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(54) **Protective helmet**

Schutzhelm

Casque de protection

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Description

[0001] The present disclosure refers to an improved protection helmet, in particular a helmet for the protection of a user's head during a sporting activity, such as, e.g., skiing, cycling, skating, mountaineering and the like.

[0002] Use of protection helmets is quite important in all those sports or work activities entailing the real risk that the user may be subjected to violent knocks to the head and suffer lesions consequent therefrom, even very serious ones.

[0003] In the sport motorcycling and automotive field, the use of said helmets has become customary since many years, in light of the extremely serious consequences that can ensue from an impact at the high speeds typical of said field.

[0004] Therefrom, helmet use has gradually spread to other fields as well: skiing, cycling, skating, mountaineering, working activities on construction yards, production plants or in hazardous environments, and further fields.

[0005] However, the use of a protection helmet poses some problems under the standpoint of the user's comfort; in fact, a helmet typically comprises a continuous shell, cap-shaped and of anti-knock material, having thermal insulation features that do not allow a user's head to be sufficiently cooled and ventilated.

[0006] Inside the helmet, in particular during physical activity or hot-weather spells and on sunny days, conditions of quite high temperature and humidity can be reached, which are continuously enhanced by user's head transpiration.

[0007] Therefore, the same user finds an increasingly less comfortable condition, until being forced to take off the helmet in an attempt to restore the initial conditions. In the motorcycling field the above-disclosed problem has been partially solved by providing a helmet provided with a ventilation system comprising front air intakes on the cap and outlets, besides related ducts, so as to implement a route for air transiting inside the helmet itself, allowing ventilation thereof. An air flow is forced inside the helmet by the difference in speed between the user and ambient air; therefore the extent of the air flow increases with the increase of the speed of the user and/or the vehicle on which he/she is travelling.

[0008] Therefore, it will be understood that such a ventilation system is rather effective in case of a motorcyclist, thanks to the high speeds typically reached, whereas it is substantially ineffective for many of the other activities listed above, which take place at limited or even nil speeds. E.g., in case of downhill or cross-country skiing, the user seldom reaches sufficiently high speeds to ensure adequate ventilation inside a helmet adopting the above-described ventilation system; actually, while waiting to access to a ski lift the user is at a substantially nil speed and therefore the described ventilation effect is completely nullified.

[0009] Moreover, protection helmets have already been advanced, in particular for the cycling field, whose

cap topwise has holes or apertures putting the helmet-enclosed volume in communication with the external environment. This typology of helmets allows a certain degree of ventilation, yet at the same time leaves the user's head exposed to the inclemency of the weather. In fact, in case of rain the drops easily pass through said apertures and get directly to the user's head, which therefore will be soaked; this constitutes a remarkable drawback of such known-art helmets.

[0010] DE 19615049 discloses a protective helmet for cyclists wherein openings in the shell are covered with a breathable, liquid-proof material such as Goretex. DE29621145U discloses a protective helmet for a climbers in artificial climbing paths. DE4129339 discloses a cyclists protective helmet. DE202004008248 discloses a helmet used by bicycle riders and including an air permeable ultraviolet protection cloth.

[0011] The present disclosure stems from the technical problem of providing a protection helmet allowing to overcome the drawbacks mentioned above with reference to the known art.

[0012] This is attained by providing a helmet for the protection of a user's head, as defined in independent claim 1.

[0013] Secondary features of the subject of the present disclosure are defined in the corresponding dependent claims thereof.

[0014] The subject of the present disclosure provides some relevant advantages. The main advantage lies in that the helmet of the present disclosure allows an effective ventilation of a user's head.

[0015] A second advantage lies in that the helmet of the present disclosure allows to effectively protect the user's head also from atmospheric events, like e.g. rain and snow, besides obviously from knocks

[0016] Another advantage lies in that the helmet of the present disclosure is comfortable to the user and versatile in use.

[0017] Still another advantage lies in that the helmet of the present disclosure is of simple and inexpensive manufacturing.

[0018] Further advantages, features and the operation steps of the subject of the present disclosure will be made apparent by the following detailed description of a preferred embodiment thereof, given by way of example and not for limitative purposes. Reference will be made to the figures of the annexed drawings, wherein:

- Figure 1 shows an exploded perspective view of a helmet according to the present disclosure;
- Figure 2 shows a partially sectional perspective view of the helmet of Figure 1 when assembled; and
- Figure 3 shows the helmet of Figure 1 worn on by a user.

[0019] By reference number 1 it is denoted a preferred embodiment of a helmet 1 according to the present disclosure, shown in Figure 1 in an exploded perspective

view; the helmet 1 is intended for the protection of a head 8 of a user, in particular a skier.

[0020] The helmet 1 comprises a cap-shaped protective shell 2, made of thermoplastic material or of other material of analogous sturdiness, and having dimensions such as to be adapted to satisfactorily enclose and protect the user's head 8.

[0021] More specifically, the protective shell 2 comprises an internal surface 21, or intrados, i.e. adapted to face a user's head 8, and an external surface 22, or extrados, adapted to face an environment external to the user.

[0022] Even more specifically, the protective shell 2 comprises a front zone 240, a rear portion or zone 241, only partially shown in the drawings, and side portions or zones, or sides, 242 and 243, of which the side portion 243 is only partially visible in the drawings.

[0023] In the protective shell 2 it is obtained at least one opening 23, in the example a single opening 23, adapted to put said internal surface 21 in fluid communication with said external surface 22.

[0024] Said opening 23 is preferably made in a top region of the protective shell 2, i.e. on the top of the protective shell 2.

[0025] More specifically, in the embodiment shown in Figure 1, said opening 23 extends over a wide portion of a top region of the helmet 1, extending from the front zone 240 of the helmet 1, i.e. at the anatomical region of a user's forehead, to the rear zone 241, i.e. at a user's occipital anatomical zone. In short, the opening 23 extends along a user's head vault which extends from the front zone 240 to the rear zone 241 along an anteroposterior direction.

[0026] Even more specifically, the opening 23 is partitioned into two portions, and it comprises a first opening portion 231, which, when the helmet 1 is worn-on by the user, occupies a front top region of the head 8 and/or a second opening portion 232, which occupies an occipital or rear region of the head 8.

[0027] As it is shown in Figure 1, the protective shell 2 comprises a stiffening element 28, i.e. with a reinforcement function, in the example in the form of a curved strip, of a rigid material, preferably of a thermoplastic material, or other material of alike sturdiness; said element 28 transversally straddles between, and connects in a bridge-like fashion, the side portions or sides 242, 243 of the protective shell 2.

[0028] Basically, the stiffening element 28 partitions the opening 23 into the two opening portions 231 and 232.

[0029] The helmet 1 further comprises a breathable member 3 which is arranged at least partially at said opening 23, preferably in a manner such as to occlude and fully cover the opening 23 itself. In particular, said breathable member 3 may be a body having a cap-like shape, and therefore have a shape substantially complementary to the shape of the protective shell 2. In other words, in the example, the breathable member 3 is a cap or bonnet extending at the front zone 240, rear zone 241 and side zones 242, 243 of said protective shell 2.

[0030] Even more preferably, the breathable member 3 is arranged on the side of the internal surface 21 of the protective shell 2, and is arranged in a manner substantially adjacent and adhering to the internal surface 21 of the protective shell 2 itself.

[0031] By the wording "breathable member" within the scope of the present disclosure it is understood a member having a structure such that it allows the transit of water vapour, preferably the outletting of water vapour from the inside of the helmet 1 to the outside, via the opening 23, whereas it prevents transit of a liquid, e.g., liquid-state water, preferably from the outside of the helmet 1 to the inside of the helmet via the same opening 23, thereby preventing water from entering into the helmet 1 at the user's head 8. E.g., the breathable member 3 is made of breathable fabric.

[0032] Even more preferably, the breathable member 3 has a preferential direction 35 for transit of vapour through the breathable member 3. Said preferential direction 35 is, e.g., locally orthogonal to the external surface 31 of the breathable member 3.

[0033] It can be understood how the cap-like shape of the breathable member 3 allows a transit of water vapour substantially at all of the user's head 8.

[0034] The helmet 1 further comprises a cover member 4 for covering the protective shell 2: said cover member 4 is a plate-shaped body, slightly curved and arranged at least partially at said opening 23, in the example it is arranged to fully cover the opening 23, so as to occlude the access thereto. As it may be observed, the cover member 4 is placed along a development surface of the protective shell 2, at the opening 23.

[0035] Preferably, also the cover member 4 is breathable.

[0036] In this regard, the cover member 4 may be provided with a plurality of through holes 41, or it may comprise a layer of material having honeycomb structure, so as to allow it also the water vapour transit therethrough.

[0037] Moreover, the cover member 4 is adapted to be removably locked on the helmet 1, in particular at a suitable perimetral seat 44 made on the external surface 22 of the protective shell 2, about the opening 23. In fact, the cover member 4 comprises reversible locking means 42, e.g. hooks, or alike removable fastening members, cooperating with corresponding locking means 24 borne by the helmet 1.

[0038] The helmet 1 may also comprise an additional layer 5, it also with a protective function, i.e. a pad for additional protection which is placed inside the region defined by the protective shell 2, on the side of the internal surface 21, even more preferably adhering to the breathable member 3; therefore, when the helmet 1 is worn-on, the additional layer 5 is arranged between the protective shell 2, or better between the breathable member 3, and the user's head 8.

[0039] Preferably, the additional layer 5 is a cap or bonnet made of polystyrene foam or the like. In other words, it may be observed from the drawings that also the ad-

ditional layer 5 is a cap or bonnet extending at the front zone 240, the rear zone 241 and the side zones 242, 243 of said protective shell 2.

[0040] Even more specifically, the additional layer 5 is provided to offer greater protection in case of a knock, therefore it is particularly suitable for all those activities entailing higher risks of a violent knock. The additional layer 5 comprises it also an internal surface 51, or intrados, only partially shown in the drawings, an external surface 52, or extrados, and a plurality of openings 53 extending between said internal surface 51 and said external surface 52.

[0041] Thus, it is obtained a multilayer helmet 1 exhibiting high breathability. Analogously to known-art helmets, the helmet 1 may further comprise a strap 6 or other system for the reversible fastening to the user's head 8.

[0042] In the light of the above, it will now have been understood how the helmet 1 allows to protect from knocks a user's head 8 during a sporting activity (skiing, cycling, skating, mountaineering, etc., and optionally also motor cycling and motor racing) or a work activity (on a construction yard or in production plants, firemen, etc.), at the same time allowing adequate ventilation of the user's head 8 regardless of the user's conditions of motion.

[0043] In fact, the hot and humid air found inside the helmet 1, produced by body heat and perspiration of the head 8, besides by solar irradiation, moves with a convective motion, going through the openings 53 of the additional layer 5 (when present), the breathable member 3, the opening (or openings) 23 of the protective shell 2 and the holes 41 or the honeycomb structure of the cover member 4, thereby getting to the external environment. In particular note that, as mentioned above, the breathable member 3 is made of a material such as to allow transit of humid air therethrough. The above-mentioned convective motions mainly depend on the difference in temperature and humidity between air inside the helmet 1 and external air; therefore, said motions set in even when the user is not in motion, like, e.g. in case of a skier waiting to access a ski lift.

[0044] In case of bad weather, rainwater that manages to go through the cover member 4 and the opening 23 is stopped by the breathable member 3, which is substantially liquid-proof. Thus, rainwater slides on the external surface 31 of the breathable member 3; by providing suitable means for water collecting and conveying obtained internally to the helmet 1, such as, e.g., eaves and channels formed on the internal surface 21 of the protective shell 2 or on the external surface 52 of the additional layer 5, water can, e.g., be outlet sideways at side portions 25 to which the strap 6 is constrained. Therefore, the user's head 8 remains dry as much as possible, even in case of bad weather.

[0045] Likewise, in case of perspiration of the head 8, water vapour transits through the breathable member 3, substantially at the entire extension of the breathable member 3, therefore substantially of the entire head 8,

and in zones at which the opening 23 is not present water vapour can condensate on the internal surface 21 of the protective shell 2, and percolate downward or in the collecting means.

[0046] In another embodiment, the breathable member 3 may be not cap-shaped, but, e.g., have shapes and sizes slightly greater than those of the opening 23 at which it is placed. Moreover, said member 3 might optionally be arranged on the external surface 22 of the protective shell 2, e.g., being interposed between the protective shell 2 and the cover member 4.

[0047] The subject of the present disclosure has been hereto described with reference to preferred embodiments thereof. It is understood that other embodiments might exist, all falling within the inventive concept of the same invention, and all comprised within the protection scope of the claims hereinafter.

Claims

1. A helmet (1) for the protection of a user's head (8), comprising

- a protective shell (2) including an internal surface (21) and an external surface (22), at least one opening (23, 231, 232) placing in fluid communication said internal surface (21) to said external surface (22),

- a breathable but substantially liquid proof member (3) arranged at least partially at said at least one opening (23, 231, 232),

- an additional protective layer (5) associated with said protective shell (2) on the side of said internal surface (21) and having an intrados (51), an extrados (52), and a plurality of openings (53) extending between said intrados (51) and said extrados (52),

characterised in that

said breathable member (3) has a cap-like shape extending in a front zone (240), a rear zone (241) and side zones (242, 243) of said protective shell (2), wherein said breathable member (3) is interposed between said protective shell (2) and said additional protective layer (5).

2. The helmet (1) according to claim 1, wherein said breathable member (3) fully occludes said at least one opening (23, 231, 232) of the protective shell (2).

3. The helmet (1) according to claim 1 or 2, wherein said breathable member (3) is made of breathable fabric.

4. The helmet (1) according to any one of claims 1 to 3, wherein the structure of said breathable member (3) is such that it has a preferential direction (35) for

transit of water vapour through the breathable member (3) itself.

5. The helmet (1) according to any one of claims 1 to 4, wherein said breathable member (3) is placed adhering to said internal surface (21) of the protective shell (2).
6. The helmet (1) according to any one of claims 1 to 5, wherein said breathable member (3) is adhering to said additional protective layer (5).
7. The helmet (1) according to any one of claims, 1 to 6, comprising collecting and conveying means for collecting and conveying water which reaches the breathable member (3), said collecting and conveying means being obtained internally to the helmet (1) and being configured to outlet water sideways at side portions (25) of the helmet (1).
8. The helmet (1) according to claim 7, wherein said collecting and conveying means comprises channels formed on the internal surface (21) of the protective shell (2) or on the extrados (52) of the additional protective layer (5).
9. The helmet (1) according to any one of claims 1 to 8, wherein said at least one opening (23, 231, 232) is in a top zone of the protective shell (2).
10. The helmet (1) according to any one of claims 1 to 9, wherein said at least one opening (23, 231, 232) of the protective shell (2) extends between a front zone (240) of the protective shell (2) corresponding to an anatomical forehead zone of the user's head (8), and a rear zone (241) of the protective shell (2) corresponding to an anatomical occipital zone of the user's head (8).
11. The helmet (1) according to claim 10, wherein the protective shell (2) comprises a stiffening element (28) transversally straddling between the side zones (242, 243) of the protective shell (2), said stiffening element (28) connecting the side zones (242, 243) and partitioning said at least one opening (23, 231, 232) into two opening portions (231, 232), a first opening portion (231) corresponding to a front top region of the user's head (8) and a second opening portion (232) corresponding to an occipital region of the user's head (8).
12. The helmet (1) according to any one of claims 1 to 11, further comprising a cover member (4), said cover member (4) being arranged at least partially at said at least one opening (23, 231, 232).
13. The helmet (1) according to claim 12, wherein said cover member (4) is provided with a plurality of

through holes (41).

14. The helmet (1) according to claim 12, wherein said cover member (4) comprises a layer of material having a honeycomb structure.
15. The helmet (1) according to any one of claims 12 to 14, wherein said cover member (4) is removably associated with said protective shell (2) by reversible locking means (42).

Patentansprüche

1. Helm (1) zum Schutz des Kopfes (8) eines Benutzers, aufweisend:
 - eine Schutzschale (2), die eine Innenoberfläche (21) und eine Außenoberfläche (22) beinhaltet, wobei zumindest eine Öffnung (23, 231, 232) die Innenoberfläche (21) mit der Außenoberfläche in eine fluidische Verbindung versetzt,
 - ein atmungsaktives, jedoch im Wesentlichen wasserdichtes Element (3), das zumindest teilweise an der zumindest einen Öffnung (23, 231, 232) angeordnet ist,
 - eine zusätzliche Schutzschicht (5), die der Schutzschale (2) auf der Seite der Innenoberfläche zugeordnet ist und eine innere gewölbte Fläche (51), eine äußere gewölbte Fläche (52) und eine Mehrzahl von Öffnungen (53) aufweist, die sich zwischen der inneren gewölbten Fläche (51) und der äußeren gewölbten Fläche (52) erstreckt,
- dadurch gekennzeichnet, dass das atmungsaktive Element (3) eine kappenförmige Form aufweist, die sich in einem vorderen Bereich (240), einem hinteren Bereich (241) und seitlichen Bereichen (242, 243) der Schutzschale erstreckt, wobei das atmungsaktive Element (3) zwischen der Schutzschale (2) und der zusätzlichen Schutzschicht (5) angeordnet ist.
2. Helm (1) nach Anspruch 1, wobei das atmungsaktive Element (3) die zumindest eine Öffnung (23, 231, 232) der Schutzschale vollständig verschließt.
3. Helm (1) nach Anspruch 1 oder 2, wobei das atmungsaktive Element (3) aus einem atmungsaktiven Stoff gefertigt ist.
4. Helm (1) nach einem der Ansprüche 1 bis 3, wobei die Struktur des atmungsaktiven Elements (3) derart beschaffen ist, dass sie eine bevorzugte Richtung (35) für die Übertragung von Wasserdampf durch das atmungsaktive Element (3) an sich aufweist.

5. Helm (1) nach einem der Ansprüche 1 bis 4, wobei das atmungsaktive Element (3) an der Innenoberfläche (21) der Schutzschale (2) anhaftend angeordnet ist.
6. Helm (1) nach einem der Ansprüche 1 bis 5, wobei das atmungsaktive Element (3) an der zusätzlichen Schutzschicht (5) haftet.
7. Helm (1) nach einem der Ansprüche 1 bis 6, aufweisend Auffang- und Übertragungsmittel zum Auffangen und Übertragen von Wasser, das das atmungsaktive Element (3) erreicht, wobei die Auffang- und Übertragungsmittel im Inneren des Helms (1) erhalten werden und konfiguriert sind, um Wasser seitlich an den Seitenbereichen (25) des Helms (1) abzulassen.
8. Helm (1) nach Anspruch 7, wobei das Auffang- und Übertragungsmittel Kanäle aufweist, die auf der Innenoberfläche (21) der Schutzschale (2) oder auf der äußeren gewölbten Fläche (52) der zusätzlichen Schutzschicht (5) ausgebildet sind.
9. Helm (1) nach einem der Ansprüche 1 bis 8, wobei die zumindest eine Öffnung (23, 231, 232) sich in einem oberen Bereich der Schutzschale (2) befindet.
10. Helm (1) nach einem der Ansprüche 1 bis 9, wobei die zumindest eine Öffnung (23, 231, 232) der Schutzschale (2) sich zwischen einem vorderen Bereich (240) der Schutzschale (2), die anatomisch einem Bereich der Stirn am Kopf (8) des Benutzers entspricht, und einem hinteren Bereich (241) der Schutzschale (2) erstreckt, die anatomisch dem Bereich des Hinterkopfs am Kopf (8) des Benutzers entspricht.
11. Helm (1) nach Anspruch 10, wobei die Schutzschale (2) ein Versteifungselement (28) aufweist, das zwischen den Seitenbereichen (242, 243) der Schutzschale (2) quer eingespreizt ist, wobei das Versteifungselement (28) die Seitenbereiche (242, 243) verbindet und die zumindest eine Öffnung (23, 231, 232) in zwei Öffnungsbereiche (231, 232) unterteilt, wobei ein erster Öffnungsbereich (231) einem vorderen oberen Bereich des Kopfs (8) des Benutzers entspricht, und ein zweiter Öffnungsbereich (232) einem Hinterkopfbereich des Kopfs (8) des Benutzers entspricht.
12. Helm (1) nach einem der Ansprüche 1 bis 11, ferner aufweisend ein Abdeckelement (4), wobei das Abdeckelement (4) zumindest teilweise an zumindest einer Öffnung (23, 231, 232) angeordnet ist.
13. Helm (1) nach Anspruch 12, wobei das Abdeckelement (4) mit einer Mehrzahl von Durchgangslöchern

(41) versehen ist.

14. Helm (1) nach Anspruch 12, wobei das Abdeckelement (4) eine Schicht aus einem Material mit einer Honigwabenstruktur aufweist.

15. Helm (1) nach einem der Ansprüche 12 bis 14, wobei das Abdeckelement (4) der Schutzschale (2) durch reversible Verriegelungsmittel (42) lösbar zugeordnet ist.

Revendications

1. Casque (1) pour la protection de la tête (8) d'un utilisateur, comprenant :
 - une coque de protection (2) comprenant une surface interne (21) et une surface externe (22), au moins une ouverture (23, 231, 232) plaçant en communication de fluide ladite surface interne (21) avec ladite surface externe (22),
 - un élément perméable à l'air mais sensiblement étanche au liquide (3) agencé au moins partiellement au niveau de ladite au moins une ouverture (23, 231, 232),
 - une couche de protection supplémentaire (5) associée à ladite coque de protection (2) sur le côté de ladite surface interne (21) et ayant un intrados (51), un extrados (52) et une pluralité d'ouvertures (53) s'étendant entre ledit intrados (51) et ledit extrados (52),

caractérisé en ce que :

- ledit élément perméable à l'air (3) a une forme de capuchon s'étendant dans une zone avant (240), une zone arrière (241) et des zones latérales (242, 243) de ladite coque de protection (2), dans lequel ledit élément perméable à l'air (3) est intercalé entre ladite coque de protection (2) et ladite couche de protection supplémentaire (5).
2. Casque (1) selon la revendication 1, dans lequel ledit élément perméable à l'air (3) bouche complètement ladite au moins une ouverture (23, 231, 232) de la coque de protection (2).
3. Casque (1) selon la revendication 1 ou 2, dans lequel ledit élément perméable à l'air (3) est réalisé à partir d'un tissu perméable à l'air.
4. Casque (1) selon l'une quelconque des revendications 1 à 3, dans lequel la structure dudit élément perméable à l'air (3) est telle qu'elle a une direction préférentielle (35) pour le transit de vapeur d'eau à travers l'élément perméable à l'air (3) lui-même.

5. Casque (1) selon l'une quelconque des revendications 1 à 4, dans lequel ledit élément perméable à l'air (3) est placé de manière adhérente sur ladite surface interne (21) de la coque de protection (2).
6. Casque (1) selon l'une quelconque des revendications 1 à 5, dans lequel ledit élément perméable à l'air (3) adhère sur ladite couche de protection supplémentaire (5).
7. Casque (1) selon l'une quelconque des revendications 1 à 6, comprenant des moyens de collecte et de transport pour collecter et transporter l'eau qui atteint l'élément perméable à l'air (3), lesdits moyens de collecte et de transport étant obtenus à l'intérieur du casque (1) et étant configurés pour laisser sortir l'eau latéralement au niveau des parties latérales (25) du casque (1).
8. Casque (1) selon la revendication 7, dans lequel lesdits moyens de collecte et de transport comprennent des canaux formés sur la surface interne (21) de la coque de protection (2) et sur l'extrados (52) de la couche de protection supplémentaire (5).
9. Casque (1) selon l'une quelconque des revendications 1 à 8, dans lequel ladite au moins une ouverture (23, 231, 232) est dans une zone supérieure de la coque de protection (2).
10. Casque (1) selon l'une quelconque des revendications 1 à 9, dans lequel ladite au moins une ouverture (23, 231, 232) de la coque de protection (2) s'étend entre une zone avant (240) de la coque de protection (2) correspondant à une zone de front anatomique de la tête (8) de l'utilisateur, et une zone arrière (241) de la coque de protection (2) correspondant à une zone occipitale anatomique de la tête (8) de l'utilisateur.
11. Casque (1) selon la revendication 10, dans lequel la coque de protection (2) comprend un élément de raidissement (28) chevauchant transversalement entre les zones latérales (242, 243) de la coque de protection (2), ledit élément de raidissement (28) raccordant les zones latérales (242, 243) et séparant ladite au moins une ouverture (23, 231, 232) en deux parties d'ouverture (231, 232), une première partie d'ouverture (231) correspondant à une région supérieure avant de la tête (8) de l'utilisateur et une deuxième partie d'ouverture (232) correspondant à une région occipitale de la tête (8) de l'utilisateur.
12. Casque (1) selon l'une quelconque des revendications 1 à 11, comprenant en outre un élément de couvercle (4), ledit élément de couvercle (4) étant agencé au moins partiellement au niveau de ladite au moins une ouverture (23, 231, 232).
13. Casque (1) selon la revendication 12, dans lequel ledit élément de couvercle (4) est prévu avec une pluralité de trous de passage (41).
14. Casque (1) selon la revendication 12, dans lequel ledit élément de couvercle (4) comprend une couche de matériau ayant une structure en nid d'abeilles.
15. Casque (1) selon l'une quelconque des revendications 12 à 14, dans lequel ledit élément de couvercle (4) est associé de manière amovible à ladite coque de protection (2) par des moyens de blocage réversibles (42).

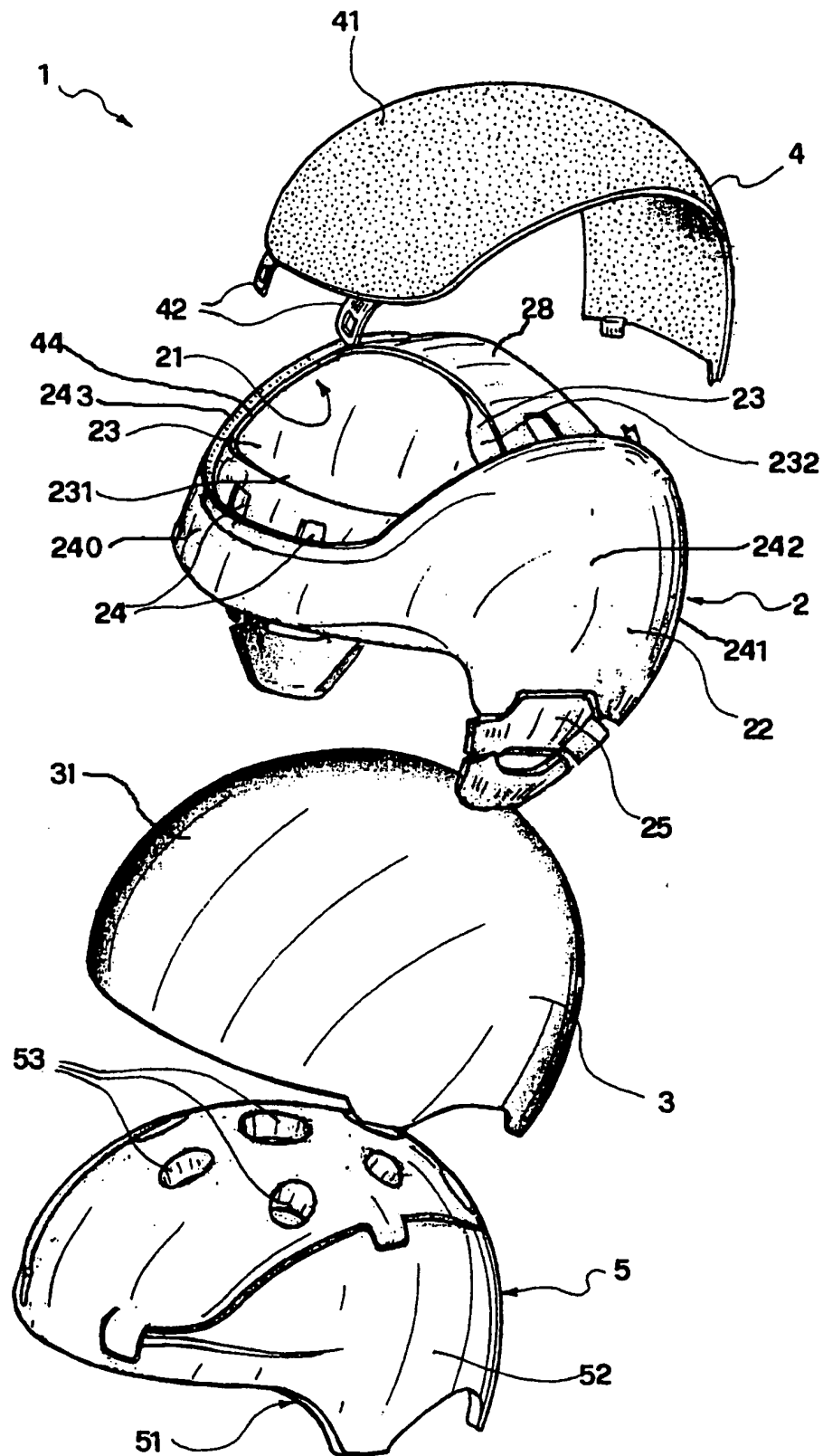


FIG. 1

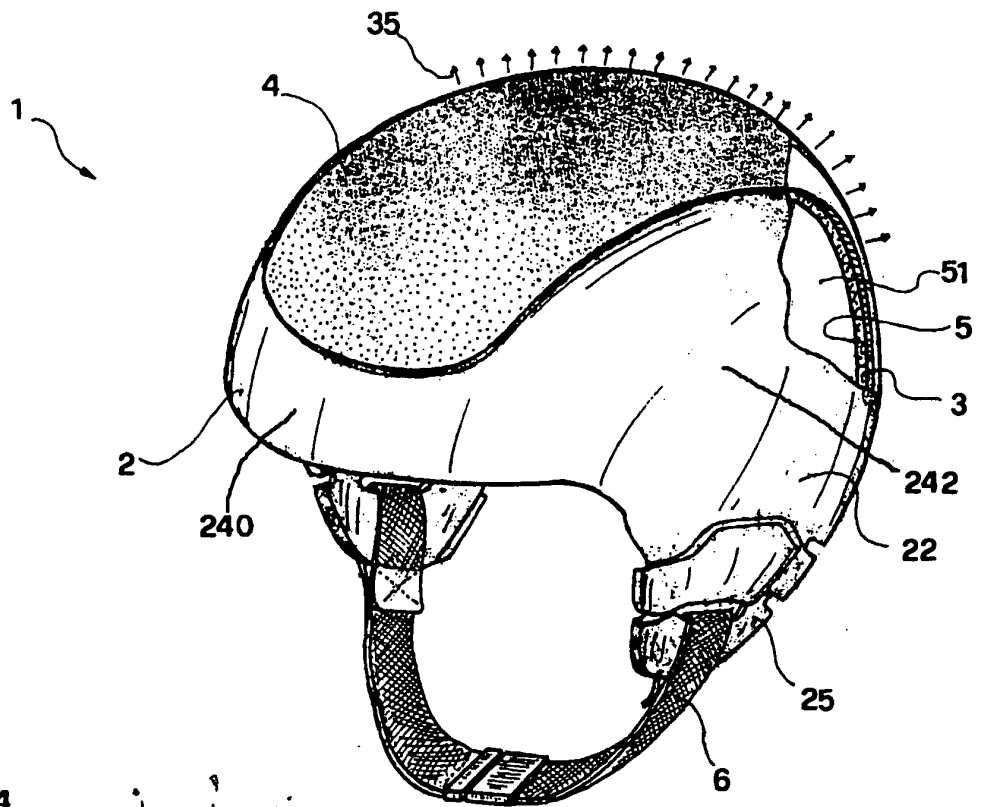


FIG. 2

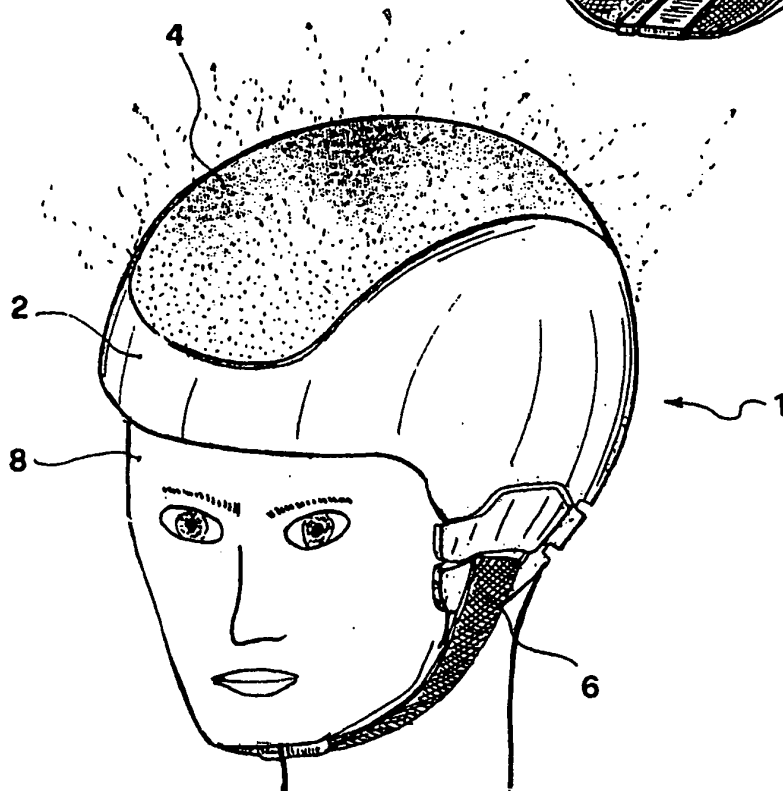


FIG. 3

REFERENCES CITED IN THE DESCRIPTION

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