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54 **Device for improvement of the ventilation inside of a helmet, in particular for motorcycle use.**

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**EP-A- 0 252 243
DE-C- 3 316 920
FR-A- 2 525 441
GB-A- 2 167 285
US-A- 3 496 854
US-A- 4 622 700**

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Description

This invention relates to a ventilation device for circulation of air inside a protective helmet, in particular of the integral type, for motorcycle use, comprising: openings surrounded by a deflector placed in the upper part of the helmet beyond the center line of division between pressure and low pressure, when the helmet is struck by a fluid current and it is characterized in that the steam (flow) of air which enters by the lower part of the helmet to eliminate the condensation of the visor, is sucked upwards by a chimney effect generating a true and real circulation which, by preventing the stagnation of the hot air, creates an effect of real inside conditioning.

The GB-A 2 167 285 patent discloses a ventilation device for circulating of air inside a helmet, in particular of the integral type for motorcycle use, comprising openings placed at the lower parts of the helmet for bringing the air from the outside and openings surrounded by a deflector, placed in the upper part of the helmet beyond the center line of division between pressure and low pressure, when the helmet is struck by a fluid current.

But the steam (flow) of air created does not lap the inner part of visor and the face of the motor-cyclist, so that the annoying increase of temperature in correspondence of the forehead of the motor-cyclist, the steaming of the visor and the stagnation of the hot air in correspondence of the face of the motor-cyclist cannot be avoided.

These drawbacks are also present in the devices according to the Fr-A 2 525 441 and the DE-C 3 316 920 patents.

It is well known that when a motor-cyclist after many hours of driving feels tired, the stagnation of the hot air into the front part of the helmet may cause him serious troubles which may bring about accidents.

This will be completely avoided with the true and the real circulation of air entering by the lower part of the helmet and sucked upwards by a chimney effect, giving an efficient conditioning of the air in correspondence of the face of the motor-cyclist.

A detailed but non-limiting description of a preferred embodiment of the invention is given below with reference to the accompanying drawings.

— Fig. 1 represents the diagram of the ventilation device with dynamic low pressure applied to the helmet;

— Fig. 2 represents a vertical longitudinal section of the helmet for a motorcyclist of the type integral with the device of the invention;

— Fig. 3 represents a bottom view of the ventilation device with low pressure ducts, applied to a helmet without comfort material;

— Fig. 4 represents the arrangement of the side intake ducts of the ventilation air at the level of the zone of circulation above the wearer's head and the collection duct located in the upper part of the cap of absorption material,

— Fig. 5 represents a view from below of the helmet with comfort material and shows the air circulation ducts.

Description of the device

The helmet (fig. 2) is equipped as known with an extraction deflector 1 (fig. 1) mounted on the upper part of the cap and communicating by means of slotted openings 2 with a chamber 3 located between the outside cap and cap of absorption material.

Deflector 1 has the shape of a wing profile with connected outlet edge to reduce noise and turbulence and it is placed in the center line of the cap in a zone that puts it roughly at the point of greatest height of the helmet when the latter is put on by the wearer; therefore the discharge zone is placed beyond the center line of division between pressure and low pressure of the helmet.

The deflector is also adjustable in capacity by sliding in a suitable seat (which also permits its closing).

According to the invention, all the strong stream (flow) of air entering by the lower part (fig. 2) of the helmets and ejected by the deflector 1 through the upper openings 2', 2, laps the inner part of the visor 11 avoiding the annoying increase in temperature around the forehead face the motor-cyclist as well as the steaming of the visor.

Circulation of the air (fig. 2 and 3) occurs in a circular zone above the wearer's head, made between the head itself and the absorption material.

This zone 4 (fig. 2 and 5) communicates with the outside by six openings (fig. 3), two intake openings 5 and four outlet openings 7.

The two intake openings 5 are obtained on the two extreme sides of the front zone above the front by means of two ducts made in the cap of absorption material, covered by sheets 6 of semirigid material that prevent the padding from penetrating into them (fig. 2). These ducts allow the direct passage of the air between the two zones on the side of front 5' and the zone above the wearer's head.

The four outlet openings 7' are precisely four cylindrical holes 7 suitably connected which, going all the way through the cap of absorption material, put zone 4 in communication with duct 8 of a particular shape which ends precisely in collection zone 3 under opening slots 2 communicating with the outside. In duct 8 there is a particular configuration, which can be seen in the drawings, which makes possible a balanced extraction of the air through the four communication holes.

Operating principle

When the helmet moves in the fluid the effect of the low pressure created at the outlet of the duct pulls the air from the inside. This air is extracted by means of collection zone 3 (fig. 3) through duct 8 and four holes 7, from chamber 4 located between the wearer's head and the absorption material; the resulting low pressure that is created pulls other air through openings 5 on the sides of the front; entry of the air by such openings is aided by the fact a slight pressure is present inside the helmet in the front zone by dynamic effects, and this entry generates a true and real circulation which, by preventing the stagnation of the hot air, creates an effect

of real inside conditioning. Further the air, which enters by the lower part of the helmet and by the openings to eliminate the condensation on the visor, is sucked upward by a chimney effect which also contributes to reducing the steaming of the visor itself.

The system also be adapted to jet helmets for various uses.

Thus, an efficient conditioning of the inside environment of the helmet is obtained by dynamic effect alone without resorting to sophisticated, expensive, uncomfortable and unreliable complicated devices installed in the helmet.

Claims

1. Ventilation device for circulation of air inside a protective helmet, in particular of the integral type for motorcycle use, comprising: openings (2, 2') surrounded by deflector (1) placed in the upper part of the helmet beyond the center line of division between pressure and low pressure when the helmet is struck by a fluid current, characterized in that the stream (flow) of air which enters by the lower part of the helmet to eliminate the condensation of the visor is sucked upwards by a chimney effect generating a true and real circulation which, by preventing the stagnation of the hot air in correspondence of the face of the motor-cyclist, creates an effect of real inside conditioning.

2. Ventilation device according to claim 1, characterized in that the circulation of the air from the visor (11) to the deflector (1) comprises a series of flow holes or ducts (7) connected to a collecting ring (8) which ends precisely in collection zone (3) at the outlet of the deflector (1) to permit balanced extraction, entry, of the stagnant hot air located on the inside (4) of the helmet of the wearer and the absorption material.

3. Ventilation device according to claims 1 and 2, characterized by an intermediate zone (4) of effective volume between the wearer's head and the material for absorption of impacts, said zone connected at intake (5') and outlet (7') to ducts (5, 7) from the visor (11) and said zone (4).

4. Ventilation device according to claim 3, characterized in that said ducts are intake ducts placed at the sides of the front wall and therefore in a secure zone from the viewpoint of mechanical tests of absorption of impacts and in case of accident.

5. Ventilation device according to claim 4, characterized in that said intake ducts (5) are obtained by discharges of the absorption material, protected by sheets of semirigid material (6) to avoid being blocked by the pressure of the comfort material, and by the wearer's hair.

Patentansprüche

1. Vorrichtung zur Verbesserung der Belüftung des Inneren eines Helms, insbesondere für eine Motorradverwendung, mit: von einem Deflektor (1) umgebenen Öffnungen (2, 2'), die im oberen Teil des Helms jenseits der Mittellinie einer Trennung zwischen Druck und niedrigem Druck, wenn der Helm von einem Fluidstrom getroffen wird, angeordnet

sind, dadurch gekennzeichnet, daß der Strom (Fluß) der Luft, die am unteren Teil des Helms eintritt, um die Kondensation der Sichtscheibe auszuschließen, durch eine Kaminwirkung aufwärts gesaugt wird, die eine richtungsgenaue und tatsächliche Zirkulation erzeugt, welche durch Verhindern der Stagnation der Warmluft in Übereinstimmung zum Gesicht des Motorradfahrers einen Effekt einer realen innerseitigen Konditionierung hervorruft.

2. Vorrichtung nach Anspruch 1, dadurch gekennzeichnet, daß der Kreislauf der Luft von der Sichtscheibe (11) zum Deflektor (1) eine Reihe von Strömungsöffnungen oder -kanälen (7) enthält, die an einen Sammelring (8) angeschlossen sind, welcher genau in einer Sammelzone (3) am Auslaß des Deflektors (1) endet, um eine ausgeglichene Extraktion, Einströmung, der stagnierenden, an der Innenseite (4) des Helms des Trägers und des Dämpfungsmaterials befindlichen Warmluft zuzulassen.

3. Vorrichtung nach den Ansprüchen 1 und 2, gekennzeichnet durch eine Zwischenzone (4) von wirksamem Volumen zwischen dem Kopf des Trägers und dem Material zur Dämpfung von Stößen, wobei diese Zone an einen Einlaß (5') und Auslaß (7') zu Kanälen (5, 7) von der Sichtscheibe (11) sowie der erwähnten Zone angeschlossen ist.

4. Vorrichtung nach Anspruch 3, dadurch gekennzeichnet, daß die genannten Kanäle Einlaßkanäle sind, die an den Seiten der Frontwand und deshalb in einem sicheren Bereich aus dem Gesichtspunkt von mechanischen Prüfungen der Dämpfung von Stößen und im Fall eines Unfalls angeordnet sind.

5. Vorrichtung nach Anspruch 4, dadurch gekennzeichnet, daß die Einlaßkanäle (5) durch Beseitigungen des Dämpfungsmaterials, die durch Lagen eines halbsteifen Materials (6) geschützt sind, um ein Blockieren durch den Druck des Polstermaterials und das Haar des Trägers zu vermeiden, erhalten werden.

Revendications

1. Dispositif pour favoriser la ventilation à l'intérieur d'un casque, en particulier d'un casque pour motocycliste, comprenant: des ouvertures (2, 2') entourées par un déflecteur (1) disposées dans la partie supérieure du casque au-delà de la ligne centrale de séparation entre la pression et la basse pression lorsque le casque est frappé par un courant fluide caractérisé par le fait que le flux (circulation) de l'air, qui pénètre par la partie inférieure du casque pour éliminer la condensation sur la visière, est aspiré vers le haut au moyen d'un effet de cheminée créant une véritable circulation réelle qui, en empêchant la stagnation de l'air chaud devant le visage du motocycliste, établit un effet réel de conditionnement à l'intérieur.

2. Dispositif selon la revendication 1, caractérisé par le fait que la circulation de l'air depuis la visière (11) jusqu'au déflecteur (1) se fait par une série d'orifices ou conduits de circulation (7) reliés à un anneau collecteur (8) qui se termine précisément dans la zone de collecte (3) à la sortie du déflecteur (1) pour permettre une extraction équilibrée de l'air

chaud stagnant, situé à l'intérieur (4) du casque au-dessus de la tête de l'utilisateur et sous le matériau absorbant.

3. Dispositif selon les revendications 1 et 2, caractérisé par le fait qu'une zone intermédiaire (4) d'un certain volume utile se trouve entre la tête de l'utilisateur et le matériau antichoc, ladite zone étant reliée à l'entrée (5') et la sortie (7') à des conduits (5, 7) allant de la visière (11) à ladite zone (4).

4. Dispositif selon la revendication 3, caractérisé par le fait que lesdits conduits sont des conduits d'aspiration disposés sur les cotés de la paroi avant et par conséquent dans une zone de sécurité du point de vue des tests mécaniques d'absorption des chocs et en cas d'accident.

5. Dispositif selon la revendication 4, caractérisé par le fait que lesdits conduits d'aspiration (5) sont obtenus par des découpes dans le matériau absorbant, protégés au moyen de feuilles en matériau semi-rigide (6) afin d'éviter que les conduits soient obturés par la pression du matériau de confort, et par les cheveux de l'utilisateur.

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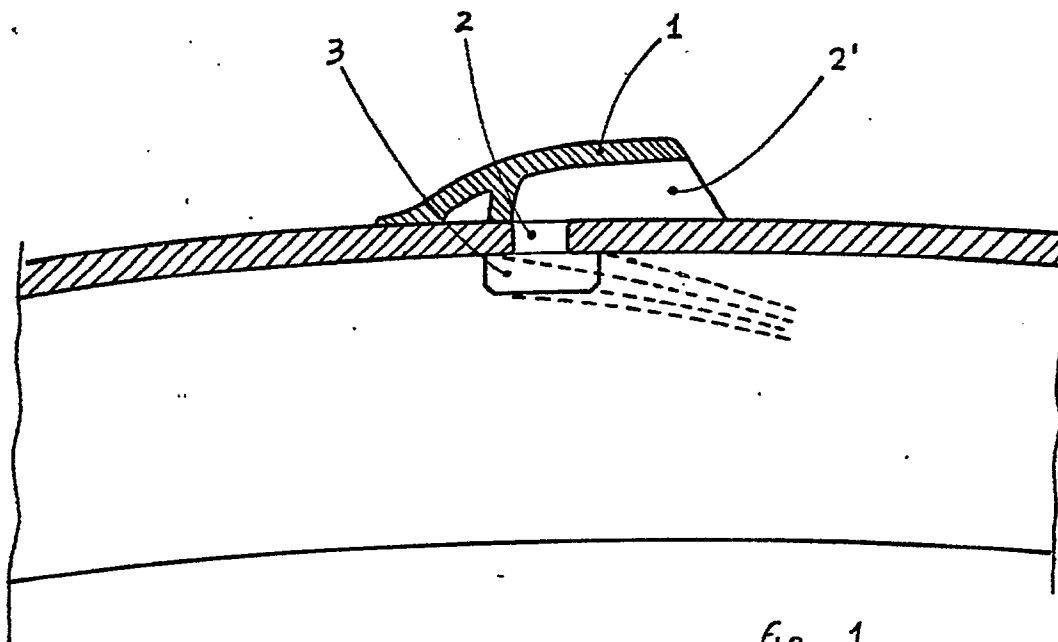


Fig. 1

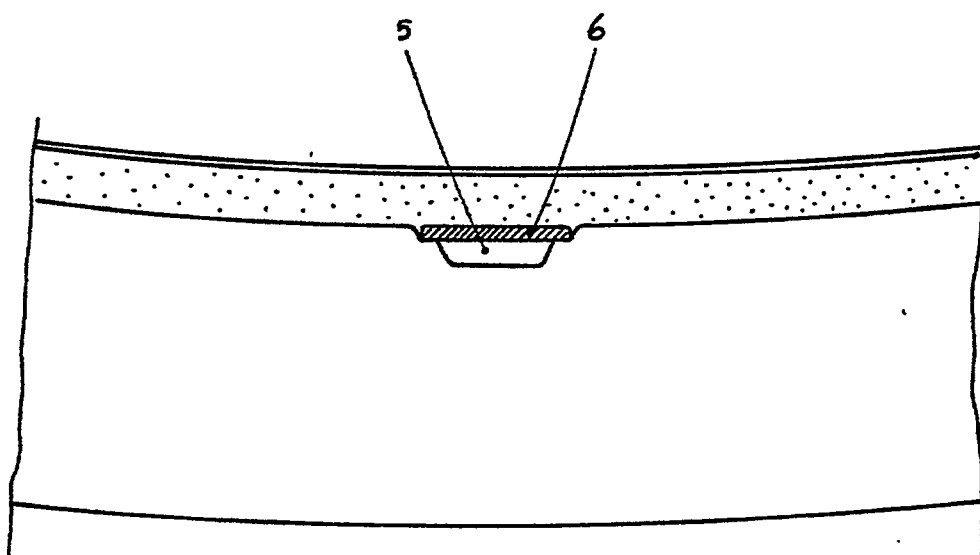


Fig. 3

Fig. 2

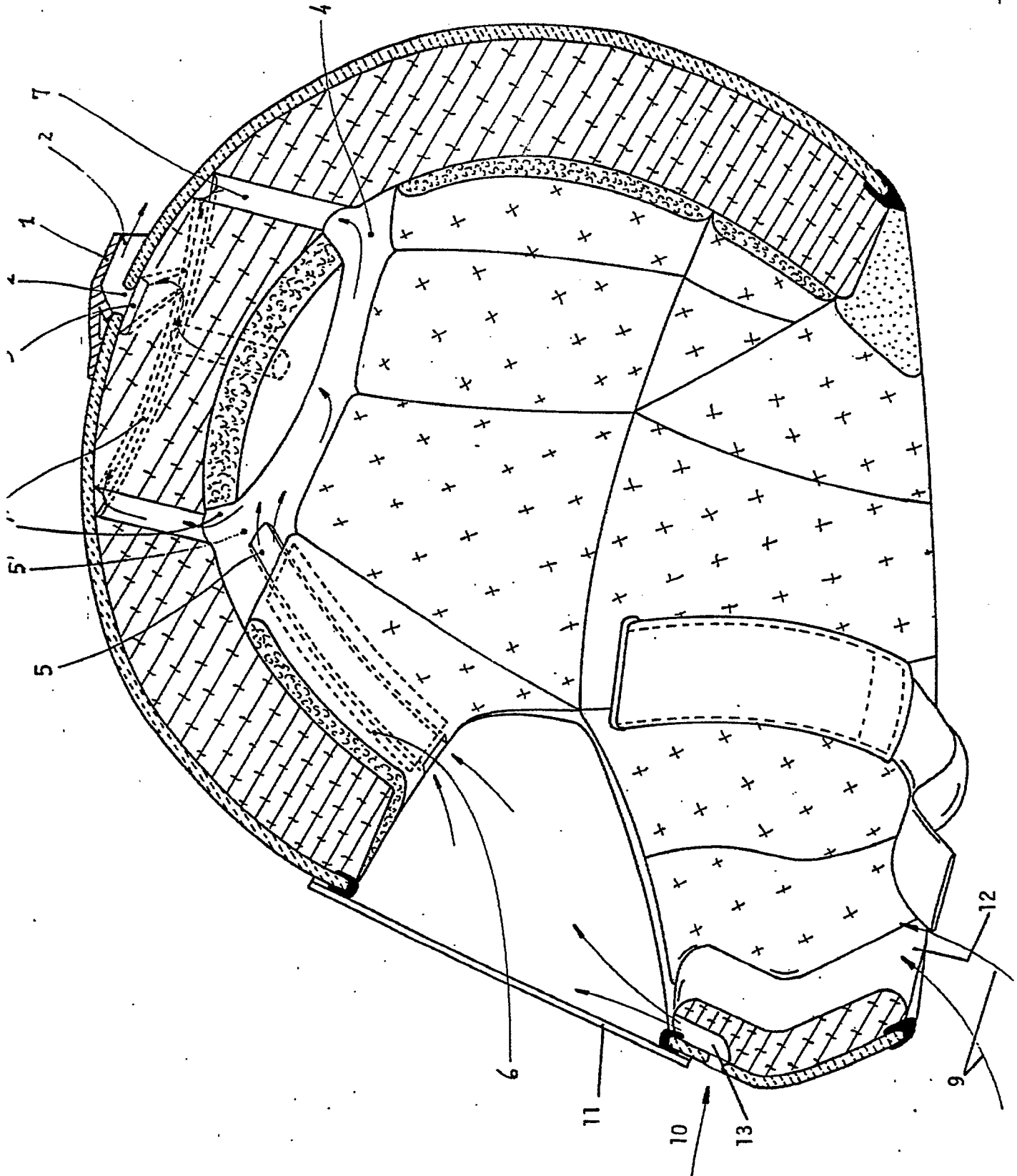


fig. 4

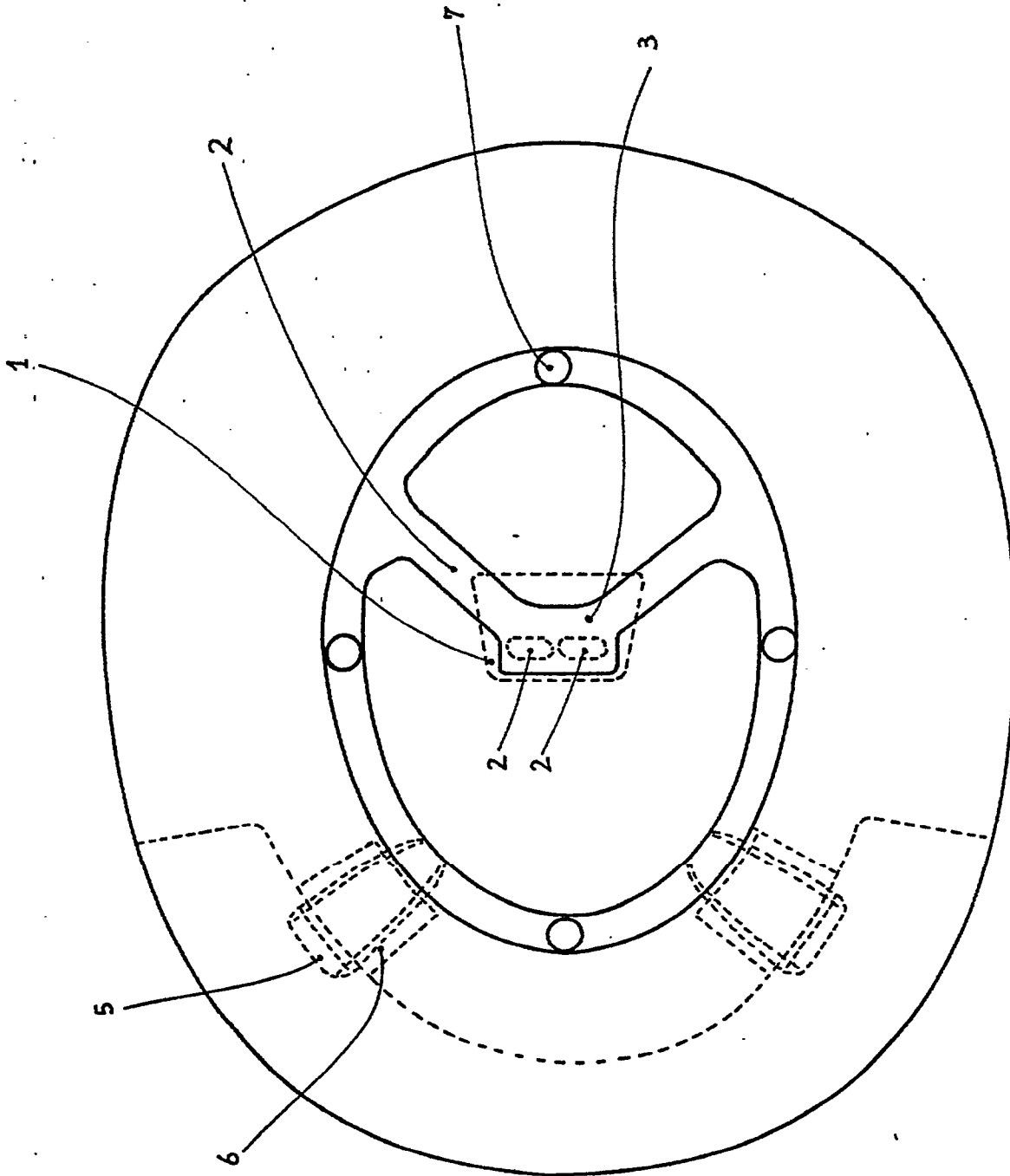


Fig. 5

