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[54] **ATHLETIC HELMET**
4 Claims, 5 Drawing Figs.

[52] U.S. Cl. 2/3

[51] Int. Cl. **A42b 1/08**

[50] Field of Search 2/3, 6, 8

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ABSTRACT: The athletic helmet has a sectional pad for the forehead and temple areas of the wearer, which pad has ends tapering outwardly. This pad is mounted in the shell by mating tapes, one of which is affixed to the outer surface of said pad, and the other mating tape is attached to the inside surface of the shell through a horizontally positioned plastic band that extends about the inside frontal half of the shell. One of the mating tapes carries woven hooks and the other facing mating tape carries woven loops. Extending back from the respective ends of the said pad is a head suspension composed of two web horizontal bands, one of which is the chordal band attached at spaced intervals to the interior of the shell and the other of which is the head contacting band affixed at medial points to the underlying chordal band. At the rear of the shell below the head suspension bands are two web, horizontal bands of the same type as the head suspension, for contacting and protecting the neck. The helmet has additional protective means including a soft crown piece at the top, inside of the helmet from which radiate spaced sling straps of the same soft material and which are attached to the shell between the latter's inside surface and the chordal head band.

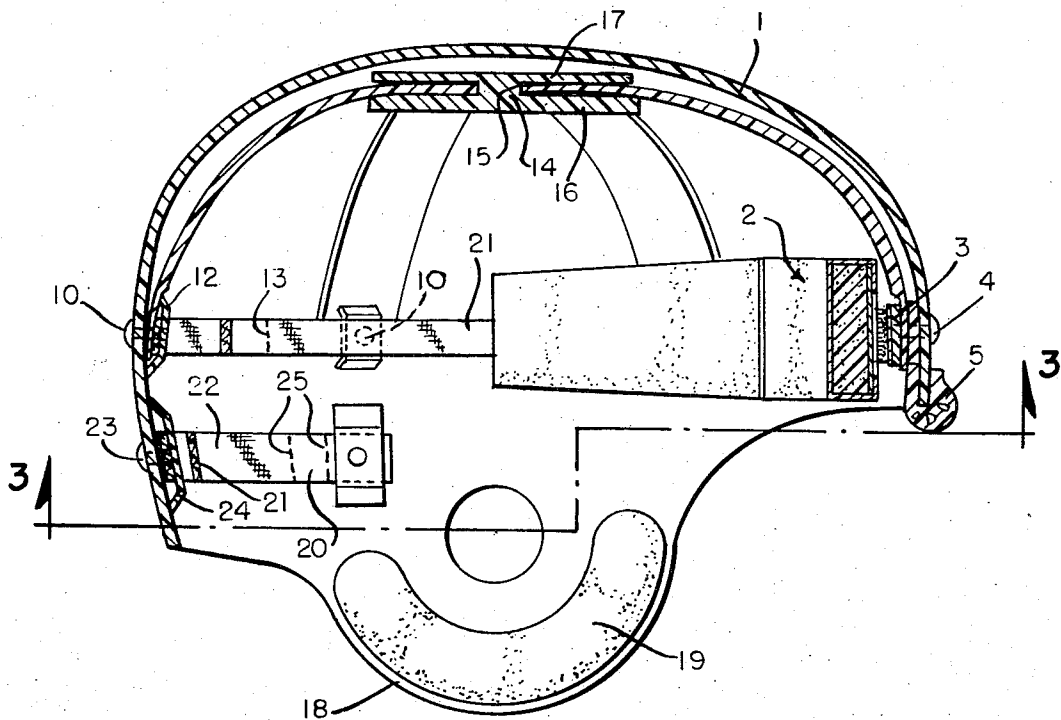


FIG. 1.

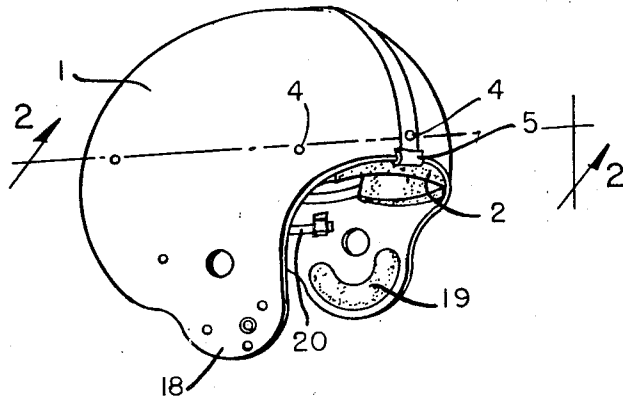
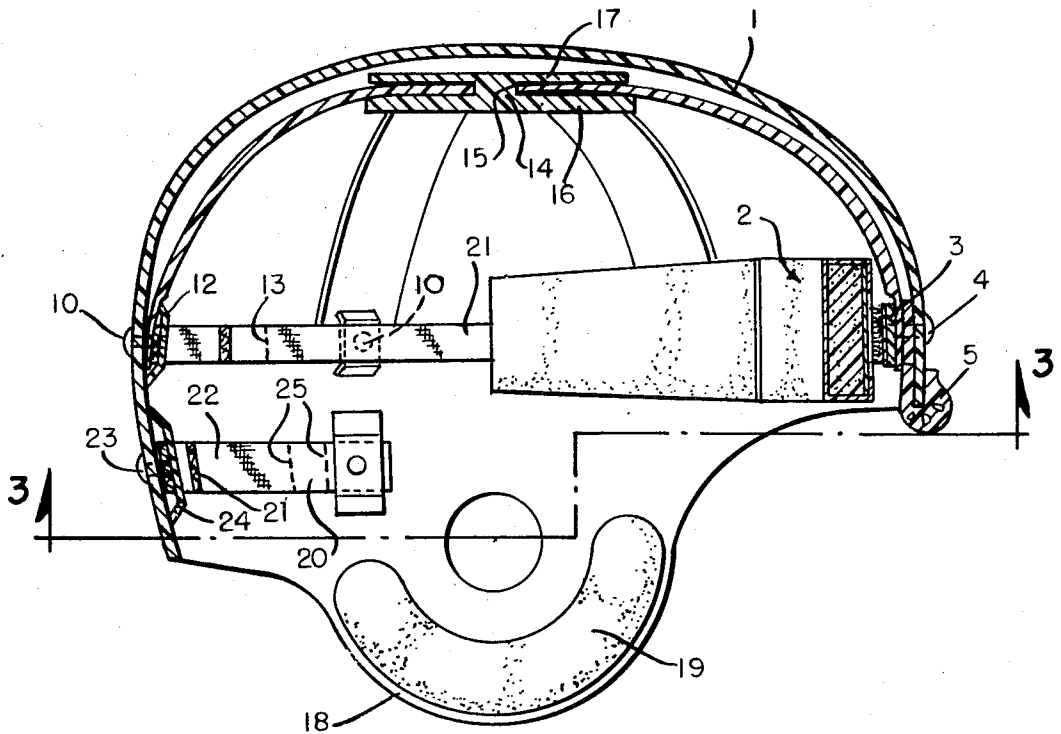


FIG. 2.



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FIG. 3.

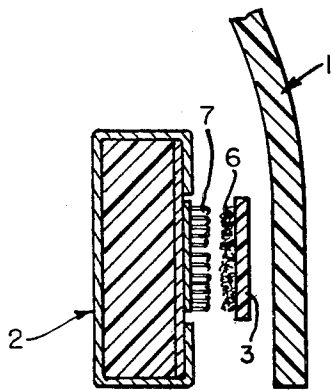
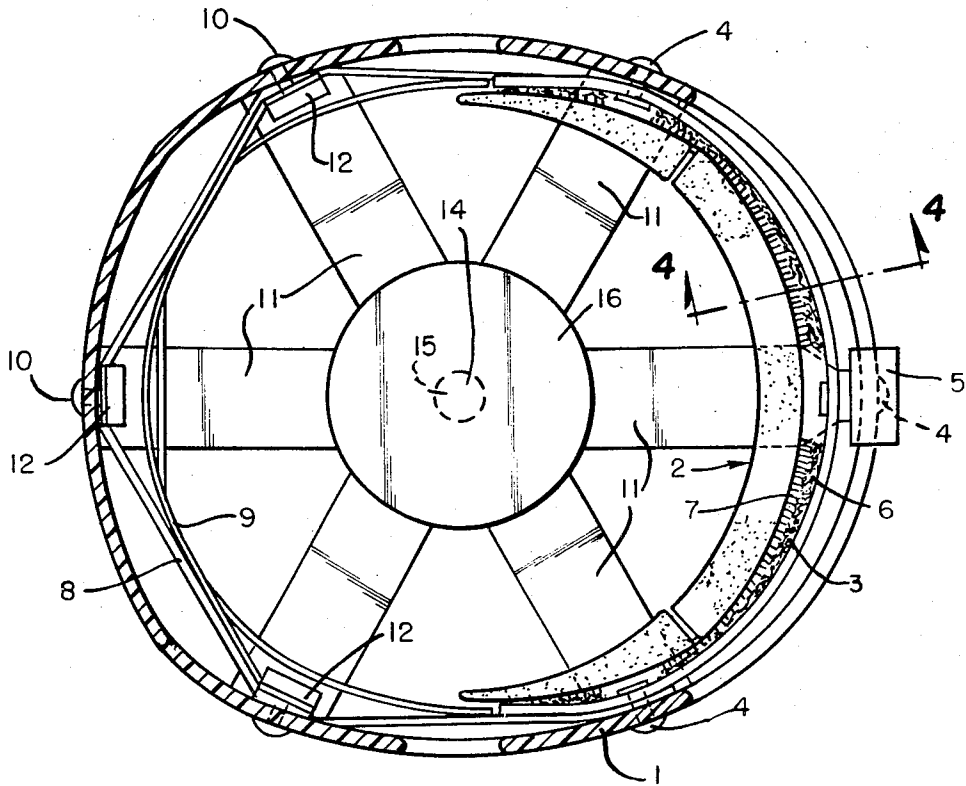
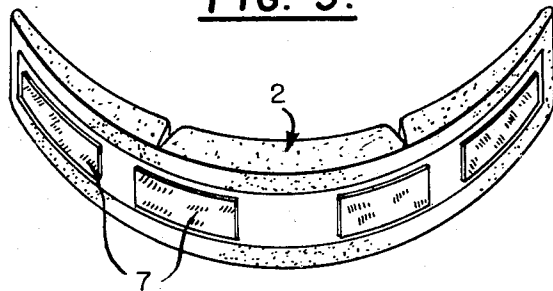


FIG. 4.

FIG. 5.



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ATHLETIC HELMET

This invention is a continuation-in-part of patent application of Mike C. Holt identified as Ser. No. 796,336 of filing dated Feb. 4, 1969 entitled Athletic Helmet.

The present invention relates to protective helmets having a padded front and front sides of the type particularly suitable for use by athletes, such as football players. It relates more specifically to football helmets having a padded front and front sides portions, the padding of which is a center pad joined with or to sections, which padding secured to a band on the helmet by tapes that mate, having permanent mating construction on each tape, one kind on one tape and the other kind on the opposite tape. The invention relates more specifically to football helmets having padded front and front sides of the type just mentioned, and extending to the rear of these portions a web head suspension, and at the back of the helmet below the horizontal level of the head suspension a web neck band. The purpose is to protect to the ultimate the head and neck of the wearer-player, such as the football player who is subject to great impacts, which can be damaging in vital areas of his body, specifically to head and/or neck.

It is an object of the present invention to provide a helmet, the shell of which is of the rigid type such as formed from molded plastic, having cushioning padding in the interior thereof arranged in the front thereof and extending to the front sides of the shell, also having a head cradle or suspension made of fabric that is somewhat elastic and also having a fabric neck band that is somewhat elastic also, specifically of web construction. The said cushioning sectional padding is held or affixed to the shell by means of tapes, preferably of Nylon material, one of which is covered with a myriad of firmly woven permanent hooks and the other tape covered with myriads of soft hoops to mate with the hooks on the opposite tape. One of these is affixed to the outer surface of the sectional pad and the other tape is affixed to a hard band fastened in turn to the shell of the helmet. The head web suspension provides lateral spacing of the wearer's head from the shell of the helmet where the aforesaid cushioning pads do not extend, and provides protection.

It is a more particular object of the present invention to provide a rigid type helmet, such as whose shell is made from molded plastic, that has a sectional pad, which is secured to a band on the inside of the helmet in the front area by mating tapes of the kind identified in the preceding sentences, and which protect the fore-head and the front sides of the wearer, with a web head suspension or cradle that gives the wearer a proper fit and maintains his head in that area a lateral distance from the shell, and with a web neck band. The neck band thereof securely holds the helmet to the wearer's head. As to the padded front and front sides of the nature described above, that characterize this invention, it would like to be stated that because of the full, ample protection that this affords, the forehead and front-side areas of the wearer's head, the corresponding result can not be gotten with a full web suspension helmet. Also because of the fabric web head suspension and the fabric web neck band this type of fitting of the wearer's head in the helmet can not be secured with a fully padded helmet.

Whereas the aforesaid neck band affords the wearer a proper fit, which per se is important, it also, because of its cushioning nature and its position for keeping the wearer's head away from the shell under all conditions, has a protective role as well.

As pointed out supra, the padding at the front and two front sides on the interior of the shell of the helmet are fastened thereon, as has previously been explained by means of coating Nylon tapes one on the outer side of the pads and the other on a plastic band that is affixed directly to the shell of the helmet. To explain how the tapes achieve this will be herewith gone into in detail. One of these tapes is covered with a myriad of finely woven Nylon monofilaments formed into permanent

hooks, the other covered with soft Nylon loops. When the two tapes are pressed together, they fasten tightly and hold securely to one another. The item, a tape fastener, is marketed under the trade mark, VELCRO, produced by Velcro Corp., 681 Fifth Avenue, New York, New York. That fastener tape combination of VELCRO that the applicant prefers is designed by its manufacturer as "Hook 80" for the hook fastening component, and for its mating tape, "Velstrick SR" (Semirigid) —napped pile. The first of these, namely "Hook 80" is described in its marketer's literature as having great sheer strength, whose tape is first woven of 80 mil. monofilament Nylon in the form of raised and staggered loops with one-sixteenth inch selvage along both edges; these loops are then precision cut in alternate directions and thereby provide a concentration of over 200 hooks per sq. in. The mating napped pile, is a pile tape that has been woven and suitably napped to form a uniform disoriented surface of invert loops; a one-sixteenth inch selvage is woven along both edges to prevent raveling. The "Velstrick SR" (Semirigid) tape is a 1 inch wide, semirigid high impact vinyl extension on which has been permanently attached napped pile tape; there is a protective beading, along both edges, offering greater rigidity. The vinyl base is slightly concave in order to maintain flat edges after having been applied to the surface.

Although the combination of the padding at the front and front sides affixed to the shell of the helmet by mating Nylon tapes as described above with a web suspension or cradle to the rear of the ends of the aforesaid pad protectors, and a web neck suspension at the rear of the shell of the helmet, each of which latter two elements are also affixed to the interior of the shell, are features characterizing the present invention, this is not to be construed as meaning that other features assisting in the protection of the wearer player can not supplement these to make the protection of the wearer's head and neck more complete. One such auxiliary protective means is shown in the drawing of this invention, and is the combination of a plurality of radiating bands of soft, resilient material to absorb shocks, which material is closed cell vinyl, extending from the top center of the helmet to spaced points on the interior of the shell of the helmet at the locus of the aforesaid pads and the web-suspension, thus to spaced points in one plane; this protection is further supplemented by a center piece of the same material both on top and below the center area of the radiating bands just mentioned.

For a further understanding of this invention, reference is made to the accompanying drawing, in which:

FIG. 1 is a perspective view of a football helmet in such position as to display a portion of the internal structure.

FIG. 2 is a view of the helmet taken along line 2—2 of FIG. 1, a longitudinal cross section

FIG. 3 is a transverse view of the helmet, i.e. on line 3—3, FIG. 2

FIG. 4 is a detailed view of fastening means in open position, on line 4—4 of FIG. 3.

FIG. 5 is a perspective view of liner pad showing mating tape fastener attached.

For the purpose of illustrating the present invention, the drawing shows the protective helmet for a football player. The outer shell is made of a suitable, solidified molded plastic, such as vinyl resin, or cellulose acetate, or analogous, functioning, solid, hard, molded plastic; however, this invention is not tied to any particular composition from which the shell is made. The shell is shaped to conform generally to the shape of the head of the wearer and is of such size that the shell per se will be spaced a lateral distance from the head of the wearer.

In the form of the invention shown in FIG. 1, the football helmet's shell, numbered 1, is provided with a detachable padding, numbered 2, for the inside front of the shell which protects the fore-head and the temple portion on each side of the player's head. From FIGS. 1 and 2, it will be perceived that this particular pad 2 is composed of three joined sections, the two end sections tapering off in thickness; this configuration is important from the standpoint of comfort to the wearer. From

FIGS. 2 and 4 it will be observed how this frontal and temple protector sectional pad 1 is attached to the helmet. There is a double plastic band 3, that is fastened by three spaced rivets, each numbered 4, to the shell; each rivet also extends through one of three radiating, crown suspension straps, numbered 11, and in the case of the front rivet also through a rubber nose bridge guard, 5, and in the case of each of the other rivets 10 through the terminal end of cordal web band, numbered 8. Due to this arrangement of mounting the double plastic band 3, through which the spaced rivets 4 extend as mentioned above, it is spaced (outer surface) throughout its length about ¼" from the inside surface of the shell as the drawing clearly reveals; that has significance. On the inner surface of the double plastic band there is a beaded edge, numbered 6 of woven napped pile forming a uniform disoriented surface of uncut loops. This is more clearly shown in FIGS. 3 and 4. Facing this surface with beaded edge just described there is a Nylon tape or band covered with myriads of finely woven Nylon monofilaments formed into permanent hooks designated by numeral 7. When these tapes, one on the exterior surface of the sectional pad, and the other on the inside surface of the inner plastic band, are pushed together by pushing the sectional pad toward the inside surface of the shell, they fasten tightly and hold securely. This consequently holds securely the sectional pad to the double plastic bands, hence to the interior of the shell. Impacts on the exterior of the shell from contacts with opposing players, their equipment or the ground will not dislodge the sectional pad. And because the double plastic bands are spaced a good distance from the inside surface of the hard shell, this structure diminishes the force of the impact on the player's head—a not to be dismissed advantage. It is obvious that the sectional pads surrounding the front and temples of the player's head cushion the force of each blow. Sectional pads of various thicknesses are available, and this enables the helmet to be fitted to wearers' heads of different sizes. Although the pad in the embodiment shown in this drawing has three joined sections, more or less could be used, provided its surface contact with the wearer's head is smooth. Preferably a plurality of sections exceeding two is employed in order to achieve smoothness. The angle of the edge of each joint should be such, as shown in the drawing, to avoid folds or bulging; that is of practical importance to the wearer to avoid abrasion. This sectional pad not only obviates abrasion or skinning of the forehead of the wearer but also it protects the nose of the wearer in the event the helmet is rolled forward due to impact; this happens quite often in football games.

The front and front side sectional pad is preferably made of closed cell vinyl to absorb the blow and covered with a coated fabric sold under the brand name, DOVE-LON ODM 6841 (marketer is Uniroyal, Inc. of Stoughton, Wisconsin), to give a smooth surface against the forehead and front sides of the wearer's head.

The web bands head suspension or cradle is composed of two bands, one of which, namely the chordal web band, 8, has been previously mentioned. The other web band of this suspension is the contacting head band 9. This structure provides lateral spacing of the shell from the player's head in that portion of the shell lying between the two ends of the protection pad, as is to be seen from FIGS. 2 and 3. The web band 9 that contacts the wearer's head, is suspended on or carried by chordal web band 8, arranged exteriorly about the head contacting band 9 in the manner shown in FIG. 3. The chordal suspension band or strap is shown fixed or fastened to the shell by rivets, numbered 10, and at the front end by rivets 4; this last fastening has previously been mentioned. The rivets 10 also fasten the lower ends of the crown suspension, sling straps or bands 11, to the shell. As also shown in the drawing, the preened ends of the rivets 10 are protected from any contact with the wearer, not only by the web but also by a one piece resilient cover, numbered 12 as shown in FIG. 2 also FIG. 3. The suspension strap or web band 8 is stretched taut in chordal relation to those areas of the shell that are bridged by them; these web straps 8 and 9 are secured to one another at

medial points by rows of stitches, denoted by the numeral 13. As to be seen from FIG. 3, the chordal suspension web strap assumes, because of this spaced manner of anchoring to the shell, a polysided form or configuration, and the head contacting web band 9, has an elliptical configuration, which is the approximate configuration of the heads of most people. The chordal suspension web band in the embodiment shown in this drawing, where riveted to the shell, is positioned over the respective ends of the crown suspension straps 11.

These crown suspension straps radiate downwardly from the central portion, numbered 14, analogous to the spokes from a hub in a wheel; the central portion is of the same material as are the crown suspension straps. In the center of this central portion portion 14, is a hole 15. Through this hole projects a dual crown head cushioning member; the lower section of it 16, is circular in design and is of a diameter about twice that of the upper portion 17. This dual cushioning member is soft, and is formed also from closed cell vinyl as are the radiating crown suspension strap 11.

In the embodiment shown in the drawing, and as to be seen from FIGS. 1 and 2, the helmet's shell is provided with cheek extensions 18, one on each side of it. They are each provided with protective pads 19, for the cheek and ear areas of the face; these pads are of sponge rubber covered by soft leather to prevent chafing of the cheeks and ears.

Positioned below the web, head suspension or cradle bands 8 and 9, referred to previously, is a neck protector 20; it is fastened in the neck portion of the helmet. As seen from FIGS. 1 and 2 of the drawing it extends horizontally between the rear portion of the protective pads 19, just mentioned, but slightly above the tips thereof. The neck protector is formed of the chordal strap, 21 that spans inwardly the areas mentioned, between the ear pads, and a web neck contacting strap, 22, having a curvature; the midportion thereof would contact the very back of the player's neck. The chordal web strap is fastened by a screw 23, to the base midpoint of the shell. This screw is protected from contacting the wearer's neck by a one piece resilient cover 24, which type of cover protects the preened ends of other screws also numbered 23 that anchor the ends of chordal web strap 21 to the shell. This type of resilient cover is used to protect the wearer from the ends of rivets in points of attachment of chordal web band 8 to the shell by rivets. The neck contacting strap is firmly stitched to chordal web strap by stitches of two rows on each side at points 25. It is replaceable and the neck protector can be varied to fit in this manner the players of thick to thin necks.

This invention may be developed within the scope of the following claims. According the above specification is to be interpreted as illustrative of only a single embodiment of this invention, rather than in a strictly limited sense.

I claim as my invention:

1. An athletic helmet for protecting the head and neck of the wearer, comprising a hard, stiff shell, to the inside thereof there is attached a horizontal plastic band spaced from the shell and extending over the approximate frontal half of the shell, a pad composed of soft material having a smooth inner surface, and whose two ends are tapered convergingly in thickness outwardly, to protect the wearer's forehead and temple areas, two contacting mating tapes having permanently woven hooks on one tape and permanently woven loops on the other tape, one of the said tapes being fastened to the outer side of the said pad, and the other tape being fastened to the inner side of said plastic band thus indirectly to the shell, said mating tapes detachably securing said pad to said plastic band, a head suspension comprising two horizontally positioned web bands of which there is a chordal web band and an outer head contacting web band, the head suspension extending rearwardly from the end areas of the aforesaid protective pad, the said chordal web band secured to the shell at spaced intervals and the outer, head contacting, web band affixed to said chordal web band at approximately medial points thereof to give the head contacting band an elliptical configuration, a neck protector consisting of two web bands positioned below,

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horizontally the aforesaid web head suspension in the rear of the shell, the said neck protector consisting of a chordal web neck contacting band that is affixed at medial points to the said chordal web band attached at spaced intervals to the interior of the shell, and a web neck contacting band that is affixed at medial points to said chordal neck band to give a curved configuration.

2. An athletic helmet as set out in claim 1, wherein at the interior top of the shell there is a crown piece of soft material from which radiate a plurality of spaced sling straps of the same material, whose lower ends are fastened underneath the chordal suspension web band to the shell.

3. An athletic helmet for protecting the head and neck of the wearer, comprising a hard, stiff shell, to the inside thereof there is attached a horizontal, plastic band spaced from the shell and extending over the approximate frontal half of the shell, a pad composed of soft material with a smooth inner surface to protect the wearer's forehead and temple areas, said pad having a plurality of sections the end sections of which taper to decreased thickness, two contacting mating tapes having permanently woven hooks on one tape and permanently woven loops on the other tape, one of the said tapes being fastened to the outer side of the said pad, and the other

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tape being fastened to the said plastic band, thus indirectly to the shell, said mating tapes detachably securing said pad to said plastic band, a head suspension comprising two horizontally positioned web bands of which there is a chordal web band and an outer, head contacting web band, the head suspension extending rearwardly from the end areas of the aforesaid protective pad, the said chordal web band secured to the shell at spaced intervals and the outer, head contacting web band affixed to said chordal web band at approximately medial points thereof to give the head contacting band an elliptical configuration, a neck protector consisting of two web bands positioned below horizontally the aforesaid web head suspension in the rear of the shell, the said neck protector consisting of a chordal web band attached at spaced intervals to the interior of the shell, and a web neck contacting band that is affixed at medial points to the said chordal neck band to give a curved configuration.

4. An athletic helmet as set out in claim 3, wherein at the interior top of the shell there is a crown piece of soft material from which radiate a plurality of spaced sling straps of the same material, whose lower ends are fastened underneath the chordal suspension web band to the shell.

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