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(54) **HELMET SHIELD**

(52) **U.S. Cl.**

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(57) **ABSTRACT**

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Publication Classification

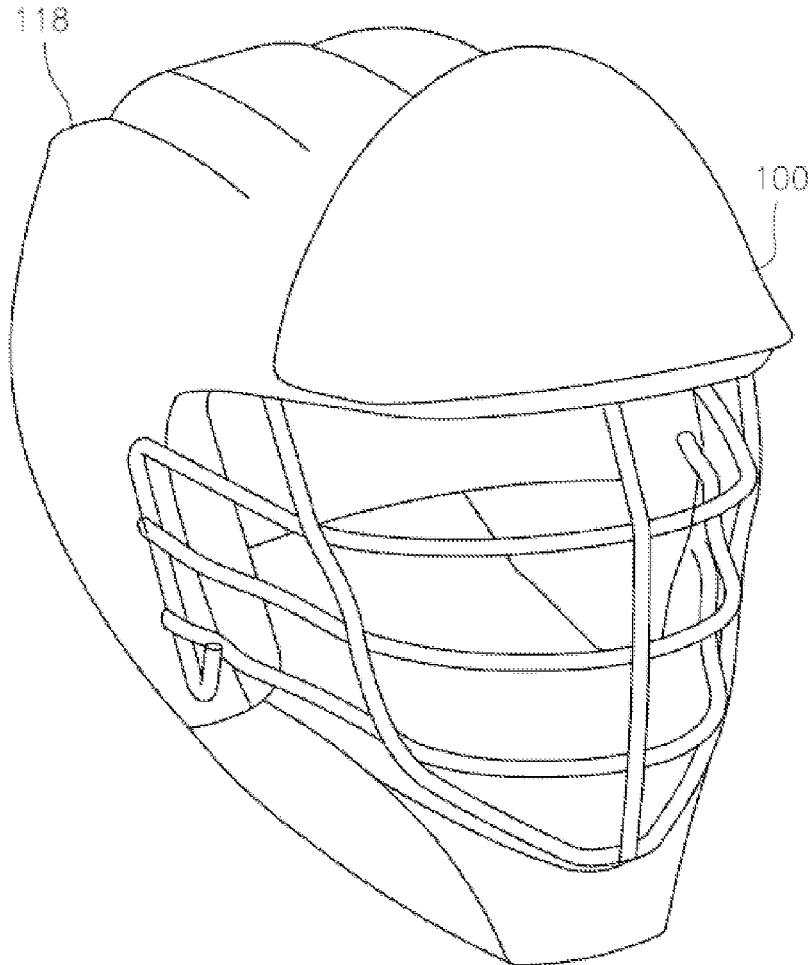
(51) **Int. Cl.**

A42B 3/06 (2006.01)

A42B 3/20 (2006.01)

A63B 71/10 (2006.01)

A shield for a lacrosse helmet, wherein the shield includes a shield structure having a shield front, a shield rear, a shield top, a shield bottom and shield sides, wherein the shield structure includes a mounting structure located proximate the shield bottom, wherein the mounting structure is configured to securely associate the shield structure with a front top portion of the lacrosse helmet, and wherein the shield structure is arcuate in shape between the shield sides to conform to the front top portion of the lacrosse helmet, and wherein the lacrosse helmet shield further includes an impact absorbent material associated with the shield rear to be located between the shield rear and the front top portion of the lacrosse helmet when the helmet shield is associated with the lacrosse helmet.



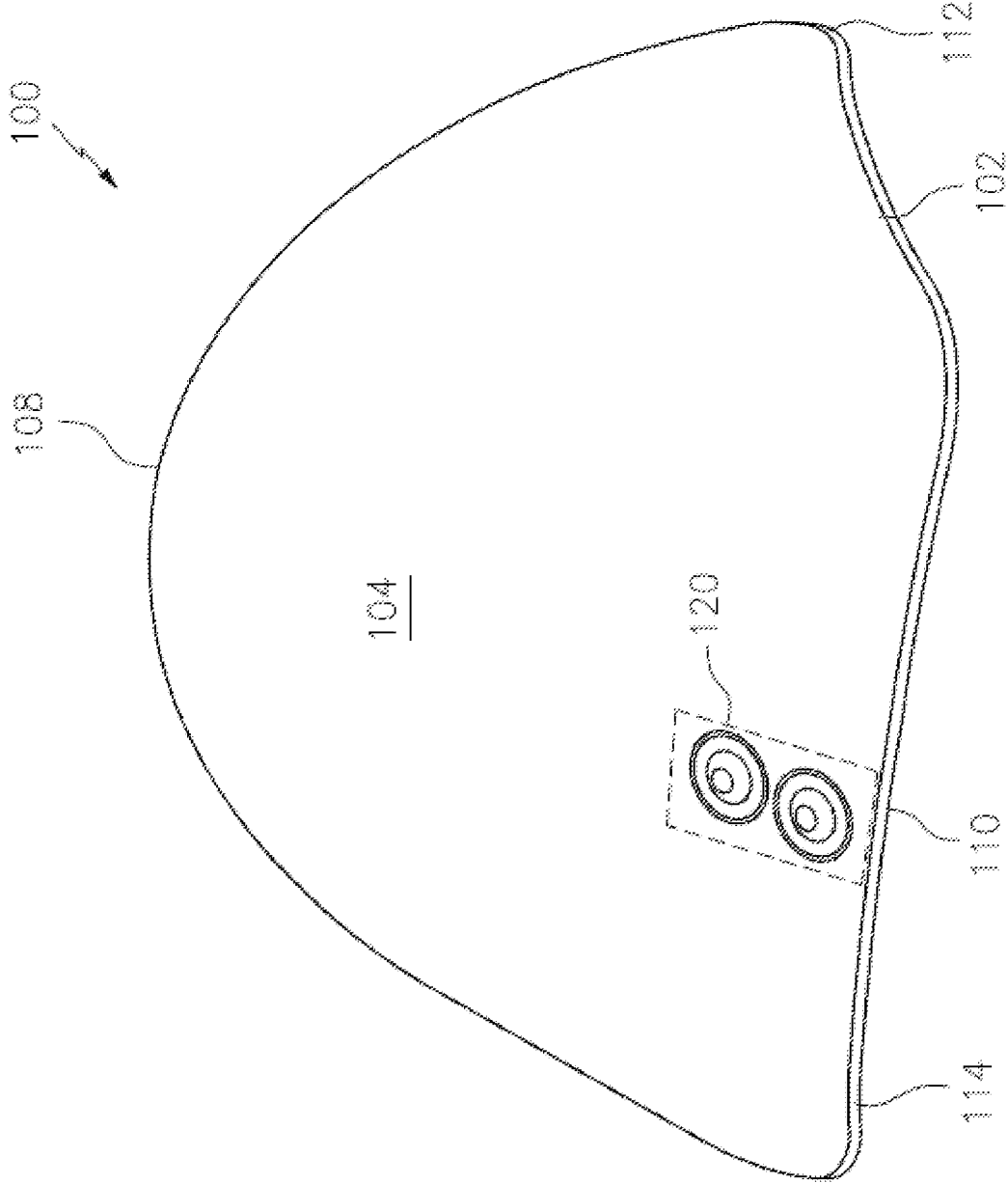


FIG. 1

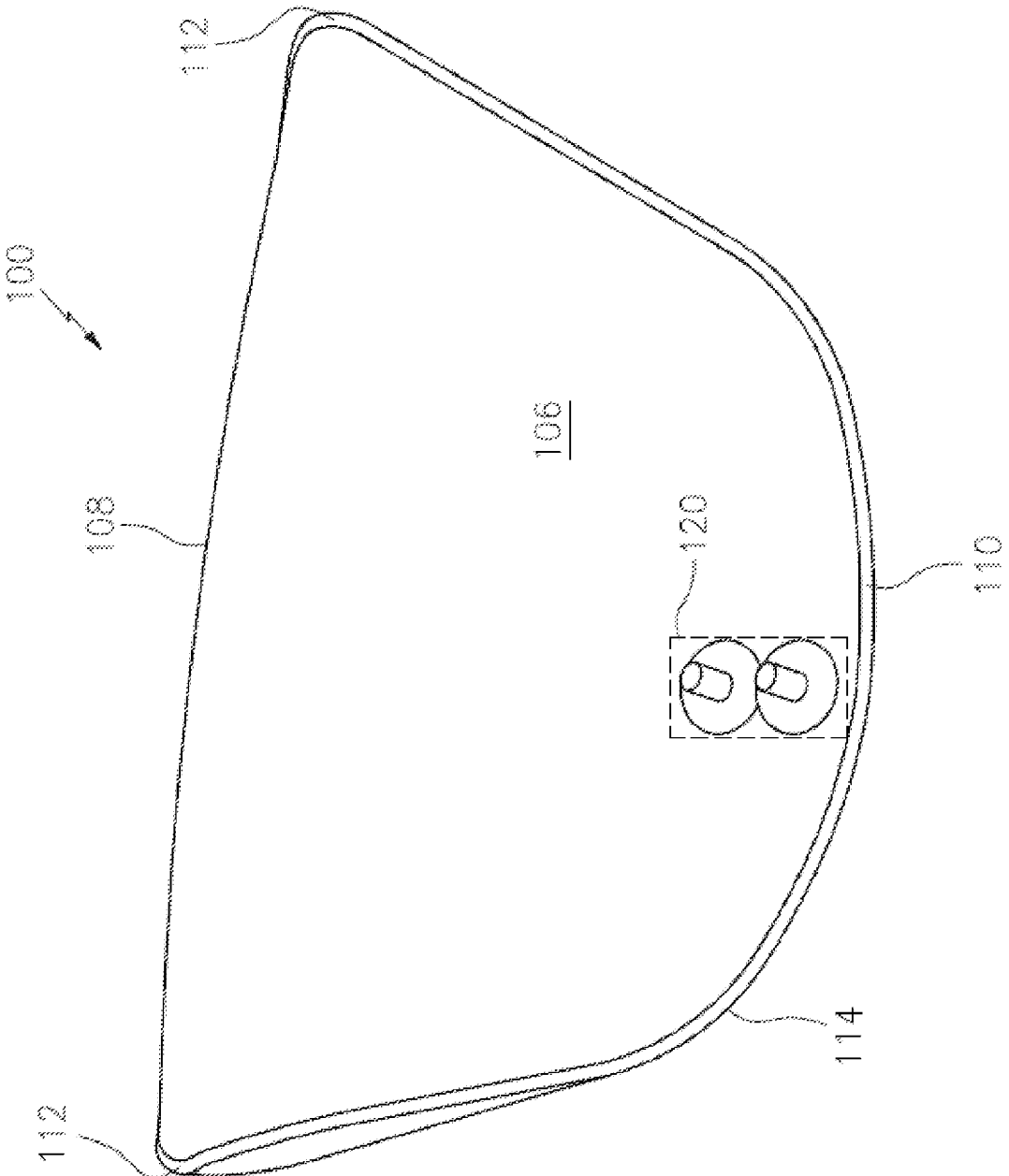


FIG. 2

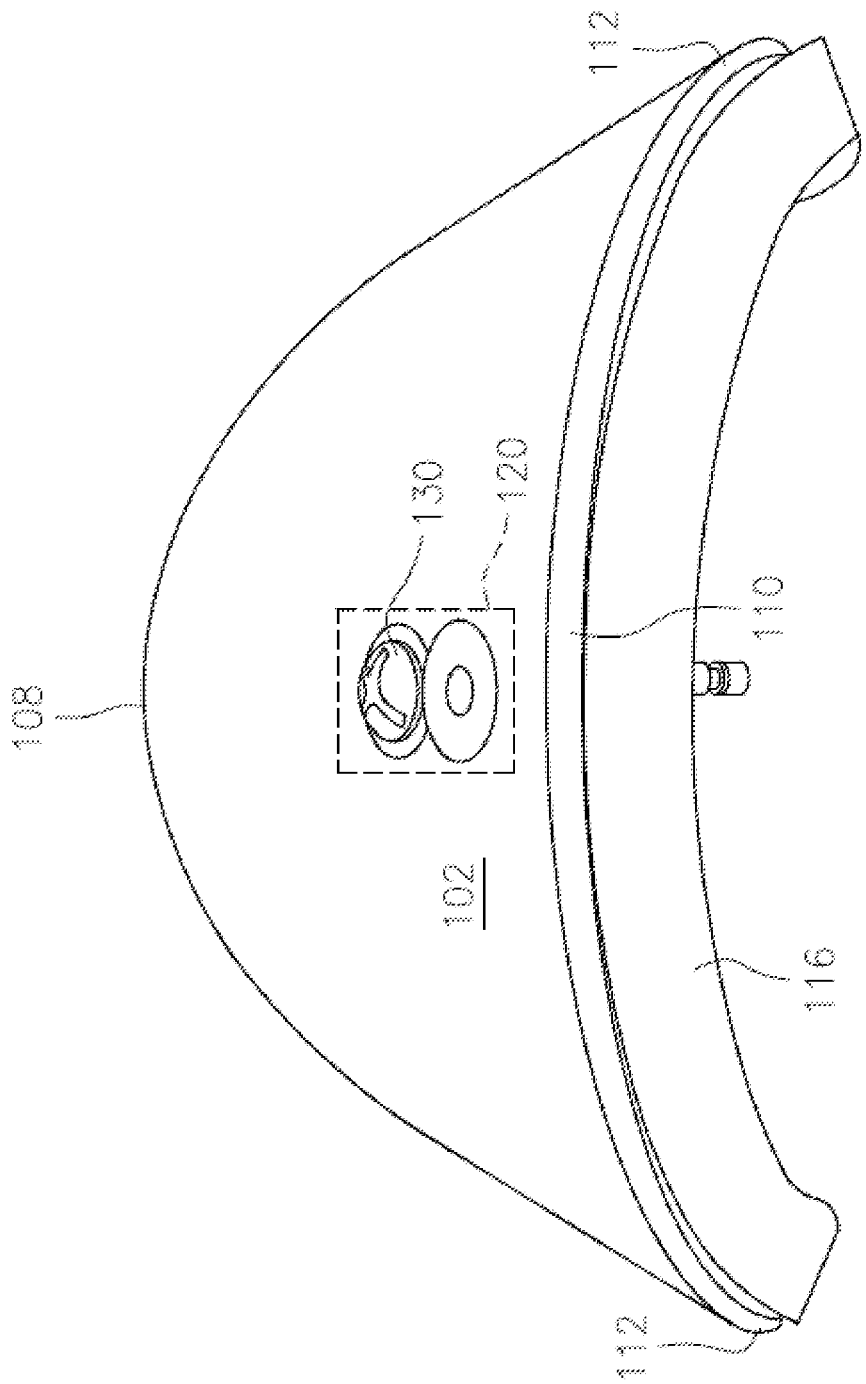


FIG. 3

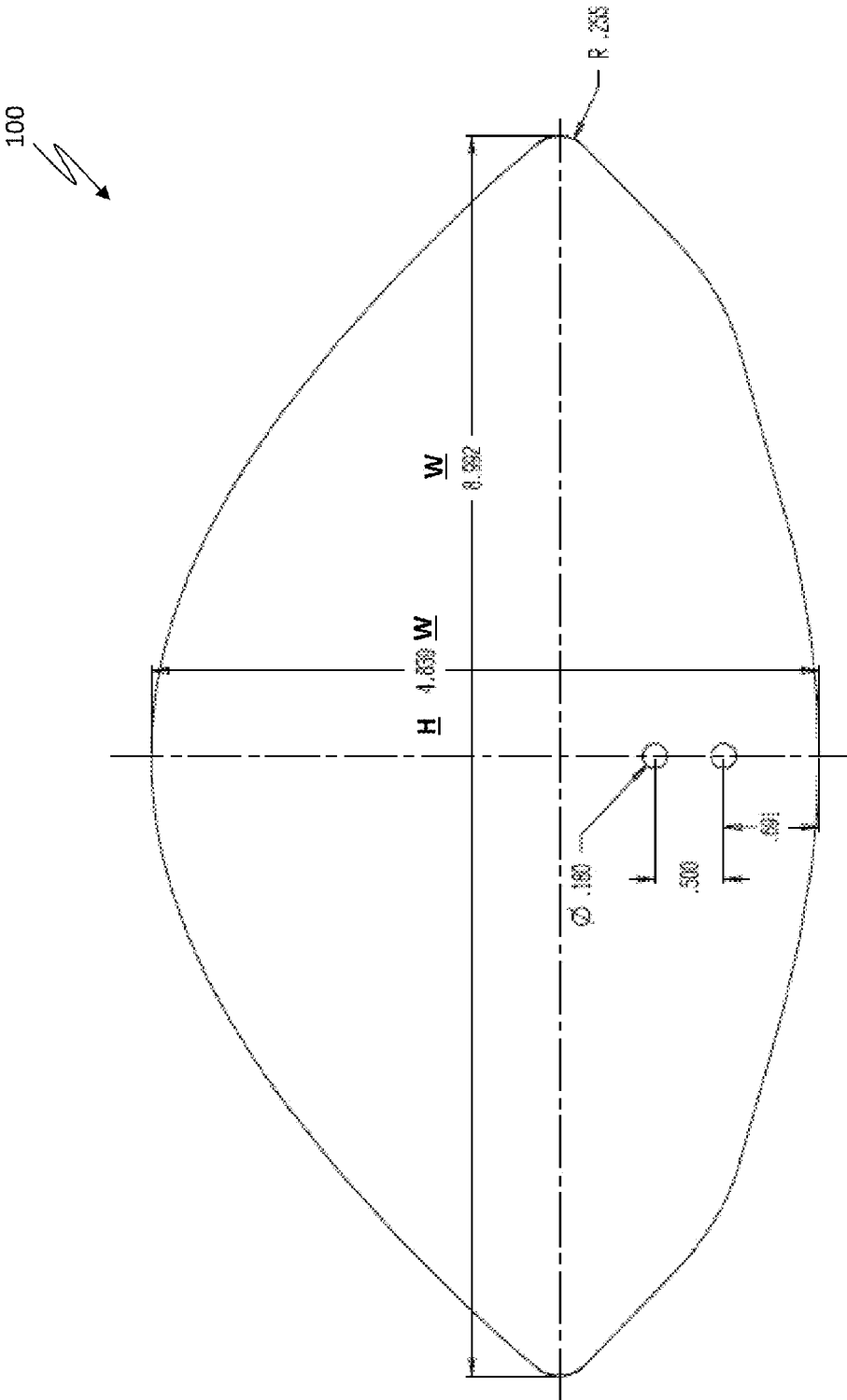


FIG. 4

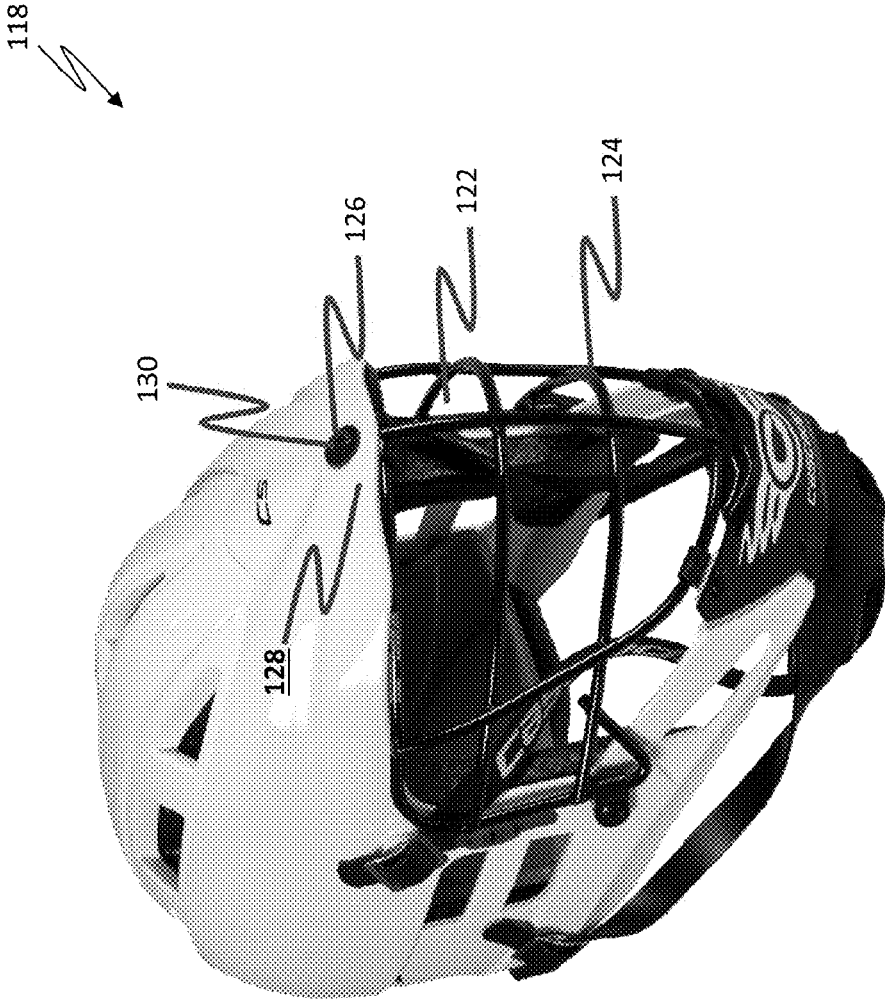


FIG. 5

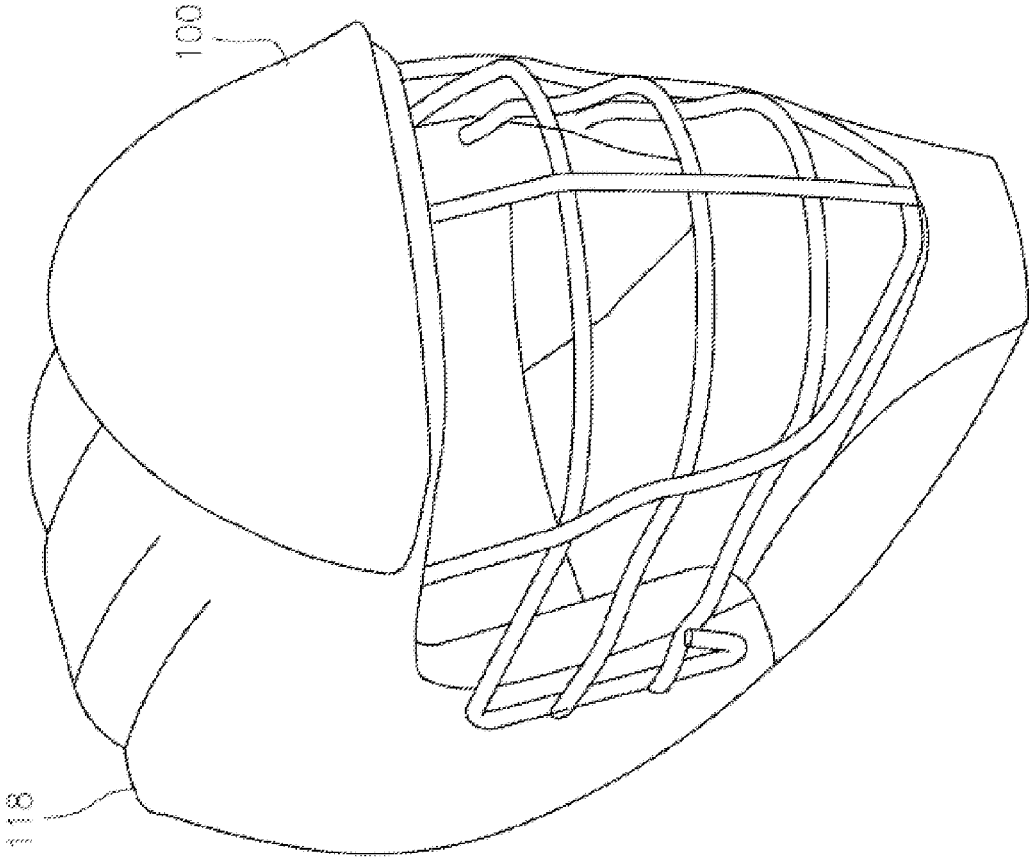


FIG. 6

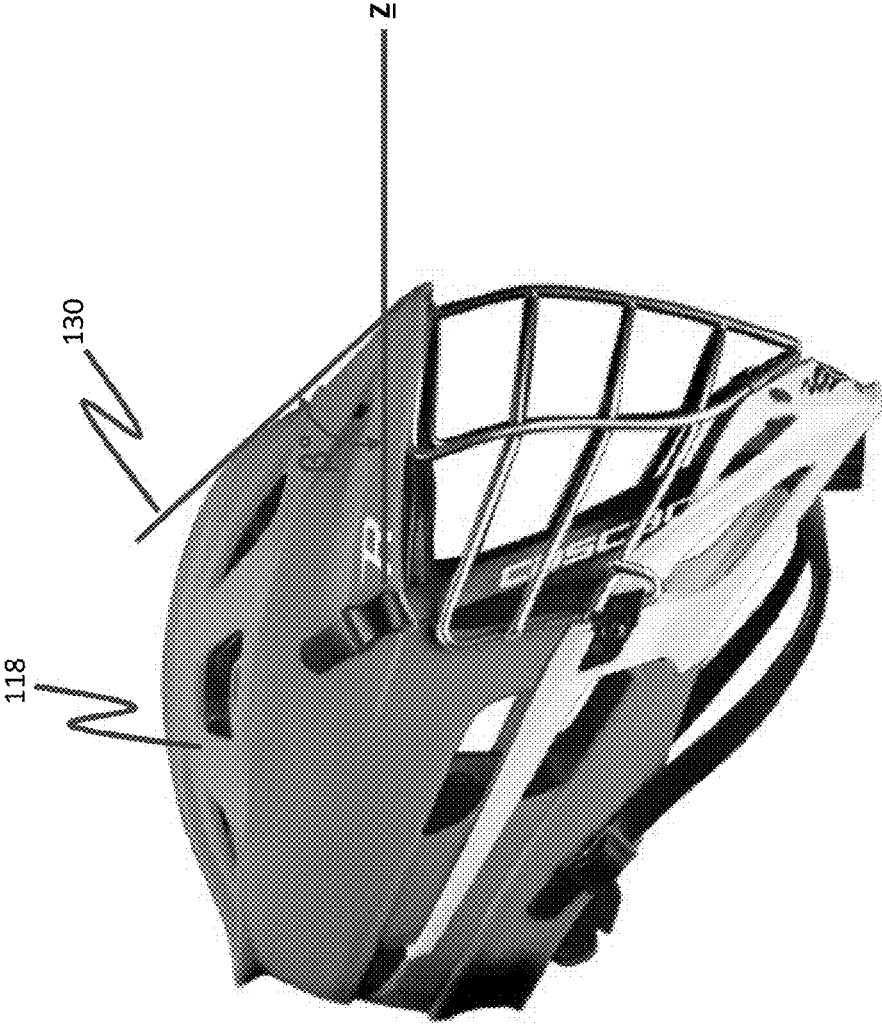


FIG. 7

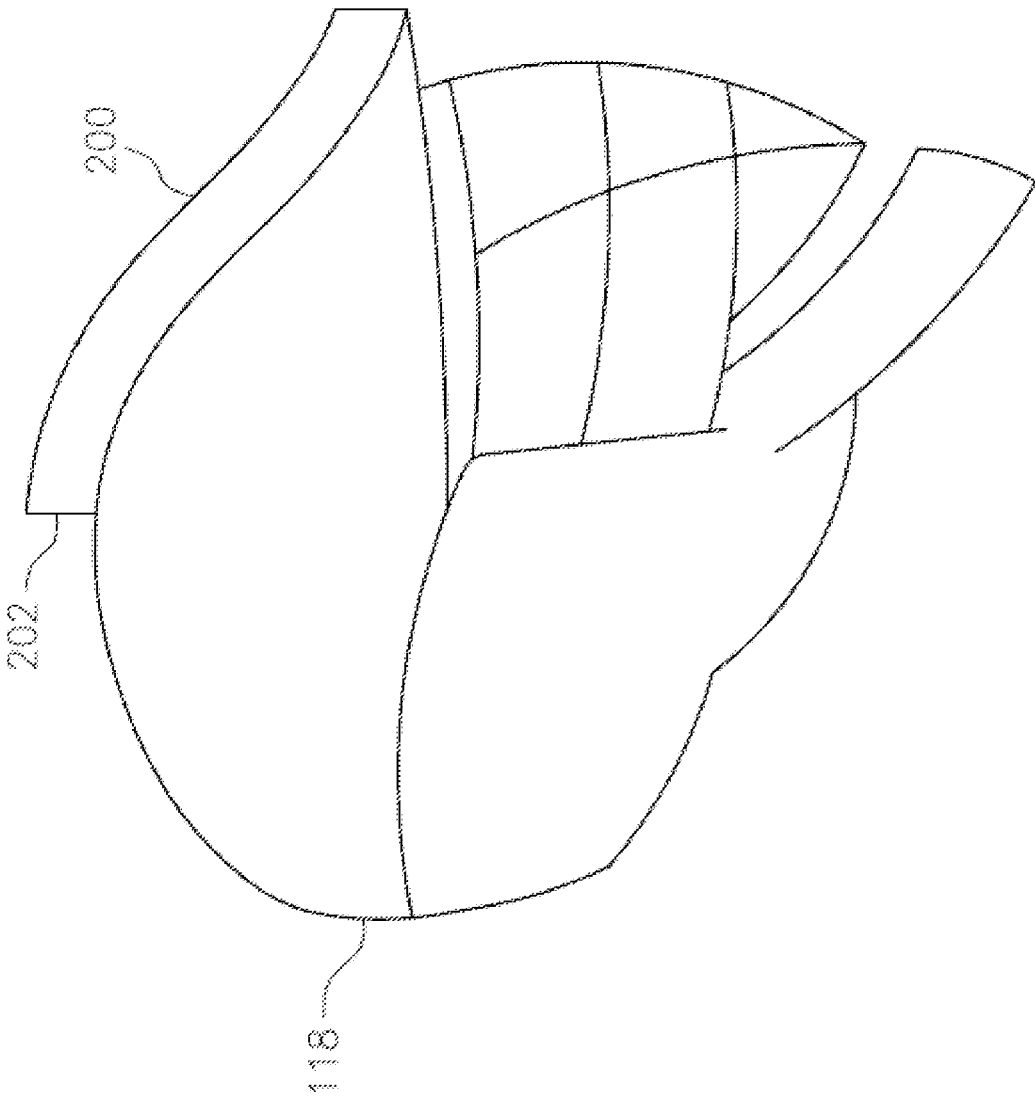


FIG. 8

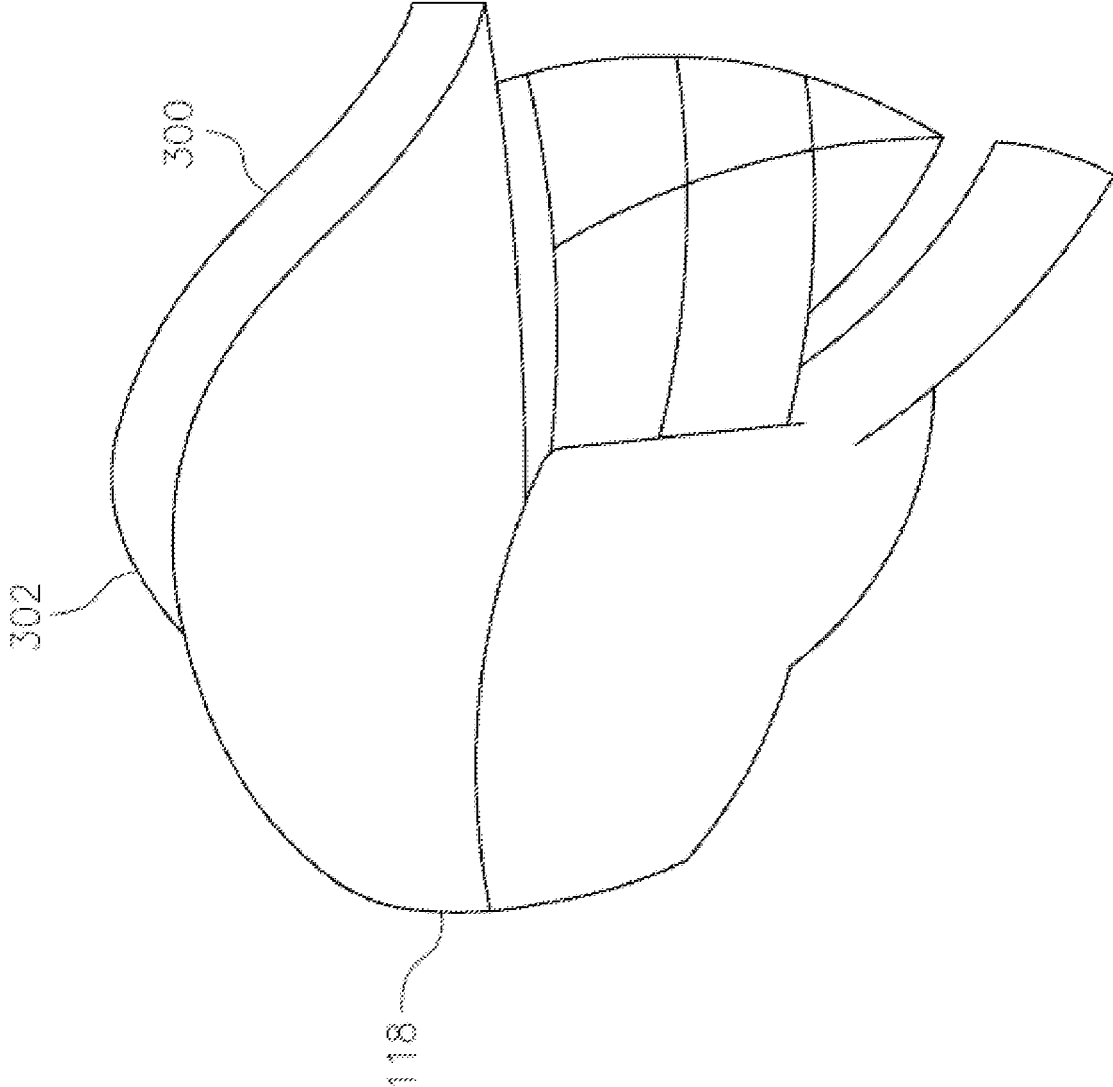


FIG. 9

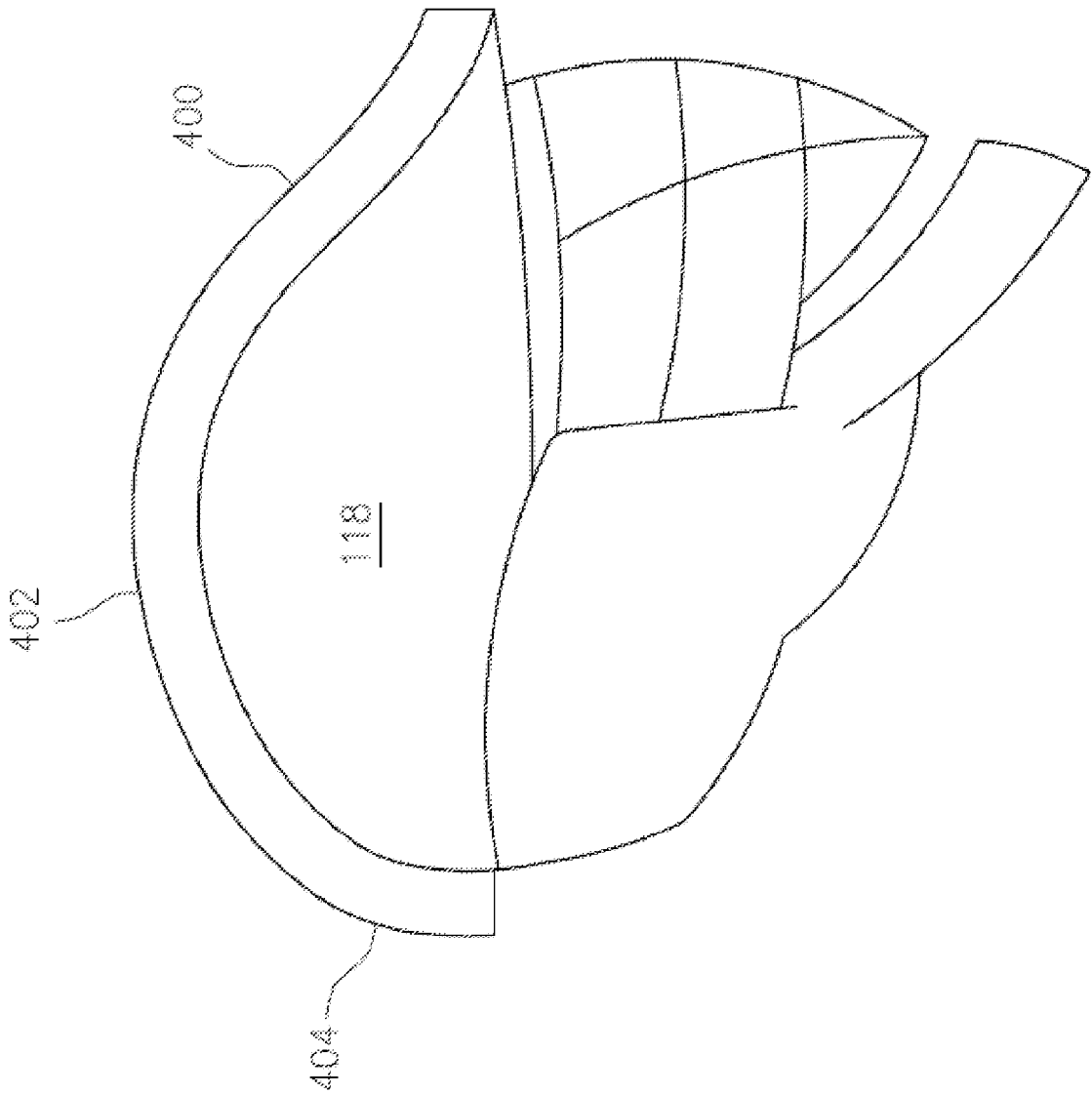


FIG. 10

HELMET SHIELD

RELATED APPLICATIONS

[0001] This application is related to and claims the benefit of U.S. Provisional Patent Application Ser. No. 62/278,009 filed Jan. 13, 2016 and U.S. Provisional Patent Application Ser. No. 62/428,293 filed Nov. 30, 2016, the contents of both of which are incorporated by reference herein in their entireties.

FIELD OF THE INVENTION

[0002] The present invention relates generally to an impact absorbing shield and more particularly to an impact absorbing shield for a Lacrosse helmet.

BACKGROUND OF THE INVENTION

[0003] Lacrosse is a well known sport that originated with Native Americans and that is quickly growing in popularity. It involves a multitude of players that carry a long stick having a basket on the far end of the stick, where the basket is configured to carry a heavy ball which is about the size of a baseball. The game is played by two teams on a field approximately the size of a soccer field, where each team has a goal located on opposite ends of the field. The object of the game is to carry the ball down the field in the basket and using the stick “toss” the ball into the opposing team’s goal which is manned and blocked by a goal keeper or “goalie.” The ball can only be touched by the basket and cannot be touched directly by the players. As the players move the ball downfield, the members of the opposing team try to get the ball away from the player carrying the ball by knocking the ball out of the player’s basket. This is done by swinging the stick at the stick and/or basket of the player carrying the ball in an attempt to hit the stick and/or basket and knocking the ball out. The player carrying the ball will try to hang onto the ball and typically passes the ball to teammates as they move downfield.

[0004] As balls are passed between players and as sticks are being swung in an attempt to knock the ball out of the player’s basket, other players are sometimes hit by either the ball or the stick. Additionally, as players toss the ball into the goal, sometimes the goalie is hit by the ball. In an attempt to reduce injuries and to protect the players, the players typically (goalies are required) to wear safety gear which includes an impact resistant helmet having a cage covering the face of the player and/or goalie. Thus, if the player is hit in the head by either the ball or the stick, the player is somewhat protected. Unfortunately, both the sticks and the ball are very hard items and they are usually swung or tossed with a lot of force. In fact, even with the helmet it is possible that a player may still be injured by a strike to the head. This is undesirable because this type of strike may cause a concussion or other head injury. Moreover, it is now known that multiple head injuries may have cumulative deleterious effects on the brain.

SUMMARY OF THE INVENTION

[0005] A helmet shield is provided and includes a shield structure having a shield front, a shield rear and shield sides, wherein the shield structure is configured to be securely associated with a front top portion of a helmet, and wherein the shield structure is arcuate in shape between the shield sides to conform to the front top portion of the helmet, and

wherein the helmet shield further includes an impact resistant material securely associated with the shield rear to be located between the shield rear and the front top portion of the helmet when the helmet shield is associated with the helmet.

[0006] A shield for a lacrosse helmet, wherein the shield includes a shield structure having a shield front, a shield rear, a shield top, a shield bottom and shield sides, wherein the shield structure includes a mounting structure located proximate the shield bottom, wherein the mounting structure is configured to securely associate the shield structure with a front top portion of the lacrosse helmet, and wherein the shield structure is arcuate in shape between the shield sides to conform to the front top portion of the lacrosse helmet, and wherein the lacrosse helmet shield further includes an impact absorbent material associated with the shield rear to be located between the shield rear and the front top portion of the lacrosse helmet when the helmet shield is associated with the lacrosse helmet.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] The foregoing and other features and advantages of the present invention will be more fully understood from the following detailed description of illustrative embodiments, taken in conjunction with the accompanying drawings in which like elements are numbered alike:

[0008] FIG. 1 is a bottom up front perspective view of a helmet shield, in accordance with one embodiment of the invention.

[0009] FIG. 2 is a bottom up rear perspective view of the helmet shield of FIG. 1.

[0010] FIG. 3 is a bottom view of the helmet shield of FIG. 1.

[0011] FIG. 4 is a bottom up rear perspective view of the helmet shield of FIG. 1, in accordance with one embodiment of the invention.

[0012] FIG. 5 is a front side view of a lacrosse helmet for use with the helmet shield of FIG. 1, in accordance with one embodiment of the invention.

[0013] FIG. 6 is a front side view of the lacrosse helmet of FIG. 5 with the helmet shield of FIG. 1 attached.

[0014] FIG. 7 is a side view of the helmet shield of FIG. 1 attached to a lacrosse helmet, in accordance with one embodiment of the invention.

[0015] FIG. 8 is a side view of a helmet shield attached to a lacrosse helmet, in accordance with another embodiment of the invention.

[0016] FIG. 9 is a side view of a helmet shield attached to a lacrosse helmet, in accordance with still yet another embodiment of the invention.

[0017] FIG. 10 is a side view of a helmet shield attached to a lacrosse helmet, in accordance with still yet another embodiment of the invention.

DETAILED DESCRIPTION OF THE INVENTION

[0018] In accordance with the present invention, an impact absorbing shield for a helmet is provided and discussed herein with regards to a lacrosse helmet. It should be appreciated that although the helmet shield of the present invention is discussed in terms of a lacrosse helmet, it is contemplated that the helmet shield may be used with any type of helmet suitable to the desired end purpose.

[0019] Referring to FIG. 1, FIG. 2, FIG. 3 and FIG. 4, a helmet shield 100 is shown in accordance with one embodiment and includes a shield structure 102 having a shield front surface 104, a shield rear surface 106, a shield top 108, a shield bottom 110, shield sides 112 and a shield structure edge 114 which surrounds the shield structure 102. The shield structure 102 includes a shield width W, which is measured between the shield sides 112 at its widest point, and a shield height H, which is measured between the shield top 108 and shield bottom 110 at its highest point. Referring again to FIG. 3, in one embodiment the shield width W is about 9 inches wide and the shield height H is about 5 inches high and the shield side surface 112 between the shield sides 112 is arcuate (crescent) in shape. The shield structure 102 also includes an impact resistant pad 116 constructed from a foam material which is located on the shield rear surface 106, wherein the impact resistant pad 116 is securely attached to the shield rear surface 106. It should be appreciated that in other embodiments, the shield width W and/or the shield height H may be any size desired suitable to the desired end purpose.

[0020] It should be appreciated that the shield structure 102 is configured and shaped to conform and mount to the forehead area of a lacrosse helmet 118. As such, the shield structure 102 is concave in shape and the shield bottom 110 is shaped to follow the contour of the top surface of the lacrosse helmet 118. The shield structure 102 may include one or more mounting openings 120 located proximate the shield bottom 110 which traverse the thickness of the shield structure 102 and which are configured to receive and contain a mounting screw for securely attaching the helmet shield 100 to the lacrosse helmet 118.

[0021] Referring again to FIG. 5 and FIG. 6 a typical lacrosse helmet 118 is shown, wherein the lacrosse helmet 118 includes a helmet face opening 122, a helmet face cage 124 covering the helmet face opening 122 and a helmet mounting opening 126 located proximate the front top portion 128 of the lacrosse helmet 118. The helmet mounting opening 126 is configured to receive and contain a mounting screw 130 which is used to secure a portion of the helmet face cage 124 to the lacrosse helmet 118. Referring to FIG. 6, a typical lacrosse helmet 118 is shown with the helmet shield 100 attached. The helmet shield 100 may be associated with the lacrosse helmet 118 by positioning the helmet shield 100 proximate the front top portion 128 of the lacrosse helmet 118 such that the impact resistant pad 116 is adjacent to and in contact with the surface of the lacrosse helmet 118 and the one or more mounting openings 120 are aligned with the helmet mounting opening 126. As such, the shield bottom 110 is located directly above the helmet face opening 122. The mounting screw 130 is positioned to be located within the one or more mounting openings 120 and is configured to securely attach the helmet face cage 124 and helmet shield 100 to the lacrosse helmet 118. Referring to FIG. 7, it should be appreciated that when the helmet shield 100 is mounted to the lacrosse helmet 118, the helmet shield 100 is disposed at an angle β relative to an imaginary horizontal plane Z, wherein the angle β is approximately about 45°. It is contemplated that the angle β may range from about 10° to about 75°.

[0022] Referring to FIG. 8, a lacrosse helmet 118 having a helmet shield 200 is shown in accordance with another embodiment. In this embodiment, the helmet shield 200 is configured such that contact with the stick and/or basket of

another player will not allow the stick and/or basket of the other player to “catch” onto or get caught under the helmet shield 200. The helmet shield 200 may include a rear portion 202 (and in some cases a side portion) that is configured to cover and/or enclose and/or prevent the stick and/or basket of the other player from going under the helmet shield 200. In this embodiment, if the stick and/or basket of the other player contacts the rear portion 202 of the helmet shield 200, the stick and/or basket of the other player will be deflected off of the helmet shield 200. As such, the impact of the stick and/or basket hitting the helmet shield 200 will be greatly reduced than if the stick and/or basket were allowed to “catch” under the helmet shield 200. This will reduce the likelihood of head and/or neck injuries to the player.

[0023] Referring to FIG. 9, a lacrosse helmet 118 having a helmet shield 300 is shown in accordance with still yet another embodiment. In this embodiment, the helmet shield 300 includes a rear portion 302 that has an arcuate or “rounded” portion to allow the stick and/or basket of another player to be deflected upon impact. As above, this advantageously prevents the stick and/or basket from becoming “caught” under and/or from engaging the underside of the helmet shield 300. As above, this will reduce the likelihood of head and/or neck injuries to the player.

[0024] Referring to FIG. 10, a lacrosse helmet 118 having a helmet shield 400 is shown in accordance with still yet another embodiment. In this embodiment, the helmet shield 400 includes a rear portion 402 that extends to the back portion 404 of the lacrosse helmet 110. As above, this advantageously prevents the stick and/or basket from becoming “caught” under and/or from engaging the underside of the helmet shield 400. As above, this will reduce the likelihood of head and/or neck injuries to the player. It should also be appreciated that the helmet shield 100, 200, 300, 400 may be configured as an add-on or “retrofit” appliance and/or the helmet shield 100, 200, 300, 400 may be integrated into the design and/or material of the helmet 118. Additionally, the characteristics of the helmet shield 100, 200, 300, 400 may be incorporated into other locations of the helmet shield 100, 200, 300, 400. For example, the side portion and/or the front portion of the helmet shield 100, 200, 300, 400 may be configured similar to the rear portion 202, 302, 402 of the helmet shield 100, 200, 300, 400 to prevent the stick and/or basket from becoming “caught” under and/or from engaging the underside of the helmet shield 100, 200, 300, 400.

[0025] Additionally, in still yet another embodiment, it is contemplated that the helmet shield 100, 200, 300, 400 may be resiliently associated with the helmet 118 such that the helmet shield 100, 200, 300, 400 may move inward/downward/upward/sideward to “absorb” part of the shock of the impact along with deflecting the shock of impact. As such, in one embodiment the helmet shield 100, 200, 300, 400 may be associated with the lacrosse helmet 118 via a spring member. In another embodiment, the helmet shield 100, 200, 300, 400 may be constructed from a material (and/or designed) that is configured to bend and/or temporarily and elastically deform. As such, it is contemplated that the helmet shield 100, 200, 300, 400 may be designed to be energy deflective (i.e. deflects the impact energy from the stick and/or basket) and/or to be energy absorptive (i.e. absorbs the impact energy from the stick and/or basket).

[0026] It should be appreciated that in one embodiment, the foam material (or other impact resistant material) which

is located on the shield rear surface of the helmet shield **100, 200, 300, 400** may be 1.3# EPE Foam about ½" thick with a Net Bond PSA on one side. It is contemplated that the impact resistant material may be of any thickness suitable to the desired end result. Additionally, the helmet shield **100, 200, 300, 400** may be at least partially constructed from a Lexan Polycarbonate that may be about ⅛" thick. Essentially, the helmet shield **100, 200, 300, 400** and its components may be constructed from any material and/or combination of materials and may be of any thickness suitable to the desired end purpose, such as plastic, metal, composites, etc. It should be appreciated that the helmet shield **100, 200, 300, 400** may be attached to the lacrosse helmet **118** via any method or device suitable to the desired end purpose, such as screws, clips, snaps, hook and loop fasteners (Velcro®) and/or adhesive. Additionally, it is contemplated that the helmet shield **100, 200, 300, 400** may be used with any helmet as desired.

[0027] It should be appreciated that while the invention has been described with reference to an exemplary embodiment, it will be understood by those skilled in the art that some or all of the elements of the embodiments disclosed herein may be combined in whole or in part and that various changes, omissions and/or additions may be made and equivalents may be substituted for elements thereof without departing from the spirit and scope of the invention. In addition, many modifications may be made to adapt a particular situation or material to the teachings of the invention without departing from the scope thereof. Moreover, it is contemplated that elements of one embodiment may be combined with elements of other embodiments as desired. Therefore, it is intended that the invention not be limited to a particular embodiment disclosed herein as the best mode contemplated for carrying out this invention, but that the invention will include all embodiments (individually and/or combined) falling within the scope of the appended claims and/or information. Moreover, unless specifically stated any use of the terms first, second, etc. do not denote any order or importance, but rather the terms first, second, etc. are used to distinguish one element from another.

We claim:

1. A helmet shield, comprising:
 - a shield structure having a shield front, a shield rear and shield sides,
 - wherein the shield structure is configured to be securely associated with a front top portion of a helmet, and
 - wherein the shield structure is arcuate in shape between the shield sides to conform to the front top portion of the helmet, and
 - wherein the helmet shield further includes an impact resistant material securely associated with the shield rear to be located between the shield rear and the front top portion of the helmet when the helmet shield is associated with the helmet.
2. The helmet shield of claim 1, wherein when the shield structure is securely associated with the helmet, the shield structure is configured to at an angle β .

3. The helmet shield of claim 2, wherein the angle β is about 45 degrees.

4. The helmet shield of claim 2, wherein the angle β is between about 10 degrees and 75 degrees.

5. The helmet shield of claim 1, wherein the impact resistant material is about ½ inch thick.

6. The helmet shield of claim 1, wherein the shield structure is constructed from at least one of a plastic material, a composite material and/or any combination thereof.

7. The helmet shield of claim 1, wherein the shield structure is configured to be securely associated with the helmet via at least one of a screw, snap, clip and/or Velcro®.

8. The helmet shield of claim 1, wherein the impact resistant material is constructed from a foam material.

9. The helmet shield of claim 1, wherein when the helmet shield is associated with the helmet, the helmet shield is sized to cover the front top portion of the helmet from temple to temple.

10. A shield for a lacrosse helmet, comprising:

- a shield structure having a shield front, a shield rear, a shield top, a shield bottom and shield sides,
 - wherein the shield structure includes a mounting structure located proximate the shield bottom, wherein the mounting structure is configured to securely associate the shield structure with a front top portion of the lacrosse helmet, and

- wherein the shield structure is arcuate in shape between the shield sides to conform to the front top portion of the lacrosse helmet, and

- wherein the lacrosse helmet shield further includes an impact absorbent material associated with the shield rear to be located between the shield rear and the front top portion of the lacrosse helmet when the helmet shield is associated with the lacrosse helmet.

11. The shield of claim 10, wherein when the shield structure is securely associated with the lacrosse helmet, the shield structure is configured to at an angle β .

12. The shield of claim 11, wherein the angle β is about 45 degrees.

13. The shield of claim 11, wherein the angle β is between about 10 degrees and 75 degrees.

14. The shield of claim 10, wherein the impact absorbent material is about ½ inch thick.

15. The shield of claim 10, wherein the shield structure is constructed from at least one of a plastic material, a composite material and/or any combination thereof.

16. The shield of claim 10, wherein the shield structure is configured to be securely associated with the helmet via at least one of a screw, snap, clip and/or Velcro®.

17. The shield of claim 10, wherein the impact absorbent material is at least partially constructed from a foam material.

18. The shield of claim 10, wherein when the shield is associated with the lacrosse helmet, the shield is sized to cover the front top portion of the lacrosse helmet from temple to temple.

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