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(71) Applicant : **YUPOONG & CO LTD**
416-1 Guro-Dong,
Guro-Gu
Seoul (KR)

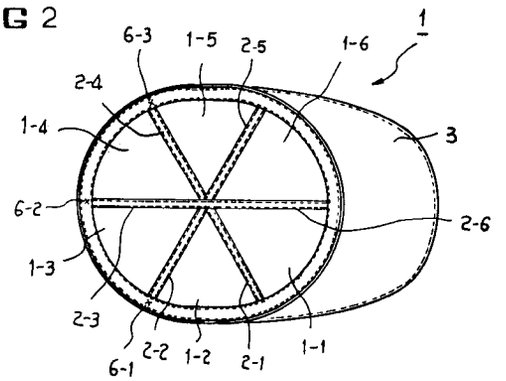
(72) Inventor : **Cho, Byoung-Woo**
251-6 Nonhyn-Dong
Kangnam-Gu, Seoul (KR)

(74) Representative : **Sanderson, Michael John et al**
MEWBURN ELLIS
York House
23 Kingsway
London WC2B 6HP (GB)

(54) Free size cap.

(57) A free size cap includes a crown (1), a portion (1-2, 1-3, 1-4, 1-5) of which rearward from the visor (3) is formed of a stretch woven fabric consisting of stretchable weft yarns and non-stretchable warp yarns, and a sweat band (4) having an elasticity and a stretchability, wherein the lower edge of the sweat band (4) is sewn to the crown (1) along the bottom edge (5) of the inner wall thereof, whereby the stretch woven fabric of the crown (1) and the sweat band (4) are stretchable/shrinkable in the inner-circumferential direction of the crown (1), for example, by an amount of 6.35 cm in a cap having a standard size of 60 cm ± 3 cm. The upper edge of the sweat band (4) is preferably sewn to a multi-stitch line area (6-1, 6-2, 6-3) in the inner surface of the crown (1) rearward from the visor (3).

FIG 2



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The present invention relates to a free size cap capable of accommodating various size heads, for example, in a range of 57 cm through 63 cm with only one standard size, while maintaining the comfort of wearer.

Since it is not necessary to produce and market a free size cap in several size classes as is the case with a conventional cap, it is possible to realize the sharp reduction of selling cost in association with the simplification of production line/installation, the reduction of labor time, the saving of space as well as the improvement of distribution efficiency. Such free size caps are known, for example, in U.S. Patent Nos. 4,662,007 and 5,119,514. It is common to these U.S. Patents that gores forming a portion of cap crown rearward from a visor are prepared with a stretch fabric. A free size cap according to the U.S. Patent no. 4,662,007 has ear flaps on the bottom edge of the crown in the portion reaward from the visor, made from a weft knitted fabric. In a normal state, the ear flaps are folded upward from the bottom edge of the crown. In the cold season such as winter, the ear flaps are unfolded down to cover the wearer's ears to maintain a temperature thereof. The ear flaps have a function as a sweat band when it is worn while being folded inside of the crown.

While, a free size cap according to the U.S. Patent No. 5,119,514 has a relatively stiff ear shield extending integrally of a visor as well as a cut-away in the rear portion of a crown and a pair of male/female members, for example, of a snap tape or a Velcro® fastener with a length of about 4~6 inches, each secured on the opposite edge of the cut-away so that a cap size is adjustable. That is, in the case of the snap tape, the male member has a series of nodules arranged in the lengthwise direction at a predetermined pitch, while the female member has a series of eyelets corresponding to the nodules, whereby the cap size is adjustable to be fit with the wearer's head by snapping the nodules into the suitable eyelets.

As stated above, in the U.S. Patent No. 4,662,007, the cap has a normally folded ear flaps secured on the bottom edge of the crown in the portion thereof rearward from the visor, which are unfolded down, if necessary, to cover and warm the wearer's ears. Also it is possible to impart the sweat aborbing function to the cap by folding the ear flaps inward of the crown. When one wishes to impart the sweat absorbing function by folding the ear flaps inward of the crown, however, problems occur in that, since there is no ear flap in the area corresponding to a forehead, the sweat absorbing function is interrupted in this area and the wearing comfort is injured. According to this cap, a standard size is one when the ear flaps are folded upward from the bottom edge of the crown. Therefore, when the cap is used while the ear flaps are folded inside of the crown to absorb sweat, the inner dimension of the crown becomes smaller, whereby the size-adjustable range is adversely reduced. Further, since the ear flaps are made from a weft knitted fabric, the stretchability thereof is gradually lost by the repetition of laundering, which worsens the sweat absorbing function and accelerates the wear thereof. In addition, since the crown includes stretchable yarns used as weft having an elastic elongation of about 20 %, a larger shrinkage force tends to be applied to the wearer's head when the head size is large, and worsens the wearer's comfort. Beside this, since the stretchable yarn having a large elongatlon of such as 20 % is generally expensive, there is a problem of an increase in the product cost.

On the other hand, according to the structure disclosed in U.S. Patent 5,119,514, when the snap tape is used, the size adjustment is conducted by varying the positional relationship between the male member secured on one side and the female member secured on the opposite side. This means that the delicate adjustment is impossible because the adjustment is carried out only in a discrete manner while being restricted by the pitch of the nodules/eyelets. Accordingly, the cap is not always just-fitted to the head size but may often be so loose or tight that the wearer's comfort is injured. In addition, creases may generate in the crown in a region corresponding to the snap tape, resulting in a poor appearance. Moreover since each of the male and female members of the snap tape is sewn to the crown at one end thereof, the production process becomes complicated, whereby the production efficiency is lowered and in turn the number of parts increases, resulting in the rise of production cost due to the adverse multiplied effect thereof. While the freedom of size adjustment is widened when the Velro® fastener is used instead of the snap tape, the life of fastener is unexpectedly short because the fastening function is rapidly deteriorated due to the structural features inherent to the hook/loop combination. further, similar to the snap tape, the hook member and the loop member must be sewn to the crown at one end thereof, whereby the production process becomes complicated, the production efficiency is lowered and the number of parts increases, resulting in the rise of production cost. Furthermore, according to this U.S. Patent, the ear shield is formed from a stiff material integral with the visor, which is not intended to be a sweat band in a folded stated but mainly used as a sun beam protector.

To solve these problems, the present applicant proposed a free-size cap in Korean Patent Application No. 92-26367, in which a crown is formed from a stretch fabric and has a double-folded sweat band of a weft knitted fabric; the crown and the sweat band having an elastic elongation within 6.3 cm (2.5 inch) in the weft direction and the cap having a standard size in a non-stretched state of 60 cm. The free-size cap according to this application has a drawback in that the double-folded sweat band of the weft knitted

fabric lacks the duribility against the repeated launderings, which means the elastic function of the sweat band is lowered even after a relatively short period use, resulting in the deterioration of a fitness of cap to a wearer's head as well as a wearing comfort. Also since the sweat band is structured as a double-folded weft knitted fabric, the cap is too thick to be worn under a warm climate condition, whereby the deterioration of the sweat band is accelerated due to sweating. Thus the cap life is shortened.

It would be desirable to be able to provide a free size cap comfortable to wear and capable of maintaining its initial function for a longer period than heretofore.

According to the present invnetion, a free size cap is provided, comprising a crown, a portion of which rearward from the visor is formed of a stretch woven fabric consisting of stretchable weft yarns and non-stretchable warp yarns, and a sweat band having an elasticity and a stretchability, wherein the lower edge of the sweat band is sewn to the crown along the bottom edge of the inner wall thereof so that the stretch woven fabric and the sweat band are strechable/shrinkable in the inner-circumferential direction of the crown within a predetermined range relative to a standard size.

The weft of the stretch woven fabric forming the rearward portion of the crown is preferably a polyurethane elastomer yarn having a stretchability within a predetermined range relative to the standard size.

The sweat band is preferably formed of a polyurethane woven band having a stretchability within a predetermined range.

Favorably, the range of stretchability of the stretch woven fabric and the sweat band is 6.35 cm along the inner surface of the cap when the cap size is 60 cm ± 3 cm in the free state.

Preferably the sweat band is sewn at the upper edge thereof to a multi-stitch line area of the inner surface of the rearward portion of the crown.

According to this free size cap, in the inner surface thereof, the crown-forming stretch fabric and the sweat band are stretchable within a predetermined range relative to the standard size so that the same cap can be used even if the head size varies as far as in this range.

In a preferred embodiment, the standard size (in a free state) is selected to be a value within 60 cm ± 3 cm. According to the experience of the applicant company who has exported the free size caps for a long time all over the world, for example, the United States, Canada, Japan, Europe or Middle East countries, substantially all head sizes of the adult in such the countries are statistically included in a range of 60 cm ± 3 cm through 66 cm ± 3 cm, Therefore, if the standard size is selected at a value in a range of 60 cm ± 3 cm and the crown-forming stretch fabric and the sweat band are stretchable in a range of 6.35 cm, it is possible to cover the head size in a range of 60 cm± 3 cm through 66 cm ± 3 cm by a cap having only one size. Moreover, the cap can be comfortably and fittingly worn without any additional means for adjusting the cap size such as a Velcro ® fastener.

If the sweat band is formed from a polyurethane woven fabric, a number of micro-openings are formed in the band when it is stretched, through which sweat generated in a head area contacting the band can be quickly discharged to the outer air, whereby the comfort is further enhanced.

Since the upper edge of the sweat band is discretely sewn to the multi-stitch line areas in the inner surface of the crown as illustrated in the preferred embodiment, the sweat band is prevented from hanging down from the bottom edge of the crown.

In addition, since the cap has a stretchability within 6.35 cm relative to the standard size selected from a range of 60 cm± 3 cm, as shown in the preferred embodiment, it is not necessary to use a highly stretchable elastomer yarn, as is the case of U.S. Patent 4,662,007, having a stretchability of 20 % (which corresponds to 13 cm if the cap size is 60 cm). Thus the production cost can be reduced accordingly. Also since the stretchabilities of both the elastomer yarn and the sweat band are only about half those of the cap according to the U.S. Patent, it is possible to avoid the excessive pressure from applying to the wearer's head so that the wearing comfort is guaranteed. The polyurethane band has an excellent durability against the repeated launderings whereby the weave structure thereof can be maintained for a long period. This band has a favorable wearing comfort, particularly in a hot country or a hot season, compared with the conventional thick sweat band or ear flap formed of a double weft knitted fabric.

In the above description, the stretchability within 6.35 cm means that the cap is stretchable from a non-stretched state (in which the elongation is zero) as far as the maxinum stretch of 6.35 cm. Since the cap according to the present invention is structured as stated above, it is possible to cover a wide range of head size by only one standard size selected from a range of 60 cm± 3 cm so that most of the users can readily wear the same without the size adjustment means. This enables the unification of a plurality of production lines, each conventionally used for producing the different size caps from the other, which in turn results in the reduction of installation, man-hour, cutting loss or the like whereby the production cost can be sharply curtailed. The standard size in the present invention may preferably be selected at one value between 57 cm and 63 cm (i. e., 60 cm ± 3 cm) so that the head size up to 63 cm through 69 cm (i. e., 66 cm ± 3 cm) can be covered.

By way of example only, an embodiment of the invention will now be described in greater detail with reference to the accompanying drawings of which

Fig. 1 is a perspective view of the inventive free size cap; and

Fig. 2 is a bottom view of this cap.

In Fig. 1, a crown 1 is formed of six gores 1-1, 1-2, 1-3, 1-4, 1-5 and 1-6, each of which is sewn to the adjacent one along the lateral edges opposite to each other. Fabric tapes 2-1, 2-2, 2-3, 2-4, 2-5 and 2-6 are sewn to the inner surface of the crown by two stitch lines (multi-stitch lines) arranged while intervening the sewn gore edge, respectively. The gores 1-1 and 1-6 located in the front portion corresponding to a visor 3 has a backup member glued thereto so that the front portion of the crown 1 becomes stiff to be capable of maintaining its shape. On the other hand, the gores 1-2, 1-3, 1-4 and 1-5 farther rearward from the visor 3 are formed of a stretch woven fabric. That is, the stretch fabric is woven by a polyurethane elastomer yarn having a maximum stretchability of 6.35 cm (2.5 inch) used as weft and a non-stretchable polyester/cotton mixed yarn used as warp. The elastomer yarn forming the stretch fabric extends in the circumferential direction of the crown so that the stretchability is imparted in this direction. A sweat band 4 woven with a polyurethane elastomer yarn (having a width of 3 cm× a thickness of 1.5 mm × an inner circumference of 60 cm) is sewn to the bottom edge 5 of the crown 1. The stretch woven fabric forming the sweat band and the gores 1-2, 1-3, 1-4 and 1-5 in the rearward portion of the crown are stretchable/shrinkable within a predetermined range in the circumferencial direction relative to a standard size value. For example, if a circumferencial length of the crown 1 (a length of the bottom edge of the crown 1) in a free state is 60 cm, the maximum strechability is 6.35 cm, whereby a free size cap fitted to a head size in a range of about 60 cm through about 66 cm is obtainable.

Further, in the area of the gores 1-2, 1-3, 1-4 and 1-5 forming the portion of the crown 1 rearward from the visor 3, the upper edge of the sweat band 4 is sewn in a discrete manner at points 6-1, 6-2 and 6-3 indicated by a cross mark on the fabric tapes 2-2, 2-3 and 2-4, respectively, covering the boundary lines between the adjacent gores. That is, the upper edge of the sweat band 4 is sewn to the rearward portion of the crown 1 at three points located at an equiangular distance of 60 ° . Thereby, the sweat band 4 is prevented from hanging down from the bottom edge of the crown.

On the other hand, the upper edge of the sweat band 4 is not sewn at all to the front portion of the crown 1 corresponding to the visor 3, which can minimize the discomfort which would occur due to the existence of hard multi-stitch lines in the area to be brought into contact with the sensitive forehead.

It should be recognized that the present invention is not restricted to the above embodiment but includes all possible modifications and alterations within a gist of the present invention. For example, the standard size of the free size cap(i. e., the inner circumferencial length in a free state) is not necessarily 60 cm, but may be varied in suitable ranges such as ± 3cm or ± 6cm. Also the backup member bonded to the front portion of the crown to always keep a constant shape of the crown may be eliminated.

Claims

1. A free size cap comprising a crown (1), a visor (3), a portion (1-2, 1-3, 1-4, 1-5) of the crown (1) rearward of the visor (3) being formed of a stretch woven fabric consisting of stretchable weft yarns and non-stretchable warp yarns, and an elastic, stretchable sweat band (4), characterised in that the lower edge of the sweat band (4) is sewn to the crown (1) along the bottom edge (5) of the inner surface thereof so that the stretch woven fabric of the crown (1) and the sweat band (4) are stretchable/shrinkable in the direction of the inner circumference of the crown (1) within a predetermined range relative to the standard size of the cap.

2. A free size cap as claimed in claim 1 wherein the weft of the stretch woven fabric forming the rearward portion (1-2, 1-3, 1-4, 1-5) of the crown (1) is a polyurethane elastomer yarn having a stretchability within a predetermined range relative to the standard size of the cap.

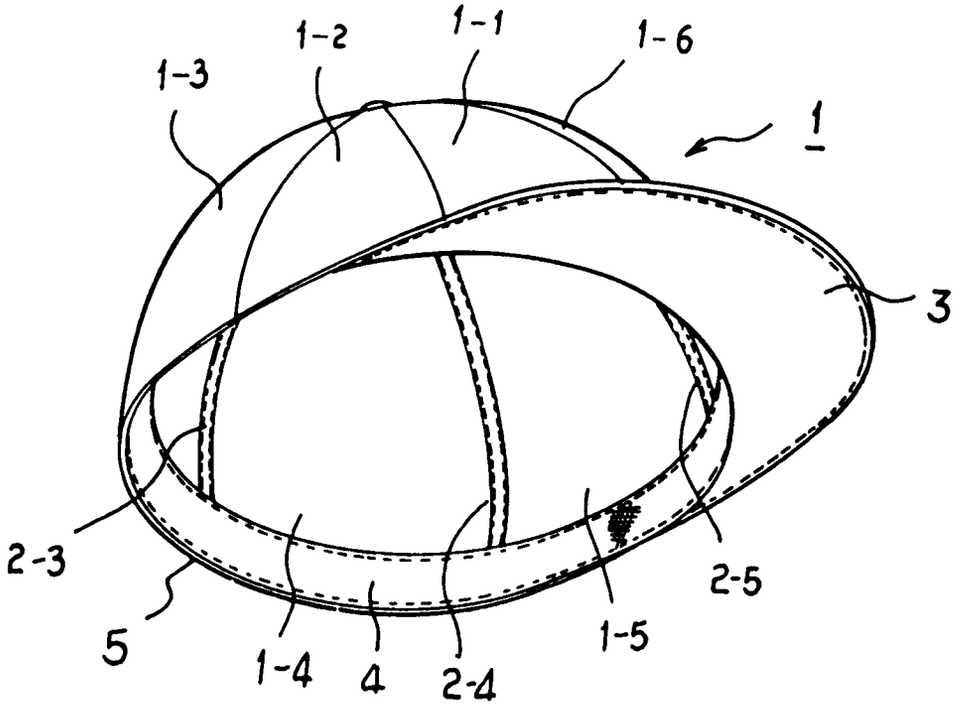
3. A free size cap as claimed in claim 1 or claim 2 wherein the sweat band (4) is a polyurethane woven band having a stretchability within a predetermined range.

4. A free size cap as claimed in any one of claims 1 to 3 wherein the range of stretchability of the stretch woven fabric of the crown (1) and the sweat band (4) is 6.35 cm in the direction of the inner circumference of the crown (1) when the cap size is 60 cm ± 3 cm in the free state of the cap.

5. A free size cap as claimed in any one of claims 1 to 4 wherein the range of stretchability of the stretch woven fabric of the crown (1) and the sweat band (4) is 6.35 cm in the direction of the inner circumference of the crown (1) when the cap size is 60 cm ± 6 cm in the free state of the cap.

6. A free size cap as claimed in any one of claims 1 to 5 wherein the sweat band (4) is sewn at the upper edge thereof to a multi-stitch line area (6-1, 6-2, 6-3) of the inner surface of the portion (1-2, 1-3, 1-4, 1-5) of the crown (1) rearward of the visor (3).

FIG 1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3
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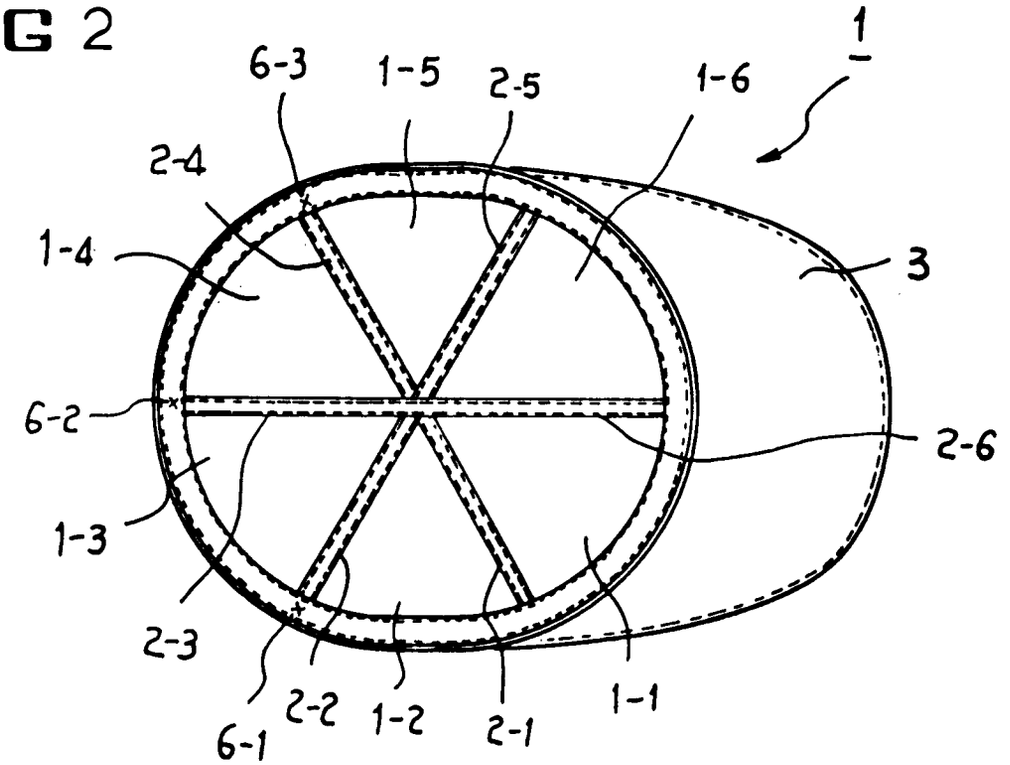
4
2-4
1-5

FIG 2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