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(54) **A reinforced crash helmet construction**

Verstärkte Sturzhelmkonstruktion

Construction de casque de protection renforcé

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Description

BACKGROUND OF THE INVENTION

[0001] The present invention relates to a reinforced crash helmet construction.

[0002] As is known, a continuous increase of use of motorcycles, motorbicycles, mainly in urban centers, and recent rules have compelled the users of the above vehicles to use crash helmets, which requirement has resulted a great development in the protective crash helmet field.

[0003] In turn, the great diffusion of the above protective crash helmets and the competitiveness of their makers have generated a requirement of providing differentiated helmets, for example also from their aesthetic standpoint, considering the fact that a comparatively high number of motor vehicle users require helmets which not only provide the necessary safety and functionality requirements, but which also have particular stylistic and aesthetic characteristics.

SUMMARY OF THE INVENTION

[0004] Accordingly, the aim of the present invention is to provide a protective reinforced crash helmet construction, particularly, though not exclusively, suitable for motorcyclists and sports use, which has a very high strength jointly with particularly pleasant aesthetic characteristics.

[0005] Within the scope of the above mentioned aim, a main object of the present invention is to provide such a crash helmet construction which can be made with a lot of different finishing pattern, according to requirements.

[0006] Another object of the present invention is to provide such a crash helmet construction which, owing to its specifically designed structurally characteristics, is very reliable and safe in operation.

[0007] Yet another object of the present invention is to provide such a crash helmet construction which can be easily made and which, moreover, is very competitive from a mere economic standpoint.

[0008] According to one aspect of the present invention, the above mentioned aim and objects, as well as yet other objects, which will become more apparent hereinafter, are achieved by a reinforced crash helmet construction comprising a crash helmet cap, made as a single-piece, and a cage element applied to an outer surface of said cap, as defined in claim 1.

[0009] EP 1 300 089 A1 discloses a reinforced crash helmet construction according to the preamble of claim 1.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] Further characteristics and advantages of the present invention will become more apparent hereinafter from the following disclosure of a preferred, though not exclusive, embodiment of the invention, which is illustrated, by way of an indicative but not limitative example, in the accompanying drawings, where:

Figure 1 is a perspective view of the crash helmet construction for motorcyclists, motorists, and sports applications in general, according to the present invention;

Figure 2 is an exploded perspective view showing the main components of the crash helmet construction according to the present invention;

Figure 3 is a partial cross-sectional view of a coupling region of the helmet cage to the helmet cap;

Figure 4 is a side elevation view of the crash helmet construction according to the invention;

Figure 5 is a front view of the crash helmet construction according to the invention; and

Figure 6 is a rear view of the crash helmet construction according to the invention.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0011] With reference to the number references of the above mentioned figures, the sports application crash helmet construction according to the present invention, which has been generally indicated by the reference number 1, comprises a crash helmet cap 2, made as a single-piece, in a per se known manner.

[0012] Said crash helmet cap 2 may be made of any desired thermoplastic material, for example polycarbonate, or composite plastic materials, reinforced by carbon fibers, and other suitable materials.

[0013] According to the present invention, to the outer surface of the crash helmet cap 2 has been applied a cage element 3, advantageously comprising a plurality of cross portions 4, coupled by two longitudinal side portions 5.

[0014] The cage element 3 is advantageously fixed to the crash helmet cap by suitable coupling systems, such as a glue material, and so on.

[0015] The cage element 3 substantially encompasses all the cap 2, with an exception of the side bottom portion 7 and the rear bottom portion of said cap.

[0016] The cage element 3, in particular, can be made of any desired materials, such as thermoplastic, composite and so on materials, and may comprise either the same material as the cap or a different material from the latter.

[0017] The side bottom portions 7 of the crash helmet cap 2 comprises a plurality of side flanks 8, also extending on the rear part of said cap.

[0018] Said side flanks 8 also operate as a support arrangement for a belt element 9 or other fixing device for latching said crash helmet as the latter is worn by a user, to meet legal requirements.

[0019] Said side flanks 8 are advantageously coupled to the cage element 3 and cooperate to reinforce the crash helmet construction.

[0020] Moreover, each said side flank 8 comprises a recessed region 10, in which is clamped an hinge end portion 11 of a swinging visor 12.

[0021] Inside the crash helmet cap 2 is applied a foamed material inner body, typically made of polystyrene, as well as the liner or padding, conventionally made of a fabric material, all in a per se known manner.

[0022] It should be pointed out that the material of the cap 2, in addition to being formed by a thermoplastic material or a composite material, can also be integrated by other materials such as metals, wood, leather or any other suitable materials.

[0023] From a crash helmet assembling standpoint, the helmet construction according to the invention can also be made, in addition to using rivets or glue materials, by ultrasound sealing or welding methods; seaming, swaging of thermoplastic pins, or by melting method.

[0024] Said belt element is clamped or fixed to the cap by rivets, as is conventionally provided, whereas the overlapping side flanks 8 also operate as a protective element for the head portions of outer rivets, against possible abrasions.

[0025] Moreover, said side flanks 8 may also operate as aesthetic covering elements for said rivets and have clamping means for clamping the crash helmet visor and its mechanical components.

[0026] It has been found that the invention fully achieves the intended aim and objects.

[0027] In fact, the invention provides a novel crash helmet construction, particularly for motorcyclists, and in general for all activities in which it would be necessary or advisable to protect the user head, the subject crash helmet having a very high strength and a very a pleasant aesthetic aspect.

[0028] Moreover, the crash helmet construction according to the present invention allows to easily change its aesthetic aspect, for example by using different colors and materials for the helmet cap and cage element, to provide a broad range of color combinations for the user.

[0029] In practicing the invention, the used materials, as well as the contingent size and shapes, can be any, according to requirements.

Claims

1. A reinforced crash helmet construction (1), said crash helmet construction comprising a single piece crash helmet cap (2), and a cage element (3) fixed to an outer surface of said cap (2), **characterized in that** said cage element (3) substantially encompasses all said cap (2) with the exception of bottom side and rear portions of said cap, that said bottom side portions of said cap comprise side flanks (8) also extending on the rear part of said cap (2) and that said side flanks are coupled to said cage element and cooperate therewith to strengthen said crash helmet construction.

2. A reinforced crash helmet construction, according to claim 1, **characterized in that** said cap (2) is made either of a thermoplastic or a composite material.

3. A reinforced crash helmet construction, according to claim 2, **characterized in that** said cap (2) material comprises, or is coated by, metal, wood, leather or other suitable coating materials.

4. A reinforced crash helmet construction, according to claim 1, **characterized in that** said cage element (3) comprises a plurality of cross cage portions (4) coupled by lateral longitudinal portions (5).

5. A reinforced crash helmet construction, according to one or more of the preceding claims, **characterized in that** said cage element (3) is fixed to said cap by rivets, glue, ultrasound welding, seaming, thermoplastic melting pins.

6. A reinforced crash helmet construction, according to claim 2, **characterized in that** said cap is made of polycarbonate, or a composite material such as a carbon fiber material and any other suitable materials.

7. A reinforced crash helmet construction, according to claim 1, **characterized in that** said cage element (3) is made of a thermoplastic and composite material either equal or different from that forming said cap (2).

8. A reinforced crash helmet construction, according to claim 1, **characterized in that** said side flanks (8) support a belt element (9) for latching said crash helmet as the latter is worn by a user.

9. A reinforced crash helmet construction, according to claim 2, **characterized in that** said belt element (9) is fixed to said cap (2) by rivets.

10. A reinforced crash helmet construction, according to claim 1, **characterized in that** said side flanks (8) further operate as a rivet covering element for covering rivets and fixing elements for clamping a crash helmet swinging visor (12).

11. A reinforced crash helmet construction, according to one or more of the preceding claims, **characterized in that** a foamed material inner body is applied inside said cap (2), said foamed material body comprising polystyrene and a further fabric material coating or padding.

Patentansprüche

1. Verstärkter Sturzhelmbau (1), der Sturzhelmbau

umfassend einen einstückigen Sturzhelmaufsatz (2) und ein Käfigelement (3), das starr an einer Außenfläche des Aufsatzes (2) befestigt ist, **dadurch gekennzeichnet, dass** das Käfigelement (3) den gesamten Aufsatz (2) unter Ausnahme von Unterseiten- und hinteren Abschnitten des Aufsatzes im Wesentlichen einschließt, dass die Unterseitenabschnitte des Aufsatzes Seitenflanken (8) umfassen, die sich außerdem am hinteren Teil des Aufsatzes (2) erstrecken, und dass die Seitenflanken zum Stärken des Sturzhelmbaus an das Käfigelement gekuppelt sind und damit zusammenwirken.

2. Verstärkter Sturzhelmbau nach Anspruch 1, **dadurch gekennzeichnet, dass** der Aufsatz (2) entweder aus einem Thermoplast oder aus einem Verbundmaterial hergestellt ist.

3. Verstärkter Sturzhelmbau nach Anspruch 2, **dadurch gekennzeichnet, dass** das Material des Aufsatzes (2) Metall, Holz, Leder oder andere geeignete Beschichtungsmaterialien umfasst oder damit beschichtet ist.

4. Verstärkter Sturzhelmbau nach Anspruch 1, **dadurch gekennzeichnet, dass** das Käfigelement (3) mehrere Käfigquerelemente (4) umfasst, die durch längs verlaufende Seitenabschnitte (5) gekuppelt sind.

5. Verstärkter Sturzhelmbau nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** das Käfigelement (3) durch Nieten, Klebstoff, Ultraschallschweißen, Falzen, thermoplastische Schmelzzapfen an dem Ansatz befestigt ist.

6. Verstärkter Sturzhelmbau nach Anspruch 2, **dadurch gekennzeichnet, dass** der Aufsatz aus Polycarbonat oder einem Verbundmaterial wie etwa einem Kohlefasermaterial und jeglichen anderen geeigneten Materialien hergestellt ist.

7. Verstärkter Sturzhelmbau nach Anspruch 1, **dadurch gekennzeichnet, dass** das Käfigelement (3) aus einem Thermoplast und einem Verbundmaterial hergestellt ist, das entweder dasselbe ist wie jenes, das den Aufsatz (2) ausbildet, oder davon abweicht.

8. Verstärkter Sturzhelmbau nach Anspruch 1, **dadurch gekennzeichnet, dass** die Seitenflanken (8) ein Gurtelement (9) zum Zuklinken des Sturzhelms stützen, wenn Letzterer von einem Benutzer getragen ist.

9. Verstärkter Sturzhelmbau nach Anspruch 2, **dadurch gekennzeichnet, dass** das Gurtelement (9) durch Nieten an dem Aufsatz (2) befestigt ist.

10. Verstärkter Sturzhelmbau nach Anspruch 1, **dadurch gekennzeichnet, dass** die Seitenflanken (8) als Nietenabdeckelement zum Abdecken von Nieten und Befestigungselementen zum Einspannen eines schwenkbaren Sturzhelmvisiers (12) wirken.

11. Verstärkter Sturzhelmbau nach einem der vorhergehenden Ansprüche, **dadurch gekennzeichnet, dass** ein Schaummaterialinnenkörper innerhalb des Aufsatzes (2) aufgebracht ist, wobei der Schaummaterialkörper Polystyrol und eine weitere Gewebematerialbeschichtung oder - polsterung umfasst.

Revendications

1. Casque antichocs renforcé (1), ledit casque antichocs comprenant une calotte (2) de casque antichocs, en une seule pièce, et un élément d'arceau de protection (3) fixé sur une surface extérieure de ladite calotte (2), **caractérisé en ce que** ledit élément d'arceau de protection (3) entoure sensiblement l'intégralité de ladite calotte (2) à l'exception des portions arrière et latérales inférieures de ladite calotte, **en ce que** lesdites portions latérales inférieures de ladite calotte comprennent des flancs latéraux (8) qui se prolongent également sur la partie arrière de ladite calotte (2) et **en ce que** lesdits flancs latéraux sont couplés au dit élément d'arceau de protection et coopèrent avec celui-ci pour renforcer ledit casque antichocs.

2. Casque antichocs renforcé, selon la revendication 1, **caractérisé en ce que** ladite calotte (2) est composée d'un matériau soit thermoplastique, soit composite.

3. Casque antichocs renforcé, selon la revendication 2, **caractérisé en ce que** ledit matériau de calotte (2) comprend, ou bien est revêtu de métal, de bois, de cuir ou de tout autre matériau de revêtement approprié.

4. Casque antichocs renforcé, selon la revendication 1, **caractérisé en ce que** ledit élément d'arceau de protection (3) comprend une pluralité de portions d'arceau de protection croisées (4), couplées par des portions longitudinales latérales (5).

5. Casque antichocs renforcé, selon une ou plusieurs des revendications précédentes, **caractérisé en ce que** ledit élément d'arceau de protection (3) est fixé à ladite calotte par des rivets, de la colle, une soudure par ultrasons, un sertissage, des axes à fusion thermoplastique.

6. Casque antichocs renforcé, selon la revendication 2, **caractérisé en ce que** ledit arceau de protection

est composé de polycarbonate, ou d'un matériau composite tel qu'un matériau en fibre de carbone et tout autre matériau approprié.

7. Casque antichocs renforcé, selon la revendication 1, **caractérisé en ce que** ledit élément d'arceau de protection (3) est composé d'un matériau thermoplastique et composite soit équivalent à, soit différent de celui formant ladite calotte (2).

8. Casque antichocs renforcé, selon la revendication 1, **caractérisé en ce que** lesdits flancs latéraux (8) supportent un élément de jugulaire (9) destiné à assujettir ledit casque antichocs quand celui-ci est porté par un utilisateur.

9. Casque antichocs renforcé, selon la revendication 2, **caractérisé en ce que** ledit élément de jugulaire (9) est fixé à ladite calotte (2) par des rivets.

10. Casque antichocs renforcé, selon la revendication 1, **caractérisé en ce que** lesdits flancs latéraux (8) servent en outre d'élément recouvrant les rivets, afin de recouvrir les rivets et les éléments de fixation pour brider une visière basculante de casque antichocs (12).

11. Casque antichocs renforcé, selon une ou plusieurs des revendications précédentes, **caractérisé en ce qu'**un corps intérieur en plastique alvéolaire est appliqué à l'intérieur de ladite calotte (2), ledit corps en plastique alvéolaire comprenant du polystyrène et un autre revêtement ou rembourrage en tissu.

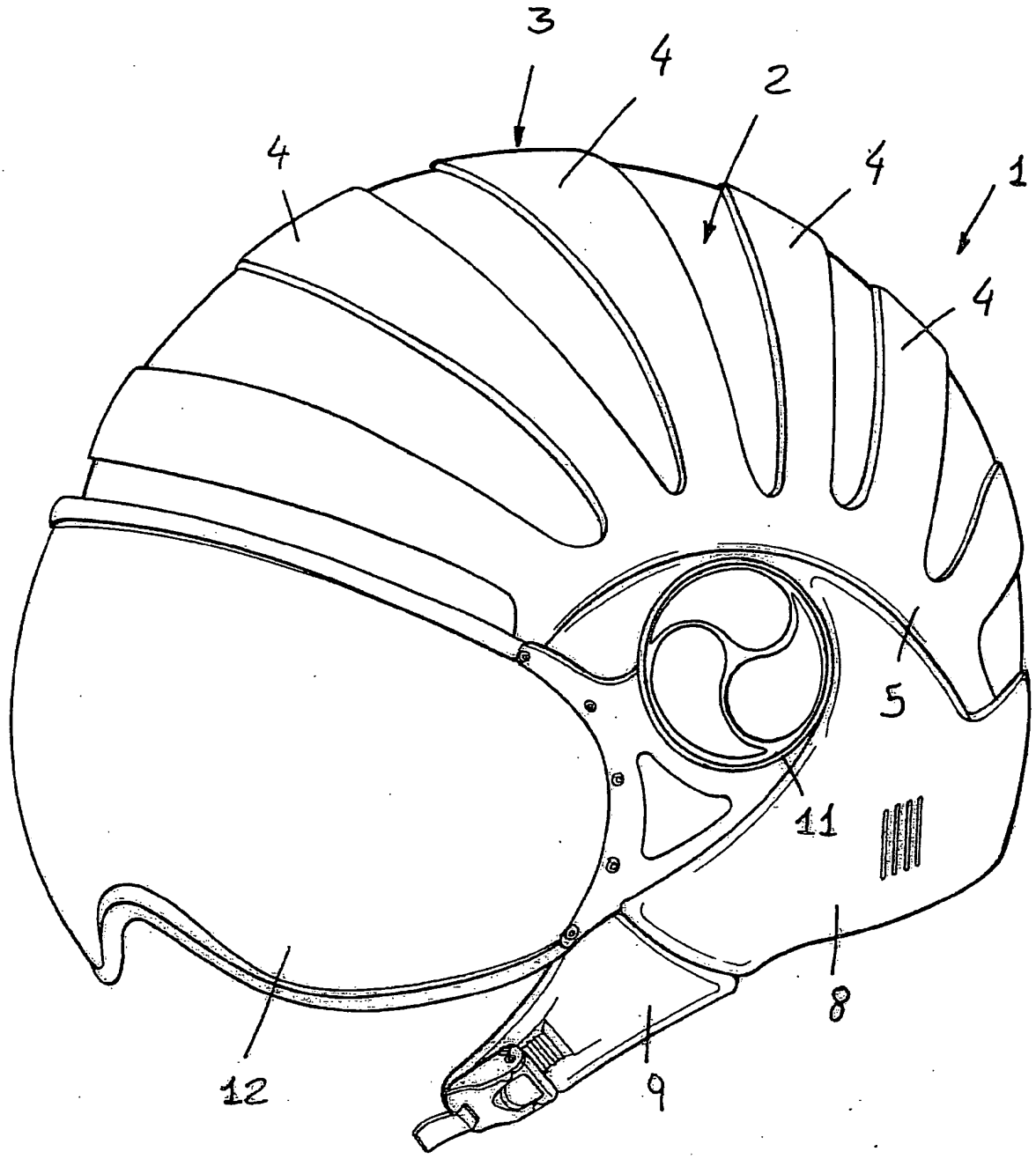

FIG. 1

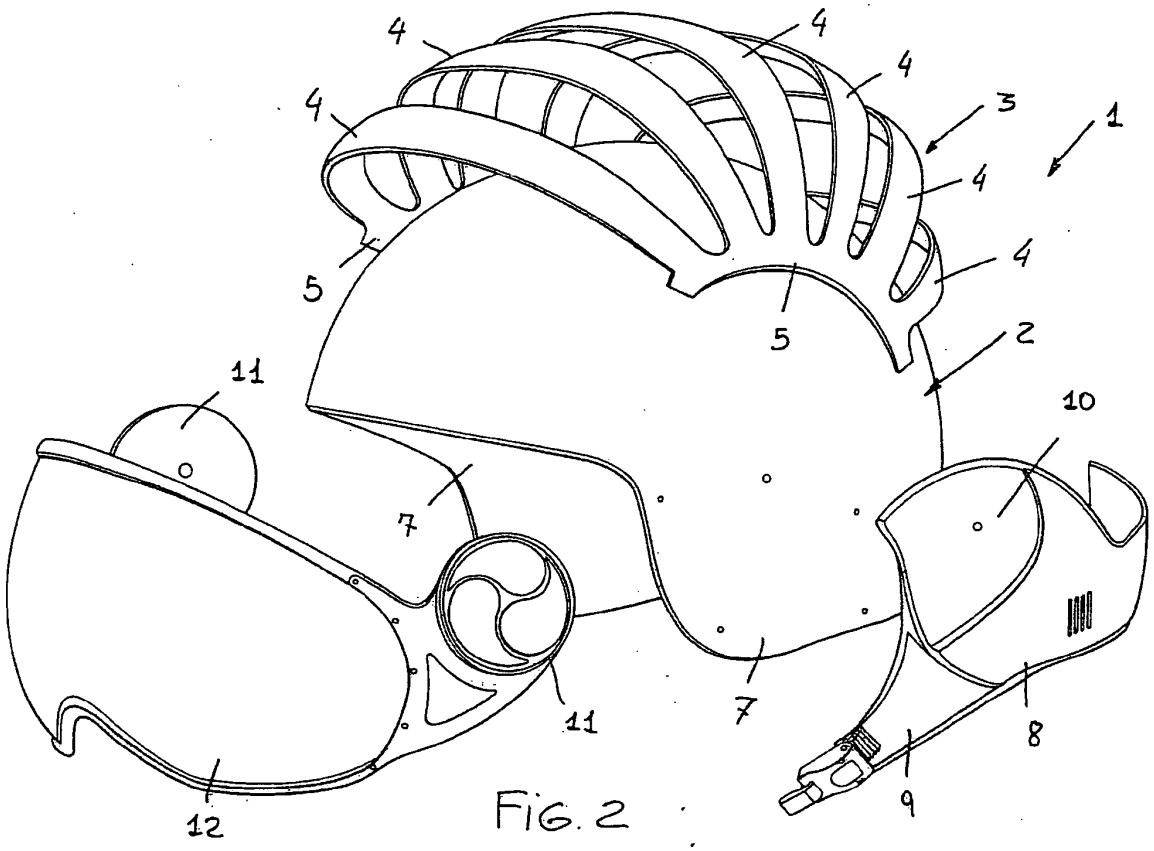

FIG. 2

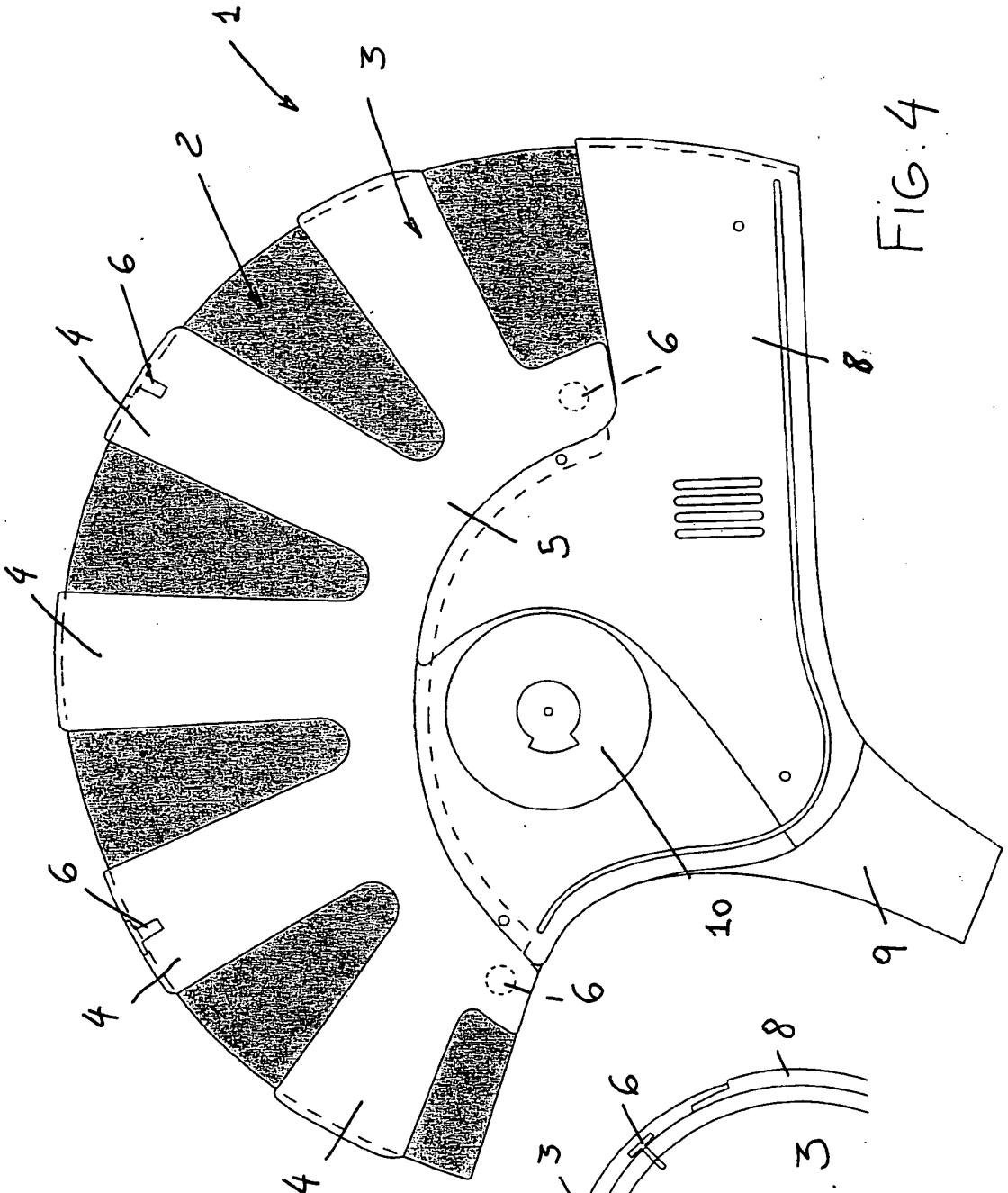

FIG. 4

FIG. 3

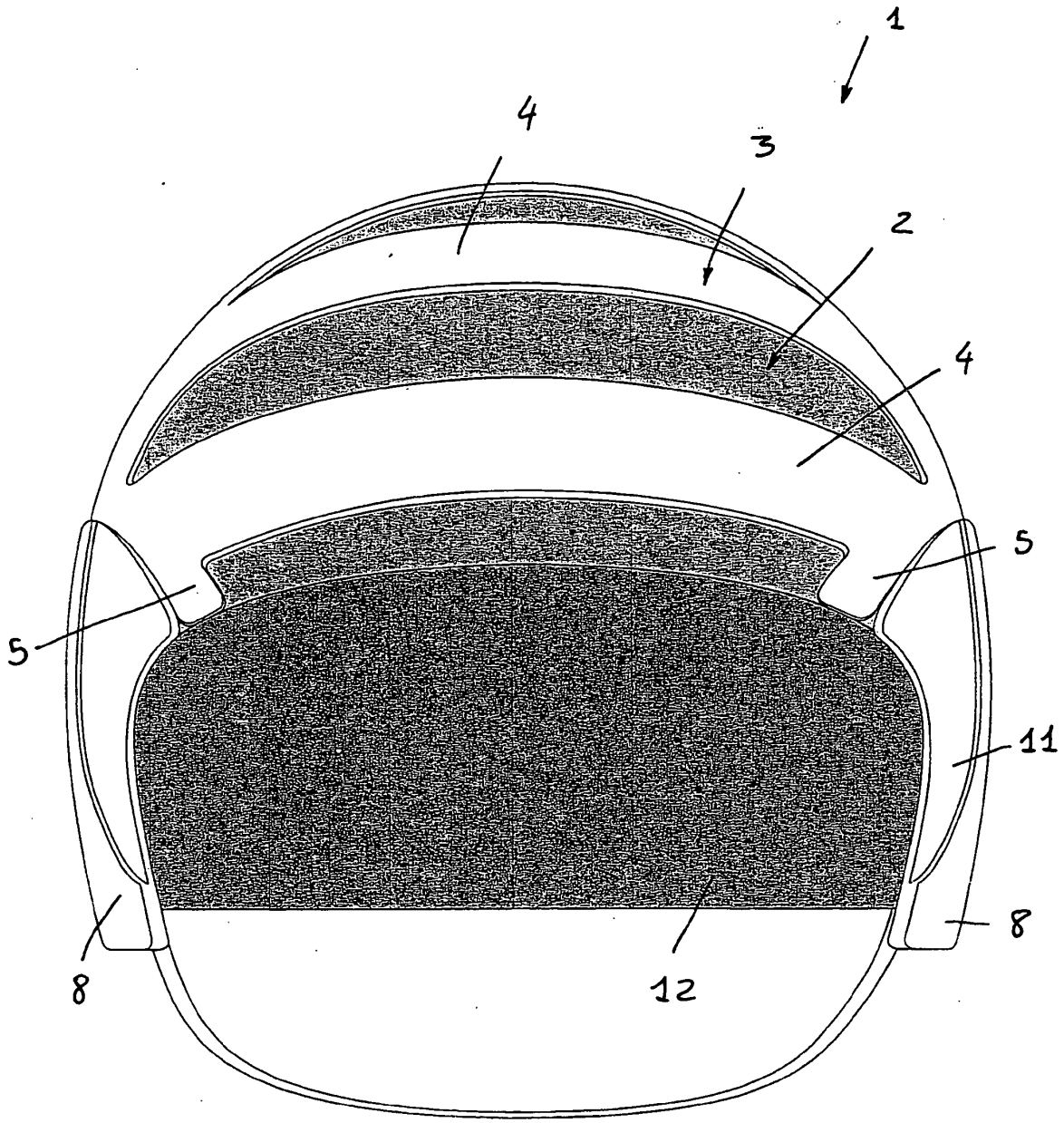

FIG. 5

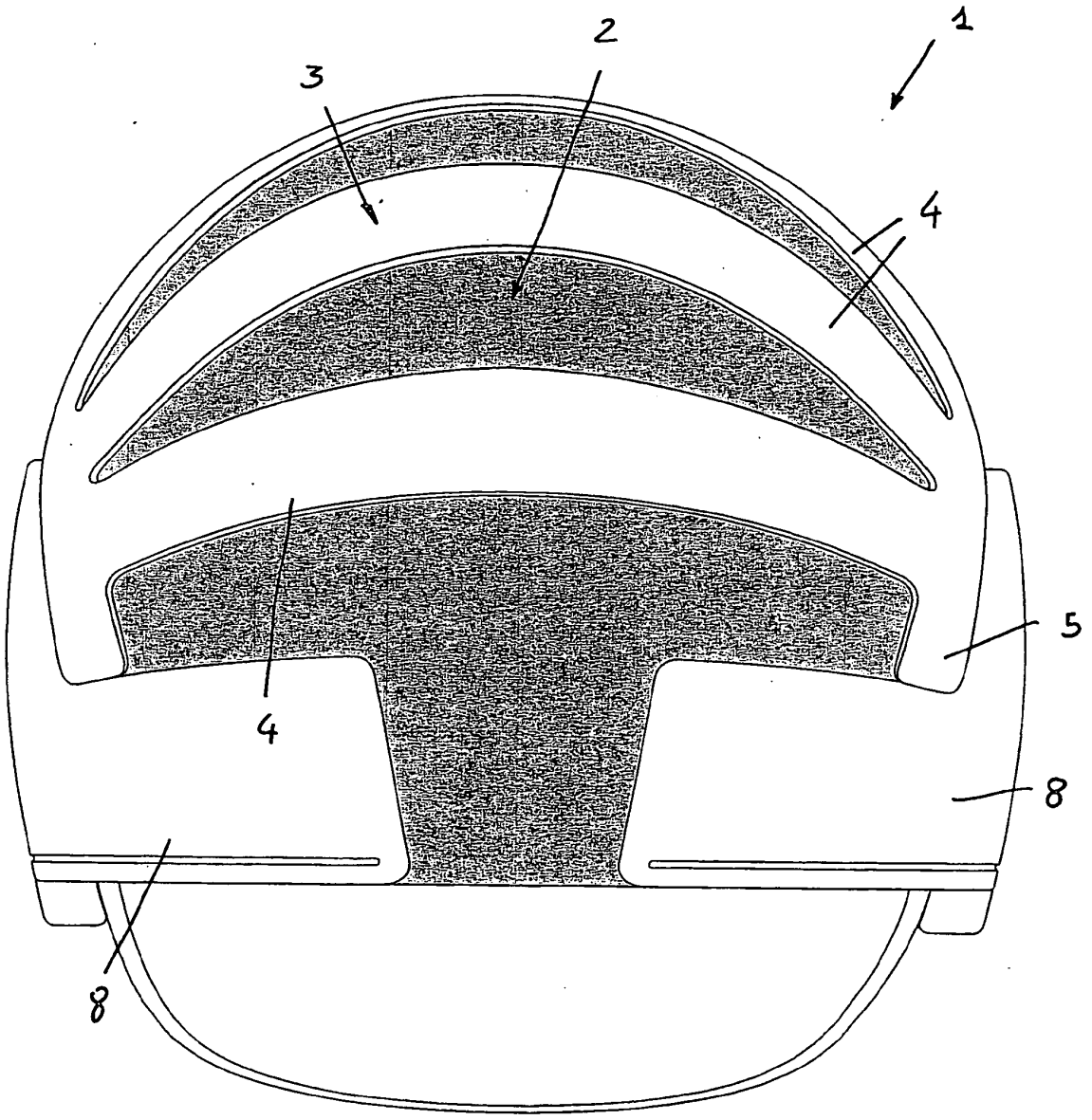

FIG. 6