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3,174,155

PROTECTIVE HELMET HAVING A PADDED OUTER SURFACE

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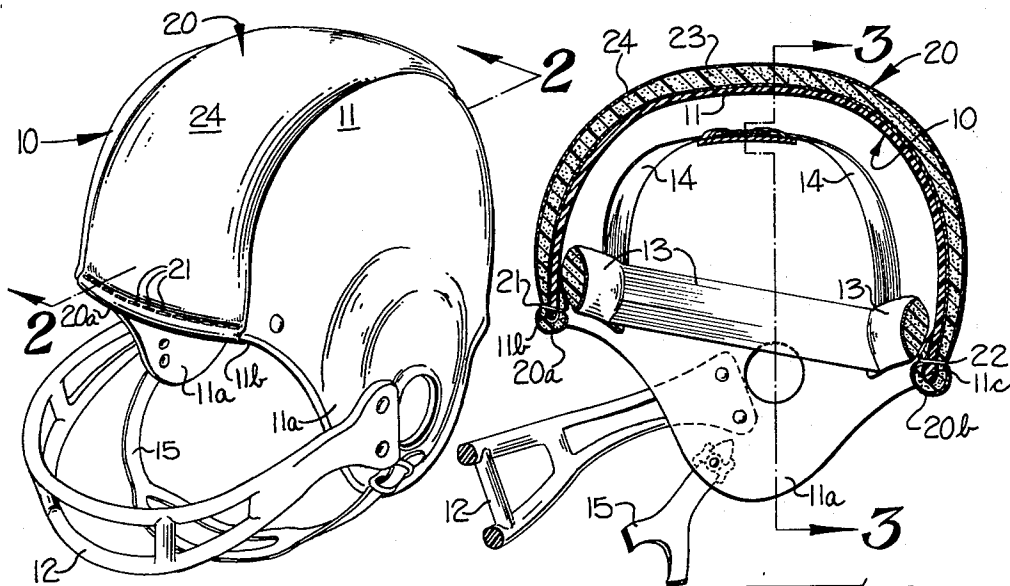


Fig-1

Fig-2

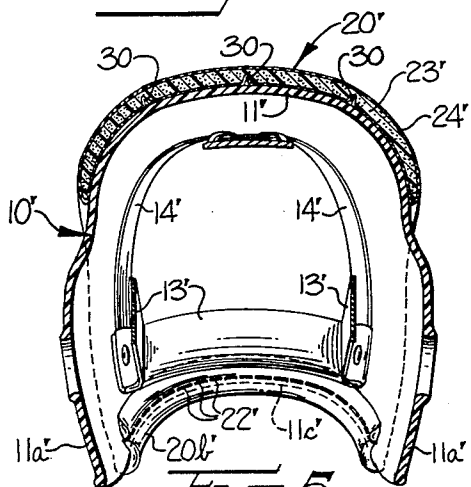


Fig-3

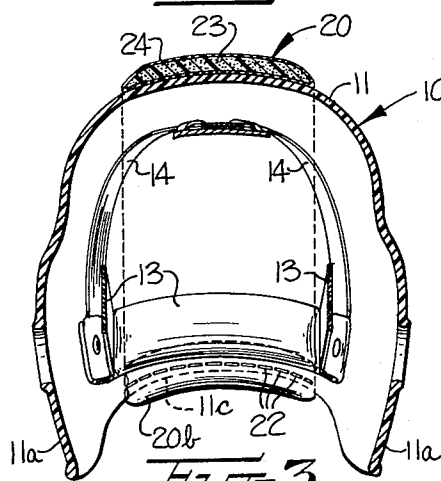


Fig-4

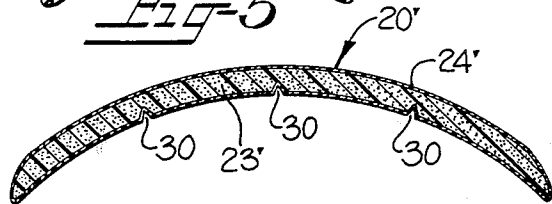


Fig-5

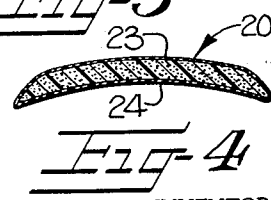


Fig-6

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PROTECTIVE HELMET HAVING A PADDED OUTER SURFACE

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2 Claims. (Cl. 2—3)

The present invention relates to protective apparel and, more particularly, to a protective helmet adapted to be worn on the head of an athlete and the like for protecting the same from injury due to contact with other athletes or objects.

The conventional protective helmet for athletes and particularly those engaged in contact sports, such as football and the like, comprises a dome-shaped shell usually formed of molded hard plastic material and having a head band and crown straps therein for supporting the shell on the head of the wearer, which head band usually includes padding across the front and rear portions thereof.

While these helmets absorb a substantial portion of the force of a blow received on the helmet due to contact with an opposing athlete or with an object, a sufficient amount of this force is transmitted through the rigid material of the helmet to the head of the wearer to frequently injure the wearer of the helmet or at least to be uncomfortable to him. Also, the front and rear edges of the helmet are frequently caused to engage the nose and the nape of the neck and this is particularly true when a nose guard thereon is grasped by an opponent and an upward or downward force is exerted thereon. Due to the hardness of such edges, broken noses or serious neck injuries frequently result.

Another problem in the use of these hard shelled protective helmets in contact sports has recently received widespread attention and resides in frequent injuries to opposing athletes caused by the hard shelled helmets striking them. In some instances, the force of such a blow has been sufficient to severely injure the athlete struck thereby and, in certain isolated cases, has even resulted in the death of the athlete struck thereby.

Previous attempts to overcome these problems have not resulted in successful solutions to the problems. One of these attempts provides a pad on the exterior surface of the helmet which pad is first molded to conform to the shape of the crown portion of the helmet and then is adhesively secured on the exterior surface thereof. The entire exterior surface of the helmet including the pad is then provided with a waterproof covering which seals the outer surface thereof.

However, the molding of these pads is quite expensive and, since helmets vary in size and shape, such pads may not be formed to fit all types and sizes of helmets, but must be specially constructed for each different type and size of helmet. Also, the surface of the pad which engages the helmet is not provided with a covering and some of the adhesive is absorbed into the pad stiffening the same and thus reducing the shock absorbing capabilities thereof. In addition, the covering is not placed on the pad until after the pad is mounted on the helmet and therefore special coating equipment is required to provide existing helmets with these pads.

Another of the aforementioned previous attempts provides a pad on the exterior surface of a helmet by cutting an elongate strip of padding from a flat sheet of foam rubber or the like and adhesively securing this strip thereon. However, in an attempt to cause this flat strip to conform to the surface of the helmet the strip is stretched thereover and adhesively secured while in this tensioned condition. This stretching of the foam material considerably reduces the shock absorbing capabilities thereof and

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renders the same substantially less effective for its intended purpose. Also, such stretching has not proved successful in causing the strip to conform to the configuration of the helmet and unsightly and undesirable wrinkles are formed at the edges of the strip when the strip is adhesively secured to the helmet.

It is therefore an object of the present invention to provide an improved protective helmet for athletes or the like wherein both the wearer and the wearer's opponent who may be struck by the helmet are protected from injury.

A more specific object of the present invention is to provide a protective helmet of the character described wherein the portion of the helmet most likely to be struck by or to strike a wearer's opponent is protected by a novel elongate pad constructed and arranged to fit substantially all types of helmets and which is mounted thereon in an untensioned and unwrinkled condition, which pad is inexpensive to manufacture and may be quickly and easily mounted on existing helmets.

A still more specific object of the present invention is to provide a protective helmet of the character last described wherein the pad includes a core of closed cell, foam rubber which in a relaxed state has a cross-sectional configuration substantially conforming to the cross-sectional configuration of the portion of the helmet on which the pad is mounted and a water-impervious covering completely enclosing said core.

A further more specific object of the present invention is to provide a protective helmet of the character described wherein the hard front and rear edges are covered by the pad on the exterior of the helmet protect the nose and nape of the neck of a wearer.

Some of the objects of the invention having been stated, other objects will appear as the description proceeds when taken in connection with the accompanying drawings, in which—

FIGURE 1 is a perspective view of a protective helmet constructed in accordance with the present invention;

FIGURE 2 is a vertical section taken substantially along line 2—2 in FIGURE 1;

FIGURE 3 is a transverse sectional view taken substantially along line 33 in FIGURE 2;

FIGURE 4 is a transverse sectional view of the pad shown in the upper portion of FIGURE 3;

FIGURE 5 is a sectional view similar to FIGURE 3 of a modified form of the present invention; and

FIGURE 6 is a transverse sectional view of the pad shown in the upper portion of FIGURE 5 prior to being mounted on a helmet.

Referring more particularly to the drawings, there is shown a protective helmet generally indicated at 10 incorporating the features of the present invention and comprising a hard domed shell-like body portion 11 having ear covering portions 11a at opposite sides thereof and having front and rear edges 11b and 11c, respectively, extending between ear covering portions 11a. A nose guard 12 may be mounted on ear covering portions 11a if desired and a head band 13 and crown straps 14 are mounted interiorly of body portion 11 for supporting helmet 10 on the head of a wearer. Also, a chin strap 15 may be connected to ear covering portions 11a for engagement with the chin of a wearer for holding the helmet on his head.

An elongate pad 20 is mounted on the exterior surface of body portion 11 by a suitable adhesive (not shown) and extends substantially between front and rear edges 11b and 11c. Preferably, the end portions 20a, 20b of pad 20 extend around front and rear edges 11b, 11c, respectively, and are folded back upon themselves inside body portion 11. End portions 20a, 20b are secured in

this folded condition by any suitable means, such as lines of stitching 21, 22.

Pad 20 comprises an inner core 23 of a closed cell, foam rubber, which inner core is extruded with a lateral cross-sectional configuration conforming to the lateral cross-sectional configuration of the portion of body portion 11 on which the pad 20 is to be mounted. Therefore, pad 20 is mounted on body portion 11 in an untensioned condition with the concave lower surface matingly receiving the convex exterior surface of body portion 11 and lies in flat, intimate relation to such exterior surface without wrinkles or unsightly bulges. Preferably, core 23 is provided with beveled side edge portions 23a which further cause pad 20 to conform to the configuration of body portion 11 and also causes pad 20 to merge into the contour of body portion 11 to improve the aesthetic appearance of helmet 10.

Inner core 23 is completely enclosed including side edge portions 23a and the end portions thereof, by a covering or coating 24 which is impervious to both water and air and protects inner core 23 against mechanical action and prevents absorption of water and/or adhesive thereinto to thereby increase the life thereof and to prevent the reduction of the shock absorbing capabilities of pad 20. Covering 24 is preferably formed by dipping core 23 in a vinyl copolymer suspended with resins and fillers in a suitable solvent, such as a ketone solvent, and then drying the same to form a smooth protective coating with excellent flexibility, toughness, and abrasive resistance. Such a covering is neutral and non-oxidizing, and is resistant to alkalies, mineral acids, alcohols, greases, oils and water. It is noted that covering 24 may have any suitable color pigments incorporated therein such that pad 20 may be of any desired color.

Referring now to FIGURES 5 and 6, a modified pad 20' is shown which is likewise adhesively secured to the exterior portion of body portion 11'. Pad 20' includes an inner core 23' and covering 24' completely enclosing inner core 23' and pad 20' is of substantially greater lateral dimensions than pad 20 such that substantially the entire top or crown portion of body portion 11' is covered thereby.

Inner core 23' is extruded with the lower surface thereof having a lateral concave configuration conforming at least in part to the convex configuration of body portion 11' and with a plurality of laterally spaced, longitudinally extending grooves 30 in the lower surface thereof causing pad 20' to further conform to the configuration of body portion 11'. Any number of grooves 30 may be formed in inner core 23', but preferably grooves 30 are formed therein at points corresponding to points on the helmet where the lateral curvature thereof changes radius such that when pad 20' is mounted on body portion 11', the same will have a self-draping effect and will conform to the shape thereof without wrinkles or bulges.

It will therefore be apparent that an improved protective helmet is provided having increased shock absorbing capabilities for protecting both the wearer and the wear-

er's opponent and having an improved aesthetic appearance.

In the drawings and specification there have been set forth preferred embodiments of the invention and, although specific terms are employed, they are used in a generic and descriptive sense only and not for purposes of limitation, the scope of the invention being defined in the claims.

I claim:

1. In a protective helmet adapted to be worn on the head of an athlete and the like and including a dome-shaped, shell-like body portion having front and rear edges; the combination of an elongate pad mounted on the exterior surface of said body portion and extending longitudinally between the front and rear edges thereof, said pad being of sufficient lateral dimensions to substantially cover the top portion of said body portion and being mounted thereon in an untensioned condition, said pad comprising

(a) an inner core of closed cell, foam rubber, the lower surface of said core having a lateral concave configuration for causing said pad to at least partially conform to the configuration of said body portion and a plurality of laterally spaced, longitudinally extending grooves formed therein for causing said pad to further conform to the configuration of said body portion, and

(b) a covering of water impervious material completely enclosing said inner core including the end thereof.

2. The structure recited in claim 1 wherein said pad is longer than the distance between the front and rear edges of the body portion taken over the top thereof and has the end portions of said pad folded back upon themselves around said front and rear edges and up inside said body portion, said grooves aiding said concave end portions in conforming to the concave inner surface of said body portion, and

(c) stitching extending through said end portions and said body portion for securing said end portions in this folded condition around said front and rear edges, whereby the nose and nape of the neck of a wearer are protected from injury by said front and rear edges of said body portion.

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