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(56) Documents Cited:
BE 000383384 A US 20090038048 A1
STR Pro Swimcap, Aqua V-cap and Pace Cap, Speedo
online store, accessed from http://web.archive.org/web/20100428035615/http://store.speedo.co.uk/webapp/wcs/stores/servlet/Category3_10151_10202_33471_33314_-1 dated
28/04/2010

(58) Field of Search:
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Other: Online: WPI, EPODOC, Internet

(54) Title of the Invention: **Swimming cap**
Abstract Title: **Swimming cap having hair containing portion**

(57) A swimming cap 6 defining a cavity 2 for accommodating a wearer's head, the cap further defining an enlarged volume portion 7. In use, the enlarged volume portion is positioned at the nape of the wearer's neck and contains the wearer's hair. This results in improved hydrodynamics compared to traditional swimming cap designs especially when the wearer has long hair. The cap is preferably formed from a stretch woven fabric, and comprises panels formed from seals. The cap preferably has a tactile or visual position marker, which can ensure a correct wearing position of the cap. The cap may be used as a swimming liner for overlaying with a further swimming cap.

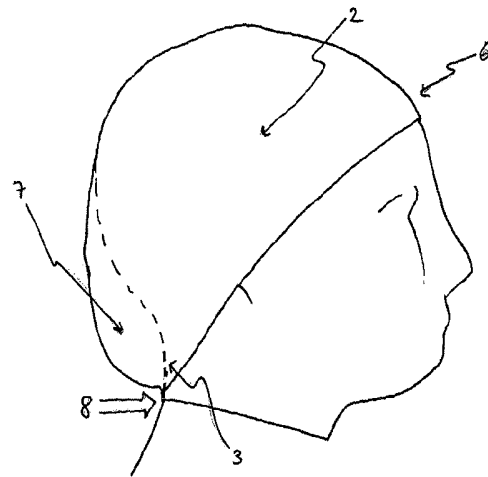
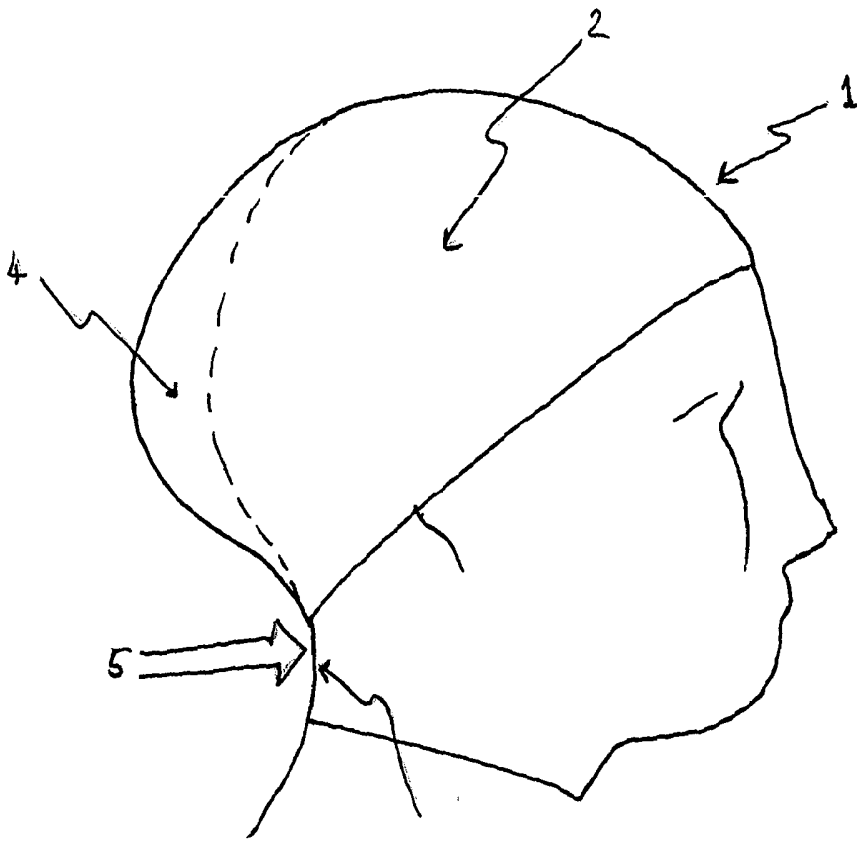


FIGURE 2



3. FIGURE 1 - PRIOR ART

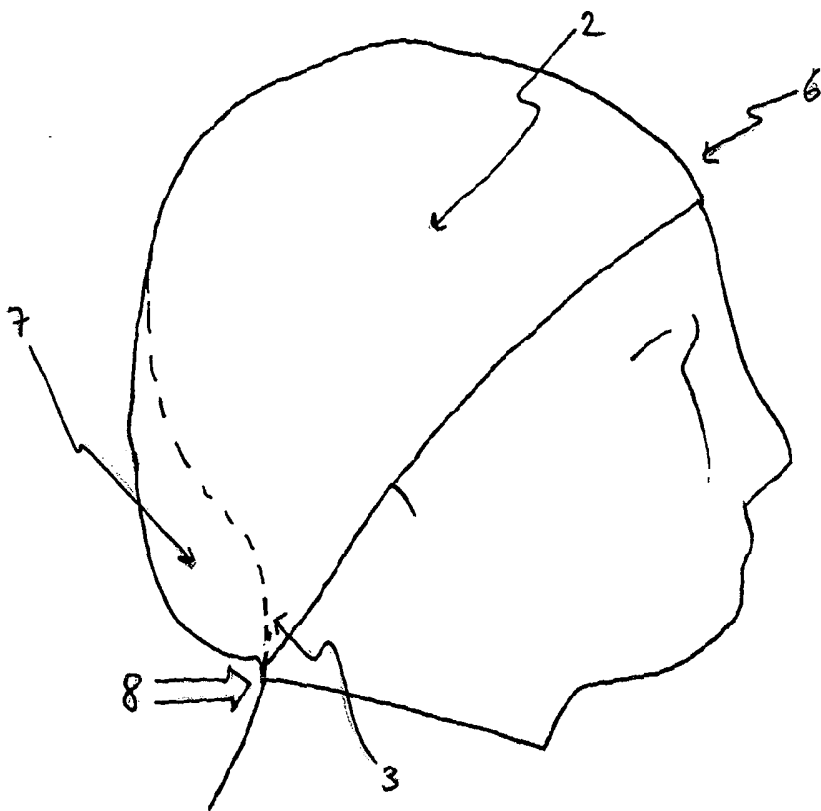


FIGURE 2

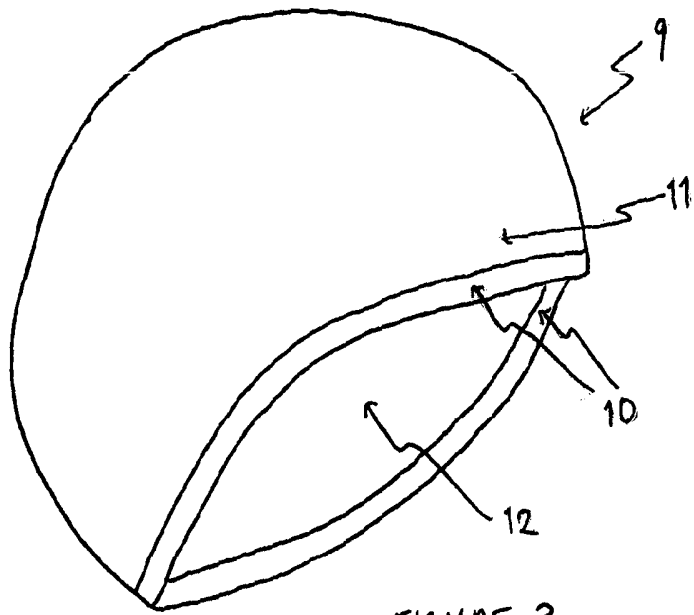


FIGURE 3

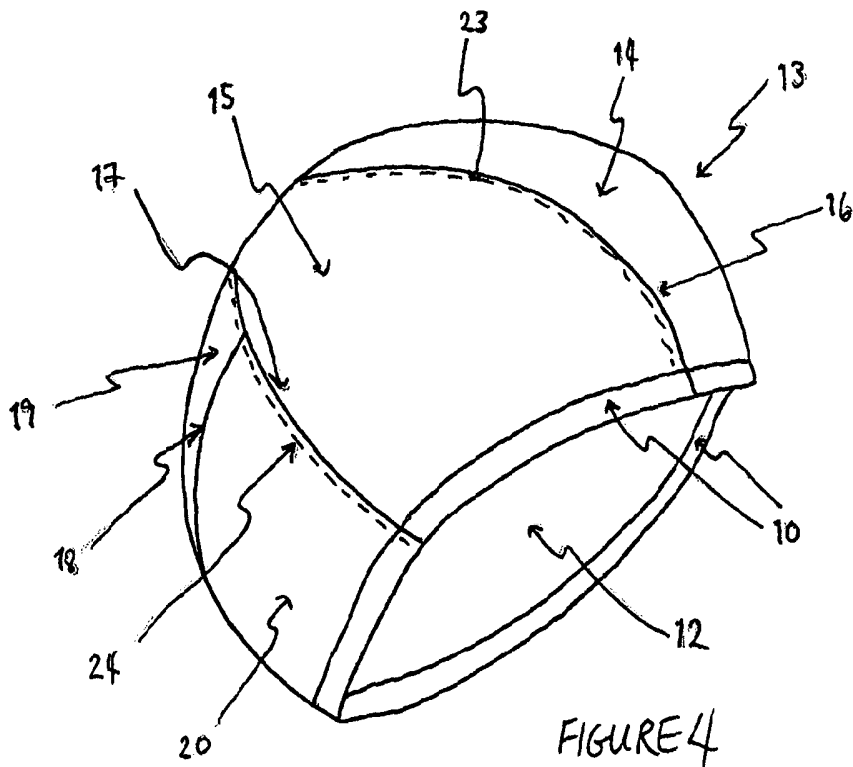
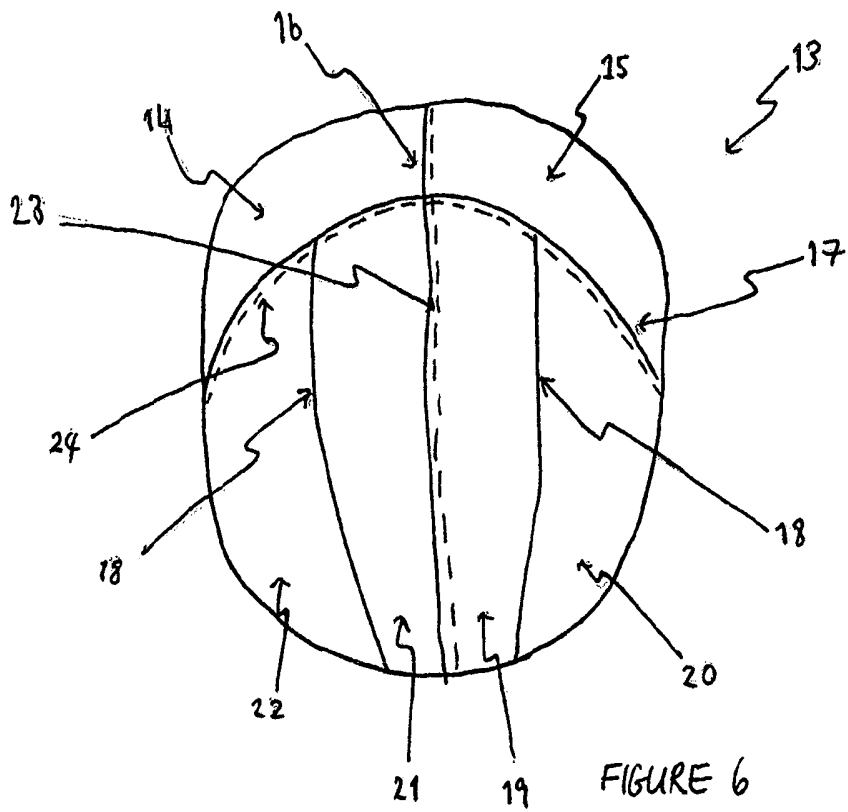
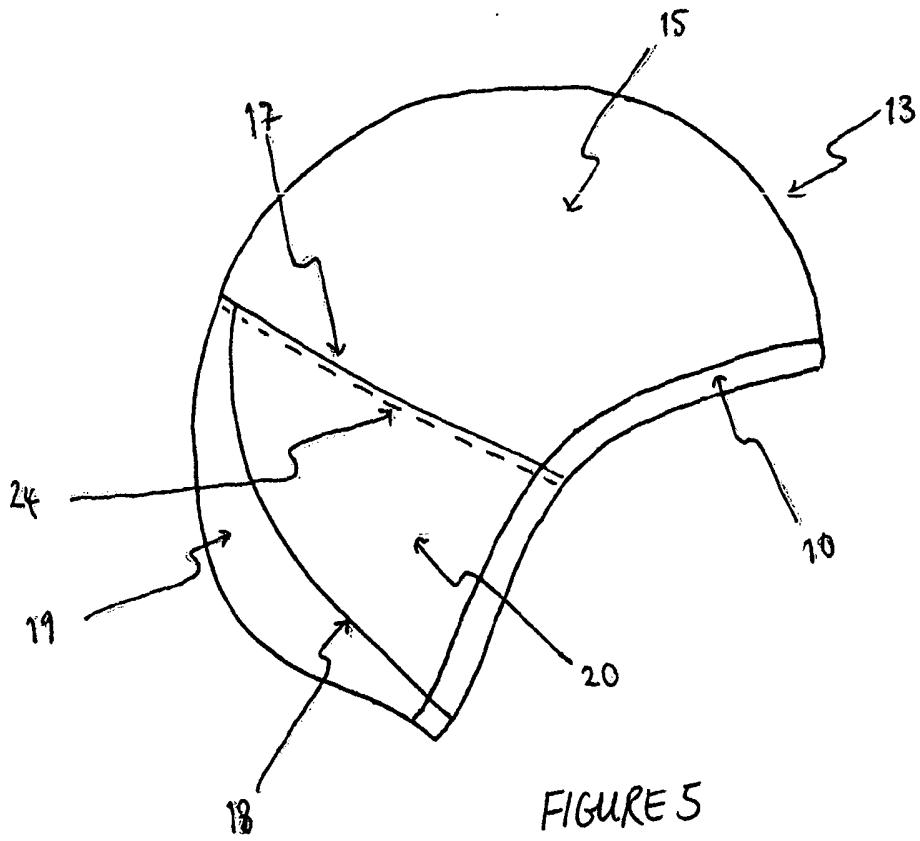


FIGURE 4



SWIMMING CAP

FIELD OF THE INVENTION

This invention relates to swimming caps for use in swimming, and related water sports.

5

BACKGROUND

Swimming caps for covering the hair of a swimmer are known to serve a number of functions. They prevent hair from dragging in the water, which would otherwise slow and distract the swimmer. In addition, the cap prevents hair that has detached from the swimmer's scalp from clogging up filters etc. in swimming pools. When made from a waterproof material, the cap may also provide a protective covering that prevents the swimmer's hair from getting wet. These caps also protect the wearer's hair and scalp from chlorine.

10

To facilitate wearing a cap, a swimmer having long, hanging hair will generally form their hair into a compact shape, such as a bun or ponytail. The cap is subsequently placed over the head, so that the hair is collected under the cap at the back of the head. This results in a head profile that substantially follows the shape of the skull except for a bulge, high at the back of the head, where the hair is contained.

20

When swimming, the swimmer will generally adopt a posture in which there is a dip between the back of the head and the shoulders. This dip, around the nape of the neck, interferes with the flow of water, adversely affecting the hydrodynamics

of the swimmer. With traditional swimming caps, this dip is accentuated by the bulge created by the hair at the back of the head, worsening the problem. Therefore, there exists a need to provide a swimming cap that has improved hydrodynamics compared to known designs.

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SUMMARY OF THE INVENTION

Accordingly, in a first aspect, the present invention provides a swimming cap defining a cavity for accommodating a wearer's head, wherein the cap further defines an enlarged volume portion which, in use, is positioned at the nape of the

10 wearer's neck for containing the wearer's hair.

In traditional designs, the hair is generally collected over the parietal and occipital bones of the skull. In caps of the present invention, however, the enlarged volume portion positions the hair lower, distal from the parietal bones of the skull.

15 The enlarged volume portion of the present cap preferably positions the substantial part of the hair below the superior nuchal line and external occipital protuberance of the occipital bone. Preferably, the enlarged volume portion of the present cap positions the hair so that a substantial part of the hair overlays a region around the base of the hairline at the back of the head.

20

By providing an enlarged volume portion to position a wearer's hair at the nape of the neck, the cap of the present invention provides means for partially filling the dip between the back of the head and the shoulders that arises in common swimming postures. Decreasing the size of this dip improves water flow over this

region. Thus, swimming caps of the present invention result in improved hydrodynamics compared to traditional swimming cap designs.

5 The swimming cap preferably has a shape approximating a hollow dome, defining the cavity, having a crown surrounded by a periphery, wherein a section of the periphery bulges to define the enlarged volume portion of the cavity. As explained above, this enlarged volume portion is positioned over the wearer's nape in use, and provides space for storing the wearer's hair.

10 Preferably, the profile of the cap is such that, in use, it has a substantially continuous gradient or slope from the crown to the enlarged volume portion i.e. it has a smooth profile with no significant deflections (e.g. indentations or protrusions). This is to ensure smooth water flow over the cap in order to minimise undesirable water resistance.

15 Preferably, the cavity of the swimming cap has a volume substantially matching the volume of the wearer's head. Having a similar volume to the wearer's head ensures that the cap fits closely to the head, minimising loose fitting regions that could create hydrodynamic drag.

20 In some embodiments, the "wearer's head" is the 50th centile female head, or a scaled version of this head. In other embodiments, the "wearer's head" is the 50th centile male head, or a scaled version of this head. In preferred embodiments,

the "wearer's head" is an average of the 50th centile female head shape and 50th centile male head, or a scaled version of this head.

5 Of course, the length of a wearer's hair will vary between wearers. Preferably, the cap is able to accommodate hanging hair extending ~34 cm to 70 cm from the crown of the head.

10 Preferably, the swimming cap has a gripping section for securing the cap to the wearer's head. The gripping section may extend around an edge of the cap, the edge defining the opening of the cavity. In certain embodiments, the gripping section completely surrounds the opening of the cavity.

15 The gripping section may be elastic, so that compression of the gripping section around a part of the head holds the cap in place. Additionally, or alternatively, the section may be made of a non-slip material that holds the cap in place through friction. For example, the gripping section can be an elastomeric material, such as a silicone rubber. The section may contact a wearer's skin, such as the forehead, and/or the wearer's hair. The gripping section provides a means to keep the cap in place on the wearer's head. It may also facilitate putting the cap
20 on, since a wearer may first locate and secure a gripping section on their head before placing the cap fully on the head.

The cap may be made from a porous or non-porous material. The material may be elastic (in which case it may compress against the wearer's head) or may be

relatively inelastic (in which case it may not compress against the wearer's head).
Alternatively, it may comprise both elastic and inelastic materials, either combined
in the same regions of the cap (e.g. in a layered construction, or
interwoven/interknitted with one another) or present in separate regions.
5 Examples of suitable materials include rubber materials, such as silicone and
latex, and textile materials such as polyamide materials (eg. nylon) and Lycra™.

Preferably, the cap is at least partially made from a textile material. The textile
material may be a woven fabric, preferably a stretch woven fabric. In preferred
10 embodiments, the cap is made from a textile material comprising both inelastic
threads (such as a polyamide material) and elastic threads (such as Lycra™).
Preferably, the percentage of elastic threads (e.g. Lycra™) is about 25wt%.
Preferably, the percentage of inelastic threads (e.g. polyamide) is about 75wt%.

15 In preferred embodiments, the cap is made from a textile material having a weight
per square metre of 90-300 grams/m². For example, the cap may have a weight
per square metre of approximately 106 grams/m².

20 Caps made from textile materials may be easier to adjust once placed on the
head than rubber caps. Rubber materials tend to grip the head (both through
compression and due to high levels of friction) making it difficult to reposition the
cap once it is placed on the head. In contrast, textile materials tend to grip the
head to a lesser extent, facilitating repositioning.

The cap preferably has a streamlined exterior, for example, the cap may have smooth exterior surfaces. This ensures that hydrodynamic drag created by the exterior surface of the cap does not negate the improved hydrodynamics resulting from the cap's positioning of the hair.

5

The swimming cap may be a unitary construction, i.e., formed from a single piece of material. For example, the cap may be a single piece of moulded material/fabric. However, it is preferred that the swimming cap comprises multiple panels joined by seams. A multi-panel construction is advantageous for the construction of the cap because the cap can be made to the desired shape by choosing the location of panels and seams, instead of by moulding or weaving the cap to this shape. Such a construction may also increase the resilience of the cap. For example, it avoids the need to have large expanses of material, which may be more prone to ripping or unwanted deformation than multiple, smaller panels.

10

15

The panels may be joined to one another by stitching or by bonding. Stitching is preferred because stitched seams may stretch at a similar rate to the fabric. This minimises stresses in the cap that could otherwise cause damage. Various seam types are possible, but lapped seams are preferred, since these can be made to rest relatively flat against the cap and minimise drag.

20

Advantageously, the swimming cap comprises a tactile or visual position marker which, in use, is aligned with an anatomical landmark on the wearer's head to

ensure a correct wearing position of the cap. In certain instances, a marker may serve as both a tactile and a visual position marker.

5 By providing such a position marker, the wearer of the cap can align the marker with an appropriate anatomical landmark (e.g. the nose, the ears etc.) to ensure that the cap is correctly fitted. Correct fitting ensures optimum comfort and/or optimum performance.

10 In some embodiments, the location of a position marker on the cap is determined by the location of an anatomical landmark on the 50th centile female head, or a scaled version of this head. In other embodiments, the location of a position marker on the cap is determined by the location of an anatomical landmark on the 50th centile male head, or a scaled version of this head. In preferred
15 embodiments, the location of a position marker on the cap is determined by the location of an anatomical landmark on a head which is the average of the 50th centile female head and 50th centile male head, or a scaled version of this head. Tactile position markers are preferred (since the wearer may be unable to visually check the position of the cap without the use of an additional aid, such as a mirror, when the cap is fitted).

20

The position marker may, in use, be positioned, for example, on the centre line of the wearer's forehead or on the centre of the wearer's crown or on the centre line of the nape of the wearer's neck. Preferably, a position marker is provided on the forward edge of the cap (which, in use, sits on the wearer's forehead). More

preferably, the position marker is provided on the forward edge of the cap for alignment with the centre line of the wearer's forehead or nose. Preferably a position marker (e.g. a tactile position marker) is alternatively or additionally provided on a side of the cap for aligning with one of the wearer's ear. More preferably, the cap has position markers on opposite sides of the cap (or a single position marker extending between opposite sides of the cap) each for aligning with a respective one of the wearer's ears. Preferably, a said position marker for aligning with one of the wearer's ear is designed to be aligned with a specific part of the ear, most preferably the outer edge of the tragon of the ear.

10

The tactile position marker may comprise a raised element or recessed element formed or provided on the surface of the cap. The raised element may be, for example, a bump or a ridge (e.g. a linear, elongated ridge). The tactile position marker can be provided in a number of ways. For example, the tactile position marker may be a separate element stitched or bonded to the cap, or the tactile position marker may itself be a stitch (or a line of stitches) having a raised profile. Alternatively, the marker may be printed onto the fabric e.g. using a Plastisol print.

15

The position marker may be an integral part of the cap, in which case it may be formed during the manufacture of the cap or during manufacture of the materials used to create the cap.

20

The tactile position marker may be a linear element or it may be an arrow-head shape with the apex of the arrow-head designating the point to be aligned

with/positioned over the anatomical landmark e.g. with the apex of the arrow-head extending to the forward edge of the cap for alignment of the apex with the centre line of the wearer's forehead. This allows the wearer to position the marker over the centre line of their forehead (by feeling for the marker with their hands). By ensuring that the marker is in the right place, the wearer can be assured that the cap is correctly fitted so that comfort, water-tightness and performance are maximised.

The visual position marker may be a visible indicator provided on the surface of the cap. It can have any design provided that it is obvious which part of the indicator must be aligned with the anatomical landmark. Examples of suitable designs are: geometric shapes such as circles, squares, triangles, diamonds (where the centre of the geometric shape is provided as the point for alignment over the anatomical landmark); arrow-heads (where the apex of the arrow-head designates the point for alignment over the anatomical landmark); crosses (where the centre of the cross marks the point for alignment over the anatomical landmark); and lines (which are especially useful where the marker is to be aligned with linear anatomical landmarks). In a preferred embodiment, the visual position marker is a line of stitches having a colour that contrasts with a background colour of the cap. For example, the cap may be predominantly dark in colour, and the line of stitches may be a contrasting bright colour (or vice versa). In such an embodiment, it is preferred that the line of stitches is also raised so as to function as a tactile position marker.

The visual position marker can be provided in a number of ways: it can be printed onto the surface of the cap; it can be embroidered onto the surface of the cap; or it can be formed during the manufacture of the fabric used to create the cap.

5 Advantageously, the cap may incorporate one or more position markers to site other objects on the wearer's head, such as swimming goggles. For example, the cap may have markers on either side of the head to aid positioning of a swimming goggles' straps. In addition, or as an alternative, the nose bridge of the swimming goggles may be aligned to a position marker on a front section of the cap.

10 Providing one or more position markers allows the wearer to reliably fit the goggles. A correct fit of the goggles is necessary to ensure water-tightness and to reduce performance impairment arising from water resistance created by incorrectly fitting goggles.

15 In a cap comprising multiple panels the seams can be used as tactile or visual position markers and aligned to anatomical landmarks such as the nose, ears etc.

For example, the swimming cap may have a central seam extending from the crown of the cap to a front portion of the cap which, in use, is positioned to line-up with the centre line of the wearer's forehead or nose. Preferably the seam is partially raised or recessed, allowing the user to feel the seam and reliably position the cap through reference to their forehead, without needing to visually check whether the cap is correctly fitted. Additionally, or alternatively, the seam

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may serve as a visual position marker. For example, the seam may incorporate a line of threads having a colour that contrasts with a background colour of the cap.

5 In some embodiments, the central seam may extend from a rear portion of the cap, over the crown, to a said front portion of the cap. In use, this may allow a wearer to position the seam at the front portion of the cap relative to their forehead, and the seam at the rear portion of the cap relative to another feature, such as the middle of the nape of the neck. Positioning the cap relative to these two features will increase the accuracy of cap fitting.

10 Alternatively, or in addition to this seam, the swimming cap may have a seam running from a side of the wearer's head to another, opposite side of the head which, in use, is positioned to line-up with the wearer's ears. This side-to-side seam may extend between diametrically opposed portions of the edge of the cap defining the opening into the cavity. Advantageously, this side-to-side seam
15 provides a position marker allowing quick and easy positioning of the cap on the wearer's head. Preferably the seam is partially raised or recessed, allowing the user to feel the seam and reliably position the cap through reference to their ears, without needing to visually check whether the cap is correctly fitted. Additionally,
20 or alternatively, the seam may serve as a visual position marker. For example, the seam may incorporate a line of stitches having a colour that contrasts with a background colour of the cap.

In a preferred embodiment, the cap has both the central seam, and the side-to-side seam, which preferably cross one another at the crown of the cap. Using one seam to position the cap relative to the ears and another to position the cap relative to the forehead can result in improved cap fitting accuracy. Alternatively, the wearer may prefer to position the cap with reference to only one seam, therefore they have the choice of whether to align the cap using the central seam or the side-to-side seam.

The cap may comprise a seam running from a rear portion of the cap to the crown of the head, the seam being offset to a side of the head. This offset rear-to-crown seam shapes the cap at the side of the head. Preferably, the cap comprises two offset rear-to-crown seams.

In a preferred embodiment, the cap has the central seam, the side-to-side seam, and two offset rear-to-crown seams. In this embodiment, it is preferred that the central seam extends from a rear-portion of the cap to a front portion of the cap over the crown, and the two offset rear-to-crown seams are arranged either side of this central seam. Additionally, it is preferred that the rear-to-crown seams terminate at the side-to-side seam. This arrangement of seams provides position markers for aligning the cap relative to the centre of the forehead or nose (using the central seam) and the ears (using the side-to-side seam).

In one embodiment of the present invention, the cap is for use as a swimming cap liner. By "swimming cap liner" we mean a cap which is worn under a further

swimming cap. In such embodiments, the swimming cap of the present invention may be used to arrange a wearer's hair and subsequently overlaid with a further swimming cap.

5 The wearing of two swimming caps is known, and is often referred to as "double-capping". However, this is commonly carried out using two silicone or latex swimming caps, which often leads the wearer to experience discomfort. One source of discomfort may arise from over-constriction of the head by the two elasticated caps. A further source may be overheating resulting from the heat-
10 insulating effect of the silicone/latex caps.

Preferably, when the cap is for use as a swimming cap liner it is made from a textile material. As mentioned above, caps made from textile materials will tend to be more easily repositioned than those made from rubber materials, because the
15 cap grips the head less. This allows the wearer to adjust the cap of the present invention until an optimal arrangement of the hair is achieved, and then overlay this with a further swimming cap. A textile material may facilitate improved heat escape from the head, overcoming the overheating issues common to double-capping with silicone/latex caps.

20

Most preferably, when the cap is for use as a swimming cap liner, it is made from a relatively inelastic textile material that does not significantly compress the head. The cap can be overlaid with a further swimming cap that compresses the head.

However, advantageously, in this arrangement the overall compressive effect will be less than the use of two silicone/latex caps.

5 When the cap is for use as a swimming cap liner, it does not need to be made of a waterproof material. The swimming cap liner may be made from a non-waterproof material and overlaid with a further cap made from a waterproof material.

10 If the wearer wears swimming goggles, it is possible for them to put on the swimming cap liner, then put on their goggles before finally overlaying with a further swimming cap. This arrangement decreases the chances of the goggles moving, for example, when the wearer dives into the water.

15 To don a cap of the present invention, a swimmer first positions the cap over their forehead, and then pulls the cap backwards, over the head, to the nape of the neck, so that the hanging hair remains protruding from the cap. The hair is then stuffed into the cap, so that the hair is contained by the enlarged volume portion at the nape of the neck.

20 Embodiments of the invention will now be described, by way of example only, with reference to the accompanying drawings in which:

BRIEF DESCRIPTION OF THE DRAWINGS

Figure 1 is a side view of a prior art swimming cap on a wearer's head;

Figure 2 is a side view of a swimming cap of the present invention on a wearer's head;

Figure 3 is a sectional elevation of the cap with gripping sections for securing the cap to a wearer's head;

5 Figure 4 is a sectional elevation of a cap made from multiple panels joined by seams;

Figure 5 is a side view of the cap in Figure 4;

Figure 6 is a back view of the cap in Figure 4; and

10 DETAILED DESCRIPTION OF THE INVENTION

A prior art swimming cap 1 having a traditional shape is shown in Figure 1. The cap 1 fits closely to the wearer's head 2, and terminates at the back of the head at the nape 3 of the neck. Normally, to put the cap 1 on, a wearer will first form the hair into a bun or similar structure at the back of the head 2, and then stretch the cap 1 over the head 2. The position of the hair, high at the back of the head 2, creates a bulge 4 at the back of the head. This bulge 4 accentuates the dip created at the nape 3 of the neck, creating dip 5, resulting in an increased recirculation of water during swimming, creating drag.

20 Figure 2 shows a swimming cap 6 according to the present invention. The swimming cap 6 defines a cavity for accommodating the wearer's head 2 and further defines an enlarged volume portion 7 which, in use, is positioned at the nape 3 of the wearer's neck for containing the wearer's hair. The enlarged volume portion 7 positions the hair so as to form a low bun shape over the nape 3

of the neck, partially filling the dip between the back of the head and the shoulders, resulting in a dip 8.

5 The enlarged volume portion 7 of cap 6 positions the hair lower on the head 2 than the prior art cap 1. The prior art cap 1 positions the hair over the parietal and occipital bones (and not over the neck), with the substantial portion being above the superior nuchal line and external occipital protuberance of the skull. In contrast, the enlarged volume portion 7 of cap 6 does not position the hair over the parietal bone, and instead positions the substantial portion of hair over the neck, with a smaller portion overlying the occipital bones. In cap 6 the substantial
10 portion of the hair is below the superior nuchal line and external occipital protuberance of the skull.

15 The dip 8 at the nape 3 of the neck when using swimming cap 6 is smaller than the dip 5 when using prior art cap 1. The arrangement of the hair created by the enlarged volume portion 7 results in improved hydrodynamics compared to prior art swimming cap 1.

20 To secure the cap to a wearer's head 2, the cap includes a gripping section. Such a cap 9 is shown in Figure 3, which has a continuous band of silicone rubber 10 surrounding the edge 11 of the opening into cavity 12. In use, friction between the silicone rubber 10 and the wearer's skin and/or hair help to secure the cap 9 to the wearer's head 2. In addition, the elasticity of the band of silicone rubber 10 holds the cap 9 in place on the head 2 by compression.

Advantageously, caps of the present invention are made from multiple panels joined by seams. Such a cap 13 is shown in Figures 4 to 6. As with cap 9, the cap 13 incorporates a band of silicone rubber 10 for holding the cap in place.

5

The cap 13 comprises a left front panel 14 and a right front panel 15 joined by a central lapped seam 16 (with left and right defined from the perspective of a wearer wearing the cap). The seam 16 is a lap construction, held together by stitching. The seam 16 is slightly raised from the exterior surface of the cap, to about the thickness of the thread used to hold together the seam. This allows the seam 16 to act as a tactile position marker for the cap 13, providing a guide to position the cap 13 on a wearer's head 2. However, the seam is not excessively raised, as this could negatively impact the hydrodynamics of the cap 13. In use, the wearer may align the seam 16 with the centre of their forehead, or their nose through feeling the position of the seam. The cap 13 also has a seam 17 running from one side of the wearer's head to the other over the crown. The seam 17 is slightly raised from the exterior of the cap similarly to seam 16, to act as a tactile position marker for positioning relative to the wearer's ears. The wearer aligns the seam 17 so as to extend from one ear to the other. Thus, aligning seam 16 with the centre of the forehead or nose and/or seam 17 with the ears allows a wearer to reliably site the cap on the head. Additional seams 18 run from seam 17 to the back of the cap 13, resulting in a right central back panel 19, right side back panel 20, left back central panel 21 and left side back panel 22.

The rear of the cap 13 has a smooth gradient profile i.e. there are no significant deflections which would be undesirable as they would result in increased drag.

5 Seam 16 incorporates a line of stitches 23 having a colour contrasting with the background colour of the cap. Seam 17 incorporates a similar line of stitches 24. The stitches are used as visual position markers, for aligning to the same anatomical landmarks as their corresponding seams. In this instance, the stitches form a part of the seam structure. However, in other embodiments the cap can incorporate a line of stitches for acting as a visual or tactile position marker that
10 are not integral to the seam structure.

The skilled person will appreciate that the swimming caps illustrated in the figures and described above are examples embodying inventive concepts described herein and that many and various modifications can be made without departing
15 from the invention.

Claims

1. A swimming cap defining a cavity for accommodating a wearer's head, wherein the cap further defines an enlarged volume portion which, in use, is positioned at the nape of the wearer's neck for containing the wearer's hair.

2. A swimming cap according to claim 1, wherein, in use, the enlarged volume portion positions the substantial part of the hair below the superior nuchal line and external occipital protuberance of the occipital bone.

3. A swimming cap according to claim 1 or 2 having a shape approximating a hollow dome, defining the cavity, the cap having a crown surrounded by a periphery, wherein a section of the periphery bulges to define the enlarged volume portion of the cavity.

4. A swimming cap according to claim 3 wherein the profile of the cap is such that, in use, it has a substantially continuous gradient from the crown to the enlarged volume portion.

5. A swimming cap according to any one of claims 1 to 4, wherein the cavity of the swimming cap has a volume substantially matching the volume of the wearer's head.

6. A swimming cap according to any one of the preceding claims, wherein the cap has a gripping section for securing the cap to the wearer's head.

5 7. A swimming cap according to claim 6, wherein the gripping section extends around an edge of the cap, the edge defining an opening into the cavity.

8. A swimming cap according to any one of the preceding claims, wherein the cap is made from a textile material.

10 9. A swimming cap according to claim 8, wherein the textile material is a stretch woven fabric.

10. A swimming cap according to any one of the preceding claims, wherein the cap comprises panels joined by seams.

15 11. A swimming cap according to any one of the preceding claims, comprising a tactile or visual position marker which, in use, is positioned over an anatomical landmark on the wearer's head to ensure a correct wearing position of the cap.

20 12. A swimming cap according to claim 11, wherein a said position marker is a seam.

13. A swimming cap according to claim 12, wherein a said position marker is a central seam extending from the crown of the cap to a front portion of the cap which, in use, is positioned to line-up with the centre line of the wearer's forehead.

5 14. A swimming cap according to claim 12 or 13, wherein a said position marker is a seam running from a side of the wearer's head to another side of the wearer's head which, in use, is positioned to line-up with the wearer's ears.

10 15. A swimming cap according to any one of claims 10 to 14, wherein the cap comprises a seam running from a rear portion of the cap to the crown of the head, the seam being offset to a side of the head.

15 16. A swimming cap according to any one of the preceding claims, comprising a tactile or visual position marker which, in use, is used to position a wearer's goggles relative to the cap.

17. Use of a swimming cap according to any one of the preceding claims as a swimming cap liner, for overlaying with a further swimming cap.



Application No: GB1117875.3

Examiner: Carrie-Ann Williams

Claims searched: 1-17

Date of search: 5 December 2011

Patents Act 1977: Search Report under Section 17

Documents considered to be relevant:

Category	Relevant to claims	Identity of document and passage or figure of particular relevance
X,Y	X=1-11, 17 Y=13-16	BE 383384 A (BOURCART) see figure 6 in particular
Y	12-16	STR Pro Swimcap, Aqua V-cap and Pace Cap, Speedo online store, accessed from http://web.archive.org/web/20100428035615/http://store.speedo.co.uk/w ebapp/wcs/stores/servlet/Category3_10151_10202_33471_33314_-1 dated 28/04/2010
A	--	US 2009/038048 A1 (THOMPSON) see figures 5 and 6 in particular

Categories:

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.

Field of Search:

Search of GB, EP, WO & US patent documents classified in the following areas of the UKC^X :

Worldwide search of patent documents classified in the following areas of the IPC

A42B; A63B

The following online and other databases have been used in the preparation of this search report

Online: WPI, EPODOC, Internet

International Classification:

Subclass	Subgroup	Valid From
A42B	0001/12	01/01/2006