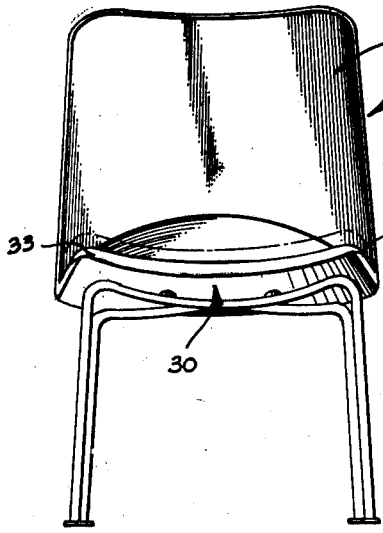


FIG. 2

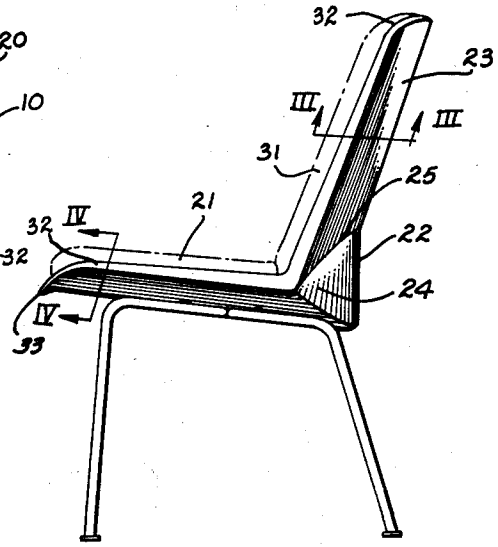


FIG. 1



FIG. 3

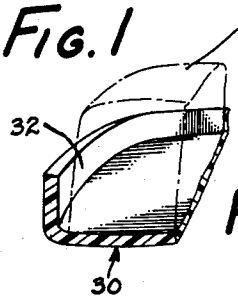


FIG. 6

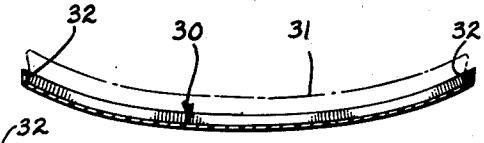


FIG. 4

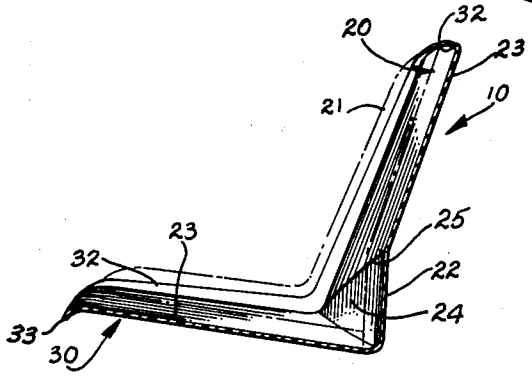


FIG. 5

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CHAIR

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This invention relates to a plastic chair, and more particularly to a one piece chair shell.

Plastic chair shells comprising a seat and back are often presently molded as a single unit. In order to provide any significant amount of back slope to a molded shell back for comfort, present chairs require relatively wide web portions extending between the back and the seat thereby providing tension portions. Even then, seat backs are ordinarily almost vertical and are often uncomfortable for extended sitting periods. Further, this type of chair shell ordinarily is not capable of retaining a cushion in position on the chair seat and back.

It is an object of this invention to provide a plastic chair and chair shell wherein the back of the seat may be sloped substantially, and wherein the chair possesses improved strength without requiring wide connecting webs. The novel chair utilizes a combination of compression portions with an extended tension flange to achieve superior strength, definite but limited flexibility, and improved comfort.

It is another object of this invention to provide a chair shell wherein a tension flange means not only provides increased strength, but also serves a cushion retaining means integral with the shell so that cushioning means may be held in place on the seat and back.

These and many other objects of this invention will be apparent upon studying the following specification in conjunction with the drawings in which:

FIG. 1 is a side elevational view of the chair with the novel chair shell;

FIG. 2 is a front elevational view of the chair in FIG. 1;

FIG. 3 is a cross-sectional view taken on plane III—III of FIG. 1;

FIG. 4 is a cross-sectional view taken on plane IV—IV of FIG. 1;

FIG. 5 is a cross-sectional view taken along the plane V—V of FIG. 2; and

FIG. 6 is a fragmentary, enlarged, cross-sectional view of a lateral portion of the shell.

Basically, this invention comprises a one-piece molded plastic chair shell comprising a seat portion, a back portion, an integral compression portion between the seat and the back portions, and a small tension flange means along the seat and back. The integral compression portion extends rearwardly from the seat and back at the juncture thereof, and is substantially vertical, being at an obtuse angle with respect to the slanted back. The protruding compression portion has a substantial height at the center and curves downwardly at the sides of the chair to essentially produce a section of a cone sliced on a plane parallel to the axis of the cone. This compression portion not only provides superior strength, but also allows a definite and limited back flexibility, as well as a posterior receiver for the sitting person. The edge flange portions project forwardly of the chair back and upwardly from the sides of the base to comprise a tension strengthening means, and cushion or pad retaining means for the seat and back.

Referring to the drawings, chair shell **10** includes a back **20**, and a seat **30**, both possessing cushion or padding means **21** and **31**. The seat is mounted upon suitable legs. The seat is slightly arcuate, with the concave side facing

upwardly, while the back is slightly arcuate with its concave side facing forwardly. At the normal juncture area of the seat and back is a special compression portion **22** which has a substantially vertical orientation as compared to the slanted back **20**. Thus, the upper portion **23** of the back is at an obtuse angle with respect to the compression portion **22** as seen in FIG. 1. This compression portion has a substantial height at its center. It tapers down to a narrow height at the sides of the chair, to thus form a geometry which resembles the section of a cone sliced on a plane parallel to the central axis of the cone. It is generally concave toward the front of the chair. This shape renders considerable strength to the plastic chair shell, so that the back **20** as molded can tilt to a comfortable angle while still maintaining a sturdy chair, It will also be noted that the rearwardly extending dish portion or compression portion accommodates the posterior of sitting individuals. Because of the arcuate juncture line **25** between the upper chair back and the compression portion, flexibility of the back is permitted. This flexibility is definitely limited in a sturdy manner because the bend line occurs along arc **25**.

The chair is provided with even more strength due to a generally peripheral flange or edge **32**. This flange projects upwardly from the sides of the seat, and forwardly from the sides and top of the back. This flange comprises a tension flange between the back and seat when the chair is used. It also forms a retaining means for cushioning elements placed on the seat and back of the chair. Preferably, the flange projects downwardly at **33** at the front of the seat for maximum leg comfort.

The peculiar shape of the shell, including the arcuate seat and back, the special rearwardly extending compression portion, and the upwardly and forwardly extending peripheral tension flanges all cooperate to provide a strong chair, and to hold seat pads, to render optimum flexture, and to provide optimum comfort. Thus, these qualities of strength and comfort are not compromised as usual, but both can be optimized.

The shell may be formed of any conventional materials suitable for this purpose. In molding the shell, two mold forms are utilized, back to back, under present practice. Conventional glass fiber reinforced polyesters are used. Other plastics might be utilized such as high density, linear polyethylene, polypropylenes, et al. as is well-known in the art.

Various obvious modifications will occur to those in the art upon studying the above described chair shell and the principles involved. These obvious modifications are deemed to be part of this invention, which is to be limited only by the scope of the appended claims and the reasonably equivalent structures to those defined therein.

I claim:

1. A chair shell comprising: a one piece shell having a seat and an upstanding back; said back including a lower compression portion at the juncture with said seat; and said compression portion being curved from side to side to form a forwardly facing concavity, all sections of said compression portion being at an obtuse angle with respect to the upper portion of said back, and said compression portion substantially resembling a section of a cone sliced on a plane parallel to the axis of the cone.

2. A chair shell comprising: a one piece shell having a seat and an upstanding back; said back being generally tilted backwardly from a vertical plane and being curved from side to side to provide a curved concavity in the front of said shell back; a generally concave compression section at the lower portion of said back; said compression section being curved from side to side to form a curved concavity in the front of said compression section, all parts of said compression section being at an obtuse

angle with respect to the adjacent parts of the upper portion of said back; and said seat having a rearwardly protruding extension extending beyond the imaginary juncture of said upper back portion with said seat and being joined to said compression portion.

3. A chair shell comprising: a one piece shell having a seat and an upstanding back; said back being generally tilted backwardly from a vertical plane; a forwardly concave, curved compression section at the lower portion of said back, all parts thereof being at an obtuse angle with respect to the upper portion of said back; said compression portion having an arcuate juncture with said upper portion; and said seat having an extension extending beyond the imaginary juncture of said upper back portion with said seat and being joined to said compression portion.

4. The chair shell in claim 3 wherein said arcuate juncture of said lower compression portion with said upper portion lies substantially in a plane which extends diagonally downwardly and toward the front of said chair shell.

5. A chair shell comprising: a one piece shell having a seat and an upstanding back; said back being generally tilted backwardly from a vertical plane; a concave compression portion at the lower portion of said back; all parts of said compression portion being at an obtuse angle with respect to the adjacent parts of the upper portion of said back; said seat having an extension extending beyond the imaginary juncture of said upper back portion with said seat and being joined to said compression portion; flange means extending at least along the sides of the back and seat, the back flange portions extending forwardly, and the seat flange portions extending upwardly; and said compression portion and tension flange portions cooperating to effect a sturdy chair shell.

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