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(54) **HEAD SAFETY DEVICE**

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(57) **ABSTRACT**

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A head safety device is provided which has a hole in the inner shell that serves as a perfect protective headgear for the sikh hair bun style or any other hair bun style, the hole/gap accommodate different hair buns on different positions providing protection to the users head and also stability and comfort.

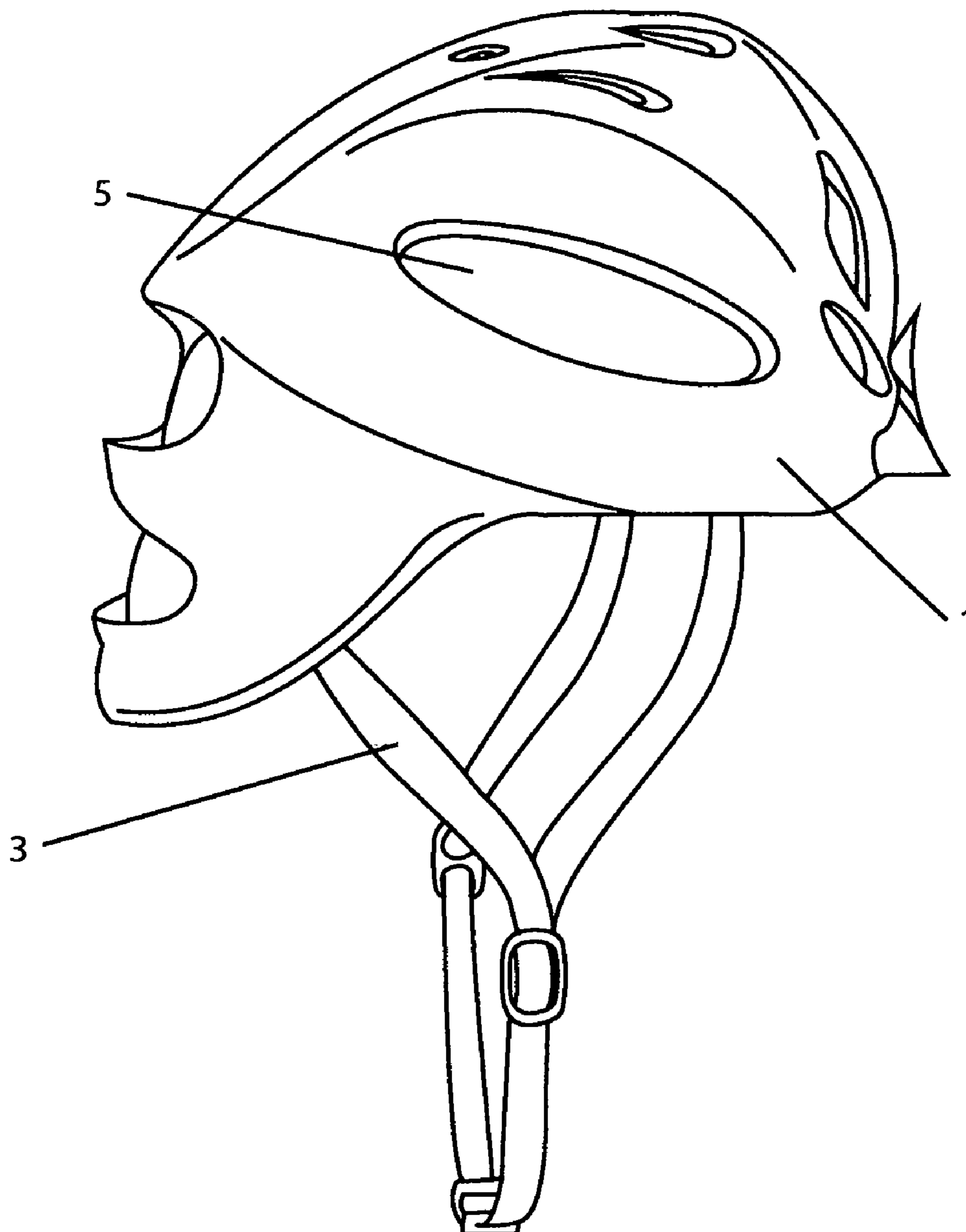


FIG. 1

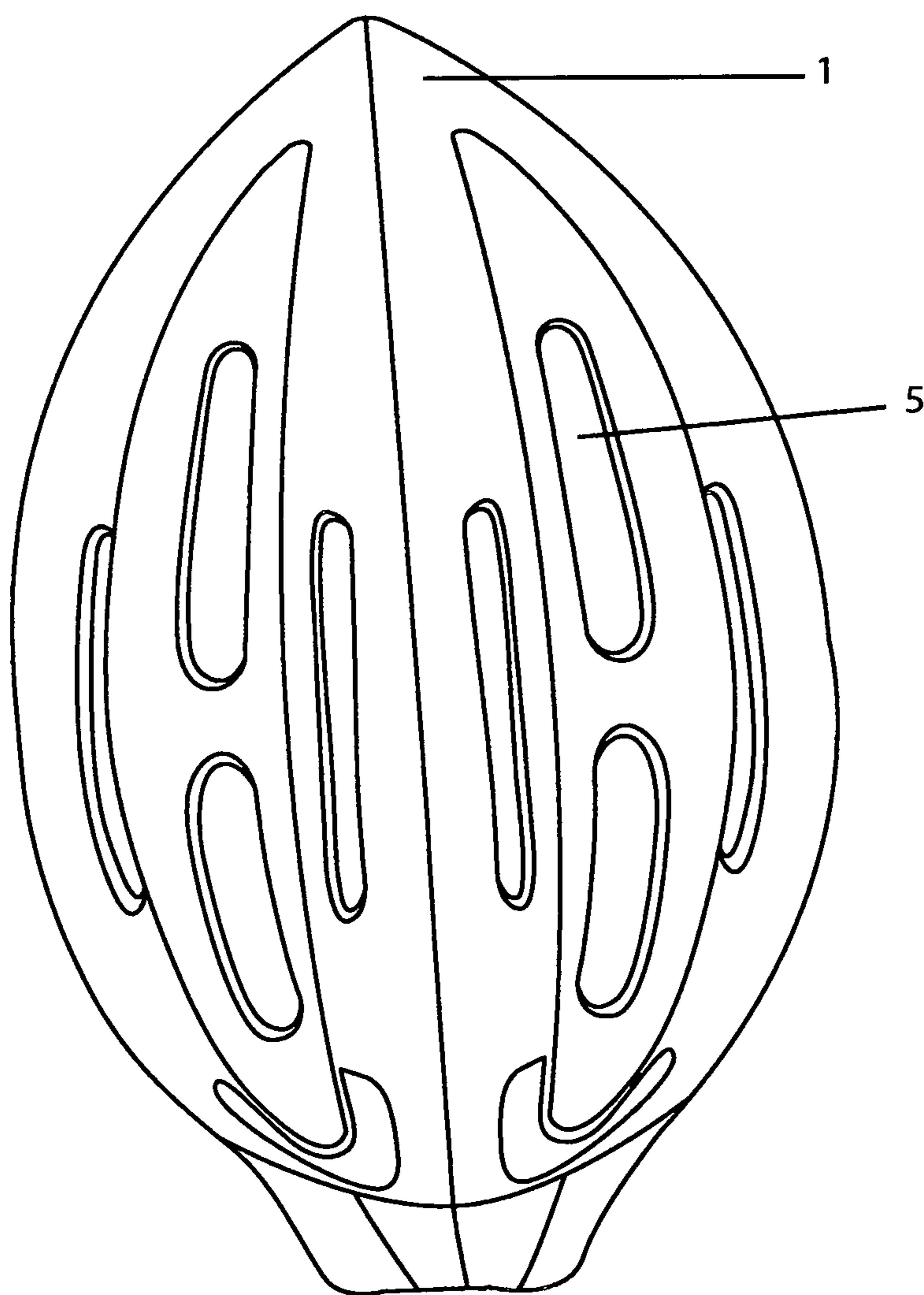


FIG. 2

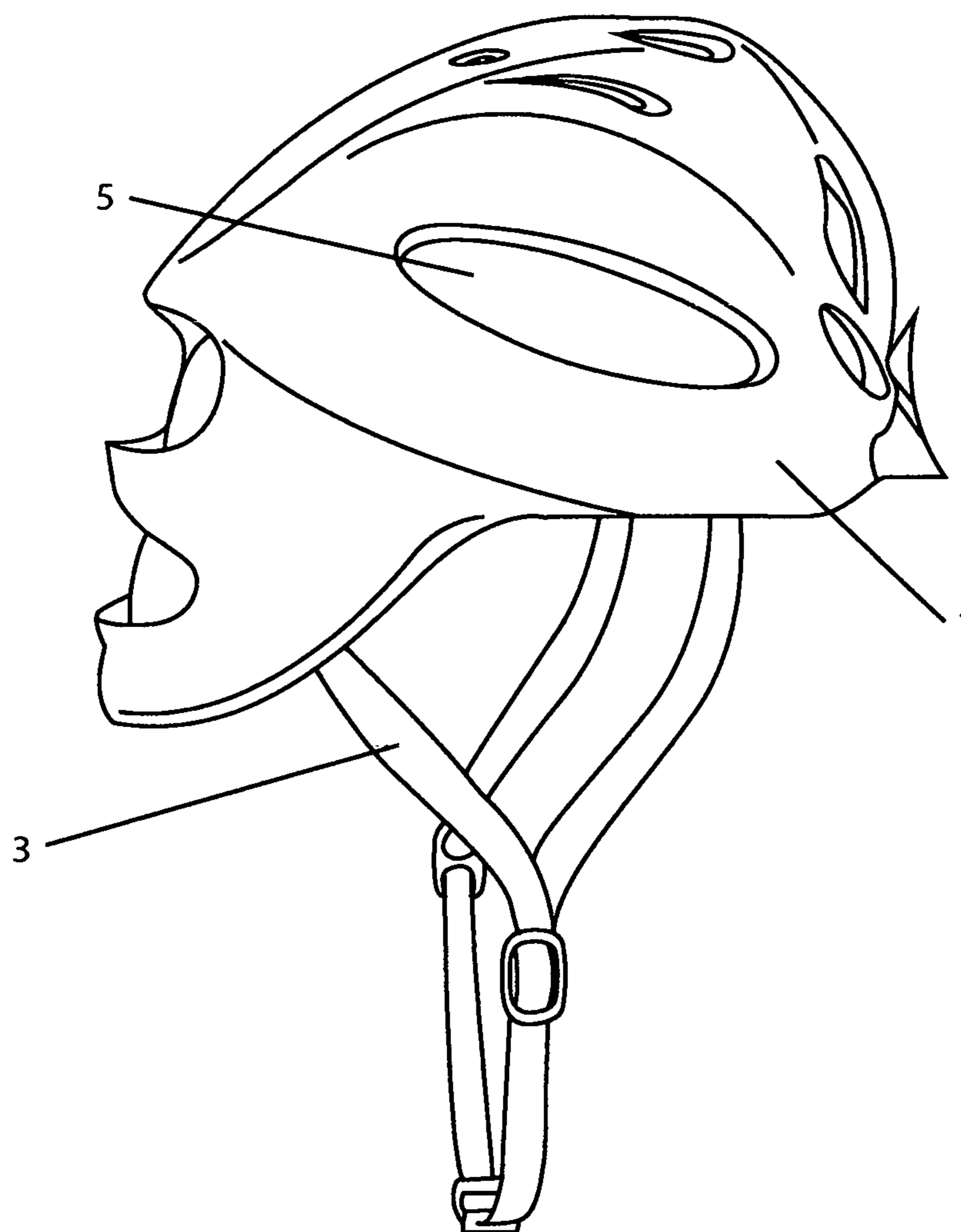


FIG. 3

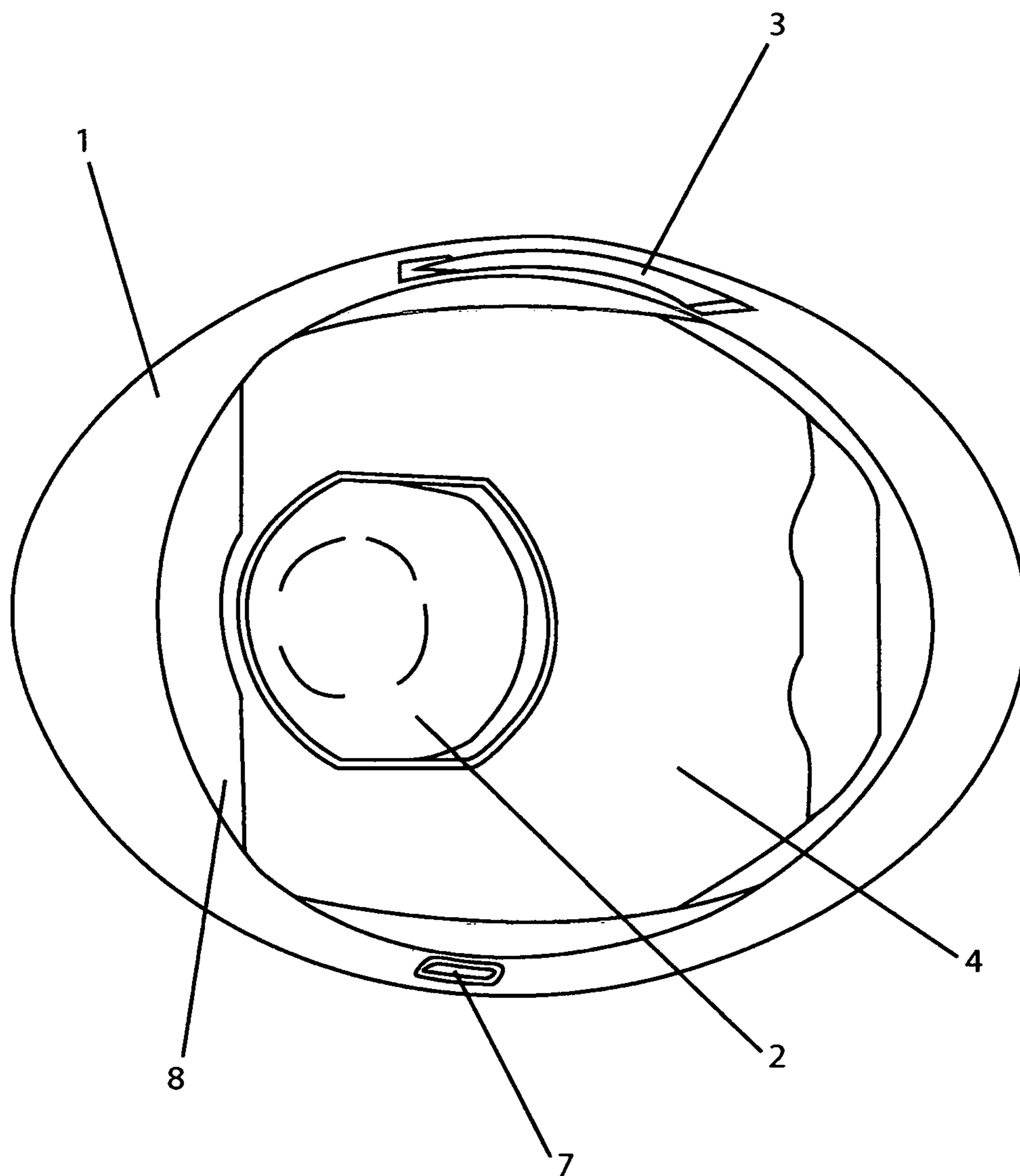


FIG. 4

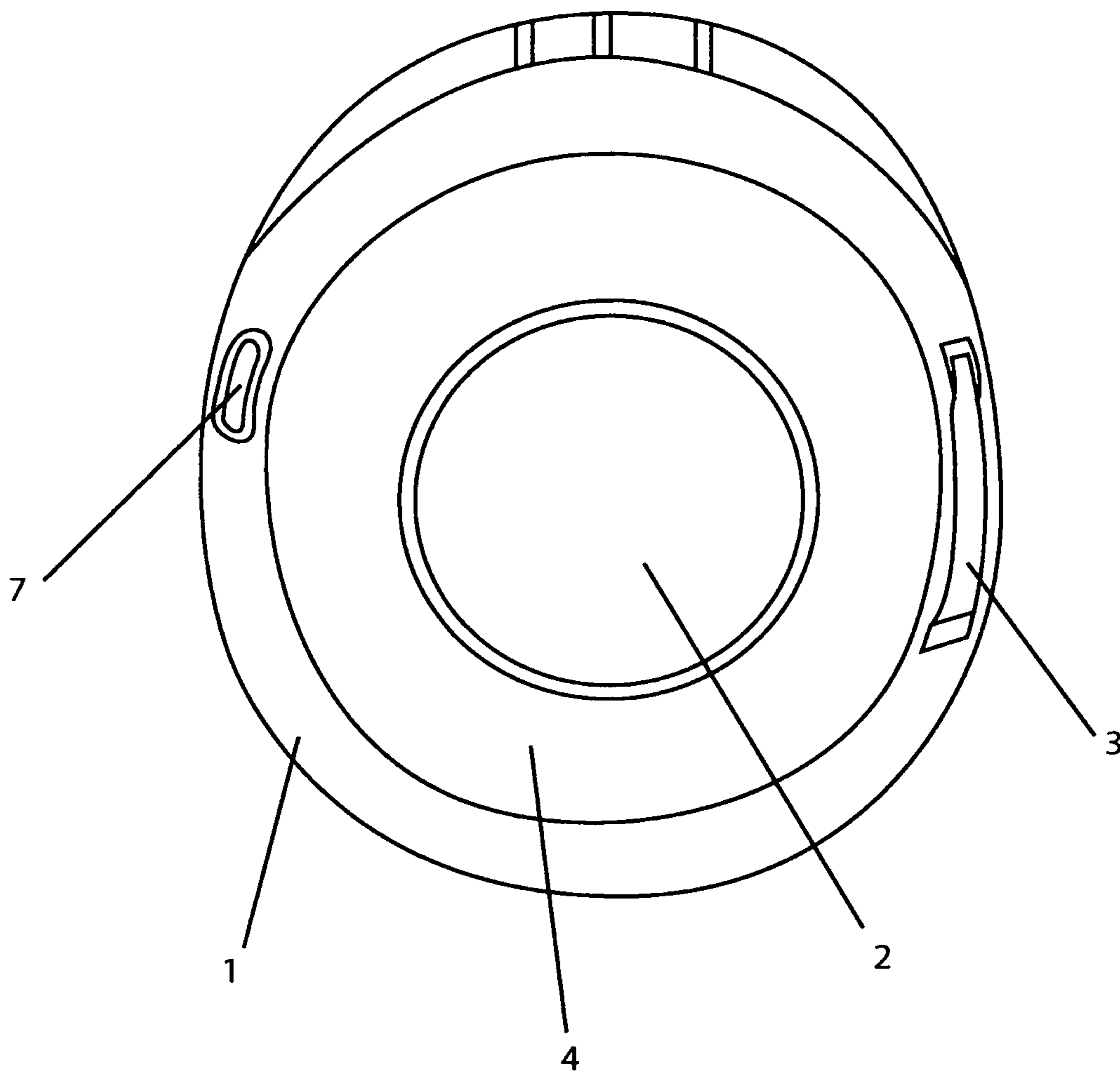


FIG. 5

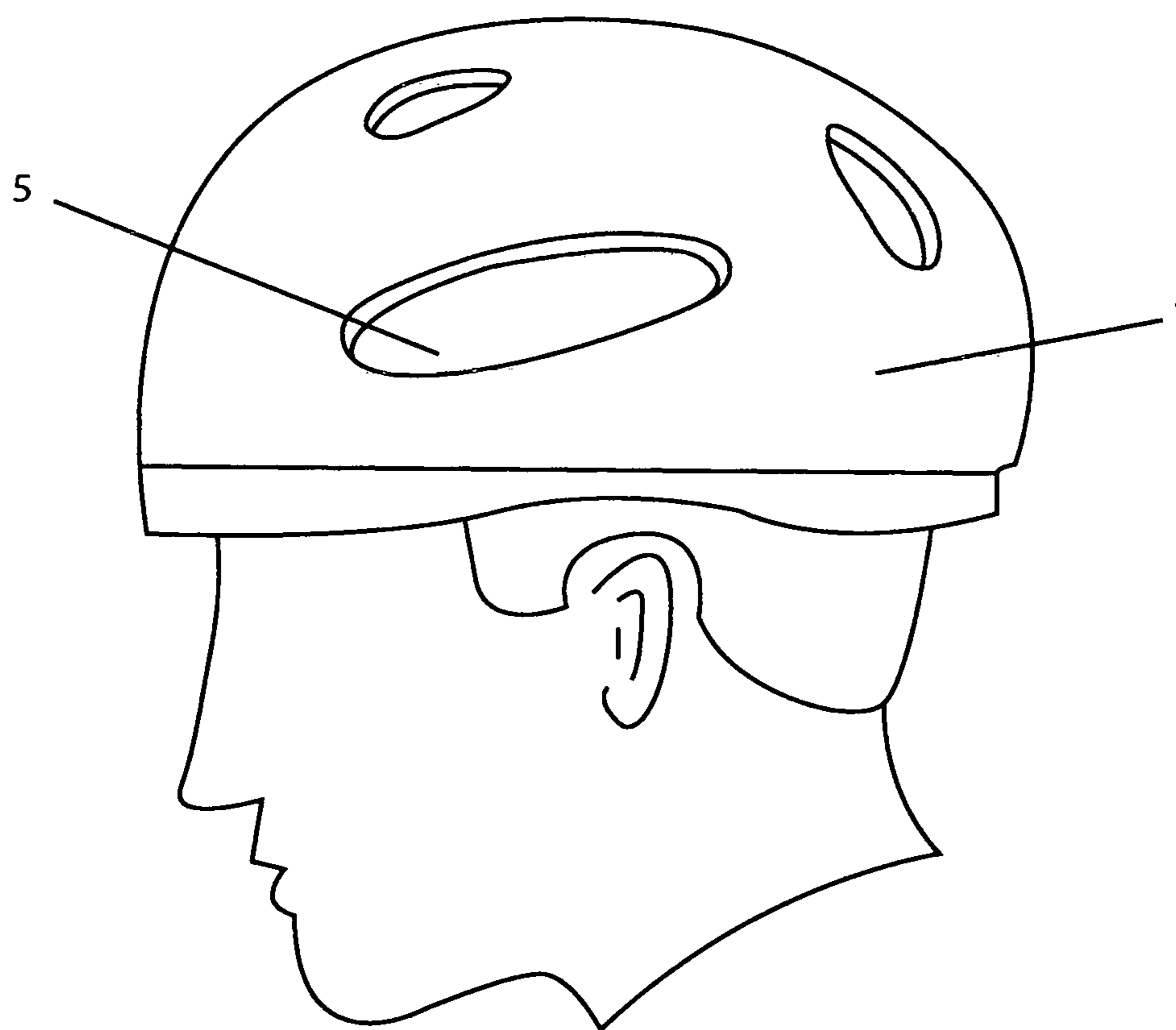


FIG. 6

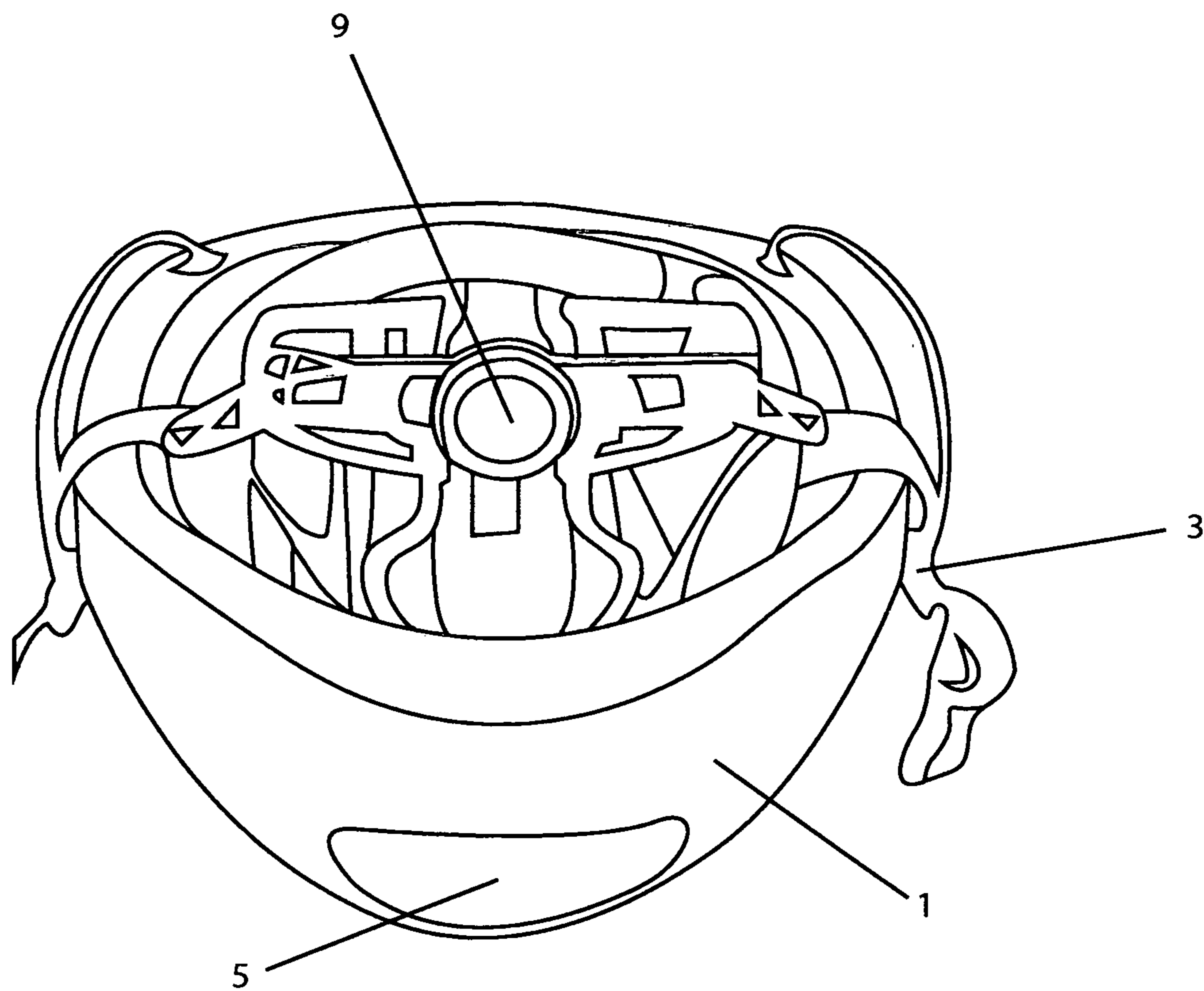
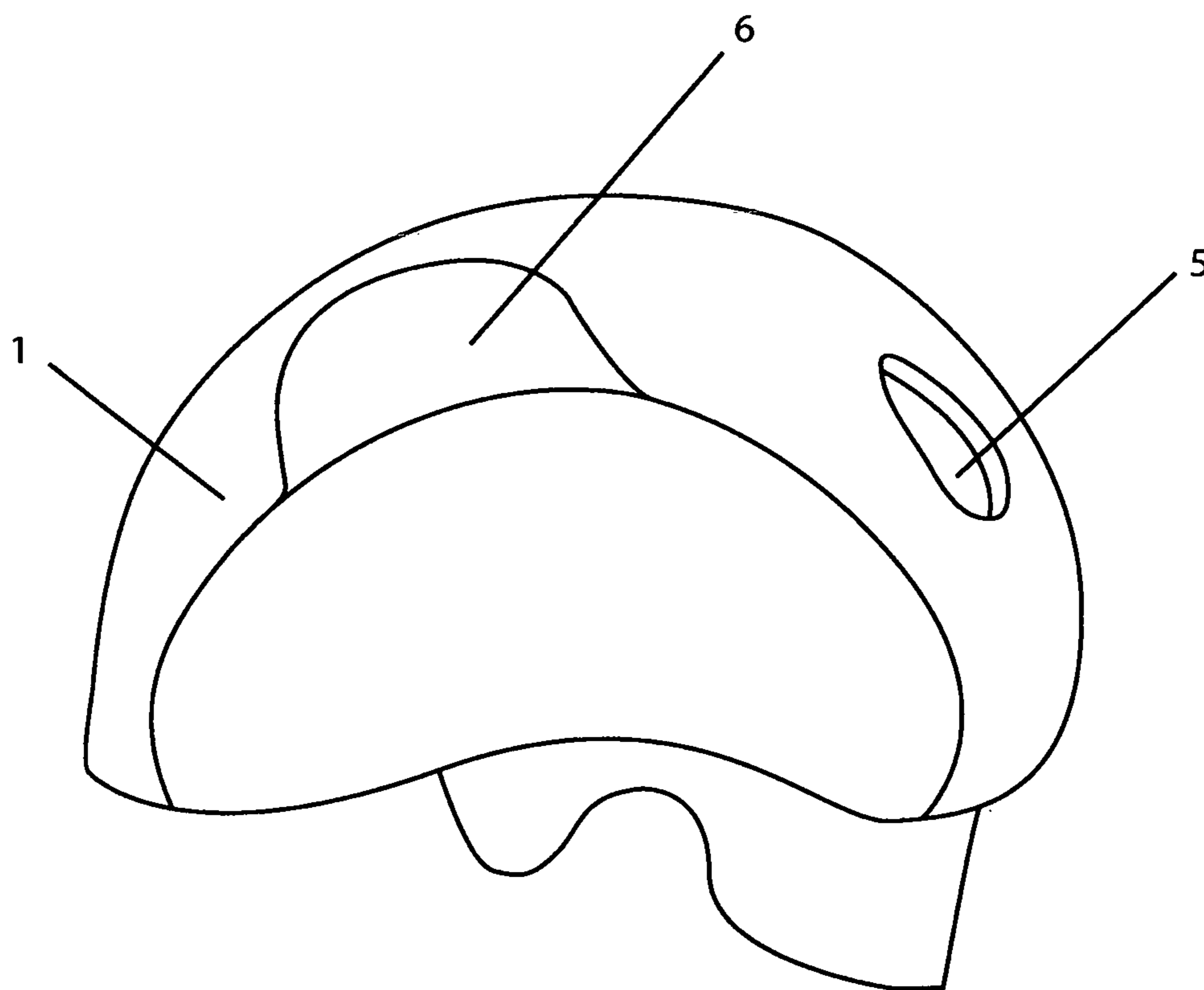


FIG. 7



HEAD SAFETY DEVICE**CROSS REFERENCE TO RELATED APPLICATION**

[0001] This application claims priority filing date of provisional application number 63/122,478 with filing date Dec. 8, 2020. First named inventor—Armet Singh Jaytani. Title of invention—Head Safety Device.

FIELD OF INVENTION

[0002] A head protective gear for use with sikh hair buns.

BACKGROUND OF INVENTION

[0003] A helmet is a form of protective gear worn to protect the head. More specifically, a helmet complements the skull in protecting the human brain. Ceremonial or symbolic helmets (e.g., a policeman's helmet in the United Kingdom) without protective function are sometimes worn. Soldiers wear combat helmets often made from Kevlar or other lightweight synthetic fibers. Helmets are used for recreational activities and sports (e.g., jockeys in horse racing, American football, ice hockey, cricket, baseball, camogie, hurling, cycling and rock climbing); helmet are also used for dangerous work activities such as construction, mining, riot policing, military aviation, and in transportation (e.g. motorcycle helmets and bicycle helmets). Since the 1990s, most helmets were made from resin or plastic, which may be reinforced with fibers such as aramids. However In the 19th century, more materials were incorporated, namely leather, felt and pith. The pith helmet and the leather pickelhaube were important 19th century developments. The greatest expansion in the variety of forms and composition of helmets, however, took place in the 20th century with the development of highly specialized helmets for a multitude of athletic and professional applications, as well as the advent of modern plastics.

[0004] Helmets of many different types have developed over time. Helmets since the mid-20th century have often incorporated lightweight plastics and other synthetic materials, and their use has become highly specialized. Some important recent developments include the French SPECTRA helmet, Spanish MARTE helmet or the American PASGT (commonly called "Kevlar" by U.S. troops) and Advanced Combat Helmet, or ACH.

[0005] Modern helmets have a much wider range of applications, including helmets adapted to the specific needs of many athletic pursuits and work environments, and these helmets very often incorporate plastics and other synthetic materials for their light weight and shock absorption capabilities. Some types of synthetic fibers used to make helmets in the 21st century include aramid, such as Kevlar and Twaron. Race car helmets include a head and neck support system that keeps the helmet (and head) attached to the body in severe collisions. While majority of the helmet available in the market for purchase comes with a peculiar design of round oval, intermediate oval and long oval shell which is totally enclosed, this design is a major disadvantage for people with hair buns (sikh hairstyle). This is as a result of the enclosed shell design that does not sit perfectly on the head therefore offering little or no protection as it is totally uncomfortable and unsafe to use. The present invention seeks to provide a solution to this problem by providing a head safety device with an inbuilt hole/gap on the inside

which accommodates the hair bun perfectly allowing for protection of the forehead, side of the head and neck, it also looks more comfortable to wear and use.

DESCRIPTION OF PRIOR ARTS

[0006] U.S. Pat. No. 6,105,176A A bicycle helmet includes a helmet body having a plurality of vents, including a front vent that is wider than high. Also, a bicycle helmet includes a helmet body having a plurality of vents, including at least one rear exit port opening outward onto a surface that is below the most rearward margin of the helmet body. Preferred helmets include both such a front vent and a pair of such rear exit ports, and preferred helmets include at least one and more preferably two lengthwise interior channels that may conduct air rearwardly within the helmet over the head of the wearer from the front vent or to the rear exit port or ports, or both from the anterior vent and to the rear exit port or ports. Methods for fabricating a helmet according to the invention include forming the helmet body of two separate parts and affixing the two formed parts together.

[0007] US20020120978 A protective helmet is provided which preferably has a hard outer shell and an energy-absorbing liner. The liner is made of low resilience or slow-recovery viscoelastic foam which is compression rate sensitive.

[0008] U.S. Pat. No. 3,413,972A The present invention relates generally to protective devices and more specifically to devices of the type which supply fresh, filtered air to persons working under extreme conditions of dust and other debris in the atmosphere. A helmet completely enclosing the head of a wearer with spaced concentric shells defining an air passage there between, an air blower discharges air into the air passage adjacent the rear thereof and an outlet is provided adjacent the bottom front of the helmet to circulate air there through. The inner shell terminates above eye level and is supported from the head in spaced relation to provide air circulation between the inner shell and the head of the wearer.

[0009] US20170119078 A protective helmet system that integrates turn signal light, break signal light, motion sensors Bluetooth connectivity and a remote control is provided. The system comprises a helmet for providing protection and enhancing safety to a rider on a vehicle, and a remote control for wirelessly controlling electronics in the helmet to perform functions.

[0010] U.S. Pat. No. 3,391,407 An air-cooled helmet is described in which the circulation of cooled air by the operation of a battery operated fan mounted in the dome of the helmet which directs the flow of air over a package of coolant mounted between the fan and the head of the wearer and further directs the cooled air downwardly out of the helmet and over the head, neck and shoulders of the wearer.

[0011] U.S. Pat. No. 9,462,840 A protective helmet for successive impacts includes a head cap adapted to surround and move with a wearer's head and an outer shell which surrounds the head cap. An energy absorbing flexible liner predominantly comprised of radially oriented foam columns is attached to both the head cap and outer shell. The liner establishes a preset initial relative position and spacing between the head cap and the outer shell and compliantly absorbs energy imparted to the outer shell during a helmet impact to enable the outer shell to move linearly and angularly relative to the head cap during the helmet impact

and to be returned to the initial relative position with the head cap following the impact.

[0012] U.S. Pat. No. 10,736,373B2 Helmets and methods for manufacturing a helmet are described. An example helmet includes a shell and a shock absorbing liner attached to the shell. The shock absorbing liner includes a cavity. The helmet a shock absorbing insert formed of a material different than the material of the shock absorbing liner. The cavity is configured to retain the shock absorbing insert.

[0013] US20150351481A1 A batting helmet having localized impact protection comprises a rigid shell with a padded inner core affixed therein. Localized impact protection comprises additional padding attached to the inner core, increased thickness of the rigid shell, increased stiffness of the rigid shell, and additional padding attached to the rigid shell, alone or in combination, positioned in various regions of the helmet.

[0014] U.S. Pat. No. 4,114,197 A substantially rigid dome-shaped shell encloses a deformable cap-like headpiece of uniform thickness. The headpiece conforms to the contour of the wearer's head and cooperates with the shell to define a dome-shaped cavity which is sealed around its bottom portion. The cavity is filled with an expandable plastics foam material which hardens and conforms to the contour of the headpiece. In one embodiment, spacer members are positioned within the cavity and extend from the headpiece to the shell for positioning the shell relative to the headpiece, and in another embodiment, the shell is spaced within a slightly larger outer shell by resilient energy-absorbing foam pads. In a further embodiment, separate earpiece units are contour fitted to the wearer's head with a resilient expandable plastics foam material, and a modified helmet shell is used as a holder for fitting the headpiece and earpiece units.

[0015] U.S. RE43,173E1 The invention is related to a helmet having an interior foam liner with at least two shell portions. The helmet includes an exterior in-mold shell portion covering a portion of the liner. The helmet also includes an exterior post-applied shell portion covering a portion of the liner that is not covered by the in-mold shell portion. The helmet includes conduits located between the liner and the post-applied shell portion for ventilation and air flow useful for removing the heat generated by a user.

[0016] The present invention aims to provide an effective solution to all the shortcoming associated with existing helmet and helmet system and the aforementioned prior arts. This is made possible with the introduction of a head safety device with an inbuilt hole/gap on the inside which accommodates the hair bun.

SUMMARY OF THE INVENTION

[0017] The present invention is a head safety device comprising of an outer shell which is made of thermoplastic or fiber reinforced polymer(FRP) a composite material consisting of a synthetic resin reinforced with for instance, fibre glass. The outer shell has an upside down convex shape and is made of PVC, PC or metal but not limited to these materials. The inner shell has a padding which is made of EPS foam and the comfort padding, which consists of a sufficiently firm synthetic foam pad covered with a skin-friendly fabric. The inner shell also consists of a hole/opening which is a unique design of the present invention, this hole/gap houses the hair bun making the helmet sit comfortably and properly on the users head. The hole is of different shapes and sizes to accommodate different hair

buns on different locations. The invention ensures fresh air is ducted into the helmet through a set of vents arranged in the outer shell therefore eliminating odour from hair as a result of sweating and allowing cooling of the head. The invention also comprises a chin strap to fasten the helmet to the users chin for more stability and also have a retention system on the back that can be used to make the helmet fit on the head by rolling it to fit to the users head. The invention is built in different sizes to fit all age grades and gender including Kids. The invention can be used as applicable for safety in various situations such as construction, sports but not limited to these uses.

BRIEF DESCRIPTIONS OF FIGURES

- [0018]** FIG. 1 Is a top view of the invention;
[0019] FIG. 2 is a side view of the invention;
[0020] FIG. 3 is an inside view of the invention;
[0021] FIG. 4 is an inside view of the invention;
[0022] FIG. 5 is a side view of the invention on a head;
[0023] FIG. 6 is an inside view of the invention with the retention wheel;
[0024] FIG. 7 is an exploded view of the invention.

DETAILED DESCRIPTION OF DRAWINGS

[0025] In FIG. 1, the present invention discloses the top view of the invention which comprises of the outer shell (1) which serves as protection for the users head, the shell (1), further comprises of air vents (5) which ensures fresh air is ducted into the helmet through a set of vents arranged in the outer shell therefore eliminating odour from hair as a result of sweating and allowing cooling of the head.

[0026] In FIG. 2, the present invention discloses the vents (5), the outer shell (1), and the chin strap (3) which is used to fasten the helmet to the users chin for more stability.

[0027] In FIG. 3, the present invention discloses the outer shell (1), the inner shell (8) which further comprises of a hole/gap (2) which is a unique attribute of the invention, the hole gap houses the hair bun making the helmet sit comfortably and properly on the users head. The invention further discloses the chin strap (3), the EPS foam (4) which protects the head by absorbing the impact energy and reducing the stresses/accelerations transferred to the head.

[0028] In FIG. 4, the invention discloses the outer shell (1), the inner shell (8), which further comprises of the hole/gap (2), and the chin strap (3).

[0029] In FIG. 5, the invention discloses the outer shell (1) and the vent (5).

[0030] In FIG. 6, the invention discloses the outer shell (1), the vents (5), the inner shell (8), the chin strap (3) and the retention wheel (9)

[0031] In FIG. 7, the invention discloses the outer shell (1), the vent (5) and the sikh hair bun (6), inside the helmet.

1. A head safety device which comprises of;
 - i. An outer shell (1) which has an upside down convex shape which is made of thermoplastic or fiber reinforced polymer(FRP) a composite material consisting of a synthetic resin reinforced with for instance, fibre glass which serves as protection for the users head, the shell (1), further comprises of air vents (5) which ensures fresh air is ducted into the helmet through a set of vents arranged in the outer shell.
 - ii. An inner shell (8) which further comprises of a hole/gap (2) which is a unique attribute of the present

invention, the hole gap houses the hair bun making the helmet sit comfortably and properly on the users head.

- iii. An inner shell (8) which further comprises of an EPS foam (4) which protects the head by absorbing the impact energy and reducing the stresses/accelerations transferred to the head, which further consists of a sufficiently firm synthetic foam pad covered with a skin-friendly fabric.
- iv. A chin strap (3) to fasten the helmet to the users chin for more stability, and
- v. a retention system (9) on the back that can be used to make the helmet fit on the head.

2. A head safety device according to claim (1) wherein the liner is made from high-density impact-absorption foam, enabling the liner to protect the head of the rider.

3. A head safety device according to claim (1) wherein said helmet is adapted to be worn by a participant/user in any activity ranging from sporting activities consisting of football, lacrosse, hockey, rock climbing, cycling, to construction activities and other activities but not limited to these uses.

4. A head safety device according to claim (1) wherein said helmet is adapt for users with hair bun such as the Sikh hairstyle or any other kind of hair bun.

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