Industria y Comercio

SUPERINTENDENCIA

Delegatura de Propiedad Industrial

División de Nuevas Creaciones

PCT

SOLICITUD

PATENTE DE INVENCION

21. **EXPEDIENTE No.** 05-53280

54. **TITULO** CASCO ENFRIADOR

51. **CLASIFICACION INTERNACIONAL** A42B/06; 3/28; 1/02; 3/10

71. **SOLICITANTE** NICHOLAS BEDFORD

DOMICILIO Warradale, S.A., Austria.

74. **APODERADO** EMILIO FERRERO

C.C. 438.019 de Usaquén.

22. **BOGOTA, D.C.,** 202099.

(FORMA P-10)

Industria y Comercio
SUPERINTENDENCIA

PETITORIO

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO
Radicacion : 05053280 00000000 Folios: 59
Fecha (AMD): 2005-06-01 17:21:33
Tramite : 011 PCT-PATENT 379 FASE NACI 411 PRESENTA
Dependencia: 2020 DIVISION DE NUEVAS CREACIONES

FORMULARIO UNICO DE SOLICITUD DE PATENTE PCT ENTRADA EN FASE NACIONAL

1 SOLICITUD DE:

☒ Patente de Invención. ☐ Patente de Modelo de Utilidad.
☐ Capítulo I. ☒ Capítulo II.

2 SOLICITANTE (71)	Nombre: **Nicholas BEDFORD** Dirección: 184 Esplanade, Port Noarlunga South, South Australia, 5167, Australia Domicilio: Port Noarlunga South, Australia	**IDENTIFICACIÓN** C.C. ☐ NIT ☐ C.E. ☐ Otro ☐ Cual ____ Número ____
3 REPRESENTANTE O APODERADO	Nombre: EMILIO FERRERO Dirección: Carrera 4ª. No. 72-35 Teléfono: 347 36 11 Fax: 211 86 50 E-mail: clientes@camvp.com. Domicilio: Bogotá, Colombia.	**IDENTIFICACIÓN** C.C. ☒ NIT ☐ C.E. ☐ Otro ☐ Cual ____ Número 438.019 T.P 31.929
4 INVENTOR (ES) (72)	**Nicholas BEDFORD** 184 Esplanade, Port Noarlunga South, South Australia, 5167, Australia	

5 PCT (86)
Solicitud Internacional No. PCT/AU2003/001437 Fecha: 31 de octubre de 2003
Publicación Internacional No. WO 2004/039191 A1 Fecha: 13 de mayo de 2004

6 Título (54)
CASCO ENFRIADOR

7 Clasificación Internacional (51) A42B 1/06 A42B 3/28; 1/02; 3/10

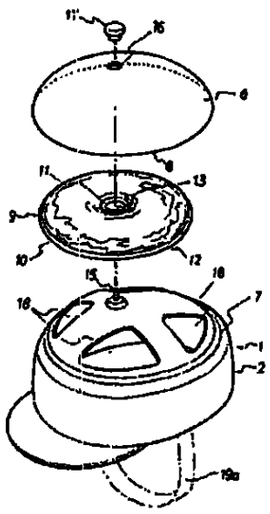
8 Prioridad SI☒ NO☐	(33) País de Origen	(32) Fecha	(31) Número de Solicitud
	AU.	1 de noviembre de 2002	2002953193

9 Comprobante de pago No.: 05 – 35.943 **Fecha:** 16 de mayo de 2005

10 Anexos:

- ☒ Comprobante de pago de la tasa de presentación de la solicitud por $ 443.000.oo.
- ☐ Comprobante de pago por reivindicación de prioridad.
- ☐ Documento que acredita la existencia y representación legal cuando el solicitante sea persona jurídica.
- ☐ Poderes, si fuere el caso.
- ☐ Documento de cesión del inventor al solicitante o a su causante.
- ☐ Declaraciones.
- ☒ Copia de la solicitud internacional. (Resumen, descripción, reivindicaciones, dibujos)
- ☒ Traducción de la solicitud internacional al castellano. (Resumen, descripción, reivindicaciones, dibujos)
- ☒ Copia del examen preliminar efectuado por la IPEA.
- ☐ Traducción del examen preliminar efectuado por la IPEA.
- ☐ De ser el caso, copia del contrato de acceso.
- ☐ De ser el caso, documento que acredite la licencia o autorización de uso de conocimientos tradicionales de las comunidades indígenas.
- ☐ De ser el caso, certificado de depósito del material biológico.
- ☒ Arte final 12x12
- ☐ De ser el caso, información sobre otras solicitudes de patente o títulos obtenidos en el extranjero por el mismo titular o su causante, relacionadas parcial o totalmente con la invención de esta solicitud.
- ☐ Otros

11 FIGURA CARACTERÍSTICA



12

Solicito la concesión de la patente,

NOMBRE: EMILIO FERRERO

FIRMA : _____

C.C. 438.019 de Usaquén T.P. 31.929

DOCUMENTOS ANEXOS

1. ☒ Publicación Internacional WO 2004/039191 **A1**
   Descripción:
   Páginas 1-15 en el idioma original
   Páginas 1-15 en español
   Reivindicaciones: Número (s) 18
   Figuras: Número (s) 6
2. ☐ **Forma PCT/RO/101.** PCT Request
3. ☐ **Forma PCT/RO/106.** Invitation to Correct Defects.
4. ☐ **Forma PCT/ISA/210.** Informe de Búsqueda Internacional.
5. ☐ **Forma PCT/ISA/220.** Notificación De La Transmisión Del Informe De Búsqueda Internacional Y De La Opinión Escrita De La Administración Encargada De La Búsqueda Internacional, O De La Declaración.
6. ☐ **Forma PCT/ISA/237.** Opinión Escrita De La Administración Encargada De La Búsqueda Internacional.
7. ☐ **Forma PCT/IB/304.** Notification Concerning Submission Or Transmittal Of Priority Document.
8. ☐ **Forma PCT/IB/306.** Notification Of The Recoding Of A Change.
   Descripción De Modificación:
   ———
9. ☐ **Forma PCT/IB/308.** Notice Informing The Applicant Of The Communication Of The International Application To The Designated Offices.
10. ☐ **Forma PCT/IB/332.** Information Concerning Elected Offices Notified Of Their Election.
11. ☐ **Forma PCT/IPEA/401.** PCT Demand
12. ☐ **Forma PCT/IPEA/402.** Notification Of Receipt Of Demand By Competent International Preliminary Examining Authority.
13. ☐ **Forma PCT/IPEA/408.** Written Opinion.
14. ☐ **Forma PCT/IPEA/416.** Notification Of Transmittal Of The International Preliminary Examination Report.
15. ☒ **Forma PCT/IPEA/409.** Informe Del Examen Preliminar Internacional.
16. ☐ Traducción Al Español Del Informe Del Examen Preliminar Internacional.
17. ☐ Traducción Al Español De Los Anexos Presentados Junto Con El Informe Del Examen Preliminar Internacional.
    Reivindicaciones Modificada (1-16)

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
13 May 2004 (13.05.2004)

PCT

(10) International Publication Number
WO 2004/039191 A1

(51) International Patent Classification[7]: A42B 1/06, 1/02, 3/10

(21) International Application Number: PCT/AU2003/001437

(22) International Filing Date: 31 October 2003 (31.10.2003)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
2002953193 1 November 2002 (01.11.2002) AU

(71) Applicant and
(72) Inventor: BEDFORD, Nicholas [AU/AU]; 18 Kildonan Road, Warradale, S.A. 5046 (AU).

(74) Agent: HOWARD, Schulze, K.; Collison & Co, 117 King William Street, Adelaide S.A. 5000 (AU).

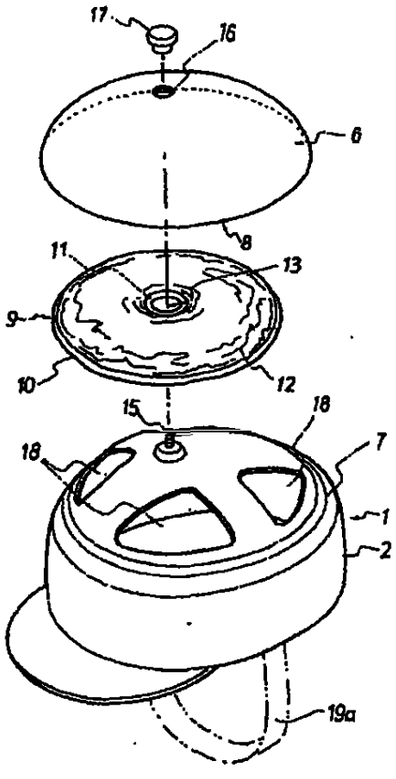
(81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW.

(84) Designated States (*regional*): ARIPO patent (BW, GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IT, LU, MC, NL, PT, RO, SE, SI, SK, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

Published:
— *with international search report*
— *with amended claims and statement*

[Continued on next page]

(54) Title: COOLING HELMET



(57) Abstract: An impact protective item of headwear (1) which has inner (2) and outer (6) impact resistant parts nesting one with respect to the other and shaped to hold between them a replaceable pouch (9) with a gel cooling or otherwise of a user.

WO 2004/039191 A1

For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.

COOLING HELMET

This invention relates to headwear particularly suited to be worn by persons requiring headwear that will provide impact protection for the wearer.

BACKGROUND OF THE INVENTION

It has been known to use ice held close to the head of a person to provide cooling for medical purposes.

For instance, it is known to cover the head with a pliable material adapted to hold frozen liquid so that the surface of the head is kept cold. This process is used to reduce damage to hair follicles for those who might be taking cancer drugs where they might otherwise lose their hair.

In practical headwear that provides impact protection which also includes temperature modifying materials, there is one prior art example published as a mere paper publication where there is a helmet with an arrangement to support a bladder with a breakable pouch of an encapsulated ammonium salt within a body of water. The bladder is shown as fitting against an inner side of the helmet and is arranged to be held in this position by hook and loop fastener pads (often referred to by the Registered Trade Mark Velcro). Unfortunately the use of a breakable pouch within a bladder in this disclosure is used to replace soft padding and is shown so that the liquid bladder will bear directly against the head of a wearer.

This has the disadvantage that the bladder will result in heat transfer from a users head directly by conduction to the bladder and is not conducive to cooling any other areas of the head. This leads implicitly to significant temperature differences against the head and is somewhat akin to having an ice pack held against the skin where this becomes very uncomfortable after a modest period.

By replacing some of the padding the advantage is that the helmet itself is not integrally compromised but the padding is altered so that it will still need separate testing.

A further difficulty with direct contact is that the temperature modifying material will be directly contacting a head of the user with the result that any retained heat

differential will be compromised relatively quickly. In other words by having direct contact the cooling effect may for instance only last a relatively short time.

A problem to which this invention is directed is to provide an impact protective article of headwear that allows for a more comfortable arrangement where heat modifying means are involved and also to assist in increasing time that a cooling of heating effect may be sustained in a headwear item.

BRIEF DISCLOSURE OF THIS INVENTION

In one form of this invention there is proposed an article of headwear having a crown which has an outer part of crown shape, and an inner part of crown shape of a size and shape adapted to and nesting with the outer part and at least one intermediate part which is positioned to be intermediate the said outer and inner crown parts and which outer and inner parts are together adapted to support in removable fashion the intermediate part, and where the intermediate part is comprised of at least in the main of a fluid.

In preference the fluid is held in one or more pliable pouches which can be removable and replaceable with other pouches.

Preferably the fluid is a freezable gel so that there can be a plurality of such pouches which can be used to replace one another so that as one is warmed another from a freezer can replace this to maintain a preferred extent of cooling.

By structurally separating the crown of a headwear item into at least two parts with an intermediate part in between provides an opportunity to control within a contained space arrangements for airflow and cooling effect and distribution of cooling air from this.

Also where there is a lower and upper part of an impact resistant material, this then allows for improved impact resistance by reason of a double wall characteristic which can then also mean that lighter materials may be used for the individual parts which is to say lighter than would have been ordinarily needed for a single thickness crown to get a similar protective effect. This can assist in keeping an all up weight of a helmet within acceptable limits.

Preferably, there is a further part positioned between the intermediate part and the outer part which is comprised of at least in the main an insulating material.

Preferably, the inner part is an impact resistant material.

Preferably, the further part is a pliable and insulating material.

Preferably, the intermediate part includes a pliable plastics material sheet holding therewithin a freezable gel.

Preferably, there is a peak extending outwardly from the outer part of the crown from a rim of the crown shape of the outer part.

In a further form of the invention, the inner part is a cradle or harness having a lower rim interengaging with the outer part and supporting at least one strap extending from one side of the rim portion to an opposite side of the rim portion and following the path defining a crown shape nesting within the outer part.

Preferably, the impact resistant material is a plastics material.

Preferably, the impact resistant material is a poly-carbonate plastics material.

Preferably, the impact resistant material is a glass fibre-reinforced polyester plastics material.

Preferably, the hat further includes a protective face frame.

Preferably, there is extending over the outer part a woven fabric..

In the alternative it is a stretch fabric..

Preferably, the outer part and the inner part are held together by a central joining member.

Preferably, the inner part has a portion which is bulbous and is centrally located and the intermediate part has a central aperture through which the bulbous portion of the inner part extends.

For a better understanding of this invention it will now be described with relation to one embodiment which shall now be described with the assistance of drawings wherein:

Figure 1 is an exploded perspective view of a first embodiment,

Figure 2 is a cross-sectional view of the embodiment shown in Figure 1,

Figure 3 is an exploded perspective view of a second embodiment,

Figure 4 is a cross-sectional view of the embodiment shown in Figure 3,

Figure 5 is an exploded perspective view of a third embodiment,

Figure 6 is a cross-sectional view of the embodiment shown in Figure 5.

DETAILED DESCRIPTION OF THE INVENTION

Now referring to the drawings, and to Figure 1 in particular, this illustrates an impact protective helmet of a type intended to be worn by a person batting in the traditional game of cricket.

Accordingly, the helmet 1 has an inner part 2 of crown shape which is moulded from an impact resistant plastics material this being glass fibre reinforced polyester in this case. This provides for further parts including a brim 19 and sides to be joined from two parts as a part of the lower part 2.

There is provided an outer part 6 of crown shape which is of a dome shape and which arranged to generally have an outer lower edge which conforms to a periphery 7 of the lower part 2 so as to define a cavity 8 between the two.

This cavity 8 is shaped so as to receive within it a pack 9 which is provided by two sheets of pliable plastic material welded together along inner and outer seems 10 and 11 so as to define a pouch 12 with a central hole 13 passing through it.

Within the pouch 12 there is a freezing gel which is adapted to be frozen at colder temperatures typically zero degrees centigrade or below and which will therefore

once frozen, be available to melt and provide thereby cooling effect.

The upper part 6 is held in position by a bolt 15 embedded within the lower part 2 at a central location and projects upwardly so as to pass through aperture 16 and to be held in position by nut 17.

Apertures 18 are positioned in distributed fashion in the inner part 2 so as to allow for air flow from the frozen gel into an air space beneath the inner part 2.

A brim 19 projects forwardly from the inner part 2 and there is a strap 19a to hold the helmet onto the head of a user.

What is not shown specifically however but which is included as is traditionally used is the means to support the helmet on the head namely in one case a set of straps which go from side to side and therefore pass over a top of the head of the user and hold the lower surface of the helmet namely the inner part significantly above the head or hair or skin of the user. In another case discrete blocks of padding 21 are placed around a periphery on the inside of the inner part 2 these being spaced apart to allow for air to access and flow to the surface of the head of the user in each case.

In practice, this arrangement then provides for a very convenient facility in which the upperpart 6 will fit with the lower shell or crown shape of the lower part 2 so that the outermost shape will look to be very similar to a conventional helmet shape.

The pack 9 can be removed from time to time by simply undoing the nut 17 and lifting the upper part away and replacing the pack with a further frozen pack so that a person wearing the hat may be able to be kept cool over periods of typically an hour or so according to tests thus far conducted.

As can now be seen the arrangement provides herein a double wall of an upper and lower part which implicitly results in a protection which is more likely to provide better protection than a single wall arrangement with a similar wall thickness and type of plastics material. Also by having a freezing gel held within a structurally self supporting arrangement means that normal protective features of this type of helmet can be maintained for instance the structure of the helmet can be supported by the conventional discrete padding or by strapping and there is no

direct engagement needed of the freezing pouch against the head or skin of the user.

Various other users require participants to wear protective headwear which also have a potential problem when it is hot. These include, amongst others, those participating in cycling, baseball, lacrosse and American football.

In each case, specialized helmets have been developed according to the requirements of each of these uses. It will be understood by persons skilled in the relevant art that it would be a relatively straightforward matter to adapt the arrangement outlined above to each of these differing helmet arrangements.

Referring now to Figures 3 and 4, this illustrates a helmet of the type intended to be worn by a construction worker working on a building site which are often referred to as a hard hat.

The helmet 20 has an outermost shell which forms there by an outer part 22 which is moulded from an appropriate impact resistant plastics material as per a conventional construction helmet such as a polycarbonate plastics material.

There is also provided an insulating material 24 which is of a dome shape, and which is adapted to generally conform to the periphery 26 of an inner part 28 so as to define a cavity 30 between the two which is to say the outer part 22 and the inner part 28 both of which are of dome shape and which provide for the inner part 28 to nest within the outer part 22.

This cavity 30 is adapted to receive within it a pack 32 which contains a freezable gel, which is provided by two sheets of pliable plastic material welded together along inner and outer seams 34 and 36 so as to define a pouch 38.

Within the pouch 38 there is the freezing gel which is adapted to be frozen at colder temperatures of typically zero degrees centigrade or below, and which will therefore once frozen, melt and provide thereby cooling effect.

The insulating material 24 and innerpart 28 are held together, and then collectively secured to the outermost shell , via the helmet webbing 40 (represented by the dashed lines), which is of a type conventionally found in such construction helmets, which in this case as is conventional is removably attached to the outermost shell

via means of clips 42 adapted to engage the outermost shell 22.

The brim 43 is in this case now a part of the outer part 22 which provides for the inner part to in this case fit or nest within the outer part 22.

Such an arrangement of helmet webbing is removable therefore relatively easily, in order to facilitate replacement of the pouch 38 once for instance it is no longer frozen with a further frozen pack as before.

Once again therefore it will be seen that the cooling materials are arranged to be held above and out of direct contact with the head or skin of a user and this then allows for air to circulate and also for better insulation and control of air flow past the frozen materials to be achieved.

A further advantage of this arrangement is that it allows for a conventional hard hat of a type which is already being manufactured in large numbers and economically to be relatively simply modified to allow for cooling to be available. This is considered to be of great advantage especially where those who are constrained to work outside may not continue work in higher temperatures but may now be persuaded to continue to work for longer periods in higher temperatures.

As hard hats are compulsory on a number of factory, building and construction sites and their design has been the subject of significant development the advantage therefore of a simple adaption will be readily appreciated to allow for cooling.

Various other occupations require protective headwear. These include, amongst others, firefighters and welders. In each case, specialized helmets have been developed according to the exact requirements of each of these occupations. It would be easily understood by a person skilled in the art that it would be a relatively straightforward matter to adapt the arrangement outlined above to each of these differing helmet arrangements.

Referring now to Figures 5 and 6, these illustrate a hat 50 made primarily of a cloth material of the type commonly referred to as a baseball cap. In this case the cap includes gores 51 which define a crown 52 and there is a peak 53 projecting from one side of the periphery of the crown. Further however this cap uses a multi size fit design in which the gores 51 are a spandex material which allows for the

crown to expand to allow for different head sizes to be fitted comfortably and there is also an elastic inner sleeve 53a which in one case which is not specifically shown is surrounded by a towelling sleeve. This allows for further comfortable expansion.

Inside the crown there is now provided an outer part 54 made from an appropriate impact resistant plastics material in a dome shape, and which is adapted to generally conform to the periphery 56 of an inner part 58 so as to define a cavity 60 between the two where the inner part 58 nests therefore with the outer part 54. These parts 54 and 58 are held in place simply by friction between the expandable crown material and the outer edges of the respective parts.

This cavity 60 is arranged to receive within it a pack 62 as before, which is provided by two sheets of pliable plastic material welded together along inner and outer seems 64 and 66 so as to define a pouch 68.

Within the pouch 68 there is a freezing gel which is adapted to be frozen at colder temperatures typically 0 degrees centigrade or below and which will therefore once frozen, melt and provide thereby cooling effect.

The shells 54 and 58 are held together as stated and then collectively secured to the hat, by a screw 70 with a button 76 of the type commonly found on the crown of such caps for a head, adapted to be received within the lowermost shell at a central location.

Such an arrangement allows for the pouch 68 to be removable therefore, in order to facilitate replacement of a further frozen pouch 68.

This design allows for applications such as golf to be accommodated with some impact protection from golf balls as well as cooling. In this design this allows for the elastic sleeve to engage arrange a head of a user so that the cron itself stands proud of the actual top of the head. In practise this means that there is again an air space and even with the several parts and a gel pouch there is still left room for and air space above the head of a wearer and the inner part lower surface.

In each case embodiment the design has been provided with an inner part and an outer part and in each case there are apertures to be provided through the parts

which have not been shown specifically but which will be able to be placed in position and be judged as to size and location to best balance the need for maintaining of insulation as compared to allowing for a cooling effect with air passage.

There are other styles of articles of headwear. It will be easily understood by a person skilled in the art that it would be a relatively straight forward matter to adapt the arrangement and principals outlined above to each of other styles.

Articles such as those described herein have now proven themselves to be of considerable benefit both for comfort for users while maintaining and probably improving safety and convenience to those who must use hats and hard caps for protective purposes, especially where being subjected to higher temperature working conditions.

Results of testing of helmets made in accordance with this invention have shown that very substantial benefits can be obtained from this b y for instance keeping the temperature above the head of a user in a cool state over a longer period without undue disadvantage.

Here are some examples of test results for the helmet generally shown as the second embodiment.

Example 1

Temperature in the shade 29deg.cel. Direct sunlight temp. 37.5 Deg. C. The gel pack is placed in position in a frozen state.

Constant temperature reading inside helmet after 30min. 20.5 Deg.C.
50min. 21.5 Deg.C.
80min. 22. Deg.C.

Based on 5 overs being bowled in 20mins, equates to Replacement for Cricketers at Drinks Break(20 overs)Average drinks break per match is 17- 20 overs.

Example 2

Temp. in shade 39 Deg.C. Direct Sunlight 47.5Deg.C. Gel pack started in the frozen state

Temperature in helmet after39min.24.Deg.C
after 70min.25Deg.C
after 75min.26Deg.C

Example 3

Test under Cricket Match conditions

Temp. In shade was 36Deg. Gel pack lasted 75 Mins . and changed at drinks.

Packs Temp In helmet was 20deg at start of play and 29deg. at the finish.

Humidity was 86% (it was a Muggy day).

Based on Medical Doctors statements a best temp range is between 18-22Deg.C. for the human brain to function best.

Example 4

Tests on Equestrian Helmet at Darwin In 34 Deg Temp .shade. Direct sunlight temp.42.5Deg.

3 hr cross Country Ride resulted inside helmet pack Temp 29DegC at end.

Example 5

Temperature Tests Done on Cricket helmet without Cooling were

Temp. 28 Deg.C.In the shade and 36.5Deg.C. Direct sunlight

Results inside helmet 16min. = 36 Deg.C.

30min = 39Deg.C.

These results illustrate the advantage of the invention.

CLAIMS

1. An article of headwear having a crown which has an outer part of crown shape, and an inner part of crown shape of a size and shape adapted to and nesting with the outer part and at least one intermediate part which is positioned to be intermediate the said outer and inner crown parts and which outer and inner parts are together adapted to support in removable fashion the intermediate part, and where the intermediate part is comprised of at least in the main a fluid.

2. An article of headwear as in the immediately preceding claim further characterized in that the fluid is held in one or more pliable pouches which are arranged to be removable and replaceable.

3. An article of headwear as in the immediately preceding claim further characterized in that the fluid is a freezable gel.

4. An article of headwear as in any one of the immediately preceding 3 claims further characterized in that there is a further part which is comprised of at least in the main an insulating material which is positioned between the intermediate part and the outer part .

5. An article of headwear as in any one of the immediately preceding 4 claims further characterized in that the inner part is an impact resistant material.

6. An article of headwear as in any one of the immediately preceding 3 claims further characterized in that the further part is a pliable and insulating material.

7. An article of headwear as in any one of the immediately preceding 6 claims further characterized in that the intermediate part includes pliable plastics material sheet holding therewithin a freezable gel.

8. An article of headwear as in any one of the immediately preceding 7 claims further characterized in that there is a peak or brim extending

outwardly from the outer part of the crown from a rim of the crown shape of the outer part.

9. An article of headwear as in any one of the immediately preceding claims further characterized in that the inner part is a cradle or harness having a lower rim interengaging with the outer part and supporting at least one strap extending from one side of the rim portion to an opposite side of the rim portion.

10. An article of headwear having a crown which has an outer part of crown shape, and an inner part of a size and shape adapted to and nesting with the outer part and at least one intermediate part which is positioned to be intermediate the said outer and inner crown parts and which outer and inner parts are together adapted to support in removable fashion the intermediate part, and where the intermediate part is comprised of at least in the main a frozen gel.

11. An article of headwear as in claim 10 further characterised in that there is a further part positioned between the intermediate part and the outer part which is comprised of at least in the main an impact resistant material.

12. An article of headwear as in either one of the immediately preceding claims further characterised in that the inner part is an impact resistant material.

13. An article of headwear in which there is attached to the outer part of the crown a peak extending outwardly from a rim of the crown shape of the outer part.

14. An article of headwear as in any one of the preceding claims in which there is attached to the outer part of the crown a peak or brim extending outwardly from a rim of the crown shape of the outer part.

15. An article of headwear as in any one of the preceding claims 1-13 in which there is attached to the inner part of the crown a peak or brim extending outwardly from a rim of the outer part.

16. An article of headwear as in any one of the preceding claims further characterised in that the inner part is a cradle having a lower rim

interengaging with the outer part and supporting at least one strap extending from one side of the rim portion to an opposite side of the rim portion and following the path defining a crown shape nesting within the outer part.

17. An article of headwear as in any one of the preceding claims further characterised in that the outer part is comprised of a woven fabric.

18. An article of headwear as in any one of the preceding claims except the last claim further characterised in that outer part is comprised of a stretch fabric.

Dated this 31st day of October 2003

NICHOLAS BEDFORD

By his Patent Attorneys

COLLISON & CO

AMENDED CLAIMS
[received by the International Bureau on 26 March 2004 (26.03.04);
original claim 13 amended,
remaining claims unchanged; (1 page)]

outwardly from the outer part of the crown from a rim of the crown shape of the outer part.

9. An article of headwear as in any one of the immediately preceding claims further characterized in that the inner part is a cradle or harness having a lower rim interengaging with the outer part and supporting at least one strap extending from one side of the rim portion to an opposite side of the rim portion.

10. An article of headwear having a crown which has an outer part of crown shape, and an inner part of a size and shape adapted to and nesting with the outer part and at least one intermediate part which is positioned to be intermediate the said outer and inner crown parts and which outer and inner parts are together adapted to support in removable fashion the intermediate part, and where the intermediate part is comprised of at least in the main a frozen gel.

11. An article of headwear as in claim 10 further characterised in that there is a further part positioned between the intermediate part and the outer part which is comprised of at least in the main an impact resistant material.

12. An article of headwear as in either one of the immediately preceding claims further characterised in that the inner part is an impact resistant material.

13. An article of headwear as in any one of claims 10-12 in which there is attached to the outer part of the crown a peak extending outwardly from a rim of the crown shape of the outer part.

14. An article of headwear as in any one of the preceding claims in which there is attached to the outer part of the crown a peak or brim extending outwardly from a rim of the crown shape of the outer part.

15. An article of headwear as in any one of the preceding claims 1-13 in which there is attached to the inner part of the crown a peak or brim extending outwardly from a rim of the outer part.

16. An article of headwear as in any one of the preceding claims further characterised in that the inner part is a cradle having a lower rim

STATEMENT OF AMENDMENTS

1. Delete page 12 of the claims presently on file and substitute in place thereof new page 12 attached hereto.

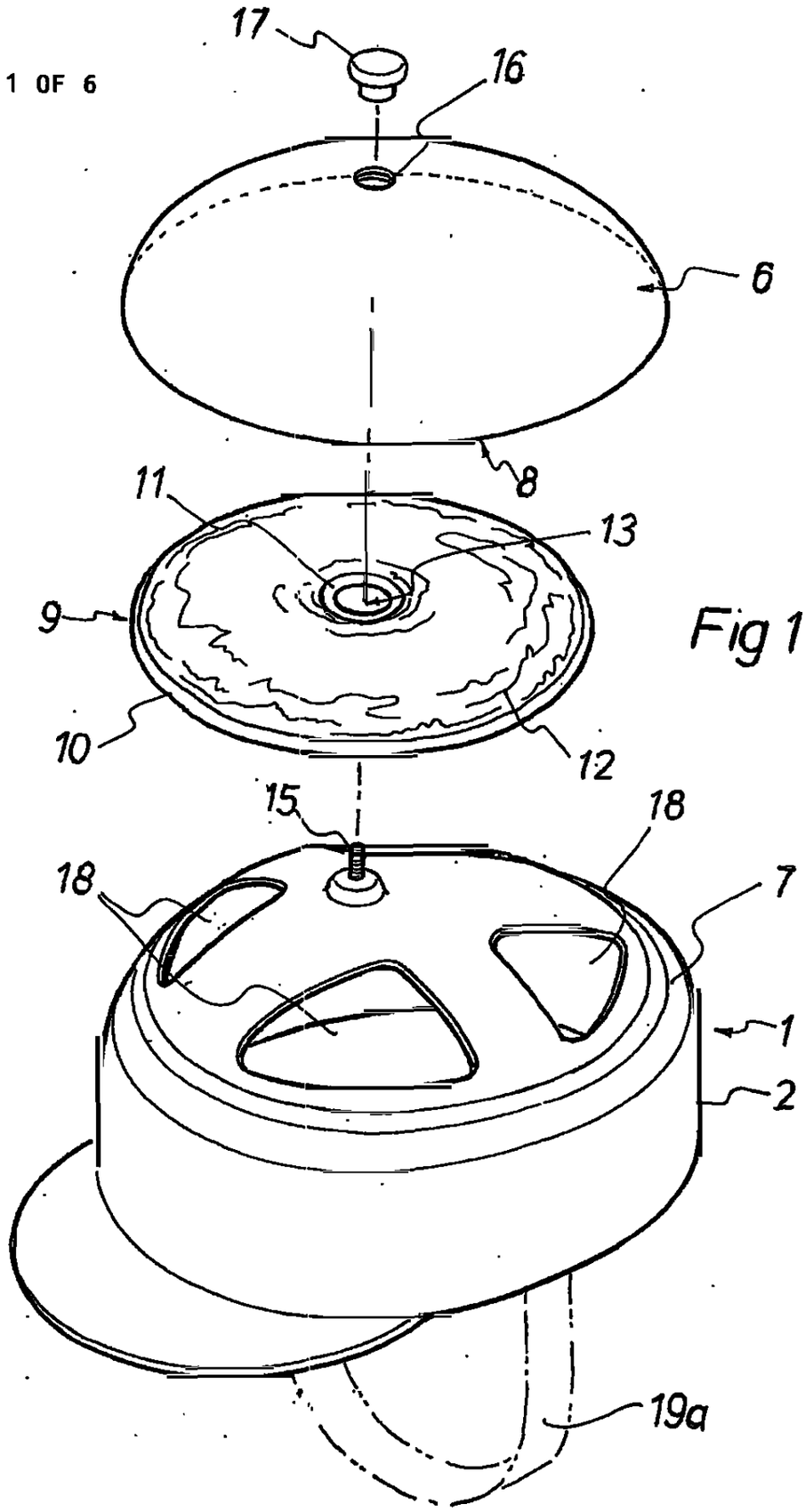


Fig 1

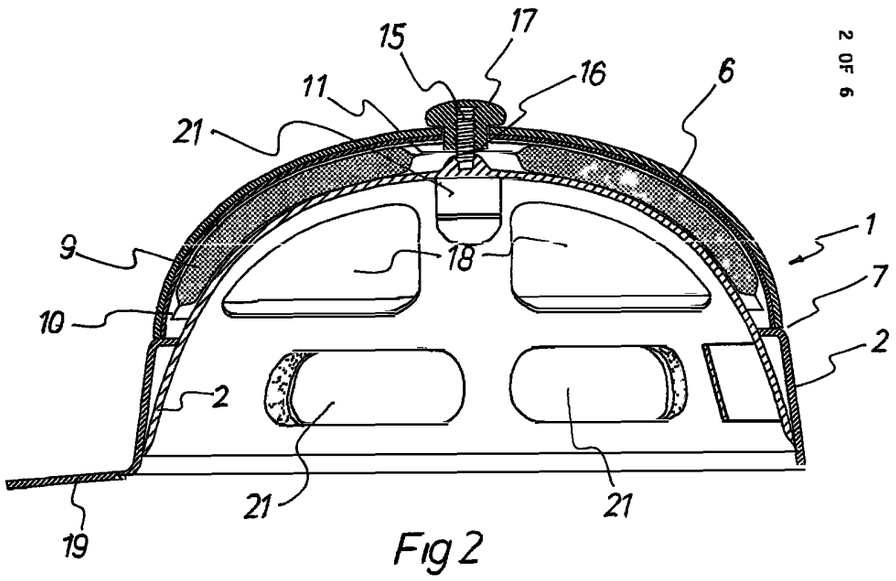


Fig 2

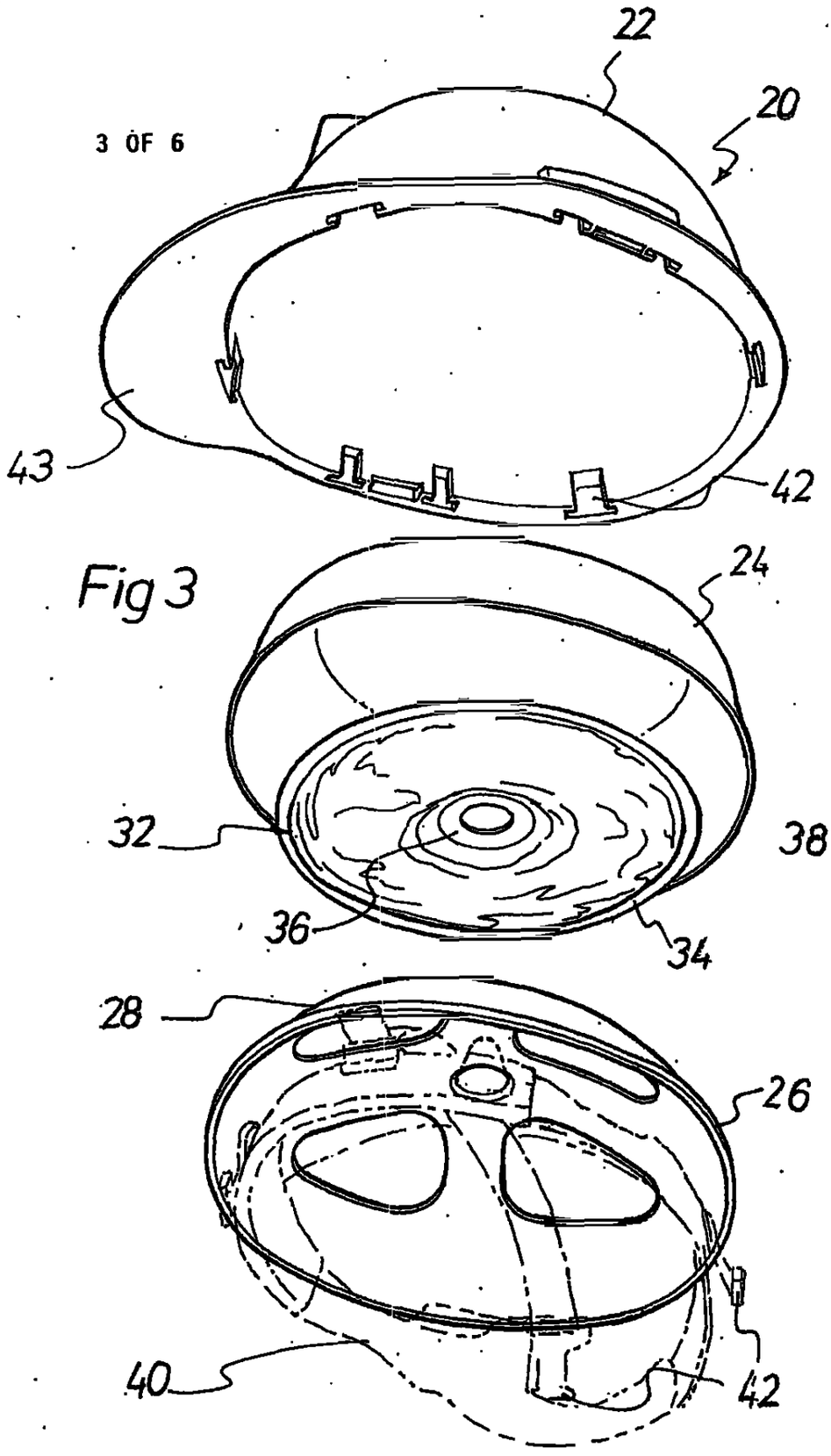


Fig 3

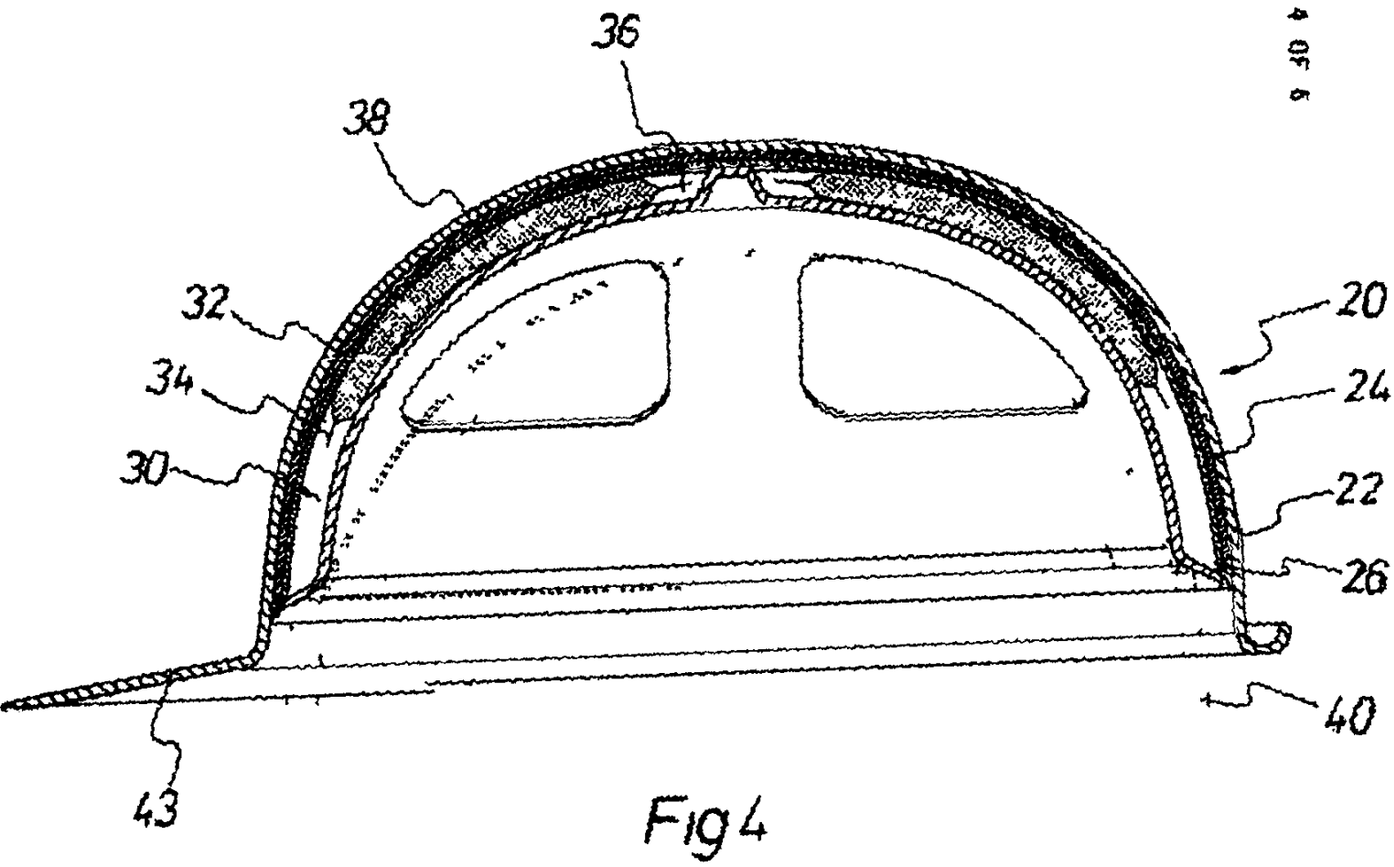


Fig 4

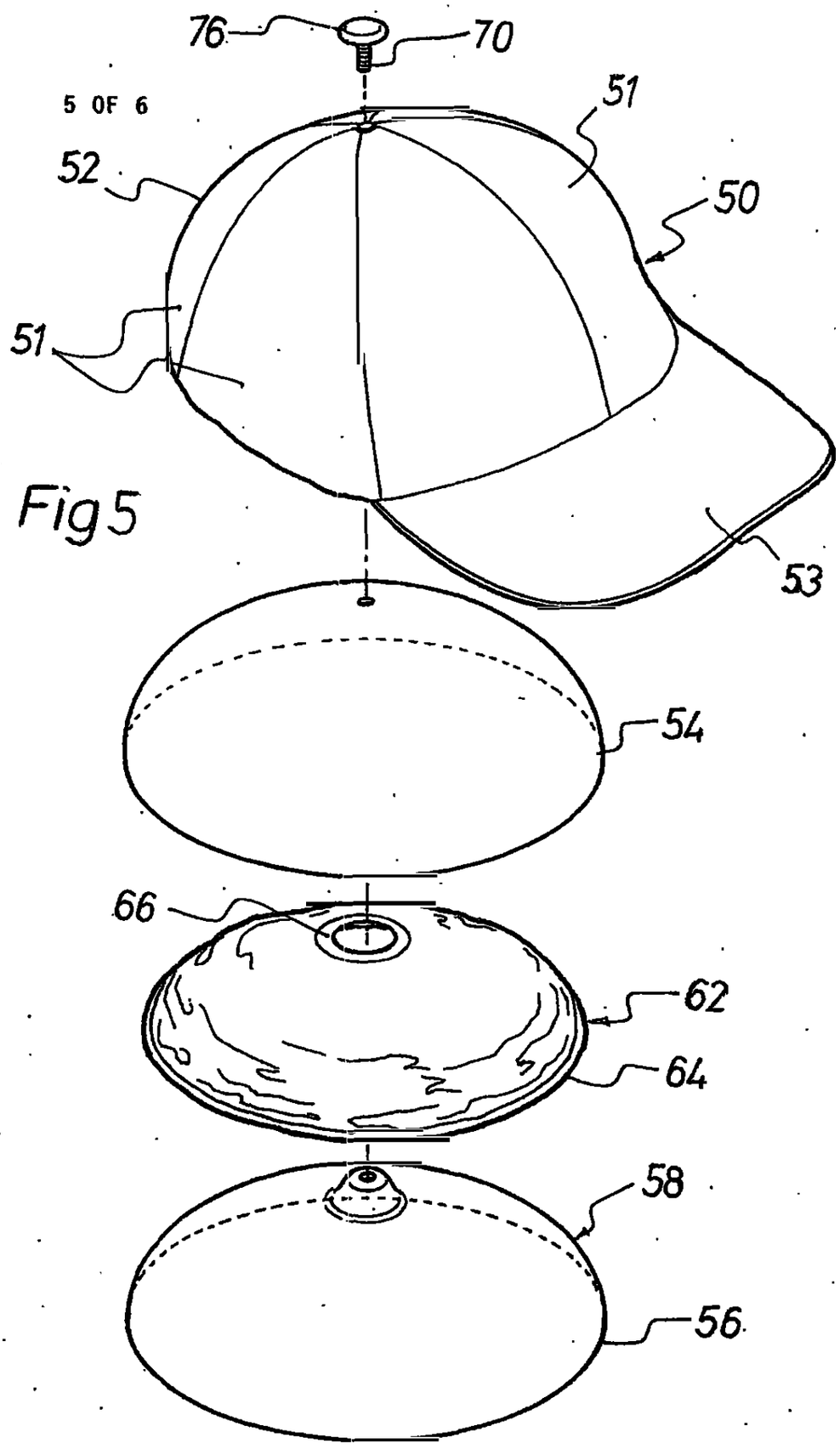


Fig 5

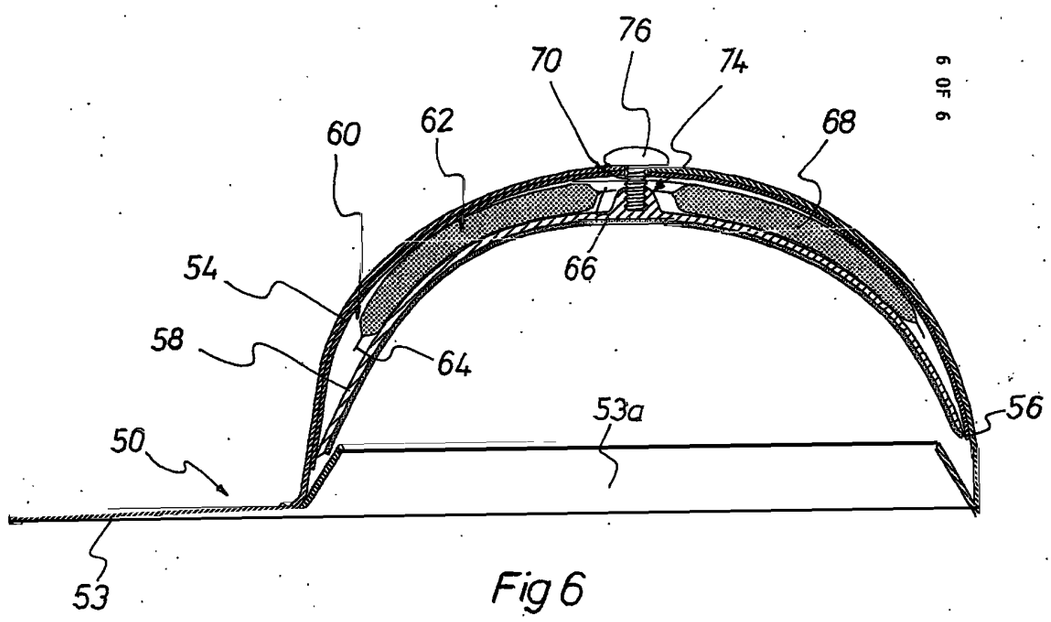


Fig 6

22

PATENT COOPERATION TREATY

PCT

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416).
54081PCT PAB:JPH		
International Application No.	International Filing Date *(day/month/year)*	Priority Date *(day/month/year)*
PCT/AU2003/001437	31 October 2003	1 November 2002

International Patent Classification (IPC) or national classification and IPC

Int. Cl.[7] A42B 1/06,1/02,3/10

Applicant

NICHOLAS, Bedford

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of 3 sheets, including this cover sheet.

   [X] This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

   These annexes consist of a total of 13 sheet(s).

3. This report contains indications relating to the following items:

   - I [X] Basis of the report
   - II [ ] Priority
   - III [ ] Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
   - IV [ ] Lack of unity of invention
   - V [X] Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
   - VI [ ] Certain documents cited
   - VII [ ] Certain defects in the international application
   - VIII [ ] Certain observations on the international application

Date of submission of the demand	Date of completion of the report
1 June 2004	18 January 2005
Name and mailing address of the IPEA/AU	Authorized Officer
AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaustralia.gov.au Facsimile No. (02) 6285 3929	JONATHAN MILLS Telephone No. (02) 6283 2113

INTERNATIONAL .. ELIMINARY EXAMINATION REPORT

International application No.
PCT/AU2003/001437

I. Basis of the report

1. With regard to the elements of the international application:*

- [ ] the international application as originally filed.
- [X] the description, pages , as originally filed,
  pages , filed with the demand,
  pages **1-10,** received on **23 December 2004** with the letter of **23 December 2004**
- [X] the claims, pages , as originally filed,
  pages , as amended (together with any statement) under Article 19,
  pages , filed with the demand,
  pages **11-13,** received on **23 December 2004** with the letter of **23 December 2004**
- [X] the drawings, pages **1-6,** as originally filed,
  pages , filed with the demand,
  pages , received on with the letter of
- [ ] the sequence listing part of the description:
  pages , as originally filed
  pages , filed with the demand
  pages , received on with the letter of

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.
These elements were available or furnished to this Authority in the following language which is:

- [ ] the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- [ ] the language of publication of the international application (under Rule 48.3(b)).
- [ ] the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- [ ] contained in the international application in written form.
- [ ] filed together with the international application in computer readable form.
- [ ] furnished subsequently to this Authority in written form.
- [ ] furnished subsequently to this Authority in computer readable form.
- [ ] The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- [ ] The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

4. [ ] The amendments have resulted in the cancellation of:
   - [ ] the description, pages
   - [ ] the claims, Nos.
   - [ ] the drawings, sheets/fig.

5. [ ] This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* *Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).*

** *Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report*

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/AU2003/001437

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Statement

Novelty (N)	Claims	1-18	YES
	Claims		NO
Inventive step (IS)	Claims	1-18	YES
	Claims		NO
Industrial applicability (IA)	Claims	1-18	YES
	Claims		NO

2. Citations and explanations (Rule 70.7)

Novelty (N)
None of the cited documents disclose all of the features of each of the independent claims. Therefore all of the claims are novel.

Inventive Step (IS)
The claimed invention is not obvious in the light of any of the cited documents nor is it disclosed in any obvious combination of them. It is also considered that it would not be obvious to a person skilled in the art in the light of common general knowledge either by itself or in combination with any of these documents.

COOLING HELMET

This invention relates to headwear particularly suited to be worn by persons requiring headwear that will provide impact protection for the wearer.

BACKGROUND OF THE INVENTION

It has been known to use ice held close to the head of a person to provide cooling for medical purposes.

For instance, it is known to cover the head with a pliable material adapted to hold frozen liquid so that the surface of the head is kept cold. This process is used to reduce damage to hair follicles for those who might be taking cancer drugs where they might otherwise lose their hair.

In practical headwear that provides impact protection which also includes temperature modifying materials, there is one prior art example published as a mere paper publication where there is a helmet with an arrangement to support a bladder with a breakable pouch of an encapsulated ammonium salt within a body of water. The bladder is shown as fitting against an inner side of the helmet and is arranged to be held in this position by hook and loop fastener pads (often referred to by the Registered Trade Mark Velcro). Unfortunately the use of a breakable pouch within a bladder in this disclosure is used to replace soft padding and is shown so that the liquid bladder will bear directly against the head of a wearer.

This has the disadvantage that the bladder will result in heat transfer from a users head directly by conduction to the bladder and is not conducive to cooling any other areas of the head. This leads implicitly to significant temperature differences against the head and is somewhat akin to having an ice pack held against the skin where this becomes very uncomfortable after a modest period.

By replacing some of the padding the advantage is that the helmet itself is not integrally compromised but the padding is altered so that it will still need separate testing.

A further difficulty with direct contact is that the temperature modifying material will be directly contacting a head of the user with the result that any retained heat

differential will be compromised relatively quickly. In other words by having direct contact the cooling effect may for instance only last a relatively short time.

A problem to which this invention is directed is to provide an impact protective article of headwear that allows for a more comfortable arrangement where heat modifying means are involved and also to assist in increasing time that a cooling of heating effect may be sustained in a headwear item.

BRIEF DISCLOSURE OF THIS INVENTION

In one form of this invention there is proposed an article of headwear including an impact resistant outer part of crown shape, and an impact resistant inner part of crown shape of a size and shape adapted to nest with the outer part and at least one intermediate part which is positioned to be intermediate the said outer and inner crown shaped parts and which outer and inner parts are together adapted to support in removable fashion the intermediate part, and where the intermediate part is comprised of at least in the main a fluid.

In preference the fluid is held in one or more pliable pouches which can be removable and replaceable with other pouches.

Preferably the fluid is a freezable gel so that there can be a plurality of such pouches which can be used to replace one another so that as one is warmed another from a freezer can replace this to maintain a preferred extent of cooling.

By structurally separating the crown of a headwear item into at least two parts with an intermediate part in between, provides an opportunity to control within a contained space arrangements for airflow and cooling effect and distribution of cooling air from this.

Also, where there is an outer and inner part of an impact resistant material, this then allows for improved impact resistance by reason of a double wall characteristic which can then also mean that lighter materials may be used for the individual parts which is to say lighter than would have been ordinarily needed for a single thickness crown to get a similar protective effect. This can assist in keeping an all up weight of a helmet within acceptable limits.

Preferably, there is a further part positioned between the intermediate part and the outer part which is comprised of at least in the main an insulating material.

Preferably, the further part is a pliable and insulating material.

Preferably, the intermediate part includes a pliable plastics material sheet holding there within a freezable gel.

Preferably, there is a peak extending outwardly from the outer part of the crown from a rim of the crown shape of the outer part.

In a further form of the invention, there is a further outermost part of a size and shape which is adapted to nest within it the outer part.

Preferably, there is a further innermost part, which is a cradle or harness having a lower rim interengaging with either the outer or outermost part and supporting at least one strap extending from one side of the rim portion to an opposite side of the rim portion.

Preferably, the impact resistant material is a plastics material.

Preferably, the impact resistant material is a polycarbonate plastics material.

Preferably, the impact resistant material is a glass fibre-reinforced polyester plastics material.

Preferably, the hat further includes a protective face frame.

Preferably, there is extending over the outer part a woven fabric.

In the alternative it is a stretch fabric.

Preferably, the outer part and the inner part are held together by a central joining member.

Preferably, the inner part has a portion which is bulbous and is centrally located and the intermediate part has a central aperture through which the bulbous portion of the inner part extends.

For a better understanding of this invention it will now be described with relation to one embodiment which shall now be described with the assistance of drawings wherein:

Figure 1 is an exploded perspective view of a first embodiment,

Figure 2 is a cross-sectional view of the embodiment shown in Figure 1,

Figure 3 is an exploded perspective view of a second embodiment,

Figure 4 is a cross-sectional view of the embodiment shown in Figure 3,

Figure 5 is an exploded perspective view of a third embodiment,

Figure 6 is a cross-sectional view of the embodiment shown in Figure 5.

DETAILED DESCRIPTION OF THE INVENTION

Now referring to the drawings, and to Figure 1 in particular, this illustrates an impact protective helmet of a type intended to be worn by a person batting in the traditional game of cricket.

Accordingly, the helmet 1 has an inner part 2 of crown shape which is moulded from an impact resistant plastics material this being glass fibre reinforced polyester in this case. This provides for further parts including a brim 19 and sides to be joined from two parts as a part of the lower part 2.

There is provided an impact resistant outer part 6 of crown shape which is of a dome shape and which arranged to generally have an outer lower edge which conforms to a periphery 7 of the lower part 2 so as to define a cavity 8 between the two.

This cavity 8 is shaped so as to receive within it a pack 9 which is provided by two sheets of pliable plastic material welded together along inner and outer seems 10 and 11 so as to define a pouch 12 with a central hole 13 passing through it.

Within the pouch 12 there is a freezing gel which is adapted to be frozen at colder

temperatures typically zero degrees centigrade or below and which will therefore once frozen, be available to melt and provide thereby cooling effect.

The outer part 6 is held in position by a bolt 15 embedded within the inner part 2 at a central location and projects upwardly so as to pass through aperture 16 and to be held in position by nut 17.

Apertures 18 are positioned in distributed fashion in the inner part 2 so as to allow for air flow from the frozen gel into an air space beneath the inner part 2.

A brim 19 projects forwardly from the inner part 2 and there is a strap 19a to hold the helmet onto the head of a user.

What is not shown specifically however but which is included as is traditionally used is the means to support the helmet on the head namely in one case a set of straps which go from side to side and therefore pass over a top of the head of the user and hold the lower surface of the helmet namely the inner part significantly above the head or hair or skin of the user. In another case discrete blocks of padding 21 are placed around a periphery on the inside of the inner part 2 these being spaced apart to allow for air to access and flow to the surface of the head of the user in each case.

In practice, this arrangement then provides for a very convenient facility in which the outer part 6 will fit with the lower shell or crown shape of the inner part 2 so that the outermost shape will look to be very similar to a conventional helmet shape.

The pack 9 can be removed from time to time by simply undoing the nut 17 and lifting the outer part away and replacing the pack with a further frozen pack so that a person wearing the hat may be able to be kept cool over periods of typically an hour or so according to tests thus far conducted.

As can now be seen the arrangement provides herein a double wall of an outer and inner part which implicitly results in a protection which is more likely to provide better protection than a single wall arrangement with a similar wall thickness and type of plastics material. Also by having a freezing gel held within a structurally self supporting arrangement means that normal protective features of this type of helmet can be maintained for instance the structure of the helmet can be supported by the conventional discrete padding or by strapping and there is no

direct engagement needed of the freezing pouch against the head or skin of the user.

Various other users require participants to wear protective headwear which also have a potential problem when it is hot. These include, amongst others, those participating in cycling, baseball, lacrosse and American football.

In each case, specialized helmets have been developed according to the requirements of each of these uses. It will be understood by persons skilled in the relevant art that it would be a relatively straightforward matter to adapt the arrangement outlined above to each of these differing helmet arrangements.

Referring now to Figures 3 and 4, this illustrates a helmet of the type intended to be worn by a construction worker working on a building site which are often referred to as a hard hat.

The helmet 20 has an outermost shell which forms there by an outer part 22 which is moulded from an appropriate impact resistant plastics material as per a conventional construction helmet such as a polycarbonate plastics material.

There is also provided an insulating material 24 which is of a dome shape, and which is adapted to generally conform to the periphery 26 of an inner part 28 so as to define a cavity 30 between the two which is to say the outer part 22 and the inner part 28 both of which are of dome shape and which provide for the inner part 28 to nest within the outer part 22.

This cavity 30 is adapted to receive within it a pack 32 which contains a freezable gel, which is provided by two sheets of pliable plastic material welded together along inner and outer seams 34 and 36 so as to define a pouch 38.

Within the pouch 38 there is the freezing gel which is adapted to be frozen at colder temperatures of typically zero degrees centigrade or below, and which will therefore once frozen, melt and provide thereby cooling effect.

The insulating material 24 and inner part 28 are held together, and then collectively secured to the outer shell, via the helmet webbing 40 (represented by the dashed lines), which is of a type conventionally found in such construction helmets, which in this case as is conventional is removably attached to the outer shell via

means of clips 42 adapted to engage the outer shell 22.

The brim 43 is in this case now a part of the outer part 22 which provides for the inner part to in this case fit or nest within the outer part 22.

Such an arrangement of helmet webbing is removable therefore relatively easily, in order to facilitate replacement of the pouch 38 once for instance it is no longer frozen with a further frozen pack as before.

Once again therefore it will be seen that the cooling materials are arranged to be held above and out of direct contact with the head or skin of a user and this then allows for air to circulate and also for better insulation and control of air flow past the frozen materials to be achieved.

A further advantage of this arrangement is that it allows for a conventional hard hat of a type which is already being manufactured in large numbers and economically to be relatively simply modified to allow for cooling to be available. This is considered to be of great advantage especially where those who are constrained to work outside may not continue work in higher temperatures but may now be persuaded to continue to work for longer periods in higher temperatures.

As hard hats are compulsory on a number of factory, building and construction sites and their design has been the subject of significant development the advantage therefore of a simple adaption will be readily appreciated to allow for cooling.

Various other occupations require protective headwear. These include, amongst others, firefighters and welders. In each case, specialized helmets have been developed according to the exact requirements of each of these occupations. It would be easily understood by a person skilled in the art that it would be a relatively straightforward matter to adapt the arrangement outlined above to each of these differing helmet arrangements.

Referring now to Figures 5 and 6, these illustrate a hat 50 made primarily of a cloth material of the type commonly referred to as a baseball cap. In this case the cap includes gores 51 which define a crown 52 and there is a peak 53 projecting from one side of the periphery of the crown. Further however this cap uses a multi size fit design in which the gores 51 are a spandex material which allows for the crown

to expand to allow for different head sizes to be fitted comfortably and there is also an elastic inner sleeve 53a which in one case which is not specifically shown is surrounded by a toweling sleeve. This allows for further comfortable expansion.

Inside the crown there is now provided an outer part 54 made from an appropriate impact resistant plastics material in a dome shape, and which is adapted to generally conform to the periphery 56 of an inner part 58 so as to define a cavity 60 between the two where the inner part 58 nests therefore with the outer part 54, and both of these nest within the outermost part, which is the crown 52 of the hat 50. These parts 54 and 58 are held in place simply by friction between the expandable crown material and the outer edges of the respective parts.

This cavity 60 is arranged to receive within it a pack 62 as before, which is provided by two sheets of pliable plastic material welded together along inner and outer seems 64 and 66 so as to define a pouch 68.

Within the pouch 68 there is a freezing gel which is adapted to be frozen at colder temperatures typically 0 degrees centigrade or below and which will therefore once frozen, melt and provide thereby cooling effect.

The shells 54 and 58 are held together as stated and then collectively secured to the hat, by a screw 70 with a button 76 of the type commonly found on the crown of such caps for a head, adapted to be received within the lowermost shell at a central location.

Such an arrangement allows for the pouch 68 to be removable therefore, in order to facilitate replacement of a further frozen pouch 68.

This design allows for applications such as golf to be accommodated with some impact protection from golf balls as well as cooling. In this design this allows for the elastic sleeve to engage arrange a head of a user so that the crown itself stands proud of the actual top of the head. In practise this means that there is again an air space and even with the several parts and a gel pouch there is still left room for and air space above the head of a wearer and the inner part lower surface.

In each case embodiment the design has been provided with an inner part and an outer part and in each case there are apertures to be provided through the parts

which have not been shown specifically but which will be able to be placed in position and be judged as to size and location to best balance the need for maintaining of insulation as compared to allowing for a cooling effect with air passage.

There are other styles of articles of headwear. It will be easily understood by a person skilled in the art that it would be a relatively straight forward matter to adapt the arrangement and principals outlined above to each of other styles.

Articles such as those described herein have now proven themselves to be of considerable benefit both for comfort for users while maintaining and probably improving safety and convenience to those who must use hats and hard caps for protective purposes, especially where being subjected to higher temperature working conditions.

Results of testing of helmets made in accordance with this invention have shown that very substantial benefits can be obtained from this by for instance keeping the temperature above the head of a user in a cool state over a longer period without undue disadvantage.
Here are some examples of test results for the helmet generally shown as the second embodiment.

Example 1

Temperature in the shade 29deg.cel. Direct sunlight temp. 37.5 Deg. C. The gel pack is placed in position in a frozen state.
Constant temperature reading inside helmet after 30min. 20.5 Deg.C.
50min. 21.5 Deg.C.
80min. 22. Deg.C.
Based on 5 overs being bowled in 20mins, equates to Replacement for Cricketers at Drinks Break (20 overs) Average drinks break per match is 17- 20 overs.

Example 2

Temp. in shade 39 Deg.C. Direct Sunlight 47.5Deg.C. Gel pack started in the frozen state
Temperature in helmet after39min.24.Deg.C
after 70min.25Deg.C
after 75min.26Deg.C

Example 3

Test under Cricket Match conditions

Temp. In shade was 36Deg. Gel pack lasted 75 Mins . and changed at drinks.

Packs Temp in helmet was 20deg at start of play and 29deg. at the finish.

Humidity was 86% (it was a Muggy day).

Based on Medical Doctors statements a best temp range is between 18-22Deg.C. for the human brain to function best.

Example 4

Tests on Equestrian Helmet at Darwin In 34 Deg Temp. shade. Direct sunlight temp.42.5Deg.

3 hr cross Country Ride resulted inside helmet pack Temp 29DegC at end.

Example 5

Temperature Tests Done on Cricket helmet without Cooling were

Temp.	28 Deg.C.In the shade and 36.5Deg.C. Direct sunlight
Results inside helmet	16min. = 36 Deg.C.
	30min = 39Deg.C.

These results illustrate the advantage of the invention.

CLAIMS

1. An article of headwear including an impact resistant outer part of crown shape, and an impact resistant inner part of crown shape of a size and shape adapted to nest with the outer part and at least one intermediate part which is positioned to be intermediate the said outer and inner crown shaped parts and which outer and inner parts are together adapted to support in removable fashion the intermediate part, and where the intermediate part is comprised of at least in the main a fluid.

2. The article of headwear as in the immediately preceding claim further characterized in that the fluid is held in one or more pliable pouches which are arranged to be removable and replaceable.

3. The article of headwear as in the immediately preceding claim further characterized in that the fluid is a freezable gel.

4. The article of headwear as in any one of the immediately preceding claims further characterized in that there is a further part which is comprised of at least in the main an insulating material which is positioned between the intermediate part and the outer part.

5. The article of headwear as in the immediately preceding claim further characterized in that the further part is a pliable and insulating material.

6. The article of headwear as in any one of the immediately preceding claims further characterized in that the intermediate part includes pliable plastics material sheet holding there within a freezable gel.

7. The article of headwear as in any one of the immediately preceding claims further characterized in that there is a peak or brim extending outwardly from the outer part, from a rim of the crown shape of the outer part.

8. The article of headwear as in any one of the preceding claims further characterized in that there is a further outermost part of a size and shape, which is adapted to nest within it the outer part.

9. The article of headwear as the immediately preceding claims further characterized in that there is a further innermost part, which is a cradle or harness having a lower rim interengaging with either the outer or outermost part and supporting at least one strap extending from one side of the rim portion to an opposite side of the rim portion.

10. An article of headwear having a crown which has an impact resistant outer part of crown shape, and an impact resistant inner part of a size and shape adapted to and nesting with the outer part and at least one intermediate part which is positioned to be intermediate the said outer and inner crown parts and which outer and inner parts are together adapted to support in removable fashion the intermediate part, and where the intermediate part is comprised of at least in the main a frozen gel.

11. An article of headwear as in any one of claims 9-12 in which there is attached to the outermost part a peak extending outwardly from a rim of the crown shape of the outermost part.

12. An article of headwear as in any one of the preceding claims in which there is attached to the outer part a peak or brim extending outwardly from a rim of the crown shape of the outer part.

13. An article of headwear as in any one of the preceding claims 1-13 in which there is attached to the inner part a peak or brim extending outwardly from a rim of the outer part.

14. An article of headwear as in any one of the preceding claims further characterised in that the innermost part is a cradle having a lower rim interengaging with the outer part and supporting at least one strap extending from one side of the rim portion to an opposite side of the rim portion and following the path defining a crown shape nesting within the outer part.

15. An article of headwear as in any one of the preceding claims further characterised in that the outermost part is comprised of a woven fabric.

16. An article of headwear as in any one of the preceding claims further characterised in that the outermost part is made of an impact resistant material.

17. An article of headwear as in any one of the preceding claims except the last claim further characterised in that outermost part is comprised of a stretch fabric.

18. An article of headwear as described in the specification with reference to and as illustrated by the accompanying illustrations.

Dated this 23rd day of December 2004

NICHOLAS BEDFORD

By his Patent Attorneys

COLLISON & CO

CASCO ENFRIADOR

Esta invención se relaciona con indumentaria para la cabeza particularmente apropiada para ser utilizado por personas que requieren indumentaria para la cabeza que proporcione protección a los impactos al usuario.

ANTECEDENTES DE LA INVENCIÓN

Se conoce el uso de mantener hielo cerca de la cabeza de una persona para suministrar enfriamiento con propósitos médicos.

Por ejemplo, es conocido cubrir la cabeza con un material flexible adaptado para mantener líquido congelado de manera que se mantenga fría la superficie de la cabeza. Este proceso es utilizado para reducir el daño a los folículos de cabello en aquellos que puedan estar tomando medicamentos contra el cáncer en donde ellos de otra manera perderían su cabello.

En la indumentaria para la cabeza práctica que proporciona protección al impacto que también incluye materiales modificadores de la temperatura, existe un ejemplo del arte previo publicado como un simple artículo en donde hay un casco con un arreglo para soportar una 'vejiga' con una bolsa rompible de una sal de amonio encapsulada dentro de un cuerpo de agua. La 'vejiga' se muestra encajando contra la parte interna del casco y está colocada para mantenerse en esta posición por medio de almohadillas sujetadoras de gancho y vuelta (usualmente referido a la marca registrada Velcro). Desafortunadamente el uso de una bolsa rompible dentro de una 'vejiga' en esta divulgación es utilizada para reemplazar el acojinamiento suave y se observa que la 'vejiga' de líquido se encuentra directamente contra la cabeza del usuario.

Esto tiene la desventaja que la 'vejiga' dará como resultado una transferencia de calor de la cabeza de los usuarios directamente por conducción a la 'vejiga' y no es conductivo para enfriar cualquier otra área de la cabeza. Esto lleva implícitamente a diferencias de temperatura significativas contra la cabeza y es de alguna manera similar a tener una bolsa de hielo contra la piel en donde se vuelve bastante incómodo después de un modesto periodo.

Al reemplazar algunas de las almohadillas, la ventaja es que el casco como tal no está integralmente comprometido sino que se altera el acojinamiento por lo cual se requiere aún de una prueba separada.

Una dificultad adicional con el contacto directo es que el material modificador de temperatura estará en contacto directo con la cabeza del usuario con el resultado que cualquier diferencial de calor retenido estará comprometido relativamente rápido. En otras palabras, al tener contacto directo el efecto enfriador puede durar un tiempo relativamente corto, por ejemplo.

Un problema hacia el cual se dirige la presente invención es proporcionar un artículo protector al impacto para usarse en la cabeza que permita un arreglo más cómodo en donde se involucran medios modificadores del calor y también para ayudar en aumentar el tiempo en que se puede mantener el enfriamiento de un efecto de calor en un artículo de indumentaria para la cabeza.

BREVE DESCRIPCION DE LA INVENCIÓN

En una forma de esta invención se propone un artículo de indumentaria para la cabeza que tiene una corona que tiene una parte exterior en forma de corona, y una parte interior en forma de corona de un tamaño y forma adaptados a y telescópicamente con la parte exterior y al menos una parte intermedia que está colocada para encontrarse en el medio de dichas partes interior y exterior en forma de corona, y cuyas partes exterior e interior están juntas para soportar de manera removible la parte intermedia, y en donde la parte intermedia está comprendida en al menos la mayor parte de un fluido.

De preferencia, el fluido se mantiene en una o más bolsas flexibles que se pueden remover y reemplazar con otras bolsas.

Preferiblemente, el fluido es un gel congelable de forma que puede haber una pluralidad de dichas bolsas que pueden ser usadas para reemplazar la una a la otra cuando una de ellas se calienta se puede reemplazar con una del refrigerador para mantener una extensión preferida del enfriamiento.

Al separar estructuralmente la corona del artículo de indumentaria para la cabeza en al menos dos partes con una parte intermedia dentro de las mismas, se proporciona la oportunidad de controlar dentro de un arreglo de espacio contenido el flujo de aire y el efecto enfriador y distribución de aire enfriador del mismo.

También cuando hay una parte inferior y superior de una material resistente al impacto, esto permite tener una resistencia al impacto mejorada en razón a una característica de pared doble lo cual a su vez también significa que se pueden utilizar materiales más livianos para partes

individuales que lo que podrían ser cuando se necesitan ordinariamente con una corona con único grosor para tener un efecto protector similar. Esto puede ayudar en mantener un peso total del caso dentro de límites aceptables.

Preferiblemente, existe una parte adicional colocada entre la parte intermedia y la parte exterior que está comprendida de al menos la mayoría de material aislante.

Preferiblemente, la parte interior es un material resistente al impacto.

Preferiblemente, la parte adicional es un material flexible y aislante.

Preferiblemente, la parte intermedia incluye una lámina de material plástico flexible que mantiene dentro de la misma un gel congelable.

Preferiblemente, hay un pico que se extiende hacia fuera desde la parte exterior de la corona desde el aro de la forma de corona de la parte exterior.

En una forma adicional de la invención, la parte interior es un soporte o arnés que tiene un anillo inferior que se engancha con la parte exterior y soporta al menos una correa que se extiende desde un lado de la porción de anillo hasta el lado opuesto de la porción de anillo y siguiendo un camino que define una forma de corona de forma telescópica dentro de la parte exterior.

Preferiblemente, el material resistente al impacto es un material plástico.

Preferiblemente, el material resistente al impacto es un material plástico de policarbonato.

Preferiblemente, el material resistente al impacto es un material plástico de poliéster reforzado con fibra de vidrio.

Preferiblemente, el casco incluye además un marco protector para la cara.

Preferiblemente, una tela tejida se extiende sobre la parte exterior.

Alternativamente, puede ser una tela que se estira.

Preferiblemente, la parte interior y la exterior se mantienen juntas por un miembro de unión central.

Preferiblemente, la parte interior tiene una porción la cual es bulbosa y se localiza centralmente y la parte intermedia tiene una apertura central a través de la cual se extiende la porción bulbosa de la parte interior.

Para un mejor entendimiento de esta invención, se describirá la misma con relación a una modalidad con la ayuda de los dibujos en donde:

La Figura 1 es una vista perspectiva en explosión de una primera modalidad.

La Figura 2 es una vista en corte de la modalidad mostrada en la Figura 1.

La Figura 3 es una vista perspectiva en explosión de una segunda modalidad.

La Figura 4 es una vista en corte de la modalidad mostrada en la Figura 2.

La Figura 5 es una vista perspectiva en explosión de una tercera modalidad.

La Figura 6 es una vista en corte de la modalidad mostrada en la Figura 5.

DESCRIPCION DETALLADA DE LA INVENCIÓN

Haciendo ahora referencia a los dibujos y a la Figura 1 en particular, ésta ilustra un casco protector a los impactos del tipo a ser utilizado por una persona bateadora en el tradicional juego del cricket.

De acuerdo con lo anterior, el casco 1 tiene una parte interior 2 de forma de corona que está moldeada a partir de un material plástico resistente al impacto el cual en este caso de poliéster reforzado con fibra de vidrio. Este proporciona partes adicionales como el borde 19 y lados a ser unidos de dos partes como una parte de la parte inferior 2.

Se proporciona una parte exterior 6 en forma de corona el cual es de forma de domo y que está arreglado para tener generalmente un borde exterior inferior que conforma una periferia 7 de la parte inferior 2 de forma que define una cavidad 8 entre las mismas.

Esta cavidad 8 está formada de forma que reciba dentro de la misma un paquete 9 que está provista por dos láminas de material plástico flexible soldadas juntas a lo largo de las costuras interna y externa 10 y 11 de forma que define una bolsa 12 con un hueco central 13 que pasa a través de la misma.

Dentro de la bolsa 12 hay un gel congelable adaptado para ser congelado a temperaturas más frías como cero grados centígrados o menores y la cual por lo tanto una vez congelada, está disponible para derretirse y proporcionar así el efecto enfriador.

La parte superior 6 se mantiene en posición por un tornillo 15 empotrado dentro de la parte inferior 2 en una localización central y se proyecta hacia arriba de forma que pasa por la apertura 16 y se mantiene en posición por la tuerca 17.

Las aperturas 18 están posicionadas de manera distribuida en la parte interior 2 permitiendo el flujo de aire del gel congelado al espacio de aire por debajo de la parte interior 2.

Un borde 19 se proyecta hacia delante desde la parte interior 2 y hay una correa 19a para mantener el casco en la cabeza del usuario.

Lo que no se muestra específicamente pero que sin embargo sí se incluyen como se utilizan tradicionalmente es los medios para soportar el casco en la cabeza, en particular en un caso un juego de correas que van de lado a lado y por lo tanto pasan sobre la parte superior de la cabeza del usuario y sostienen la superficie inferior del casco, específicamente la parte interior del casco significativamente encima de la cabeza o el cabello o la piel del usuario. En otro caso, se colocan bloques discretos de almohadillas 21 alrededor de una periferia en la parte interna de la parte interior 2 espaciados aparte para permitir el acceso del aire y flujo a la superficie de la cabeza del usuario en cada caso.

En la práctica, este arreglo proporciona una facilidad muy conveniente en la cual la parte superior encajará con la forma de concha o corona inferior de la parte inferior 2 de manera que la forma más exterior se verá muy similar a la forma convencional de un casco.

El paquete 9 puede ser removido de vez en cuando simplemente soltando la tuerca 17 y levantando la parte superior hacia fuera y reemplazando el paquete con un paquete congelado tal

que una persona que usa el casco pueda mantenerse fresca por periodos de típicamente una hora de acuerdo con las pruebas hasta ahora conducidas.

Como se puede apreciar el arreglo proporciona una pared doble de una parte superior e inferior que da como resultado implícitamente una protección que seguramente será mejor que un arreglo de pared sencilla con un grosor de pared similar y un tipo similar de material plástico. También al mantenerse el gel congelable dentro de un arreglo que se soporta estructuralmente a sí mismo significa que los aspectos de protección normales de este tipo de casco pueden mantenerse, por ejemplo, la estructura del casco puede soportarse por almohadillas discretas convencionales o por correas y no se requiere un enganche directo de la bolsa congelable contra la cabeza o piel del usuario.

Diferentes usuarios requieren que los participantes utilicen indumentaria protectora para la cabeza la cual también tiene un problema potencial cuando se calienta. Estos incluyen, entre otros, aquellos que participan en ciclismo, béisbol, Lacrosse y fútbol americano.

En cada caso, se han desarrollado cascos especializados de acuerdo con los requerimientos de cada uno de estos usos. La persona versada en la materia entenderá que será materia relativamente sencilla el adaptar el arreglo arriba mencionado a cada uno de estos arreglos de diferentes cascos.

Haciendo referencia ahora a las figuras 3 y 4, estas ilustran un casco de el tipo a ser utilizado por un trabajador de construcción que trabaja en un sitio de construcción los cuales se conocen usualmente como "casquillo" (hard hat).

El casco 20 tiene una concha más externa la cual forma una parte exterior 22 que está moldeada a partir de un material plástico resistente al impacto como por ejemplo un casco de construcción convencional tal como en material plástico de policarbonato.

También se proporciona un material aislante 24 que tiene forma de domo, y que está adaptado para conformarse generalmente a la periferia 26 de una parte interna 28 definiendo una cavidad 30 entre las dos lo que significa que la parte exterior 22 y la parte interior 28 las cuales tienen forma de domo, proporcionan a la parte inferior 28 estar telescópicamente dentro de la parte exterior 22 .

Esta cavidad 30 está adaptada para recibir dentro de la misma un paquete 32 que contiene un gel congelable, que está provista por dos láminas de material plástico flexible soldadas juntas a lo largo de las costuras interna y externa 34 y 36 para definir una bolsa 38.

Dentro de la bolsa 38 hay un gel congelable que está adaptado para congelarse a temperaturas bajas típicamente de cero grados centígrados o menores, y que por lo tanto una vez congelados se fundirá y proporcionará así el efecto enfriante.

El material aislante 24 y la parte inferior 28 se mantienen juntas, y luego se aseguran colectivamente a la concha más externa, a través de una red de casco 40 (representada por las líneas punteadas) la cual es de un tipo convencional encontrado en dichos cascos de construcción y que en este caso como es convencional está unido de forma removible a la concha más externa a través de medios de gancho 42 adaptados para enganchar la concha más externa 22.

El borde 43 es en este caso una parte de la parte exterior 22 el cual proporciona a la parte interior el encaje dentro de la parte exterior 22.

Tal arreglo de red de casco es por lo tanto removible de forma relativamente fácil para facilitar el reemplazo de la bolsa 38 una vez que la misma ya no esté congelada con un paquete congelado adicional.

Una vez más por lo tanto se apreciará que los materiales de enfriamiento se arreglan para mantenerse por encima y fuera de contacto directo con la cabeza o piel del usuario y esto permite así que el aire circule y también un mejor aislamiento y control del flujo de aire que ha pasado los materiales congelados.

Una ventaja adicional de este arreglo es que permite que un "casquillo" convencional del tipo que está siendo fabricado a gran escala es económicamente más simple modificarlo para permitir que proporcione el enfriamiento. Esto se considera una gran ventaja especialmente en donde aquellos que requieren trabajar afuera podrían no continuar trabajando en altas temperaturas pero ahora podrían ser persuadidos a continuar su trabajo por períodos más largos a dichas altas temperaturas.

Como los sombreros duros son obligatorios en una cantidad de sitios de fábricas, edificios y construcción y su diseño ha sido sujeto de desarrollo significativo la ventaja por lo tanto de una simple adaptación seria altamente apreciada para permitir el enfriamiento.

Otras ocupaciones diferentes requieren de indumentaria protectora para la cabeza. Estas incluyen, entre otras, bomberos y soldadores. En cada caso, se han desarrollado cascos especializados de acuerdo con los requerimientos de cada una de dichas ocupaciones. Será fácilmente entendible para una persona versada en la materia que será relativamente fácil adaptar el arreglo mencionado arriba a cada uno de estos arreglos de casco diferentes.

Haciendo referencia ahora a las figuras 5 y 6, éstas ilustran una gorra 50 hecha principalmente de un material de tela del tipo comúnmente referido como gorra de baseball. En este caso la gorra incluye secciones 51 que definen una corona 52 y hay un pico 53 que se proyecta desde un lado de la periferia de la corona. Además, esta gorra utiliza un diseño de ajuste a diferentes tamaños en el cual las secciones 51 son de material spandex que permite que la corona se expanda para permitir el ajuste de diferentes tamaños de cabeza de manera cómoda y también hay una porción interna elástica 53a que en un caso que no se muestra específicamente está rodeada de una porción de material de toalla. Esto permite una cómoda expansión adicional.

Dentro de la corona se provee una parte exterior 54 hecha de un material plástico apropiado resistente al impacto en forma de domo, y que está adaptada para generalmente conformarse a la periferia 56 de una parte interior 58 de forma que se define una cavidad 60 entre las mismas en donde la parte interior 58 por lo tanto se encuentra de manera telescópica con la parte exterior 54. Dichas partes 54 y 58 se mantienen en lugar por simple fricción entre el material expandible de la corona y los bordes externos de las partes respectivas.

Esta cavidad 60 está adaptada para recibir dentro de la misma un paquete 62 como antes, que está provista por dos láminas de material plástico flexible soldadas juntas a lo largo de las costuras interna y externa 64 y 66 para definir una bolsa 68.

Dentro de la bolsa 68 hay un gel congelable que está adaptado para congelarse a temperaturas bajas típicamente de cero grados centígrados o menores, y que por lo tanto una vez congelados se fundirá y proporcionará así el efecto enfriante.

Las conchas 54 y 58 se mantienen juntas como ya se mencionó y luego se aseguran colectivamente a la gorra por un tornillo 70 con un botón 76 del tipo típicamente encontrado en la corona de dichas gorras para la cabeza, adaptado para ser recibido dentro de la concha más externa en una localización central.

Dicho tipo de arreglo permite que la bolsa 68 puede ser así removida para facilitar su reemplazo por una bolsa 68 congelada adicional.

Este diseño permite que ciertas aplicaciones tales como el golf puedan ser acomodadas con cierto tipo de protección al impacto de bolas de golf así como al enfriamiento. En este diseño se permite que la porción elástica enganche al arreglo de cabeza del usuario de forma que la corona misma se mantenga en la parte superior actual de la cabeza. En la práctica esto significa que nuevamente existe un espacio de aire y aún con las diferentes partes y la bolsa de gel hay espacio para el aire por encima de la cabeza del usuario y la superficie inferior de la parte interior.

En cada modalidad el diseño se ha provisto con una parte interior y una parte exterior y en cada caso hay aperturas provistas a través de las partes que no se han mostrado específicamente pero que podrán ser colocadas en posición de acuerdo con el tamaño y localización para dar el mejor balance requerido para mantener el aislamiento comparado con permitir un efecto enfriante mediante el paso de aire.

Existen otros estilos de artículos de indumentaria para la cabeza. Será fácilmente entendible para una persona versada en la materia que será relativamente fácil adaptar el arreglo y principios mencionados arriba a cada uno de otros estilos.

Artículos tales como aquellos aquí descritos han probado ser de beneficio considerable para comodidad del usuario a la vez que mantiene y probablemente mejoran la seguridad y conveniencia para aquellos que deben utilizar gorras y cascos con propósitos protectivos, especialmente cuando están sujetos a condiciones de trabajo a altas temperaturas.

Los resultados de prueba de los cascos elaborados de acuerdo con la presente invención han mostrado que se pueden obtener beneficios sustanciales por los mismos, por ejemplo, mantener la temperatura por encima de la cabeza de un usuario en estado fresco durante un periodo más largo sin desventajas indebidas.

A continuación hay algunos ejemplos de los resultados de prueba para el casco mostrado generalmente como la segunda modalidad.

Ejemplo 1

Temperatura en la sombra: 29 °C. Temperatura directa del sol: 37,5 °C. El paquete de gel se coloca en posición en estado congelado.

Lectura de temperatura constante dentro del casco después de 30 min: 20,5 °C

50 min: 21,5 °C
80 min: 22 °C

Basados en 5 "overs" (un "over" son seis bolas lanzadas por jugador) jugados en 20 minutos, equivale al Reemplazo por Jugador de Cricket en el Descanso para Bebidas (20 "overs"). Los Descansos para Bebidas promedio por partido son cada 17 a 20 "overs".

Ejemplo 2

Temperatura en la sombra: 39 °C. Temperatura directa del sol: 47,5 °C. El paquete de gel se coloca en posición en estado congelado.

Lectura de temperatura constante dentro del casco después de 39 min: 24 °C
70 min: 25 °C
75 min: 26 °C

Ejemplo 3

Prueba bajo condiciones de Juego de Cricket

Temperatura en la sombra: 36 °C. El paquete de gel duró 75 minutos y fue cambiado durante el Descanso para Bebidas. La temperatura en los paquetes en el casco fue de 20 °C al comienzo del juego y de 29°C al final.

La humedad fue de 86% (era un día húmedo).

Basados en declaraciones médicas de doctores, el mejor rango de temperatura para que funcione mejor el cerebro es entre 18-22 °C.

Ejemplo 4

Pruebas en cascos para equitación en Darwin a 34 °C a la sombra. Temperatura directa del sol: 42,5 °C.

3 horas de carrera a campo traviesa dieron como resultado una temperatura del paquete dentro del casco de 29 °C al final.

Ejemplo 5

Las pruebas de temperatura llevadas a cabo en cascos de cricket sin enfriamiento fueron:

Temperatura en la sombra: 28 °C. Temperatura directa del sol: 36,5 °C.

Resultado dentro del casco después de 16 min: 36 °C
30 min: 39 °C

Estos resultados ilustran la ventaja de la invención.

REIVINDICACIONES

1. Un artículo de indumentaria para la cabeza que tiene una corona que tiene una parte exterior de forma de corona, y una parte interior con forma de corona de un tamaño y forma adaptados a y de forma telescópica con la parte exterior y al menos una parte intermedia que está posicionada para estar en el medio de dichas parte de corona exterior e interior y en donde dichas partes interior y exterior se adaptan juntas para soportar de manera removible la parte intermedia, y en donde la parte intermedia está comprendida al menos principalmente de un fluido.

2. Un artículo de indumentaria para la cabeza de acuerdo con la reivindicación inmediatamente anterior caracterizado además porque el fluido está contenido en una o más bolsas flexibles que están arregladas para ser removidas y reemplazadas.

3. Un artículo de indumentaria para la cabeza de acuerdo con la reivindicación inmediatamente anterior caracterizado además porque el fluido es un gel congelable.

4. Un artículo de indumentaria para la cabeza de acuerdo con cualquiera de las tres reivindicaciones precedentes caracterizado además porque hay una parte adicional que está comprendida de al menos principalmente un material aislante que está colocado entra la parte intermedia y la parte exterior.

5. Un artículo de indumentaria para la cabeza de acuerdo con cualquiera de las cuatro reivindicaciones precedentes caracterizado además en que la parte interior es de un material resistente a los impactos.

6. Un artículo de indumentaria para la cabeza de acuerdo con cualquiera de las tres reivindicaciones precedentes caracterizado además en que la parte adicional es de un material flexible y aislante.

7. Un artículo de indumentaria para la cabeza de acuerdo con cualquiera de las seis reivindicaciones precedentes caracterizado además en que la parte intermedia incluye una lámina de material plástico flexible que mantiene dentro de la misma un gel congelable.

8. Un artículo de indumentaria para la cabeza de acuerdo con cualquiera de las siete reivindicaciones precedentes caracterizado además en que hay un pico o borde que se extiende

hacia fuera de la parte exterior de la corona a partir de un anillo de la forma de corona de la parte exterior.

9. Un artículo de indumentaria para la cabeza de acuerdo con cualquiera de las reivindicaciones precedentes caracterizado además en que la parte interior es un soporte o arnés que tiene una anillo inferior que enganche con la parte exterior y soporta al menos una correa que se extiende desde un lado de la porción de anillo hasta el lado opuesto de la porción de anillo.

10. Un artículo de indumentaria para la cabeza que tiene una corona que tiene una parte exterior de forma de corona, y una parte interior con un tamaño y forma adaptados a y de forma telescópica con la parte exterior y al menos una parte intermedia que está posicionada para estar en el medio de dichas parte de corona exterior e interior y en donde dichas partes interior y exterior se adaptan juntas para soportar de manera removible la parte intermedia, y en donde la parte intermedia está comprendida al menos principalmente de un gel congelado.

11. Un artículo de indumentaria para la cabeza de acuerdo con la reivindicación 10 caracterizado además porque hay una parte adicional colocada entra la parte intermedia y la parte exterior que está comprendida de al menos principalmente un material resistente a los impactos.

12. Un artículo de indumentaria para la cabeza de acuerdo con cualquiera de las reivindicaciones precedentes caracterizado además en que la parte interior es de un material resistente a los impactos.

13. Un artículo de indumentaria para la cabeza el cual tiene unido a la parte exterior de la corona un pico que se extiende hacia fuera de un anillo de la forma de corona de la parte exterior.

14. Un artículo de indumentaria para la cabeza de acuerdo con cualquiera de las reivindicaciones precedentes el cual tiene unido a la parte exterior de la corona un pico o borde que se extiende hacia fuera a partir de un anillo de la forma de corona de la parte exterior.

15. Un artículo de indumentaria para la cabeza de acuerdo con cualquiera de las reivindicaciones 1-13 precedentes el cual tiene unido a la parte interior de la corona un pico o borde que se extiende hacia fuera a partir de un anillo de la parte exterior.

16. Un artículo de indumentaria para la cabeza de acuerdo con cualquiera de las reivindicaciones precedentes caracterizado además en que la parte interior es un soporte que tiene

un anillo inferior que engancha con la parte exterior y soporta al menos una correa que se extiende desde un lado de la porción de anillo hasta un lado opuesto de la porción de anillo y sigue el camino que define una forma de corona que está telescópicamente dentro de la parte exterior.

17. Un artículo de indumentaria para la cabeza de acuerdo con cualquiera de las reivindicaciones precedentes caracterizado además en que la parte exterior es de una tela tejida.

18. Un artículo de indumentaria para la cabeza de acuerdo con cualquiera de las reivindicaciones precedentes a excepción de la inmediatamente anterior reivindicación caracterizado además en que la parte exterior es de una tela elástica.

REIVINDICACIONES MODIFICADAS

[recibidas por la Oficina Internacional el 26 de marzo de 2004; reivindicación 13 original modificada, demás reivindicaciones sin modificar (1 página)]

hacia fuera de la parte exterior de la corona a partir de un anillo de la forma de corona de la parte exterior.

9. Un artículo de indumentaria para la cabeza de acuerdo con cualquiera de las reivindicaciones precedentes caracterizado además en que la parte interior es un soporte o arnés que tiene una anillo inferior que enganche con la parte exterior y soporta al menos una correa que se extiende desde un lado de la porción de anillo hasta el lado opuesto de la porción de anillo.

10. Un artículo de indumentaria para la cabeza que tiene una corona que tiene una parte exterior de forma de corona, y una parte interior con un tamaño y forma adaptados a y de forma telescópica con la parte exterior y al menos una parte intermedia que está posicionada para estar en el medio de dichas parte de corona exterior e interior y en donde dichas partes interior y exterior se adaptan juntas para soportar de manera removible la parte intermedia, y en donde la parte intermedia está comprendida al menos principalmente de un gel congelado.

11. Un artículo de indumentaria para la cabeza de acuerdo con la reivindicación 10 caracterizado además porque hay una parte adicional colocada entra la parte intermedia y la parte exterior que está comprendida de al menos principalmente un material resistente a los impactos.

12. Un artículo de indumentaria para la cabeza de acuerdo con cualquiera de las reivindicaciones precedentes caracterizado además en que la parte interior es de un material resistente a los impactos.

13. Un artículo de indumentaria para la cabeza el cual tiene unido a la parte exterior de la corona un pico que se extiende hacia fuera de un anillo de la forma de corona de la parte exterior.

14. Un artículo de indumentaria para la cabeza de acuerdo con cualquiera de las reivindicaciones precedentes el cual tiene unido a la parte exterior de la corona un pico o borde que se extiende hacia fuera a partir de un anillo de la forma de corona de la parte exterior.

15. Un artículo de indumentaria para la cabeza de acuerdo con cualquiera de las reivindicaciones 1-13 precedentes el cual tiene unido a la parte interior de la corona un pico o borde que se extiende hacia fuera a partir de un anillo de la parte exterior.

16. Un artículo de indumentaria para la cabeza de acuerdo con cualquiera de las reivindicaciones precedentes caracterizado además en que la parte interior es un soporte que tiene un anillo inferior

COLO 14800-841-001-8
MRE-2

Industria y Comercio
SUPERINTENDENCIA

FORMATO DE DIGITALIZACION
RELACION DE ANEXOS

Royal Technologies S.A.

Item	Expediente No	05-053280 No de unidades	No de Folio √
1	CD		
2	DVD		
3	REVISTA		
4	LIBRO		
5	PERIODICO		
6	DISQUETES		
7	SOBRE DE MANILA		
8	SOBRE BLANCO TAMAÑO CARTA X	1	✓
9	SOBRE BLANCO TAMAÑO OFICIO		
10	OTROS:		

Observaciones:

Anexo Final

59

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

Radicacion : 05053280 00000000 Folios: 59

Fecha (AMD): 2005-06-01 17:21:33

Tramite : 011 PCT-PATENT 379 FASE NACI 411 PRESENTAC

Dependencia: 2020 DIVISION DE NUEVAS CREACIONES

SUPERINTENDENCIA DE INDUSTRIA Y COMERCIO

NIT : 800176089-2

RECIBO OFICIAL DE CAJA : 05 - 35,943
FECHA : MAYO 16 DE 2005

***** C O N S I G N A C I O N *****

DEPOSITANTE	TIPO PAGO	BANCO	CUENTA	No. PAGO	FECHA PGO	Vr. PAGO
CAVELIER ABOGADOS	CONSIGNACION	BANCO POPULAR	050-00110-6	40116714	16/05/2005	39,471,000.00

***** C O N C E P T O *****

CANT.	RENTISTICO	CONCEPTO	TOTAL CONCEPTO
1	50005-01-01 SOLICITUDES	7 TRAMITES DE SOL. DE DISENOS INDUS	443,000.00
		TOTAL : $	443,000.00

SON: CUATROCIENTOS CUARENTA Y TRES MIL PESOS

RESPONSABLE : _____

RECIBO DE CAJA APLICADO AL EXPEDIENTE No._____

Cdo 14800-841-001-8

60

REQUISITOS NECESARIOS PARA PRESENTACION Y AGILIZACION DEL TRAMITE

	USUARIO	RADICADOR
PATENTE DE INVENCIÓN MODELO DE UTILIDAD	( )	( )
- Indicación de que se solicita la concesión de una patente.	( )	( )
- Datos de identificación del solicitante o de la persona que se presenta la solicitud.	( )	( )
- Descripción de la invención.	( )	( )
- Dibujos de ser estos pertinentes.	( )	( )
- Comprobante de Pago de las tasas establecidas.		
COMPLETA ( ) INCOMPLETA	( )	( )
DISEÑO INDUSTRIAL ( )		
- Indicación de que se solicita el registro de Diseño Industrial	( )	( )
- Datos de identificación del solicitante o de la persona que presenta	( )	( )
- la solicitud.		
- Representación gráfica o fotográfica del Diseño Industrial o muestra del Material que incorpora el diseño.	( )	( )
Comprobante de pago de las tasas establecidas	( )	( )
COMPLETA ( ) INCOMPLETA	( )	( )
ESQUEMA DE TRAZADO ( )		
- Indicación de que solicita el registro de un Esquema de trazado.	( )	( )
- Datos de Identificación del solcitante o de la persona que presenta La solicitud.	( )	( )
Representación gráfica del esquema de trazado	( )	( )
Comprobante de pago de las tasas establecidas.	( )	( )
COMPLETA ( ) INCOMPLETA	( )	( )

Firma Responsable:

Fecha:

SUPERINDUSTRIA Y COMERCIO
Radicacion : 0505A200 00000000 Folios: 39
Fecha (AMD): 2005-06-01 17:21:33
Tramite : 011 PCT-PATENT 379 FASE NACI 411 PRESENTAC
Dependencia: 2020 DIVISION DE NUEVAS CREACIONES

61

Industria y Comercio
SUPERINTENDENCIA

2020
Bogotá, D.C.,

Doctor:
EMILIO FERRERO
NICHOLAS BEDFORD
Solicitante

Oficio N° 05693

ASUNTO:		
	Radicación N°	05-53280
	Solicitud internacional	PCT/AU2003/001437
	Fecha inicio fase nacional	01/06/2005
	Trámite	011
	Evento	379
	Actuación	430
	Folios	001

Como resultado del examen de forma, realizado con fundamento en el artículo 38 de la Decisión 486 de la Comisión de la Comunidad Andina, artículo 27 del Tratado de Cooperación en Materia de Patentes (PCT), regla 51 bis del Reglamento y Circular Única de la Superintendencia de Industria y Comercio, se le comunica que:

- ☐ La solicitud no contiene el poder debidamente otorgado, con el lleno de los requisitos exigidos por los artículos 63 y subsiguientes del Código de Procedimiento Civil. Adicionalmente, deberá presentar el documento que acredita la existencia y representación legal de la sociedad solicitante, cuando ésta fuere persona jurídica.

En cumplimiento de lo dispuesto por el artículo 39 de la Decisión 486, se le requiere para que dentro del término de dos meses siguientes a la fecha de notificación del presente oficio, complete los requisitos anteriormente enunciados. En caso de no dar cumplimiento al presente requerimiento, la solicitud se considerará abandonada y perderá su prelación.

Notifíquese el presente oficio conforme a lo dispuesto en el numeral 5.2, literal e), del capítulo quinto del título primero de la Circular Única N° 10 de 2001.

ALIX CARMENZA CESPEDES DE VERGEL
Jefe de la División de Nuevas Creaciones.

El anterior requerimiento fue notificado por fijación en lista de fecha, 8 JUL. 2005

202030

Carrera 13 No. 27-00 Piso 5 y 10
Conmutador: 334 12 21-2-3-4
Fax: 281 31 25 e-mail: info@sic.gov.co
Santa Fe de Bogotá D.C. - Colombia