VENTING SYSTEM FOR SPORTS HELMETS

Inventor: Manfred Krauter, Bretnig (DE)
Assignee: CASCO GROUP SOCIETATE IN COMANDITA SIMPLA (SCS), Satu Mare (RO)

Appl. No.: 12/898,785
Filed: Oct. 6, 2010

Foreign Application Priority Data
Oct. 6, 2009 (DE) .................. 10 2009 045 383.0

Publication Classification
Int. Cl. A42B 3/28 (2006.01)
U.S. Cl. ........................................ 2/410

ABSTRACT
A venting system for a sports helmet has venting openings wherein at least some of the venting openings have covers that at least partially cover the venting openings. By tilting about an axis of rotation the covers partially or completely release the venting openings. Upon actuation of the cover, one end of the cover is lifted above the surrounding helmet surface while the other end of the cover is lowered below the level of the surrounding helmet surface.
VENTING SYSTEM FOR SPORTS HELMETS

BACKGROUND OF THE INVENTION

[0001] The invention concerns a venting system for a sports helmet, in particular for skiers, that is characterized by a simple inexpensive configuration, easy operability and the individual adjustment of the air stream by the wearer.

[0002] In recent years, the awareness with respect to the danger that an athlete exposes himself to when practicing his sports has increased significantly. Especially those types of sports that have a distinct high-speed component, for example, motor sports, downhill skiing, bicycling, have an increased risk of injury. The athletes attempt to meet these concerns by suitable safety measures, in particular suitable sports clothing. An important component of such clothing is a resistant head protection, for example, in the form of a helmet. Since practicing sports causes increased physical stress, increased perspiration and, caused thereby, increased venting needs must be taken into consideration. In particular in case of helmets the need for venting can be combined only with difficulty with the safety requirements that require an encapsulation of the head to be protected as complete as possible.

[0003] DE 693 10 264 T2 proposes a helmet construction, preferably for motorcyclists, where at the front side of the helmet air venting openings are formed that extend through tubes in the damping layer of the helmet to its rear where there are air exit openings. In the interior of the helmet there are air passages that extend through the damping material from the top of the head to the tubes. Such a construction is however complex with respect to manufacture and a control of the supplied air stream is hardly possible.

[0004] DE 42 05 842 C1 discloses the construction of a sports helmet in which the venting openings can be opened or closed by sliding, as needed, an outer shell that is provided with corresponding openings. The main disadvantage in this connection is that the venting openings cannot be adjusted one by one and individually because upon displacement of the outer shell simultaneously all openings are opened or closed to the same degree. Moreover, the openings are arranged perpendicularly to the flow direction of the oncoming head wind which makes it difficult, or prevents as a result of turbulence at higher speeds, that fresh air can flow into the openings, at least at the sides as well as at the side top and rear side of a helmet.

[0005] U.S. Pat. No. 4,964,178 discloses a helmet for motorcyclists that is provided at the top side with at least one venting opening through which, by means of a movable cover elements, air can be guided as needed into the interior of the helmet.

[0006] U.S. Pat. No. 6,317,891 B1 discloses the construction of a helmet for motorcyclists with an internal ventilation system. The ventilation system has a front plate and a rear plate that cover corresponding openings. In addition, two further air inlet openings are provided that are positioned laterally relative to the front opening. These openings are closed by cover elements that move from the interior of the helmet in front of the openings. The openings have a complex mechanism in the helmet interior which enables to control opening and closing.

[0007] Object of the present invention is to provide a reliable and inexpensive venting system for a sports helmet, in particular for skiers, that in addition to a simple operability also provides adaptation to different needs with respect to adjustment and/or exchange of helmet parts that determine the venting action.

SUMMARY OF THE INVENTION

[0008] According to the invention, this object is solved by a venting system with venting openings wherein at least some of the venting openings have covers that cover the venting openings at least partially and by tilting about an axis of rotation partially or completely open the venting openings.

[0009] In this connection, venting openings with covers are provided that are integrated positive-lockingly in such a way into the top shell of the helmet that in the closed state they are substantially flush with its surface. The covers can be embodied to be tiltable or foldable or pivotable and can release by tilting the venting openings partially or completely. The tilting, folding or pivot movement of the covers is realized preferably about an axis of rotation that is substantially parallel or tangential to the surface of the helmet.

[0010] Upon actuation of the cover one end of the cover is lifted above the surrounding helmet surface while the other end of the cover remains below the level of the surrounding helmet surface. The lifted end of the cover may have in this connection at its bottom side venting passages or venting ribs. These ribs improve at the same time the stability of the end of the cover. The helmet part that is exposed upon tilting of the cover may also have arranged therein venting passages or venting ribs. The two venting openings that are arranged on the helmet surface are thus advantageously opened by only one actuation of the cover.

[0011] Advantageously, the cover is arranged such in the helmet surface that, upon actuation, the front part, in the viewing direction of the wearer, of the cover is lifted above the helmet surface.

[0012] The venting openings can be formed at any location of the helmet. An arrangement of the openings symmetrical to the connecting line forehead area—neck area is possible and provides manufacturing-technological advantages as a result of the simple configuration of the original molding tool.

[0013] Advantageously, the venting openings for a targeted cooling of the head are arranged in the temple area and/or neck area.

[0014] Advantageously, one or several covers have venting slots that enable a permanent venting action. These venting slots in a preferred embodiment are open in a direction toward the rear and downward.

[0015] In order for the covers to stay in the desired position, they can be locked by means of positive-locking action or frictional action in at least one position. This is realized advantageously by means of knobs that are integrated into the sides of the covers and engage lockingly in recesses in the helmet material. The positions of the knobs and recesses can also be reversed.

[0016] The axles of the tiltable, foldable or pivotable covers are advantageously integrated into the helmet in such a way that the covers, as needed, can be removed. In this way, one for several covers can be selected with respect to special requirements and inserted into the helmet. For example, covers with or without pre-manufactured additional venting openings can be inserted. The covers can be matched with regard to their color or their material or they can be furnished with additional functional elements, for example, lighting means, forced venting means, reflectors, receptacles for head phones or ear phones or the like. Forced venting means ensure
by an active air supply, for example, by means of a fan, a forced air supply into the helmet.

[0017] An elastic snap-on system for the cover provides, for example, to introduce the axle into positive-locking bearings wherein the bearings are comprised of elastic material and have an opening with a somewhat smaller diameter than the thickness of the axle so that the axle with minimal force expenditure can be unsnapped by the wearer.

[0018] An elastic snap-on system for the covers provides that the axles of the covers are formed as pins on shaped parts of elastic material which enable an elastic deformation of the shaped parts in order to introduce the axle pins into the axle bushings in the helmet material or to remove them therefrom.

[0019] A further elastic snap-on system for the covers provides that the axle bushings are embodied in elastic shaped parts of the helmet material so that a brief deformation enables introduction or removal of the covers.

[0020] Also, combinations of the mentioned exemplary elastic snap-on systems for attachment of the axles of the covers in the helmet material are possible.

[0021] In a preferred embodiment the covers have forwardly oriented venting openings. The covers are symmetric so that a cover, in case that the airstream is to be reduced, can be removed from the elastic snap-on system and can be reinserted after rotation about 180°. The venting openings of the covers now point to the rear and are no longer directly flowed through. In case that the air flow is to be increased, the reverse can be done.

[0022] A preferred embodiment provides that the venting openings and the corresponding covers are formed within frames. The frames can be integrated into the helmet or can be separate so as to be removable from and insertable into the helmet. In this way, it is possible to exchange the entire venting opening with frame and cover in order to thus insert embodiments that are matched to the requirements or to realize fashion-based or aesthetic adaptations of the helmet shell. Also, insertion of functional elements, such as lighting means or forced venting means, into the frame is possible.

[0023] In a further preferred embodiment the frames serve as holders for covers that can be rotated about an axis that is oriented perpendicularly to the helmet surface.

[0024] The frames can be of a closed configuration or surround the covers only partially, for example, in the form of a U wherein the open end of the U is a cutout of the frame.

[0025] Preferably, the axis of rotation of the cover is arranged centrally and at a right angle to the symmetry line.

BRIEF DESCRIPTION OF THE DRAWINGS

[0026] FIG. 1 shows a helmet with a venting system according to the present invention in a cavalier projection.

[0027] FIG. 2 shows a detail of a helmet shell with venting opening and correlated cover in cross-section.

[0028] FIG. 3 shows an alternative locking device in a basic illustration.

DESCRIPTION OF PREFERRED EMBODIMENTS

[0029] In one embodiment, two venting openings are provided in a helmet. Both venting openings are arranged along a symmetry line that extends from the forehead area of the helmet (root of the nose of the wearer) across, during wearing, the highest point toward the neck area (cervical vertebra of the wearer) of the helmet. The first venting opening is located above the forehead area of the helmet in front of the highest point, the second venting opening is located behind the highest point of the helmet in front of the neck area. The two openings are axial-symmetrical to the above-mentioned symmetry line and are provided with covers. The covers are integrated in such a way into the helmet surface that in the closed state they are flush with its surface. The covers are moveable and can partially release the venting openings by tilting. The axis of rotation of the cover extends centrally and at a right angle to the symmetry line.

[0030] Upon actuation of the forward cover, the front end, in the viewing direction of the helmet wearer, of the cover is lifted above the surrounding helmet surface while the rear end of the cover is lowered below the level of the surrounding helmet surface. The forward end of the cover has in this connection at its bottom side venting ribs that serve at the same time as a reinforcement of the cover. At the helmet part that upon tilting of the cover becomes exposed at the rearward cover end, there are also venting ribs arranged.

[0031] The rear cover is embodied in a similar way as the front cover. Upon opening of the rear cover, however, the rear part of the cover is lifted above the surrounding helmet surface so that correspondingly the front part of the rear cover will be lowered below the level of the surrounding helmet surface.

[0032] The rear cover is provided with several venting slots that ensure a minimal venting action. These venting slots open oriented to the rear and downwardly and ensure in this way a venting action without allowing possibly existing precipitation to enter.

[0033] FIG. 1 shows a helmet with a venting system according to the invention in a cavalier projection. In the helmet surface 10 a cover 1 is arranged that is supported so as to be rotatable about axis of rotation 2. In the illustration according to FIG. 1 the cover is rotated such that a front venting opening 8 and a rear venting opening 9 are open. By pressing onto the front area of the cover 1, the user in a simple way can effect rotation of the cover 1 by which the two venting openings 8, 9 are dosed. Both venting openings have venting passages or venting ribs 11 that distribute the air stream in the interior of the helmet.

[0034] FIG. 2 shows a detail of a helmet shell with venting opening and correlated cover 1 in cross-section. The cover 1 is fitted into a frame 3 and is movable about as of rotation 2. The two locking devices 4 serve for fixation of the cover 1 in the open position or closed position. The cover 1 is illustrated in the closed position. In this position it is secured by the locking device 4. The two arrows indicate the possible opening movement of the cover 1. In the open position, the cover 1 is secured with the slotted locking device 4.

[0035] FIG. 3 shows an alternative locking device 4 in a basic illustration. The direction of the arrow indicates the direction of movement of the cover 1. The cover 1 and frame 3 are comprised of elastic materials so that the knob 6 can pass across the knob 5 and can assume a stable position in the recess 7. In this way, the cover 1 is secured in the desired position.

LIST OF REFERENCE NUMERALS

[0036] 1 cover
[0037] 2 axis of rotation
[0038] 3 frame
[0039] 4 locking device
[0040] 5 knob in the frame
5. Venting system according to claim 1, wherein at least one of the covers (1) is attached with a detachable connection on or in the helmet.

6. Venting system according to claim 5, wherein the detachable connection is an elastic snap-on system.

7. Venting system according to wherein at least one of the covers (1) is lockable in at least one position.

8. Venting system according to wherein at least one cover (1) is symmetrically designed and has oriented venting openings, wherein the venting openings by appropriate insertion of the cover (1) into the helmet can be oriented in the direction of air flow or opposite thereto.

9. Venting system according to wherein at least one cover (1) is arranged in a frame (3) that is integrated into the helmet or detachably connected thereto and completely or partially surrounds the cover (1).

10. Venting system according to claim 9, wherein at least one of the covers (1) and/or the frame (3) is exchangeable for a functional element.

11. Venting system according to claim 10, wherein the functional element is a lighting means, a reflector, a forced venting means or a receptacle for earphones or headphones.

* * * * *