

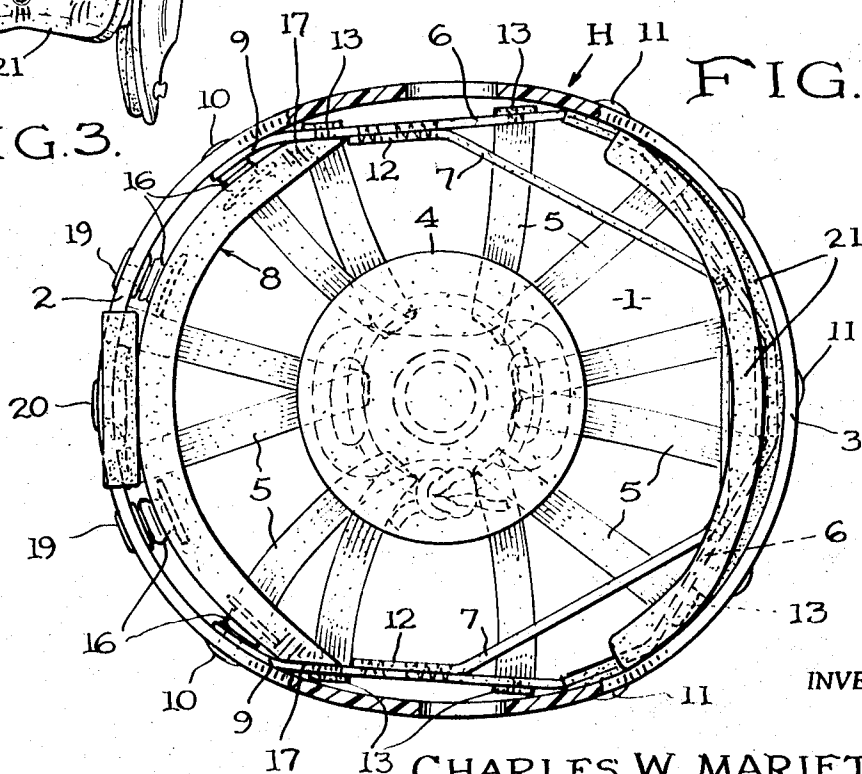
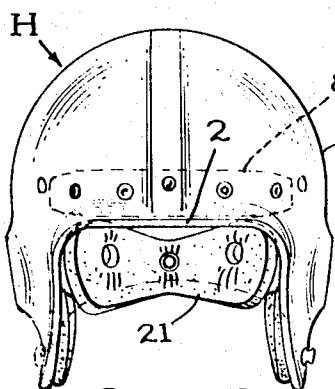
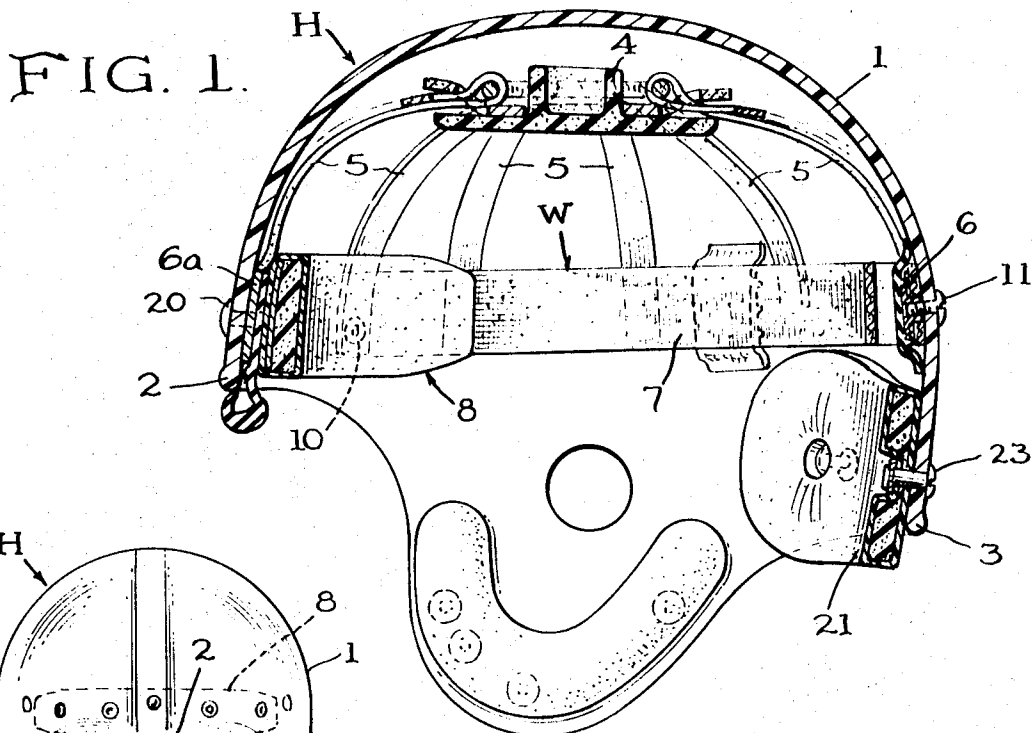
Sept. 20, 1971

C. W. MARIETTA
PROTECTIVE HEADGEAR

3,605,113

Filed May 5, 1969

3 Sheets-Sheet 1



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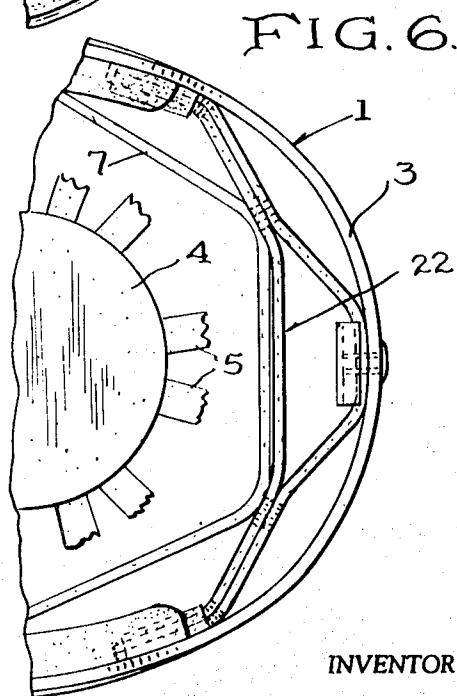
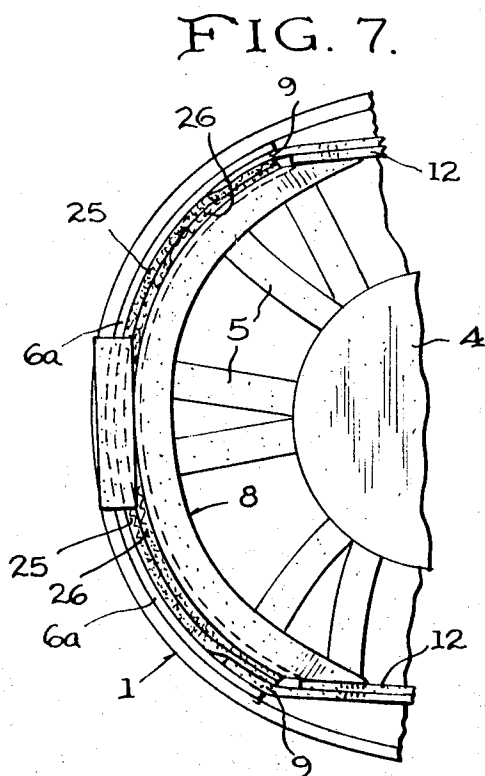
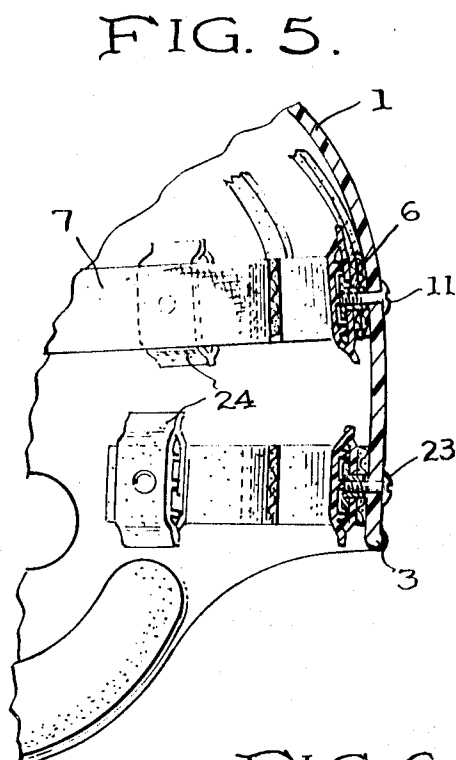
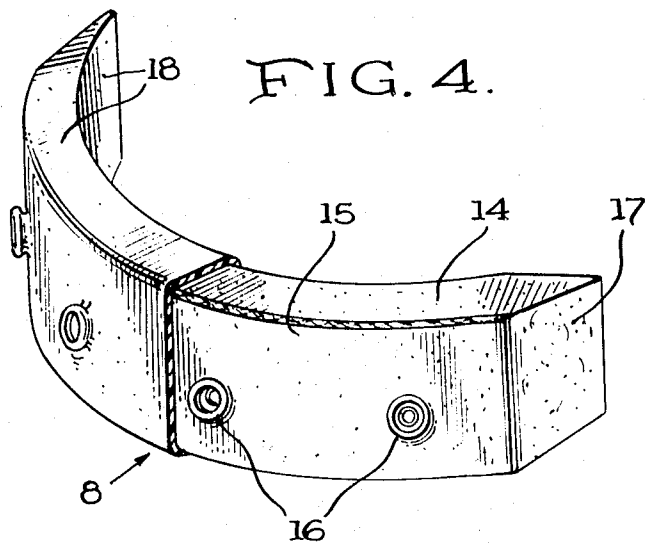
Sept. 20, 1971

C. W. MARIETTA
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3,605,113

Filed May 5, 1969

3 Sheets-Sheet 2



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3 Sheets-Sheet 3

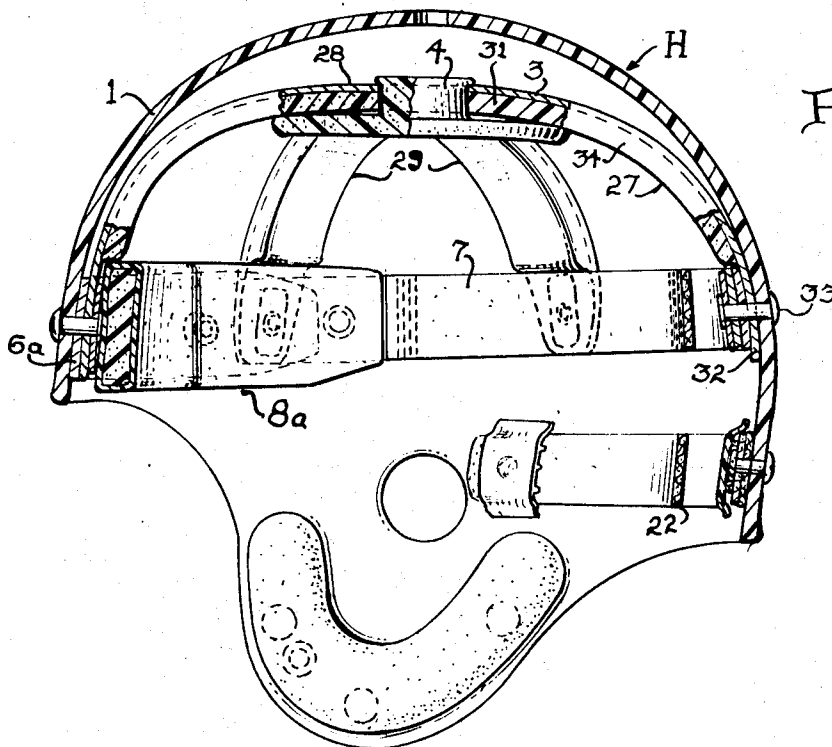


FIG. 8.

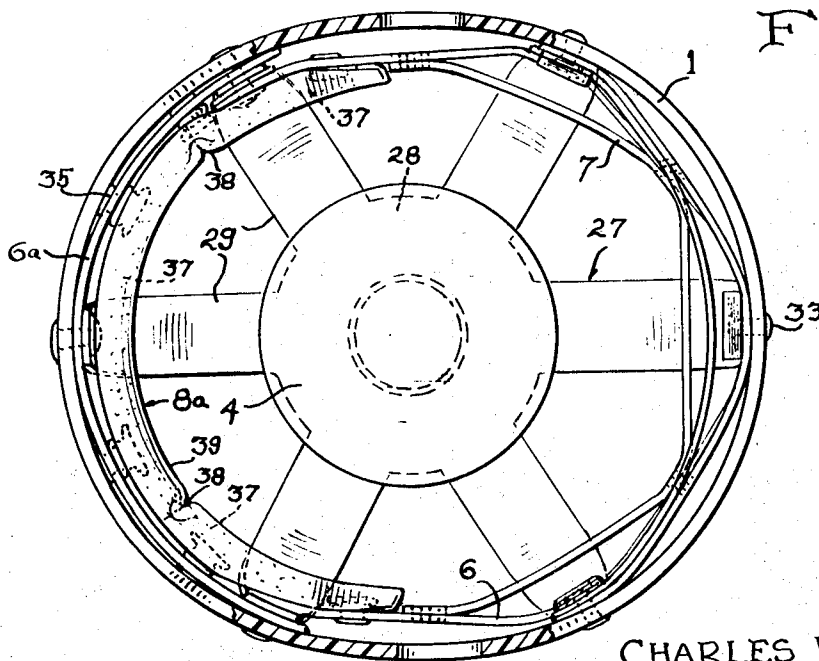


FIG. 9.

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3,605,113

PROTECTIVE HEADGEAR

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Filed May 5, 1969, Ser. No. 821,666
Int. Cl. A42b 1/08

U.S. Cl. 2—3

11 Claims

ABSTRACT OF THE DISCLOSURE

A helmet having a suspension assembly including both a head size band partially encircling the wearer's head and a removable frontal pad, the latter of which is substantially rigidly attached to the inner periphery of the helmet shell while the former is suspended in a manner isolated from the shell inner periphery.

This invention relates generally to headgear, and more particularly, to a protective helmet having an improved suspension assembly therein readily constructed to provide a more perfect fit for various head sizes while insuring the maximum degree of shock absorbing protection for the wearer's head.

Numerous types of safety headgear have been available for use by athletes, such as football players and the like, and in most such instances the helmets have usually comprised a substantially lightweight yet highly shock resistant outer shell provided on the interior thereof with suitable yieldable protective padding in association with a suspension or webbing assembly. In a well known arrangement this web assembly comprises a head encircling band positioned within the interior of the shell and extending 360° therein and which is attached at spaced apart points to the shell by means of various types of fastening devices. In each instance this band must be constructed for the particular head size of a wearer in order to provide an extremely close fit with the head in order to isolate all points of the wearer's head from the inner surface of the shell so that during the progress of the sporting activity involved there will not be any contact between the head and the helmet shell; however it has been found that when extreme blows are delivered to the helmet the player's head, particularly the area of the forehead, will strike the shell causing cuts, bruises and even the possibility of concussions. It has also been found that these head bands, which are on the order of 1" in width, cut into the head of the wearer in view of the necessity of maintaining a substantially tight fit with such an arrangement. A further shortcoming found in these fixed full circle head band suspension systems is that there is no means to permit size adjustment, that is for the in-between sizes and in the case of a wearer having a long, oval head.

By means of the present invention a protective headgear is provided which utilizes all of the advantages of the head band suspension while improving thereon by the combination therewith of a resilient frontal pad or cushion which is readily replaceable by the wearer and which provides a much more positive head fit in addition to far more protection to the vital forehead area.

Accordingly, one of the primary objects of the present invention is to provide a protective headgear having an improved suspension assembly.

A further object of the present invention is to provide a protective headgear having a suspension assembly comprising a head size band extending only partially around the inner periphery of a helmet shell and including a frontal cushion pad overlying the forehead of the wearer.

Still another object of the present invention is to provide a protective headgear including a suspension system

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comprising a head size band spaced from the inner surface of the helmet shell throughout a portion of the shell and combined with a frontal cushion pad having terminal portions overlying the ends of the head size band.

Another object of the present invention is to provide a protective headgear having a suspension system including a plurality of head straps, some of which have their lower terminal portions attached to a head encircling web assembly, and others of which are attached directly to the helmet shell at points adapted to receive a removable frontal cushion pad.

With these and other objects in view which will more readily appear as the nature of the invention is better understood, the invention consists in the novel construction, combination and arrangement of parts hereinafter more fully described, illustrated and claimed.

A preferred and practical embodiment of the invention is shown in the accompanying drawings, in which:

FIG. 1 is a vertical sectional view of a protective headgear according to the present invention.

FIG. 2 is a bottom view, partly in section, of another embodiment of the present invention.

FIG. 3 is a front elevation of the present invention and illustrates in broken lines the position of the frontal pad.

FIG. 4 is a perspective view, with portions broken away, of the frontal pad of the present invention.

FIG. 5 is a fragmentary vertical sectional view and illustrates one embodiment of a neck support strap.

FIG. 6 is a fragmentary bottom plan view of the neck support strap of FIG. 5.

FIG. 7 is a fragmentary bottom plan view of another embodiment of the present invention.

FIG. 8 is a vertical sectional view of a modification of the protective headgear.

FIG. 9 is a bottom view, partly in section, of the protective headgear of FIG. 8.

Similar reference characters designate corresponding parts throughout the several figures of the drawings.

Referring now to the drawings, more particularly FIG. 1, the present invention will be seen to comprise a headgear, generally identified as H, and including an outer shell 1 which may be constructed of any suitable type of highly shock resistant material such as laminated glass fiber and is of the usual preferred configuration having a front edge 2 adapted to fit over the forehead of the wearer at a point just above the eyes and a rear portion or rim 3 disposed at a lower level than the front edge and covering the lower portion of the back of the wearer's head adjacent the neck. Although a plurality of shells having different dimensions may be utilized to accommodate different head sizes it will be appreciated that by the present invention this number of different sizes may be substantially reduced in view of attachments to be described hereinafter which serve to define specific head sizing means readily changeable in any single size shell 1 to adapt the headgear H to a particular wearer.

A well known strap suspension system may be employed in combination with the present invention such as shown in the patent to Michael T. Marietta, No. 3,111,674, issued Nov. 26, 1963, which comprises a top crown piece 4 in association with a plurality of radially and downwardly extending suspension straps 5. The above referenced patent, however, discloses the suspension straps as used in combination with a conventional head band assembly comprising a full head encircling band. The instant invention departs from the prior art by providing a unique arrangement including a specially disposed outer band 6 and partial head size band 7 which combine to form a web assembly W and are utilized in association with a removable frontal pad 8. This web assembly W, comprising the outer band 6 and head size band 7, is most clearly illustrated in FIGS. 1 and 2 of the drawings. In the embodi-

ment illustrated in FIG. 2 it will be seen that the outer band 6 comprises a longitudinal member extending approximately three-fourths the inner periphery of the shell 1 and includes a pair of forward free ends 9—9 anchored by suitable means such as the fasteners 10—10 at points in the area of the wearer's temples.

From the forward ends 9—9 the band 6 will be seen to extend rearwardly and engage the inner periphery of the shell at three spaced apart points whereupon it is securely attached to the shell by the fasteners 11. Securely attached to this outer band 6 is the head size band 7 which may be stitched or otherwise secured to the four segments of the outer band 6 which are spaced inwardly from the inner periphery of the shell 1, it being noted that the head size band 7 encompasses slightly more than one-half the periphery of the inner shell area with its forward portions 12—12 disposed slightly forward of the wearer's ears. The lower terminal portions 13 of the previously described straps 5 that are located rearwardly of the forward ends 9—9 of the outer band 6 are likewise stitched or otherwise securely attached to the outer periphery of the band 6, preferably at points on either side of each of the points at which the head size band 7 is attached to the outer band 6. In the case of a 12-point suspension system such as shown in the drawings, it will be apparent that eight of the straps 5 will have their lower terminal portions 13 attached as described to the outer band 6. Two additional straps 5 will be seen to have their lower terminal portions 13 attached directly to the helmet shell 1 by means of the same fasteners 10—10 used to secure the forward ends 9—9 of the outer band 6 while the remaining two forwardmost straps 5—5 are securely attached to the shell 1 in a manner to be described hereinafter.

The final sizing of a particular helmet H as well as the achievement of the ultimate in impact cushioning is provided by means of an interchangeable or replaceable frontal pad generally designated 8 which comprises a curved resilient member adapted to overlie the forward ends 9—9 of the outer band 6 and extend longitudinally throughout the entire frontal area of the shell 1 immediately above and inside the front edge 2 thereof such that approximately one-third the inner periphery of the shell will be encompassed thereby. A specific construction of the frontal pad 8 will be seen most clearly in FIG. 4 which discloses a cushion body 14 of any suitable high density resilient material. Overlying one face of the cushion body 14 is an outer reinforcing web 15 of limited flexibility to which are attached on the outer face thereof a plurality of snap fastener components 16. A tapered or inclined surface forms the end wall 17 at each end of the frontal pad, it being understood that this inclination may extend from either the outer or inner face of the pad for reasons which will be understood hereinafter. A suitable covering 18 surrounds the cushion body 14, outer reinforcing web 15 and snap fastener components 16 and may comprise either a leather covering or a plastic coating, which latter would preferably be applied such as by dipping, it being apparent that in either case provision would be made to insure the operability of the snap fastener components 16 after application of the covering 18.

In order to removably attach the frontal pad 8 as shown in FIGS. 1, 2 and 4 to the shell 1, complementary snap fastener components must be provided within the frontal area of the shell. The fasteners 10—10 which already serve to secure the forward ends 9—9 of the outer band 6 to the shell as well as the lower terminal portions 13—13 of two of the straps 5 may also include on their innermost end complementary fastener components compatible with the two outermost snap fastener components 16 on the outer wall of the frontal pad 8 while the pair of innermost snap fastener components 16 on the frontal pad may be removably attached to the shell 1 by means of additional snap fastener components 19—19 extending through the shell. The arrangement described above will be seen to apply to the embodiment as shown in FIG. 2 of the draw-

ings, while in the case of all embodiments it will be understood that when the frontal pad 8 is attached the inclined end walls 17—17 fully overlie the forward ends 9—9 of the outer band and thus provide a substantially smooth continuity between the inner surface of the head size band 7 and inner surface of the frontal pad 8.

In the embodiment illustrated in FIG. 1 the fastener elements 19—19 are dispensed with and instead a frontal strap 6a extends around the inner periphery of the frontal portion of the shell 1 to span the area between the two temple snap fasteners 10—10. Quite obviously, this frontal strap 6a may comprise a separate strap or, on the other hand, a continuation of the outer band 6. In either case it is advantageous to anchor the medial portion of this strap at the center front of the shell 1 by means of the fastening element 20. With this arrangement the four or six snap fasteners 16 for the removable attachment of the frontal pad 8 will be disposed with two such fasteners having their components mounted on the strip 6a on either side of the central fastener 20.

Adequate protection is afforded the vulnerable area adjacent the rear rim 3 of the headgear H by means of either the posterior pad 21 as shown in FIGS. 1—3 or the neck support strap 22 as illustrated in FIGS. 5—6. In either case it will be understood that this neck protection may be removably mounted such as by the fasteners 23. As an additional safety factor each of the fasteners 11 as used to secure the outer band 6 to the shell 1, as well as the fasteners 23 as used in attaching the neck support strap 22, may be provided on their innermost portions with suitable cushioning elements 24 such as disclosed in Pat. No. 3,153,973 issued to Michael T. Marietta on Oct. 27, 1964.

A further modification for the mounting of the removable frontal pad 8 is disclosed in FIG. 7 of the drawings which illustrates a helmet shell 1 including a frontal mounting strap 6a such as in the embodiment of FIG. 1. In addition to serving as the anchoring means for the lower terminal portions of the forwardmost suspension straps 5 it will be seen that the inner surface of the frontal strap 6a in this modification is provided with one component 25 of the well known Velcro fastening device, while the juxtaposed outer face of the frontal pad 8 is devoid of any mechanical snap fastener elements as in the other embodiments and instead is provided with the complementary Velcro structure 26 such that the frontal pad 8 may be readily attached and removed merely by manual pressure upon the pad in order to interlock the two components 25, 26 of the Velcro arrangement.

The arrangement shown in FIGS. 8 and 9 illustrates a modified form of upper suspension assembly, generally designated 27, and frontal pad 8a. As shown most clearly in FIG. 8 the upper suspension assembly 27 comprises a unitary formation including a centrally apertured core 28 which supports the crown piece 4 and from which radiate the plurality of outwardly and downwardly extending straps 29. The construction of this formation will be understood to be uniform in cross section and comprises a web backing or layer 30 of canvas material or other strong yet flexible material, and an underlying cushion body 31 of a high density resilient composition. The cushion body 31 will be seen to terminate short of the lower end of each strap 29 to provide a web terminal portion 32 which is attached to the shell 1 by a suitable fastening member 33. Preferably the juxtaposed surfaces of the web backing 30 and cushion body 31 are joined by means of an adhesive while the entire outer surface of the upper suspension assembly 27 is provided with an outer covering 34 such as a flexible plastic coating which may be applied by dipping. The outer band 6 and head size band 7 may be of the construction as previously described in connection with the other embodiments and the number of fastening members or joints between the various components may be reduced in this modification by utilizing the same fastening members 33 as are used to anchor the

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terminal portions 32 of the suspension assembly 27 for the additional purpose of attaching the outer band 6 at spaced apart points along its length.

It will be appreciated that the aforescribed upper suspension assembly 27 may be utilized in combination with any of the previously described embodiments of frontal pads 8 and associated attaching means. In the protective headgear illustrated in FIGS. 8 and 9 a frontal pad 8a is disclosed, the terminal portions of which may extend substantially one-half the inner periphery of the shell 1. The frontal mounting strap 6a shown in this form is attached to the shell 1 by the three underlying fastening members 33 securing the adjacent web terminal portions 32 and this same mounting strap will be seen to carry a plurality of snap fasteners 35 to permit the removable attachment of the frontal pad 8a, while another snap fastener 36 is attached to the outer band 6 on each side of the helmet to provide further attaching means for this longer version of a frontal pad 8a. As before, the mating sections of each snap fastener 35, 36 will be carried by the outer surface of the frontal pad. In view of the greater length of the frontal pad and the attendant increased angular curvature thereof the inner cushioning material of this frontal pad is preferably formed of three separate cushion body sections 37 or, on the other hand, at least a single cushion body section 37 having a plurality of vertical slits or notches 38 on the inner surface thereof. An appropriate outer covering 39 encases the cushion body material of the frontal pad 8a and as in the other forms of frontal pads 8 may comprise leather or a plastic dipped coating with or without the inclusion of a reinforcing web layer on the outer surface thereof.

I claim:

1. A helmet comprising, an outer shell having a front edge adapted to extend over the forehead and a rear rim positionable over the back of the neck, a web and suspension assembly mounted within said shell to isolate the head from direct impact with said shell, said assembly including an outer band extending horizontally within said shell to encompass a substantial portion of the perimeter therein, means securing said outer band to said shell at longitudinally spaced apart points to provide outer band segments spaced from said shell from one side of the shell and rearwardly to the opposite side of the shell, a head size band within the confines of said outer band and extending horizontally to encompass a substantial portion of the inner perimeter of said outer band, means securing said two bands together at longitudinally spaced apart points located intermediate said means securing said outer band to said shell, a frontal cushion pad overlying at least the wearer's forehead and attached within said shell in a horizontal plane similar to the plane of said head size band, releasable fastening means mounting said frontal pad in a juxtaposed manner to said shell adjacent said front edge whereby the intermediate portion of the forward surface of said frontal pad is relatively immobile, said frontal cushion pad including a high density compressible body of substantially uniform thickness having tapered distal end portions, said distal end portions of said pad juxtaposed said head size band in the areas of said spaced segments of said outer band, whereby a smooth head-engaging inner periphery is provided by the displaceable head size band and the relatively fixed frontal cushion pad.

2. A helmet according to claim 1, wherein said outer

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band extends substantially 360° within said shell, means securing the frontal portion of said outer band in a non-displaceable contiguous manner to said shell, and said releasable fastening means includes mating fastener components on the frontal portion of said outer band and the forward surface of said frontal cushion pad.

3. A helmet according to claim 1, wherein said outer band includes forward ends terminating at the temple area of the frontal portion of the shell, a mounting strap spanning the two forward ends of said outer band and rigidly secured juxtaposed said shell frontal portion, and said releasable fastening means includes mating fastener components on said mounting strip and the forward surface of said frontal cushion pad.

4. A helmet according to claim 1, wherein said outer band includes forward ends terminating at the temple area of the frontal portion of the shell, and said releasable fastening means includes mating fastener components on said shell frontal portion and the forward surface of said frontal cushion pad.

5. A helmet according to claim 1, including a plurality of overhead suspension straps within said shell extending radially and downwardly, and the lower terminal portions of a plurality of said straps secured to said outer band while the remainder thereof are rigidly attached to the frontal area of said shell.

6. A helmet according to claim 1, wherein said suspension assembly includes a unitary formation comprising a core having a plurality of outwardly and downwardly radiating straps, said formation comprising an uppermost backing layer overlying a cushion body layer, and means attaching the lower terminal portions of each of said straps to said shell at a plane adjacent said outer band.

7. A helmet according to claim 6, wherein said cushion body layer terminates short of the distal portion of said strap terminal portions at a plane adjacent the top of said outer band.

8. A helmet according to claim 6, including an outer covering surrounding said core and straps.

9. A helmet according to claim 1, wherein said compressible body is provided with a web layer on the outer face thereof.

10. A helmet according to claim 9, including an outer covering surrounding said compressible body and web layer.

11. A helmet according to claim 1, wherein said compressible body includes a plurality of adjacent sections.

References Cited

UNITED STATES PATENTS

2,250,275	7/1921	Riddell	2—3
2,532,442	12/1950	Daly	2—3
2,939,149	6/1960	Morgan	2—3
3,174,155	3/1965	Pitman	2—3
3,183,522	5/1965	Groot	2—6
3,292,180	12/1966	Marietta	2—3
3,447,162	6/1969	Aileo	2—3
3,486,169	12/1969	Rawlings	2—3

FOREIGN PATENTS

1,215,217	11/1959	France	2—3
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