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(54) **PROTECTION DEVICE FOR THE HEAD**

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CPC ... *A42B 3/04* (2013.01); *A42B 3/00* (2013.01);
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USPC **2/411; 2/455; 2/410**

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(57) **ABSTRACT**

A protection device for a helmet includes a base, and a protection member coupled to the base. The base and protection member are configured to be coupled to an outer surface of the helmet.

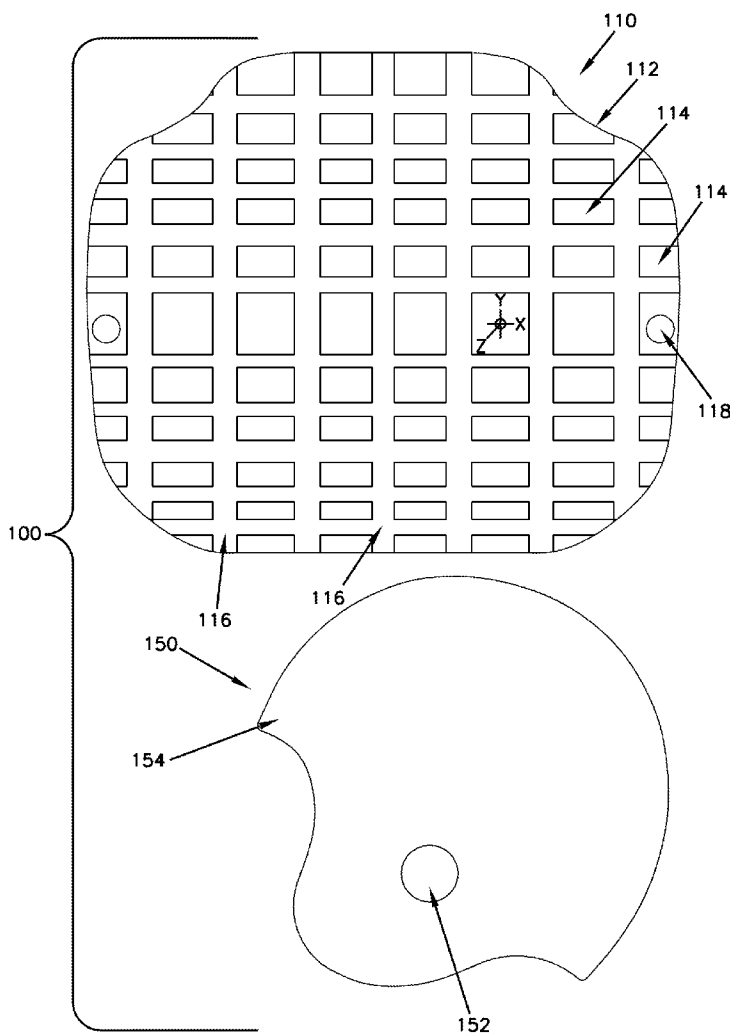


FIG. 1

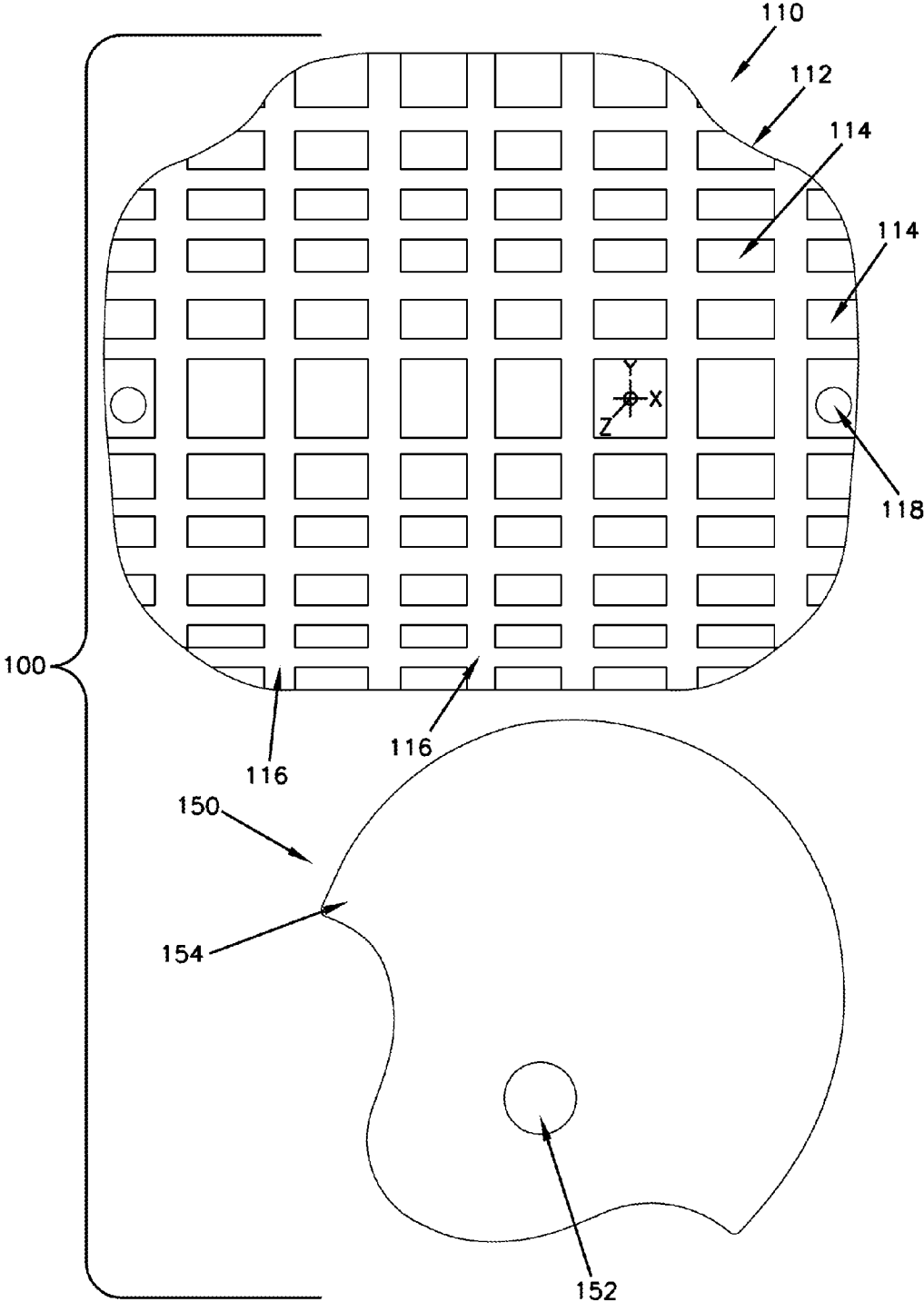


FIG. 2

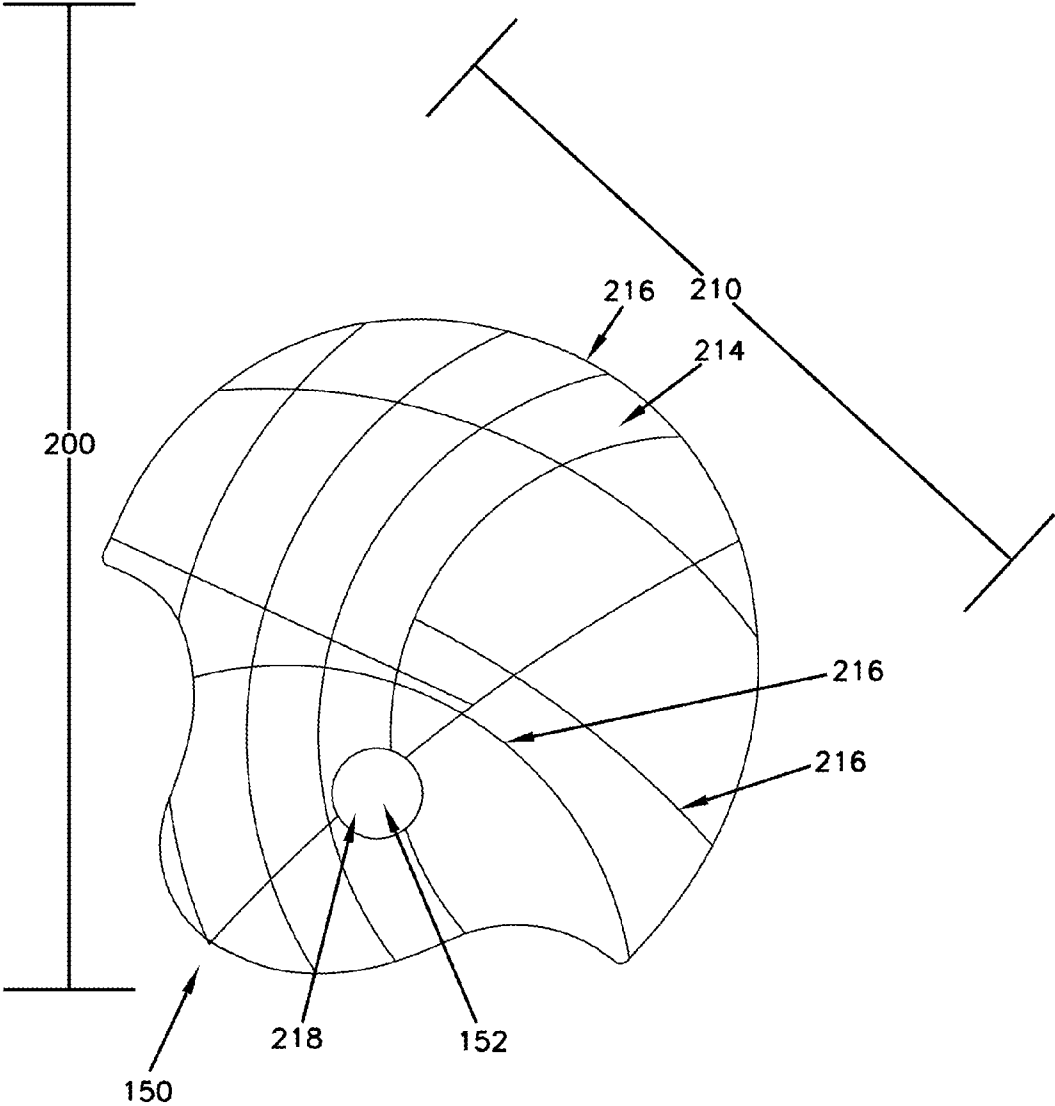


FIG. 3

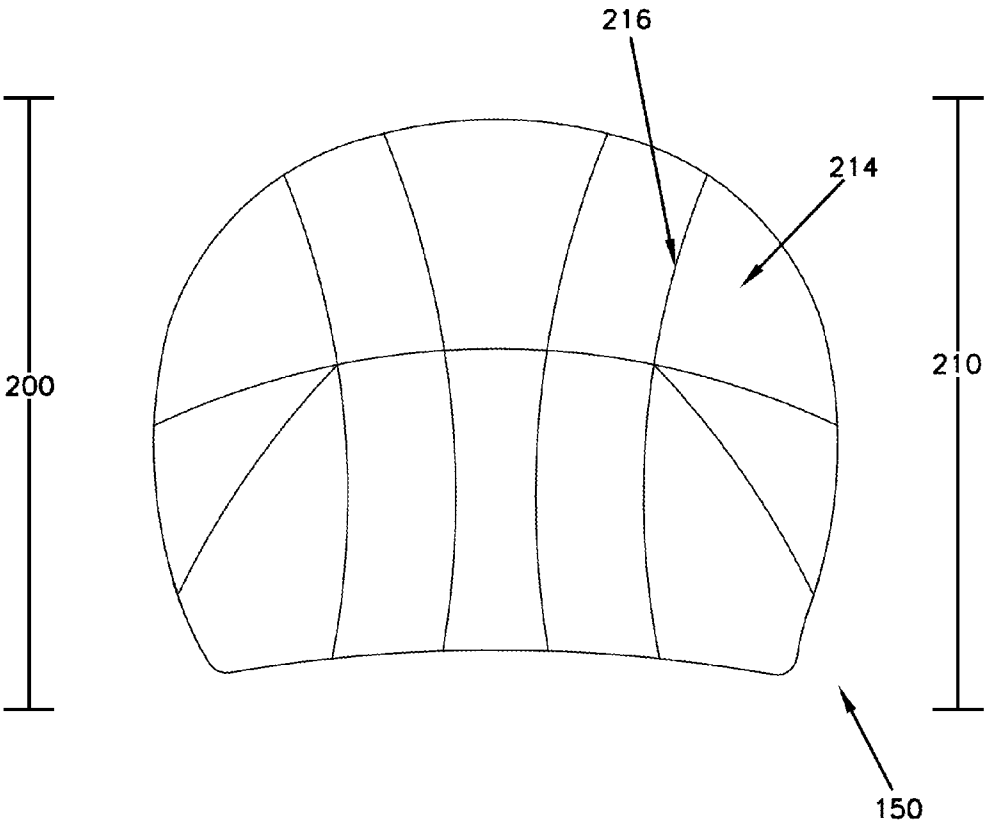


FIG. 4

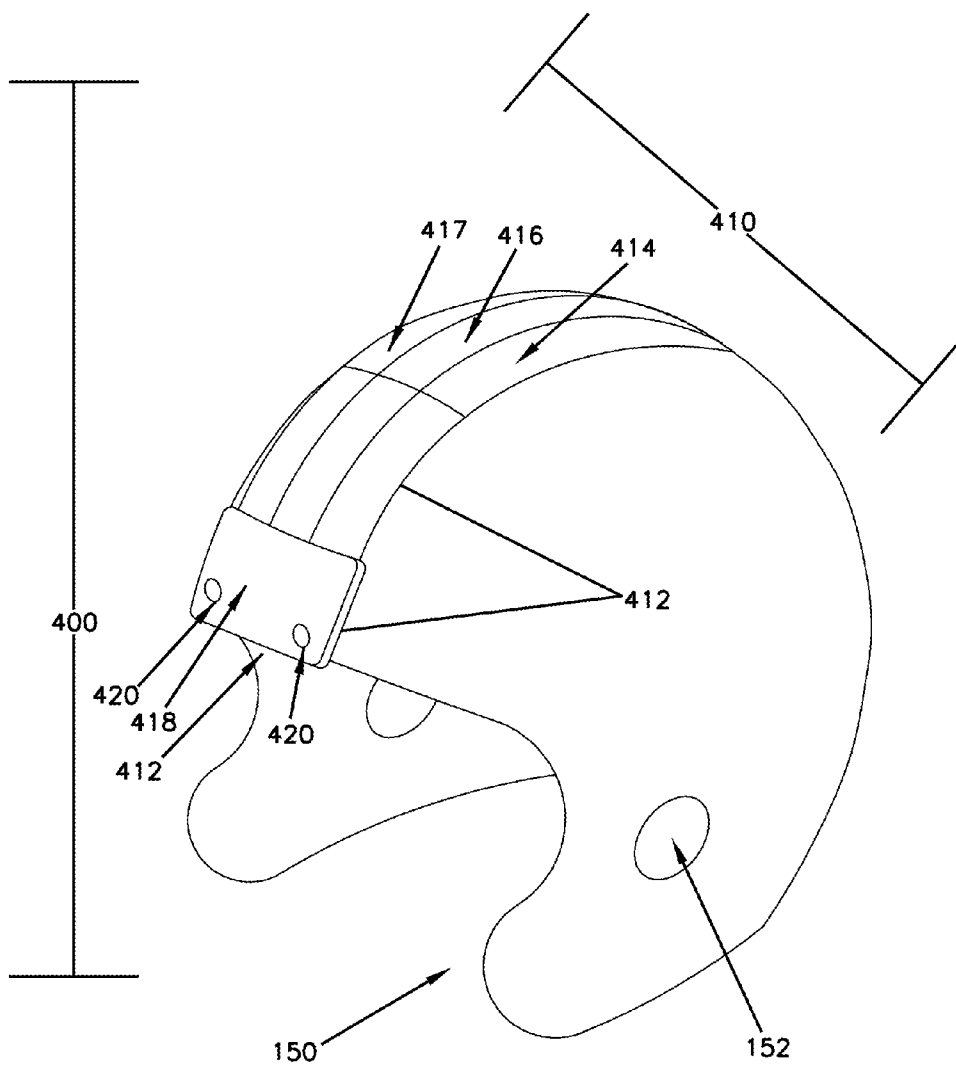


FIG. 5

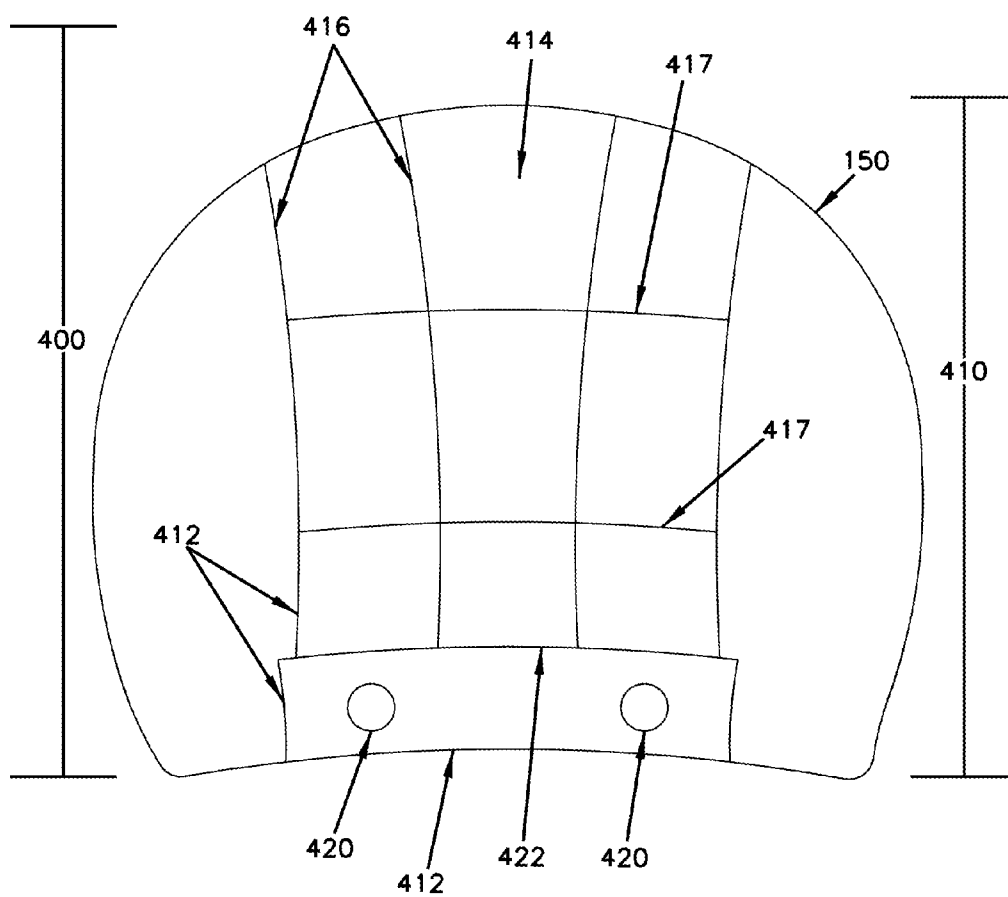
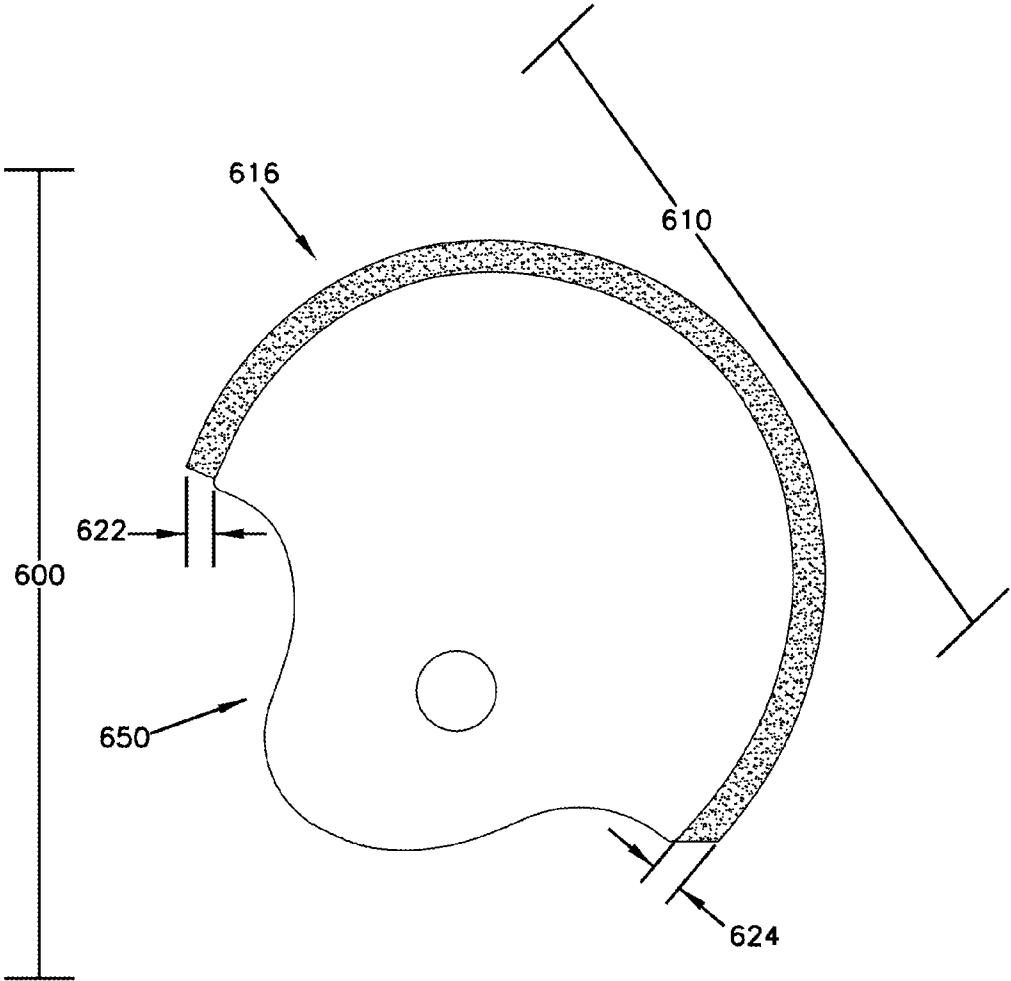


FIG. 6



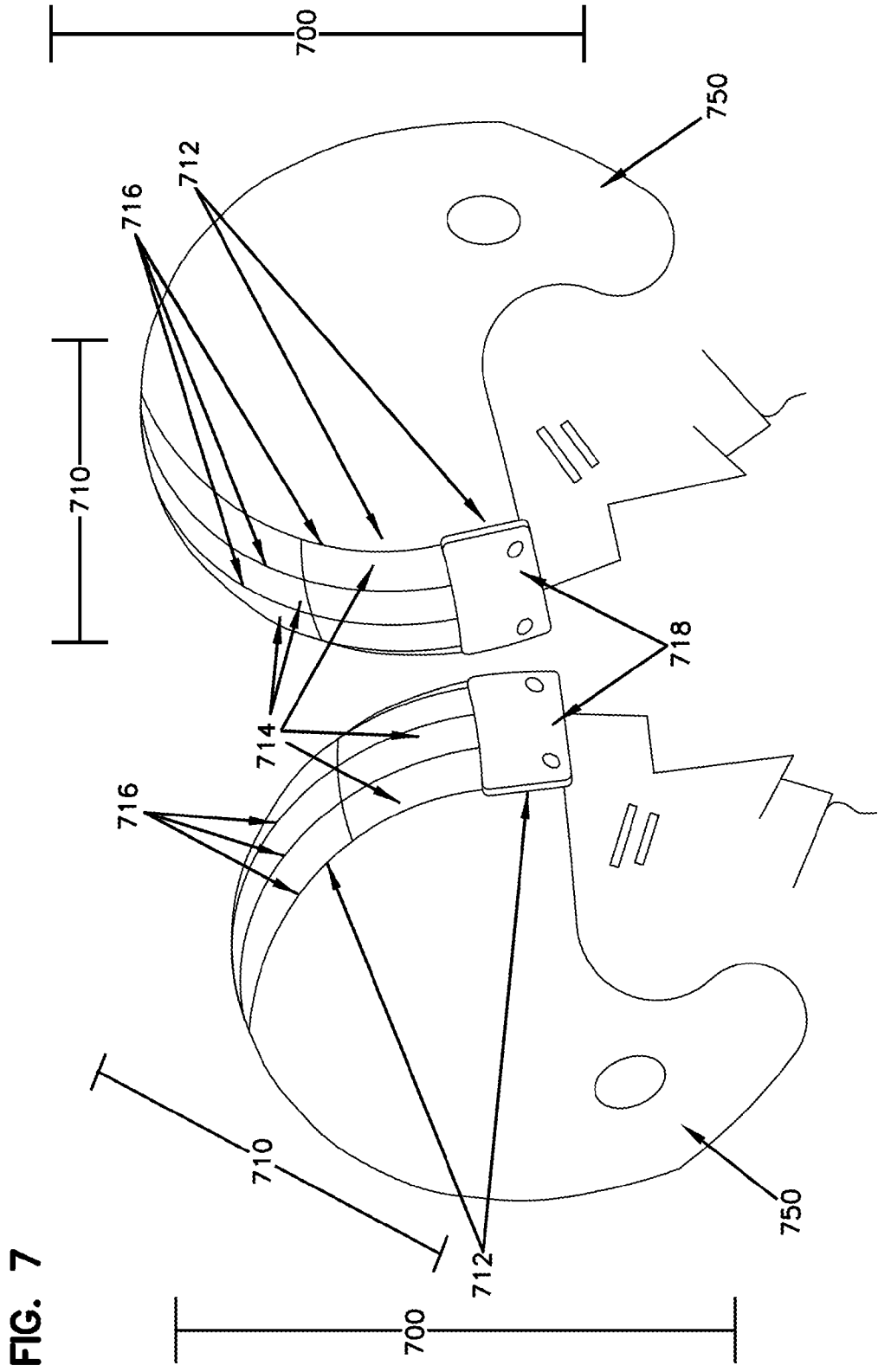
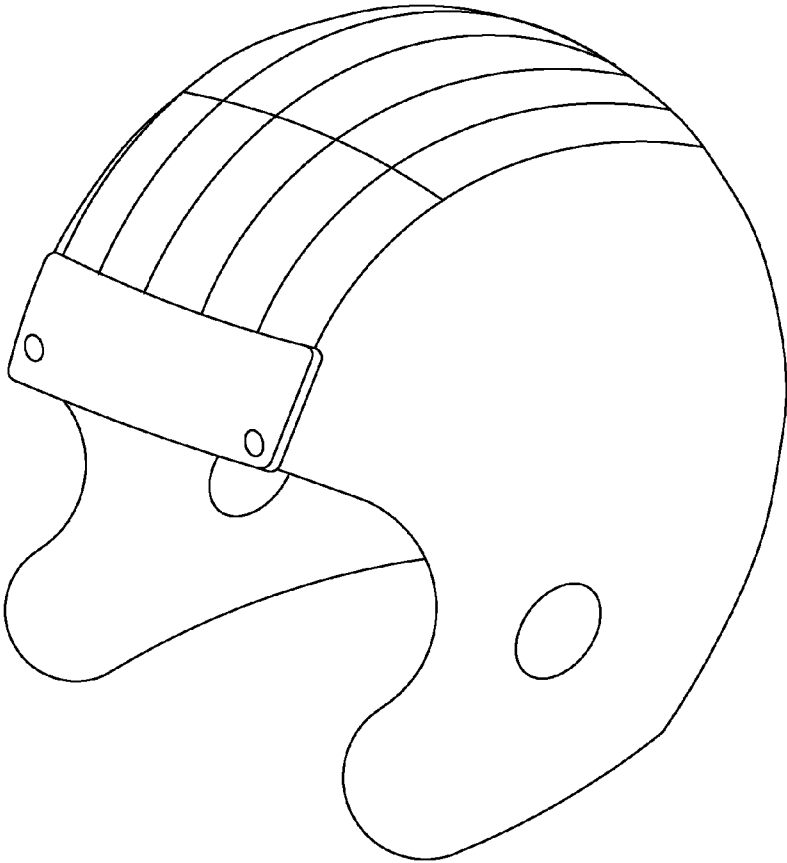


FIG. 8



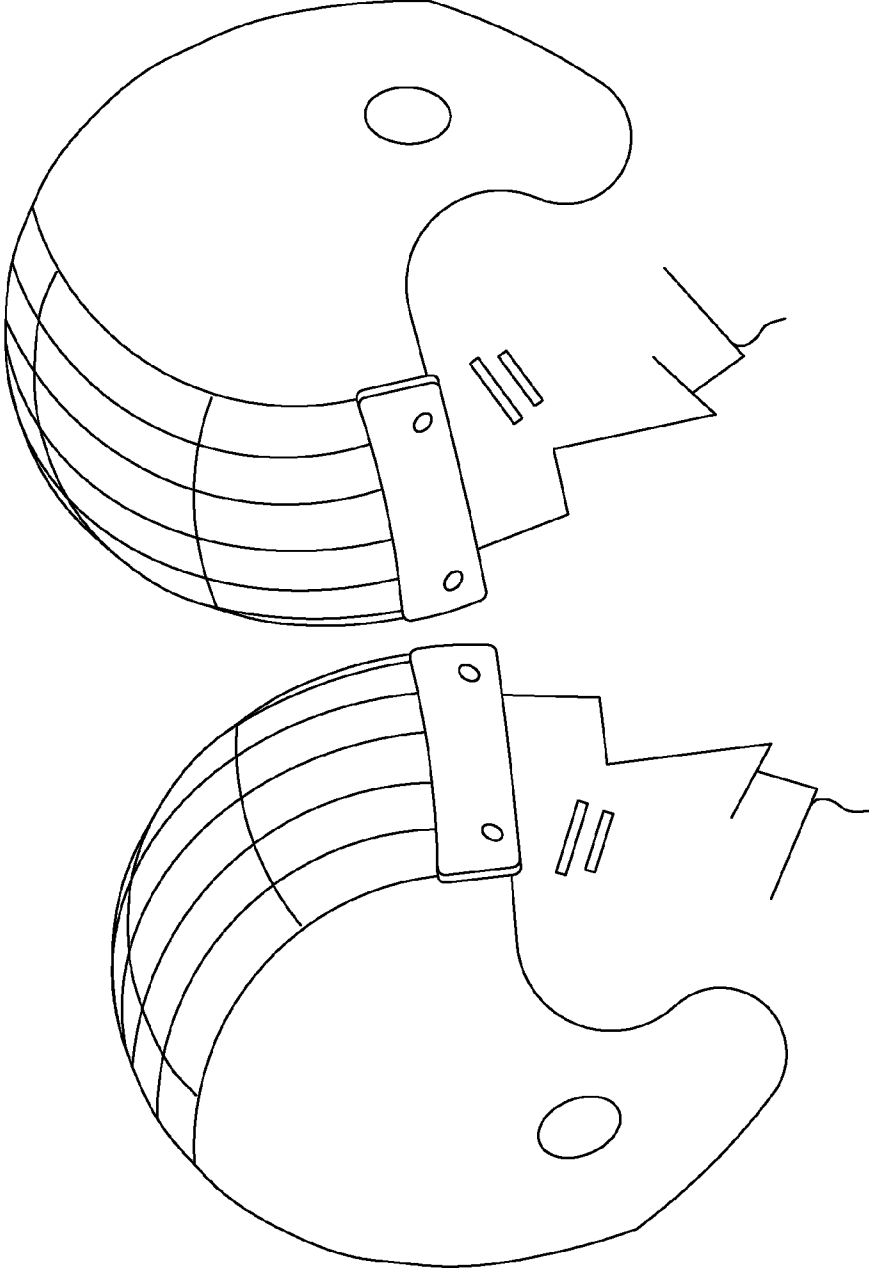
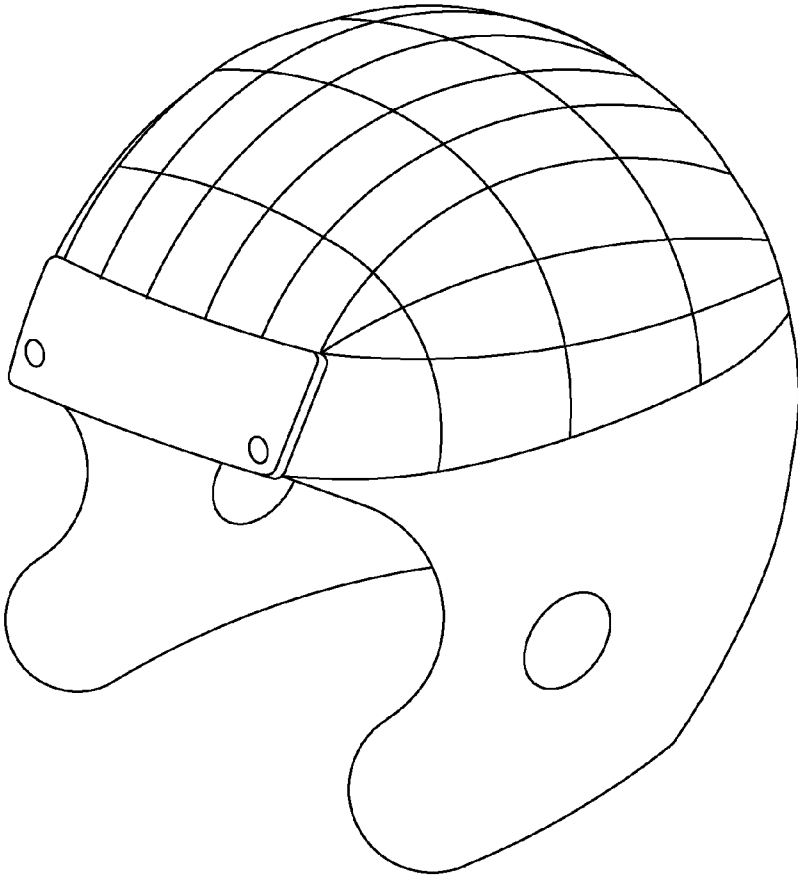


FIG. 9

FIG. 10



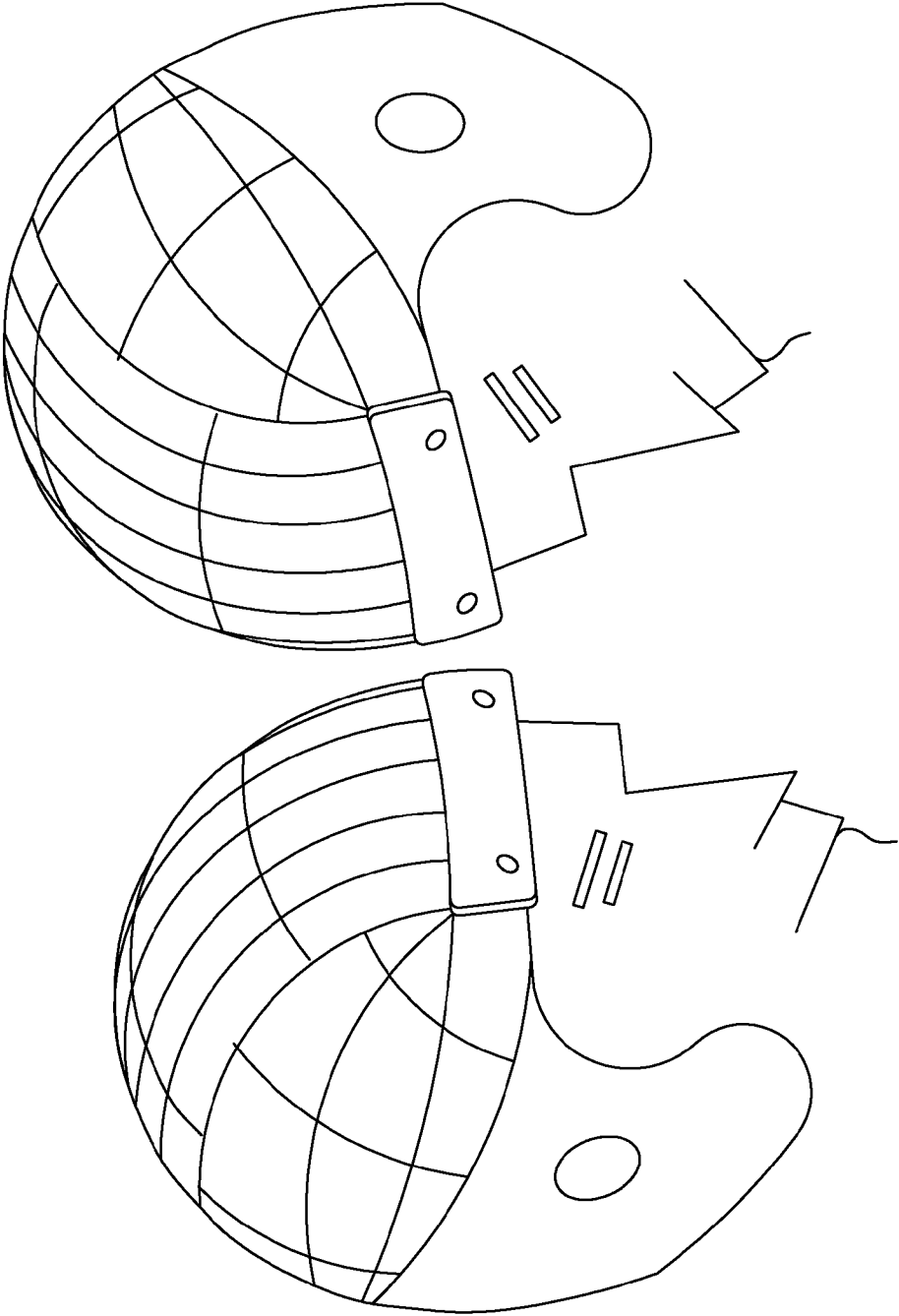


FIG. 11

PROTECTION DEVICE FOR THE HEAD

RELATED APPLICATION

[0001] This application is related to U.S. patent application Ser. No. 61/637,945 filed on Apr. 25, 2012, the entirety of which is hereby incorporated by reference.

BACKGROUND

[0002] Individuals participating in sports or other physical activities potentially involving contact often expose themselves to health risks. Protecting the biological matter within a human head against various types of collisions, impacts or trauma allows an individual to participate in various activities with less risk of injury than participating without such protection. Head-gear technology today uses materials having not only durability and strength (for protection to the head) but also levity (for ease of movement of the head). Even with these types of advances in head-gear technology, injuries such as concussions or other damage resulting from trauma to the head remain commonplace.

SUMMARY

[0003] In one non-limiting aspect, a protection device for a helmet includes a base, and a protection member coupled to the base. The base and protection member are configured to be coupled to an outer surface of the helmet.

DESCRIPTION OF THE FIGURES

[0004] FIG. 1 shows an example system comprising a detachable protection device and an individual piece of head-gear.

[0005] FIG. 2 shows a perspective view of one example of a detachable protection device coupled to an individual piece of headgear.

[0006] FIG. 3 shows a rear view of the example protection device and headgear of FIG. 2.

[0007] FIG. 4 shows a perspective view of another example of a detachable protection device coupled to an individual piece of headgear.

[0008] FIG. 5 shows a rear view of the example protection device and headgear of FIG. 4.

[0009] FIG. 6 shows a side view of a protection device coupled to an individual piece of headgear.

[0010] FIG. 7 shows an example of use of a detachable protection device.

[0011] FIGS. 8 and 9 show another example of a protection device coupled to headgear.

[0012] FIGS. 10 and 11 show another example of a protection device coupled to headgear.

DETAILED DESCRIPTION

[0013] The present disclosure relates generally to a device configured to enhance the safety or protection provided by headgear in the context of activities involving collisions, such as sports, athletic training or competition, law enforcement, industry, the military, or any activity or set of circumstances which entails a potential for injury to one's head. The present disclosure more specifically relates to a detachable protection device to add protection to or increase the safety of helmets used in contact sports or athletic competition.

[0014] Although the following embodiments are directed toward the game of football, the device and uses of the present

disclosure are applicable to any situation where it is desirable to have, obtain or provide protection of, for or to one's head from one or a plurality of various types or magnitudes of forceful contact, collision or impact.

[0015] Referring now to FIG. 1, an example system 100 is shown. In general, the system 100 includes a detachable protection device 110 and a helmet 150.

[0016] In this example, the helmet 150 is used by football players. Helmet 150 includes an outer surface 154 and openings 152. In this example, the openings 152 are generally positioned to coincide with the ears of the wearer to allow for greater ease in hearing. However other examples may or may not have an opening 152. In this example, helmet 150 is made of a hard, durable material that provides protection for the wearer. Examples of the materials that can be used to make helmet 150 include various types of leather, resin, synthetic fiber, or plastic.

[0017] The protection device 110 generally comprises a boundary 112 defining a perimeter that encloses a plurality of protection strips 116, under or over and to which a body 114 is coupled; that may enclose one or more openings 118; and that encloses the body 114.

[0018] In general, body 114 may be coupled to one or more than one protection strip 116. Each protection strip 116 may generally have at least one interconnection with one or more than one other discrete protection strip 116. Other examples may have protection strips lacking interconnection or may utilize a shape other than a strip for protection. In other embodiments, a protection device may lack a body such as body 114 depicted in device 110 such that protection strips or other protective shapes couple directly to a helmet's surface rather than to a body which in turn directly couples to a helmet's surface.

[0019] A protection device in some embodiments may have elasticity, such that the device may be deformed to define a perimeter greater than that of the device at its resting state to aid in coupling by: (i) stretching the device sufficiently to place it around the outer surface of the headgear, placing the device around the headgear, and (ii) releasing the device from its stretched state such that it conforms to the outer surface of the headgear.

[0020] The example protection device 110 shows discrete protection strips 116 interconnected orthogonally with respect to each other. With respect to an orthogonal x-y-z coordinate axis, other angular or positional configurations of protection strips 116 within the boundary 112 are also possible. Although example system 100 shows the boundary 112 defining a perimeter enclosing the openings 118, alternative embodiments may or may not comprise openings 118. Openings 118 align with openings 152 of helmet 150 when device 110 is coupled with helmet 150 within system 100 in the embodiment depicted by FIG. 1.

[0021] In example embodiments, the strips 116 are made of a material that will attenuate kinetic energy or will absorb impact, such as foam, rubber or plastic. Other materials can be used. The strips 116 can be various colors, such as black, clear, or colored. For example, the strips can be clear so that the strips do not obscure any emblems on the helmet. In other examples, the strips can be colored to match the color of the helmet or other insignias for a particular team.

[0022] Referring now to FIGS. 2 and 3, an example system 200 is shown. In general, the system 200 includes a detachable protection device 210 coupled to a helmet 150. The

protection device 210 is similar to that of protection device 110 as described above with respect to FIG. 1.

[0023] However, protection device 210 comprises a plurality of protection strips 216 having interconnections involving various angles and configurations with other protection strips 216, a body 214 coupled underneath protection strips 216, and openings 218 coinciding with helmet openings 152. The protection device 210 in the example shown in FIG. 2 uses elasticity to couple to helmet 150 as described above with respect to FIG. 1. FIG. 3 shows a rear view of system 200 described above with respect to FIG. 2.

[0024] Referring now to FIGS. 4 and 5, an example system 400 is shown. In general, the system 400 includes a detachable protection device 410 coupled to a helmet 150. The protection device 410 is similar to the protection device 110 as described above with respect to FIG. 1.

[0025] However, FIGS. 4 and 5 show protection device 410 comprising a boundary 412 defining a perimeter that encloses base segment 418 positioned at the front of helmet 150 and base segment 422 positioned at the back of helmet 150, a plurality of protection strips 416 coupled to segments 418 and 422, protection strips 417 interconnected with protection strips 416, and a body 414 coupled to and underneath protection strips 416 and 417 and to segments 418 and 422.

[0026] Segments 418 and 422 in the example shown in FIGS. 4 and 5 comprise discrete locations 420 where the protection device 410 couples to helmet 150. The coupling of helmet 150 to device 410 may entail snap-on devices, buttons, Velcro®, screws, or some other means of adhesion, at discrete locations 420. Other examples of a protection device may couple to a headgear without the use of discrete locations for coupling as shown in FIGS. 4 and 5.

[0027] For example, as described above, in some embodiments the protection device is adhered to the helmet by simply deforming the protection device, placing the protection device on the helmet, and allowing the protection device to return to a non-deformed state, thereby adhering to the helmet. In other examples, the protection device can be adhesively applied to the helmet. For example, one or more strips can be glued to the helmet at desired locations. Other configurations are possible.

[0028] For example, referring now to FIG. 6, a side view of an example system 600 is shown. In general, the system 600 includes a detachable protection device 610 coupled to a helmet 650. FIG. 6 shows protection device 610 comprising a protection strip 616. In this example, protection strip 616 is coupled directly to helmet 650. FIG. 6 also shows protection strip 616 extending outward from the surface of helmet 650 to the extent that protection strip 616 has dimensions 622 and 624. In some examples, the dimensions 622, 624 can be 3/16 inch to 1/4 inch. Other heights can also be used.

[0029] In some examples, height dimension 622 may or may not equal height dimension 624. For example, the strip 616 can be contoured so that height dimension 622 is smaller than the dimension 624. Other configurations are possible.

[0030] Referring now to FIG. 7, a perspective view of an example of use of the protection devices disclosed herein is shown. This example shows a use of a system 700 in relation to two heads colliding into one another. In general, systems 700 each include a detachable protection device 710 coupled to a helmet 750. Each protection device 710 is similar to one or more of devices 110, 210, 410, 610 as described above.

[0031] FIG. 7 shows each protection device 710 comprising a boundary 712 defining a perimeter that encloses base

segment 718 positioned at the front of helmet 750, a plurality of protection strips 716 coupled to segment 718, and a body 714 coupled to and underneath protection strips 716 and to segment 718. As illustrated, upon collision of the helmets 750, the protection devices 710, rather than surfaces 154, contact one another first to absorb at least a portion of the impact. In this manner, the impact between the helmets 750 is lessened.

[0032] FIGS. 8-11 show alternative embodiments of protection devices with additional coverage of the helmet. In these examples, the protection devices extend to the sides of the helmet to provide additional coverage. Other configurations are possible.

[0033] For example, the embodiments described herein are detachable protection devices. However, in other embodiments, the protection device can be incorporated directly into the helmet. For example, in the football context, the protection strips could be molded into, adhered to, or otherwise directly provided on the outer surface of the helmet. In this manner, the protection device becomes an integral part of the helmet. Other configurations are possible.

[0034] The various embodiments described above are provided by way of illustration only and should not be construed as limiting. Various modifications and changes may be made to the example embodiments and applications illustrated or described herein or below without departing from the true spirit and scope of the disclosure.

What is claimed is:

1. A protective device comprising:
 - a front base and a back base; and
 - at least one protection member with a front portion and a back portion, wherein the protection member extends from the front base to the back base and further wherein the front portion is operably connected to the front base and the back portion is operably connected to the back base.
2. The protective device of claim 1, wherein the at least one protection member is configured to be connected to an outer surface of a helmet using an attachment mechanism.
3. The protective device of claim 2, wherein the attachment mechanism is selected from a group consisting essentially of: buttons, Velcro®, screws, glue, or bolts.
4. The protective device of claim 2, wherein the protective device is directly adhered to the outer surface of the helmet.
5. The protective device of claim 1, further comprising a body member, wherein the body member further comprises a protective layer operably connected to a bottom side of the at least one protection member and is further operably connected to the front base and the back base.
6. The protective device of claim 1, wherein the at least one protection member includes first, second, and a third protection members, wherein the first, second, and third protection members are each operably interconnected.
7. The protective device of claim 6, wherein the first, second, and third protection members are each interconnected at varying angles.
8. The protective device of claim 1, wherein the protection member is made of a clear color.
9. A method for attaching a protection device to a helmet, the method comprising:
 - attaching a first end of the protection device to a front portion of a helmet, wherein the protection device further comprises at least one protective member with an elongated portion;

extending the elongated portion of protective member across an outer surface of the helmet to a back portion of the helmet; and

attaching a second end of the protection device to the back portion of the helmet.

10. The method of claim 9, wherein attaching further comprises gluing the protection device to the outer surface of the helmet.

11. The method of claim 9, further comprising attaching a body of the protection device to the outer surface of the helmet, wherein the body is operably connected to a bottom side of the protection device.

12. The method of claim 9, further comprising removing the protection device from the helmet.

13. A system for providing enhanced protection to headgear, the system comprising:

a helmet with an outer surface; and

a protection device operably connected to the outer surface of the helmet, wherein the protection device comprises at least one protective member, wherein the at least one protective member is formed with a substantially impact-absorbing material.

14. The system of claim 13, wherein the at least one protective member further comprises a first protective member

and a second protective member, wherein the first protective member is connected to the second protective member at an angle.

15. The system of claim 13, wherein the at least one protective member has a height in the range of about 3/16 of an inch to 1/4 of an inch.

16. The system of claim 13, wherein the protection device covers an entirety of the outer surface of the helmet.

17. The system of claim 13, wherein the protection device further covers a middle portion of the outer surface of the helmet.

18. The system of claim 13, wherein the protection device defines a first opening and a second opening wherein the first opening and the second opening align with a first hole and a second hole of the helmet.

19. The system of claim 13, wherein the helmet is comprised of a hard, durable material made of leather, resin, synthetic fiber, plastic, or any combination thereof.

20. The system of claim 13, wherein the substantially impact-absorbing material comprises foam, rubber, or plastic.

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