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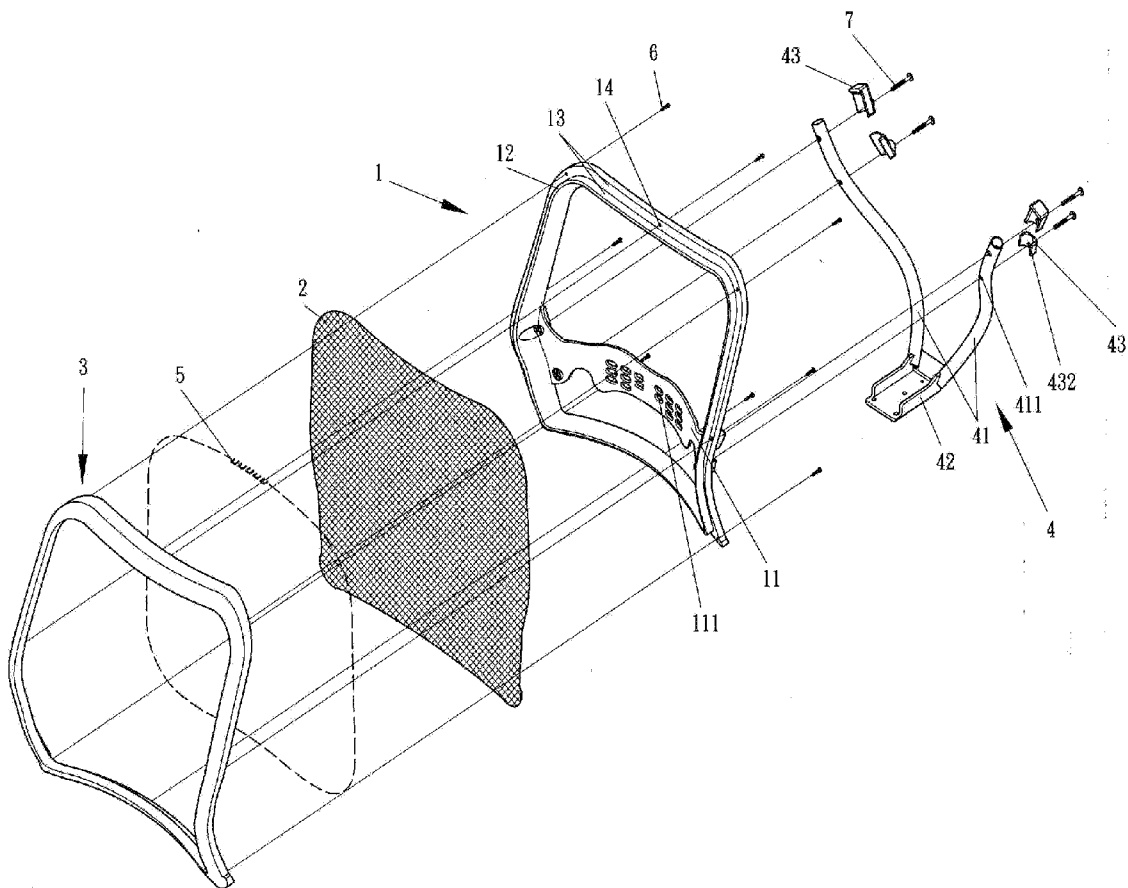
(19) **United States**(12) **Patent Application Publication**
Su(10) **Pub. No.: US 2008/0079307 A1**(43) **Pub. Date: Apr. 3, 2008**(54) **CHAIR BACKREST**(52) **U.S. Cl. 297/452.56**(76) **Inventor: Tung-Hua Su, Tainan Hsien (TW)**(57) **ABSTRACT**

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(2006.01)

A chair backrest comprises a closed loop frame, a net, a frame cover, and the subsidiary supporting-arms. The frame includes a protruding loop edge, defining a global frame-net interface with frame fixing holes therein. A loop-like net fixing piece is used for nailing the border of the net onto the frame-net interface. The subsidiary supporting-arms consists of a pair of branching poles; the ends of the branching poles are connected to a common base with the upper portion of the poles fixed to the frame by frame-arm fixing devices and frame-arm fixing pieces. A back reinforcement board traversing between the right side and the left side of the frame can be added to the rear side of the frame to further support the frame against forces applied.



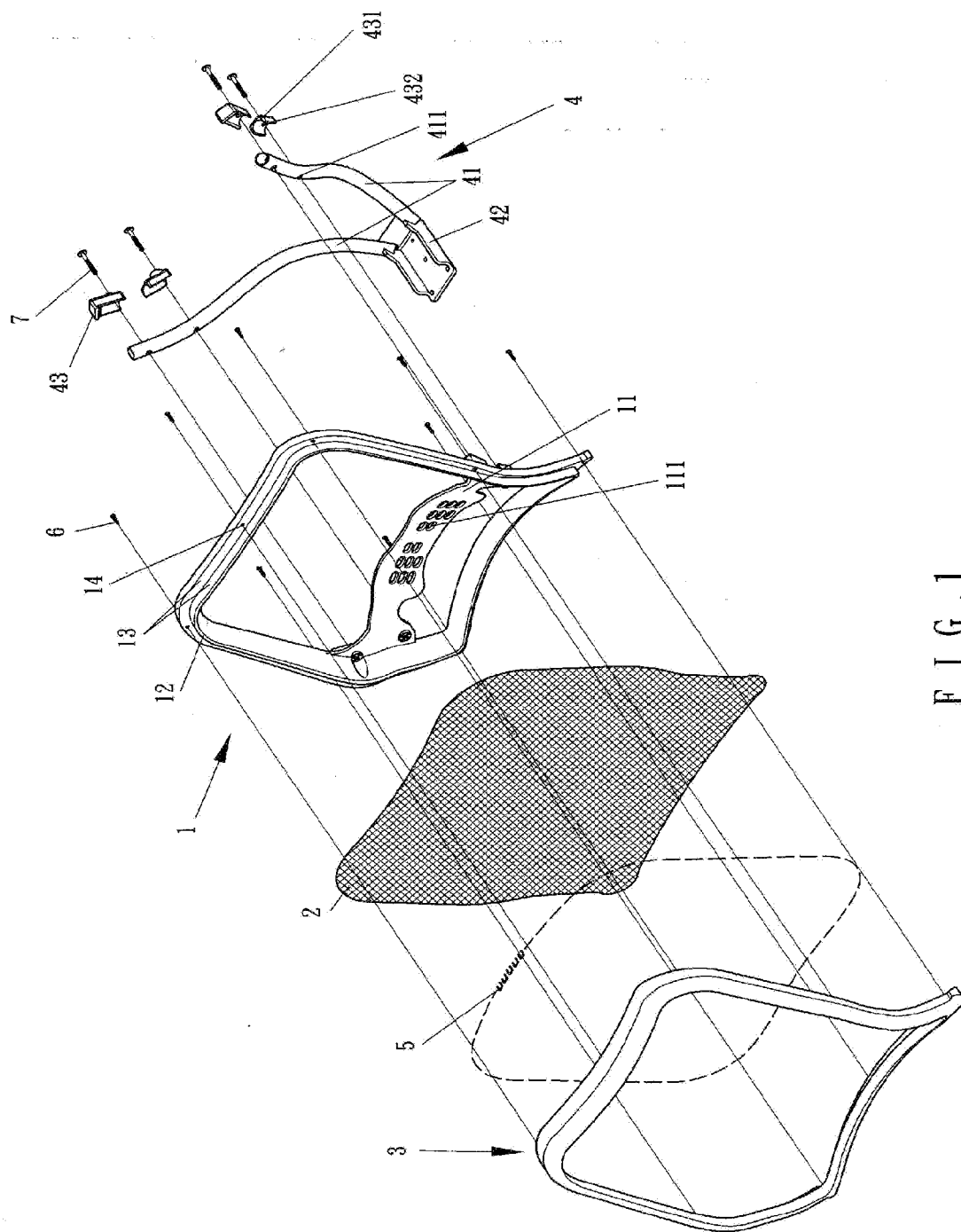
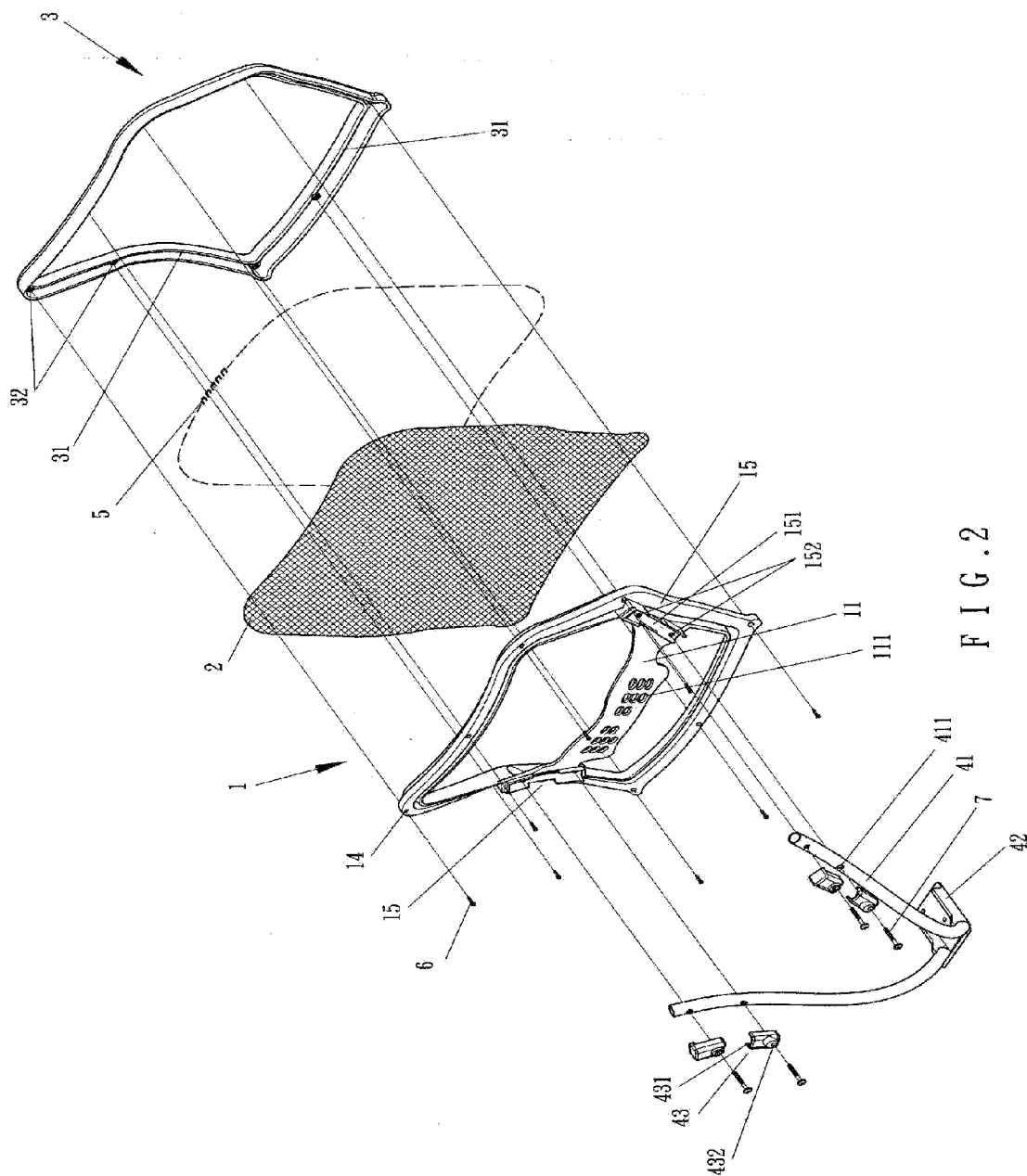


FIG. 1



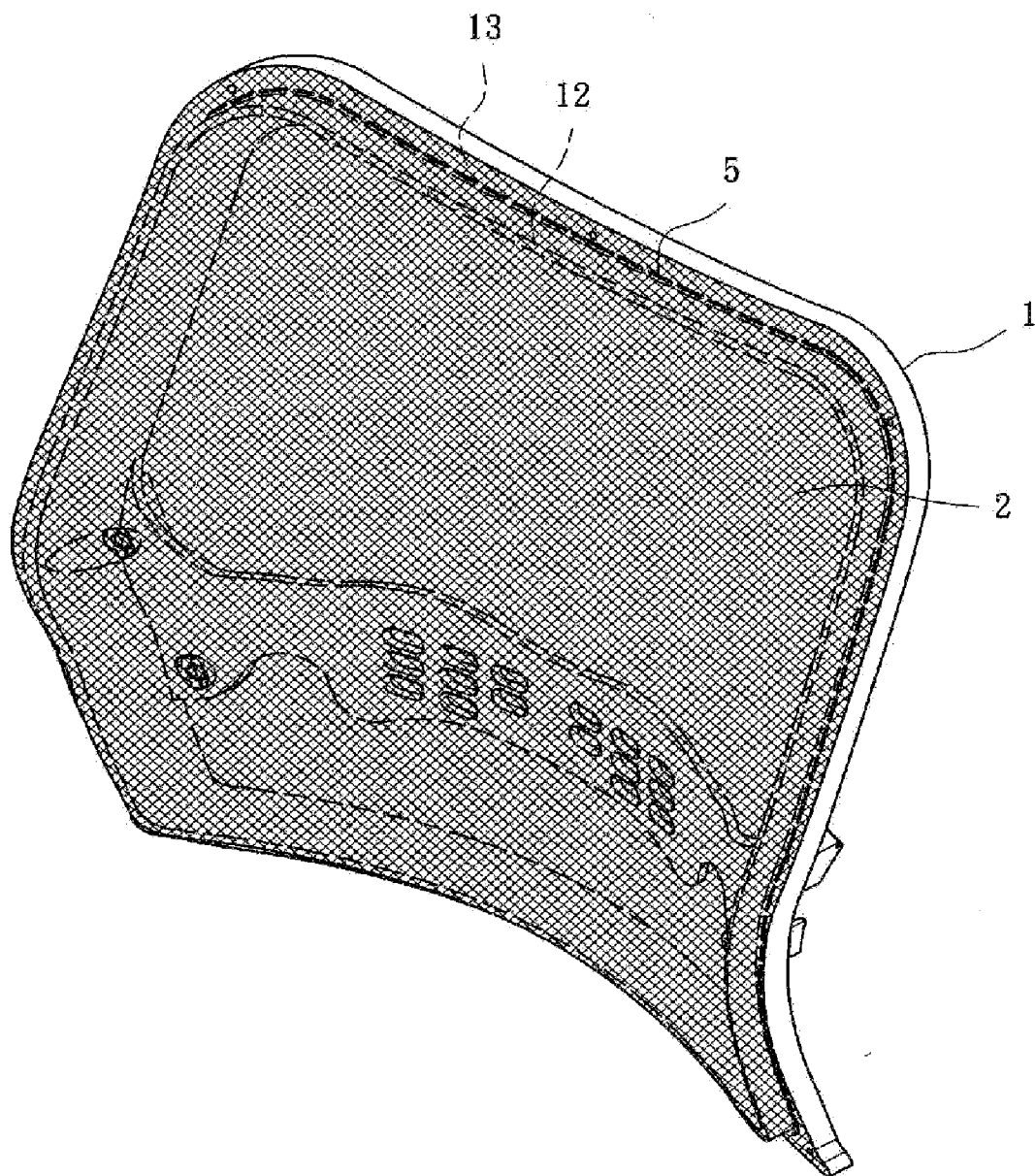


FIG. 3

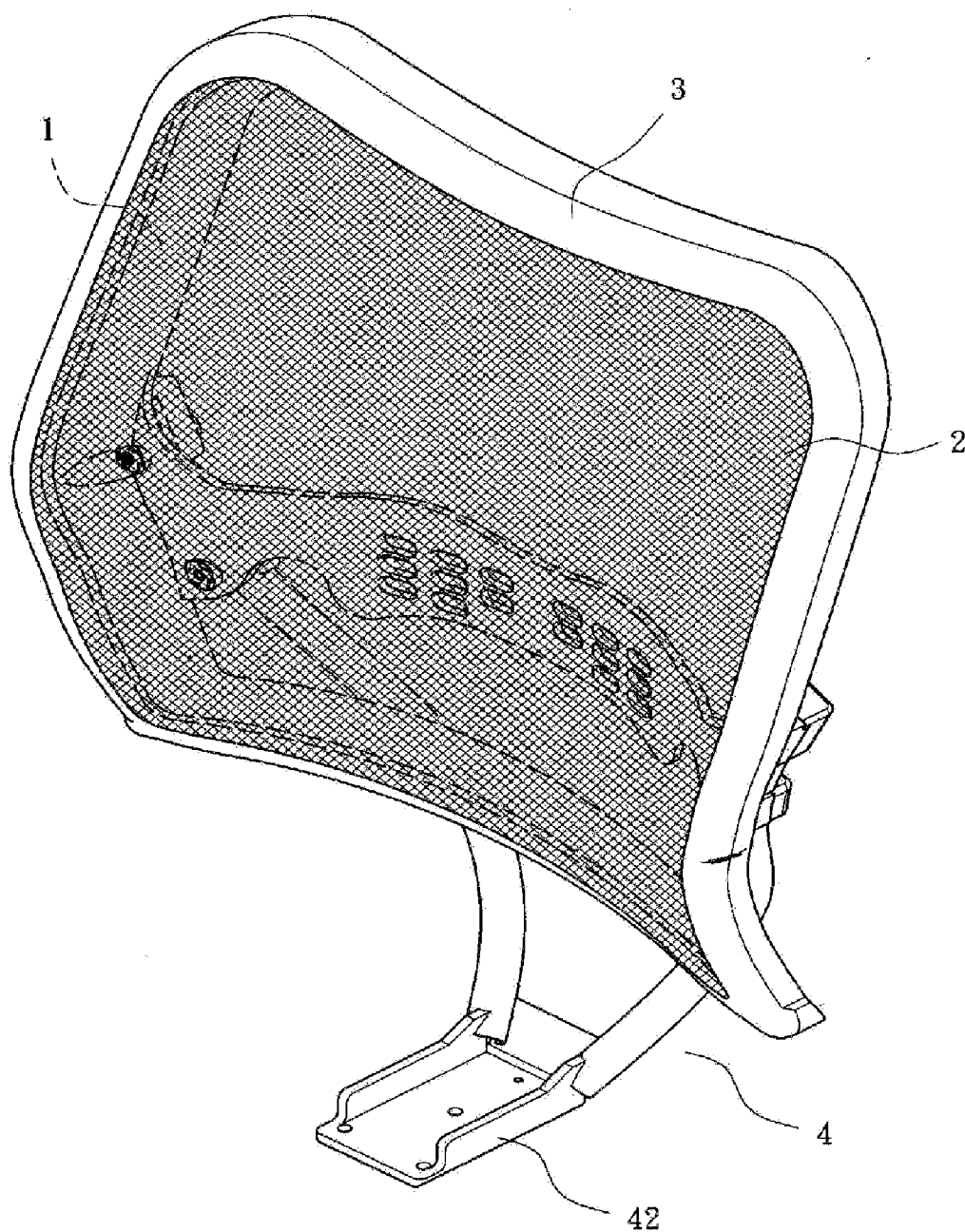


FIG. 4

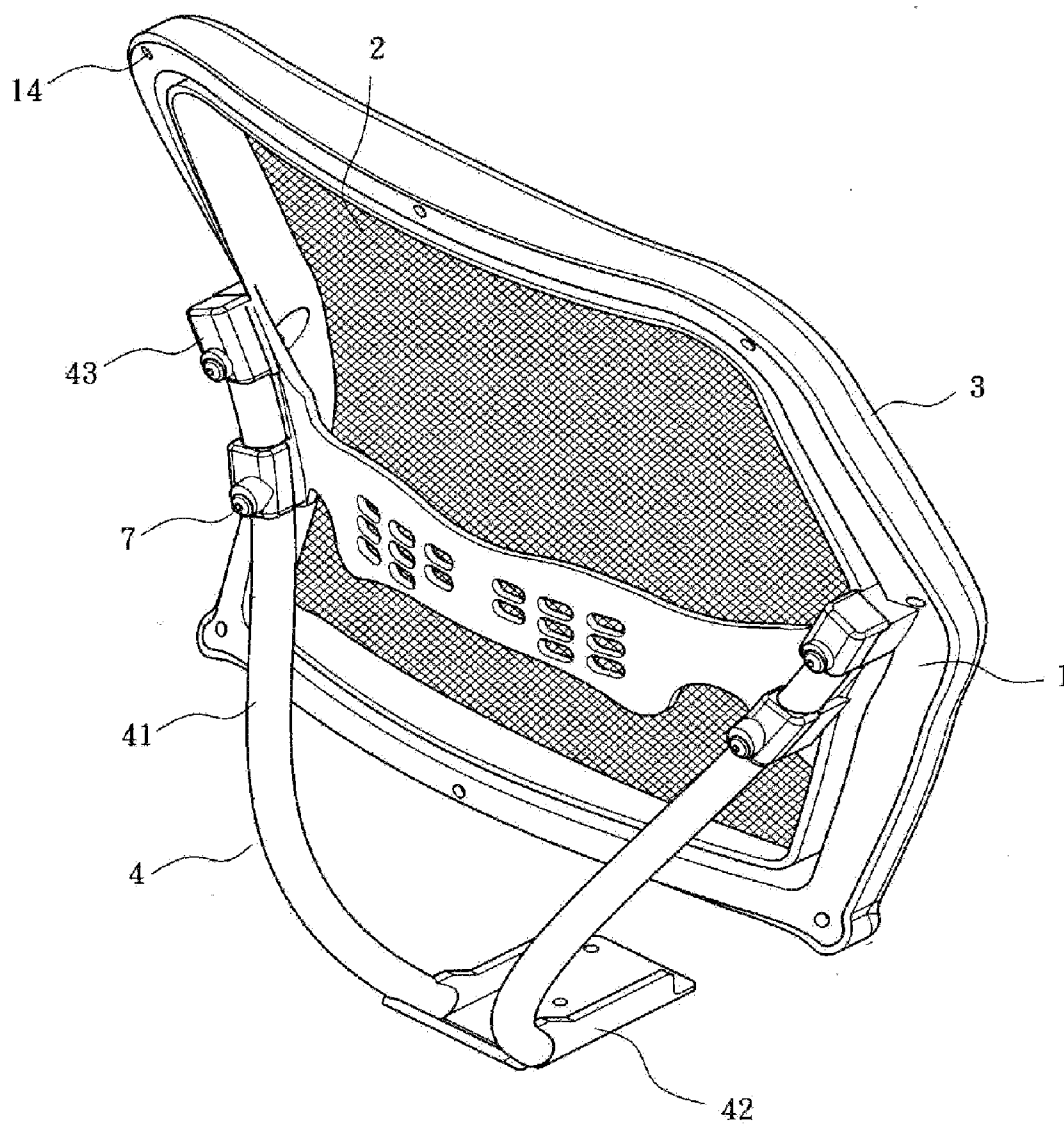
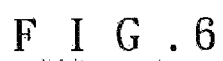


FIG. 5



CHAIR BACKREST

BACKGROUND OF THE INVENTION

[0001] 1. Field of the Invention

[0002] The present invention relates to a chair backrest. In particular, it relates to a backrest with a net which provides stronger support against forces applied, and an enhanced stability in frame-net assembly, along with significant ventilation, sustained elasticity, and substantial durability of the net.

[0003] 2. Background Art

[0004] A disadvantage of conventional backrests made with an outer surface of cloth or leather is the lack of ventilation, resulting in a sweaty situation for a chair occupant after sitting on for some time. Some improved conventional backrests are equipped with a ventilated soft net, and a loop frame made of hard plastics. The ventilating net is then installed in its associated loop frame by connecting pieces (such as a metal plate) along the edge or end portions of the net, the disadvantage of which includes:

[0005] (1) When forces applied by a user's back to the soft net of the backrest are substantially large, connecting pieces engaging the frame with the net is very likely to be displaced out of its original position, resulting in dislocation of the net and thereby dissociation of the net and the frame.

[0006] (2) Due to the sensitivity of hard plastic materials to environmental temperatures, the shape of a backrest frame made of hard plastics tends to deform with the temperatures; the frame has a tendency to contract in low temperatures, and to expand in high temperatures, adversely affecting the durability of the frame.

[0007] (3) The supporting force of a conventional chair backrest relies mostly on a single frame of hard plastics, which is not structurally durable for an overweight chair occupant.

SUMMARY OF THE INVENTION

[0008] It is the therefore purpose of this invention to provide a cost-effective compact chair backrest which is easy to assembly, and yet, offer substantially ventilation, sustained elasticity, and longer life of the chair net. What distinguishes the present invention from the prior arts includes:

[0009] (I) The unique configuration of the frame-net interface, which includes a huge global outer surface area of the frame, rather than just some localized spots along the border of a net; the former does a better job in securing the net onto the frame than the latter. Such a global frame-net interface is created by having a protruding eaves along the loop-like frame. The cross-sections of the frame-net interface thus designed may have a shape similar to a mirror image of L (such as "J"), an upside-down L (such as "T"), or an upside-down and mirrored image of L (such as "I"), depending on different sections of the frame concerned (when a partially front side view is taken). In sum, the frame-net interface contains two planes forming a sharp angle close to 90-degree, which intensifies the elastic tension of the net, and at the same time, increases the frame-net contact area without degrading the outer appearance of the backrest.

[0010] (II) In a similar way, the net fixing device in the present invention is embodied by a global fixing loop

lying on top of the net over the frame-net interface, in addition to the conventional fasteners and fixing bores.

[0011] (III) A loop-like frame cover, mounting on top of the frame-net interfacing area, acts as an extra force (beside the net fixing loop, and the conventional fasteners and fixing holes) to stabilize both the net and the net fixing loop underneath; in the meantime, a suppressing lock jutting out along the inner surface of the frame cover is used to further stabilize the border of the net and the net fixing loop in position.

[0012] (IV) The unique configuration of supporting arms intensifies the frame against deformation caused by constant or extreme temperature changes, or over-weights of a chair occupant.

[0013] (V) A back reinforcement board, attached to the rear of the frame on each of the right and left side of the frame, gives further support for the loop-like frame structure.

[0014] Having examining the differences between the present invention and the prior arts, we will now summarize the prevent invention as follows.

[0015] This invention features a backrest with four main components: (1) a loop-like frame made of hard plastics, (2) an elastic latticed net, (3) a frame cover, and (4) a pair of frame supporting arms.

[0016] A preferred embodiment in this invention has a net locked in closely with an ergonomically configured frame, armored with a curved-V shape supporting-arms, and a back-reinforcement board traversing the right and left side of the frame to prevent the frame from being deformed or ruptured. Furthermore, to prevent the net from coming off the frame which it is originally engaged to, a fixing loop and a frame cover are used to secure the border of the net onto the frame.

[0017] To be more specific, the outer front-most periphery of the frame (facing toward a chair occupant's back) protrudes out of the frame, together with the opposing outer back-most periphery of the frame, defining a loop-like frame-net contact area, which has a sharp angle. The border of the net is secured onto the frame-net contact area by a fixing loop placed on its top. A frame cover, configured in a way to fit onto the frame, is installed over the frame-net interface, hemming in (within its inner confine) both the net border and the net fixing loop underneath.

[0018] The advantages of the present invention over the known prior art will become more apparent to those of ordinary skilled in the art upon reading the following descriptions in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

[0019] FIG. 1 is an exploded perspective front view of a chair backrest in accordance with the present invention.

[0020] FIG. 2 is an exploded perspective rear view of a chair backrest in accordance with the present invention.

[0021] FIG. 3 is a perspective front view of the frame and the latticed net in assembly, with a net fixing loop (shown in darkened dashed line) mounting on top of the net.

[0022] FIG. 4 is a perspective assembly front view of a chair backrest in accordance with the present invention.

[0023] FIG. 5 is a perspective assembly rear view of a chair backrest in accordance with the present invention.

[0024] FIG. 6 is a side cross-sectional assembly view of a chair backrest in accordance with the present invention, with two partially enlarged views.

DETAILED DESCRIPTION OF THE DRAWINGS

[0025] Referring to FIG. 1-2, a backrest in accordance with the present invention generally comprises a frame 1, a latticed net 2, a frame cover 3, and supporting arms 4.

[0026] The frame 1 is made from hard plastics in the shape of a loop tilting outwardly in the lower back portion thereof. At the rear side of the frame 1 (facing away from a chair occupant) is equipped with a back-reinforcement board 11, traversing between the left and the right side of the frame 1. The back-reinforcement board curves toward the rear of the frame and comprises ventilating bores 111. The frame 1 is further intensified by the back reinforcement board 11. As a result, the elastic tension of the net 2 installed over the frame 1 is also enhanced.

[0027] The loop-like front edge 12 of the frame 1 protrudes outwards (facing a chair occupant) and defines a frame-net interface 13, the shape of which at any point of the frame has a sharp angle like a mirror image of L (such as “J”), an upside-down L (such as “T”), or an upside-down and mirrored image of L (such as “l”), depending on different sections of the frame concerned. The loop-like front edge 12 curves smoothly at the two upper corners. The frame-net interface 13 is further perforated with a couple of frame-net fixing holes 14, through which fasteners extend.

[0028] The frame-arm fixing section 15 is each positioned on the right and left side of the rear of the frame 1, declining slightly inwardly toward the lower center of the frame 1. Through the frame-arm fixing device 15 on each of the left and right side of the frame 1, the supporting arms 4 is assembled to the frame 1. Each of the frame-arm fixing section 15 includes a frame-pole fixing groove 151 for engaging with each of the two supporting poles; the frame-pole fixing groove 151 is formed with frame-pole fixing bores 152 for locking the supporting pole 41 with the frame-arm fixing device 15, and hence the frame 1.

[0029] The latticed net is made from soft materials with its border contacting the frame-net interface 13 secured by a net fixing loop 5. Alternatively, the net fixing loop 5 can be replaced by any equivalent device for nailing the net 2 onto the frame 1.

[0030] The frame cover 3 is configured in a loop for mounting onto the frame 1, with both the border of the lattice net 2 and the net fixing loop 5 enclosed under the inner side thereof. Furthermore, a suppressing lock 31 juts out along the inner surface of the frame cover 3 to suppress in position both the border of the net 2 and the net fixing loop 5. Frame cover fixing bores 32 are configured on the frame cover 3 at locations corresponding to where the frame-net fixing holes 14 of the frame 1 are formed.

[0031] Supporting arms 4 comprises two supporting poles 41, an arm base plate 42, and frame-arm fixing pieces 43. The pair of supporting poles 41 is made of metal, shaped like a curved-V. The metal arm base plate 42 at the lower ends of the supporting poles 41 connects to a chair seat (not shown in the figures). On the upper portion of the supporting poles 41 are formed frame-arm fixing bores 411. The frame-arm fixing piece 43 defines a pole-fixing grooves 431 and are formed with pole fixing holes 432 in it for engaging supporting arms 4 to the frame 1.

[0032] Referring to FIG. 3, in assembly, a latticed net 2 first mounts over the frame-net interface 13 of the frame 1, secured to the frame 1 by a fixing loop 5. Since a net 2 is supported by a projecting loop-like front edge 12, it is empowered with quite durable elasticity. Likewise, by having a sharp angle inside the frame-net interface 13, the net fixing loop 5 functions as a even stronger fastener in engaging the net 2 to the frame-net interface 13.

[0033] Referring to FIG. 1 to FIG. 6, a frame cover 3 mounts on top of the frame 1, covering the frame-net interface 3 completely. Fasteners (such as screws) extends through the frame-net fixing holes 14 of the frame 1, and the cover fixing holes 14 of the cover 3 such that the cover 3 encompasses the border of the net 2 and the fixing loop 5 underneath. On the whole, the backrest after complete assembly gives a single-piece elegant look. Furthermore, a suppressing loop 31 of a frame cover 3 provides an extra force to stabilize the net 2 and the fixing loop 5, and thereby to better secure them onto the frame-net interface 13.

[0034] Referring to FIG. 2 and FIG. 5, the upper ends of the pair of supporting poles 41 of supporting arms 4 are each assembled inside the frame-pole fixing groove 151. By having a fastener (such as a screw) extend through the pole fixing holes 432 of the frame-arm fixing piece 43, the frame-arm fixing bores 411 of the supporting poles 41, and the frame-pole fixing bore 152 of the frame 1, the frame 1 is armored by the supporting arms 4 against deformation or rupture (due to heavy weights or temperature changes), which in turns upholds the elastic tension of the net 2.

[0035] Although a preferred embodiment in accordance with the present invention has been provided in this application, it is to be understood that many other possible modifications and variations can be made without departing from the scope of the present invention hereafter claimed.

I claim:

1. A chair backrest comprising:

a frame made of hard plastics shaped like a closed loop with frame fixing holes, wherein

the outer front loop-like edge of said frame protrudes outwards facing a chair occupant's back, defining a loop-like frame-net interface with a sharp angle, wherein said frame-net interface being confined by said front loop-like edge and the opposing rear periphery of said frame; said frame-net interface is formed with frame-net fixing holes;

on each the right and left side of the rear of said frame is formed a frame-arms fixing section, defining an inner groove and frame-arms connection holes for engagement;

a net fixing piece;

a net made from soft materials with the border of said net secured onto said frame-net interface by said net fixing piece;

a frame cover shaped like a closed loop for mounting over said frame-net interface;

said frame cover is configured with cover-fixing bores at locations corresponding to said frame-net fixing holes;

along the inner surface of said frame cover is formed a loop-like suppressing lock for stabilizing in position the border of said net and said net fixing piece underneath; and

a supporting-arms assembly with branching V-like supporting poles; the upper portion of each said supporting poles connects to said frame-arms fixing section of said frame.

2. The chair backrest as claimed in claim 1 wherein said net fixing piece is a nailing loop.

3. The chair backrest as claimed in claim 1 wherein said supporting-arms assembly comprises:

two supporting poles, shaped in a V-like branch from bottom to top, with frame-arm fixing bores at the upper portion of said supporting poles;

a base plate to which the bottom ends of said two poles connect; and

frame-arm fixing pieces for engaging the upper portion of each said supporting pole to said frame-arms fixing section of said frame; each said frame-arms fixing piece defines an inner pole-fixing groove and a pole-fixing bore for fasteners to go through.

4. The chair backrest as claimed in claim 1 wherein said frame is made from hard plastics, while said supporting poles and said base plate are made of metals.

5. The chair backrest as claimed in claim 1 wherein said frame is reinforced with a frame supporting board, traversing between the right and left side of said frame in a curve way toward the rear of said frame.

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