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(54) Title: UNIVERSAL PROTECTIVE HEADGEAR

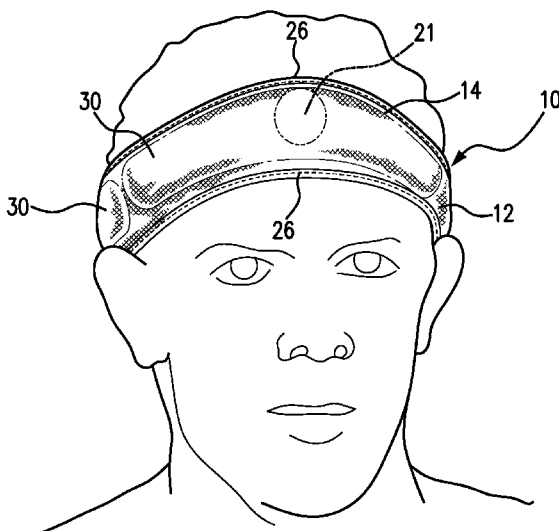


FIG. 1

(57) Abstract: A universal protective headgear device is sized, structured and configured to wrap around a user's head to cover and protect crucial areas around the entire circumference of the cranium while conforming to each user's particular anatomy, including head shape and size. Pads formed of impact absorbing polymers having full elastic memory are fitted within the headgear, between inner and outer layers of neoprene or similar elastomeric polymer material. Hook and loop fasteners on the opposite end portions allow for adjusted fitting to the user's head so that the universal protective headgear can be properly fitted to heads of all users, including children, adults and the elderly. The polymeric pads are structured and disposed to absorb and dissipate significant impact forces, thereby providing increased protection to areas around a user's entire head that are at the highest level of risk of head and brain injuries.



UNIVERSAL PROTECTIVE HEADGEAR

BACKGROUND OF THE INVENTION

5 Field of the Invention

The present invention relates to protective headgear and, more particularly, to a universal protective headgear for sports, recreational activities and other activities for both children and adults that extends around the circumference of the head and absorbs and dissipates significant impact forces to the head and brain.

10

Discussion of the Related Art

Head and brain injuries from forces of impact are an unfortunate but common occurrence in a wide variety of sports, as well as in the daily routines of children, adults, the elderly and challenged individuals. While head injuries cannot be entirely
15 eliminated, the number and severity of injuries can be significantly reduced with the use of protective headgear.

Numerous innovations for head protective devices have been provided in the prior art, including those devices disclosed in my prior U.S. Patent Nos. 7,234,174; 6,978,487; 6,675,395; and 6,272,692. Many of the protective headgear devices in the
20 prior art resemble helmets that extend over the top of the head and, while suitable for the purpose of providing some protection, there are shortcomings of the prior art devices which the present invention overcomes. For instance, many prior art headgear devices use padding materials that do not provide complete elastic memory. Thus, their ability to consistently absorb impact and dissipate significant impact forces is diminished. The

various head protective devices in the prior art are designed to cover areas of the head that have a low level of risk for injury due to impact forces, resulting in cumbersome, oversized headgear devices that are hot, unsightly and difficult to wash. Moreover, headgear that resembles a helmet presents a negative stigma and many individuals, including athletes, are reluctant to such cumbersome and less attractive devices. In certain sports, athletes are concerned about presenting and maintaining a tough or macho image. While they will wear protective headgear that looks and acts like a sweatband, many of these "macho" athletes refuse to wear helmets or other protective headgear that is not stylish or that is not considered "cool."

The present invention seeks to overcome the problems, limitations and negative stigma of the prior art headgear devices. The present invention provides the first universal protective headgear that can be applied to a wide variety of sports, recreational activities, cheerleading, the elderly prone to falling, veterans that have traumatic brain injuries (TBI), children on playgrounds, children learning to walk, and challenged children. Specifically, the present invention provides a stylish, highly functional and extremely effective universal protective headgear device that is lightweight, ventilated and adjustable and which includes full memory polymeric absorbing material offering increased protection at crucial impact zones around the entire circumference of the user's cranium, including at the forehead, temporal regions and the back of the head.

20

Summary of the Invention

The present invention is directed to a universal headgear device for protecting those areas of the head that are at the highest level of risk of injury from forces of impact.

The invention has been developed and tested to be in full compliance with ASTM standards, FIFA (Federation Internationale de Football Association), the National Federation of High School Associations and the European CE II requirements, designating the product as protective headgear after independent testing.

5 The universal protective headgear includes an elongate headband formed of neoprene or other elastomeric polymeric materials that have similar properties to neoprene. The elongate headband has opposite end portions and a central portion. The headband is sized, structured and configured to wrap around a user's head to cover and protect crucial areas around the entire circumference of the cranium. Pads formed of
10 impact absorbing polymers having full elastic memory are secured between inner and outer layers of the headband at the central and opposite end portions. The hardness of the polymeric pads is selected depending upon the amount of absorption and dissipation required for a specific activity. Hook and loop releasable fasteners on the opposite end portions allow for adjusted fitting of the headband to the user's head. The polymeric
15 pads are specifically positioned to allow the headband to easily wrap around and conform to the user's head and are structured and disposed to absorb and dissipate significant impact forces, thereby providing increased protection to areas around the user's entire head that are at the highest level of risk of injury from forces of impact, including at the forehead and at the back of the head.

20 The universal protective headgear of the present invention is useful in a wide variety of sports, recreational activities and other activities and environments for both children and adults including, but not limited to, the following:

- Soccer
- Basketball

- Under an Ice Hockey Goalie's face mask
- Women's Lacrosse
- Women's Field Hockey
- Volleyball
- 5 • Cheerleading
- Flag Football
- Floor Hockey
- Ice Skating
- Under the helmet of Jockeys and Equestrian Riders
- 10 • Hiking
- Children and Dwarfs Learning to Walk
- Children on Playgrounds
- Autistic Children that are prone to hit their head against the wall
- Challenged Children
- 15 • Veterans that have traumatic brain injuries (TBI)
- Elderly that are prone to falls
- Elderly in Nursing Homes

Precise positioning and placement of protective headgear is critical in reducing
20 significant impact forces to the head that could cause head and brain injuries. Providing
protection at the areas of the head that are at the highest level of risk for injury is
particularly important with regard to children playing sports whose brains are still
developing. For instance, children running around a playing field while participating in
a contact sport can hit their heads together, get kicked in the head, have their heads hit to
25 the ground or come into contact with a goal post. They may also be inadvertently hit in
the head with an object, such as ball in field hockey or a puck in floor hockey. In
addition, heading the ball in soccer exposes the player to sub-concussive and concussive

impacts. All of these impact forces to the head and brain are significantly reduced with the use of the universal protective headgear of the present invention. The risk of head and brain injuries from such impact forces necessitates use of the universal headgear which provides a lightweight and non-burdensome means to absorb and dissipate a substantial portion of the significant impact forces associated with collisions and other impacts to the head and brain areas.

In the past twenty years, cheerleading, which includes "competitive cheer", has evolved into a highly physical sport of tumbling, flying through the air and building tall human pyramids. Cheerleaders perform these dangerous acrobatics without the use of any body armor or protective headgear. Not surprisingly, thousands of cheerleaders are injured each year from falls and collisions while performing various acrobatic maneuvers. In fact, the Consumer Product Safety Commission recently reported that there were almost 37,000 emergency room visits for cheerleading injuries among girls aged 6-22 in just the course of one year. Cheerleading poses by far the greatest risk of catastrophic injury to young female participants of any sport. The American Academy of Pediatrics reported that, between the years 1982 and 2009, cheerleading accounted for 65% of all direct catastrophic injuries to girl athletes at the high school level and 70% at the college level. Many of these catastrophic injuries involve closed-head injuries and skull fractures. Accordingly, there is an urgent need to provide protective headgear for cheerleaders that significantly lowers the risk of the severity of significant impact forces to the head and brain areas, while also being lightweight, stylish and matching the color and design of cheerleader uniforms.

As noted above, children are particularly susceptible to head injuries. In particular, children learning to walk and children on playgrounds are extremely

vulnerable to banging their head on the ground or into other objects. Challenged children and autistic children are also at risk for head injuries and may intentionally hit their head against a wall or other object. In some instances, these impacts to children's heads can be severe and have long lasting effects, possibly resulting in permanent brain damage or death. Dwarfs learning to walk are also at significant risk to head injuries. Because dwarfs' heads are large and throw the rest of the child's body off balance, they find it difficult to learn to walk. Until the development of the present invention, dwarfs have had no other option but to wear helmet while learning to walk. Accordingly, there is an urgent need for a universal protective headgear product that can be worn by all children, doing all types of activities, in order to provide protection that lowers the risk of the severity of significant impact forces to the head and brain areas.

Veterans in hospitals and elderly persons in nursing homes are also vulnerable to hitting their head against walls, doors, the floor and other objects. This may be the result of a loss of balance, neurological disorders or other conditions or events (e.g., tripping on curbs or other objects) that result in impacts to the head. Accordingly, there remains an urgent and definite need to protect veterans in hospitals, and elderly persons in nursing homes from head injuries by providing a universal headgear product that lowers the risk of the severity of significant impact forces to the head and brain areas.

The universal protective headgear of the present invention serves to provide protection that lowers the risk of the severity of the impact force to the head and brain, while also functioning as a sweatband that absorbs perspiration. The complete structure of the headgear has consistent memory throughout its length, while also being structured and disposed to provide an appropriate level of ventilation and breathing, thereby reducing heat between the headband and the user's head. The universal headgear of the

present invention may be manufactured in a variety of sizes, widths, thicknesses, and degrees of curvature to suit the needs of the particular user, as well as to conform to the circumference and contour of the anatomy of a particular user's head.

5 Objects and Advantages of the Invention

Considering the forgoing, it is a primary object of the present invention to provide a universal protective headgear product that is sized, structured and configured to cover areas of the head that are at the highest level of risk of injury from exposure to impact forces and that has universal application for a wide variety of sports, recreational
10 activities, cheerleading, nursing homes, playgrounds, veterans in hospitals and challenged children, and wherein the headgear is structured and disposed to absorb and dissipate significant impact forces to the head.

It is a further object of the present invention to provide a universal protective headgear product that adjustably fits around and conforms to the entire circumference of
15 the user's head and which is compressible and has full elastic memory throughout the entire length of the headgear.

It is a further object of the present invention to provide a protective stylish headband that resembles a typical sweatband, while also providing significant protection to areas of the head that are at the highest level of risk of head and brain injuries,
20 thereby appealing to even the most "macho" athletes.

It is still a further object of the present invention to provide a universal protective headgear product that is stylish, lightweight, adjustable to fit all head sizes, and that maintains its integrity while in place around the circumference of the user's head.

It is still a further object of the present invention to provide a universal protective headgear device in the form of a headband that absorbs perspiration and which is formed of breathable materials, thereby maintaining the user's head cool and comfortable, while also significantly reducing the severity of impact forces to the brain.

5 It is still a further object of the present invention to provide a protective headgear device that is easily washed in a sink with tap water and hand soap.

It is yet a further object of the present invention to provide a universal headgear device in the form of an elongate headband that can be manufactured in a variety of colors and designs in order to match the decor of uniforms and/or equipment worn by
10 the user.

It is still a further object of the present invention to provide a protective headband that provides for an area for placement of team and/or brand names and logos.

These and other objects and advantages of the present invention are more readily apparent with reference to the following detailed description taken in conjunction with
15 the accompanying drawings.

Brief Description of the Drawings

For a fuller understanding of the nature of the present invention, reference should be made to the following detailed description taken in conjunction with the
20 accompanying drawings in which:

Figure 1 is a perspective view showing the universal protective headgear worn on a male adult's head;

Figures 2A-2D show examples of use of the universal headgear by participants in various contact sports, such as cheerleading, soccer, flag football and women's lacrosse;

Figure 3 is a bottom plan view of the universal protective headgear of the present invention, showing the inner facing side of the headband with three separate pads of polymeric material secured under a liner on the inner facing side of the headband;

Figure 4 is a cross sectional view taken along the plane of the line indicated by the arrows 4-4 in Figure 3;

Figure 5 is a top plan view of the universal protective headgear of the present invention showing the outer facing side of the headband when stretched out and laid flat;

Figure 6 is a side elevational view of the headband shown in Figure 3 illustrating the three separate polymeric pads protruding on the inner facing side and hook and loop fasteners at opposite ends of the headband;

Figure 7 is a bottom plan view of the universal protective headgear of the present invention showing an alternative configuration and placement of the impact absorbing polymeric pads; and

Figure 8 is a bottom plan view of the universal protective headgear of the present invention, showing yet a further embodiment of the invention using a single impact absorbing polymeric pad extending along the entire length of the protection area of the headband.

Like reference numerals refer to like parts throughout the several views of the drawings.

Detailed Description of the Preferred Embodiments

Referring to the several views of the drawings, and initially Figures 1 and 2A-2D, the universal protective headgear 10 of the present invention is shown on several users' heads participating in various sports. The universal protective headgear 10 is defined primarily by an elongate headband 12 that resembles and functions as a sweatband. When properly worn, as shown in Figures 1 and 2A-2D, the headband 12 extends around the entire circumference of the user's head and substantially covers the forehead, left and right temporal regions and the back of the head, covering those areas where there is the highest level of risk to head and brain injuries from forces of impact.

The universal headgear 10 is structured to be fully compressible and provide full elastic memory throughout its entire length. The headgear includes one or more pads formed of impact absorbing polymers. When the headgear is properly worn, the impact absorbing polymeric pads are positioned in covering, protective relation to those high risk areas, around the entire circumference of the user's head. The hardness of the polymeric pads can be varied depending upon the amount of absorption and dissipation required for a particular sport or activity in full compliance with existing ASTM standards, FIFA, the National Federation of High School Associations and the European CE II standard designating the product as "protective headgear" after independent testing. In a preferred embodiment, the hardness of the polymeric pads 30 is in the range of between 20-65, as measured by a TECLOCK durometer, model JS S 6050.

Referring to Figures 3-8, several embodiments of the universal protective headgear 10 are shown. In each of these embodiments, the headband 12 includes a central zone 14, a first distal end zone 16 and a second distal end zone on the opposite

side of the central zone 14. Each of the first and second distal end zones 16, 18 extend from the central zone to the respective opposite distal ends of the headband 12.

Referring to Figure 4, the construction of the universal protective headgear 10 is shown in cross section and includes an outer facing material band 20 formed of an elastomeric polymeric material, such as neoprene or other elastomeric polymers that have similar properties, and an inner facing layer of material 22 formed of an elastomeric material, such as neoprene or similar elastomeric polymeric material. In a preferred embodiment, the inner facing layer of material 22 is lighter in weight (i.e., thinner) compared to the outer layer of material 20. The one or more impact absorbing polymeric pads 30 are positioned between the outer material layer 20 and the inner material layer 22. In a preferred embodiment, the inner facing layer of material 22 is tightly fitted about the one or more polymeric pads 30 and against an inner side of the outer layer of material 20 so as to firmly and snugly hold the one or more polymeric pads in fixed position on the headband 12. A stitched rib of material 26 extends about the entire periphery of the headband 12 and joins the outer material layer 20 with the inner material layer 22. The stitched rib 26 is formed of an elastomeric material, similar to the outer and inner layers, and preferably of a thickness that is equal to or similar to the inner material layer 22. As seen in Figures 3 and 5-8, the rib 26 is stitched on both sides of the headband to secure the inner and outer layers together. While thread stitching is shown, in accordance with a preferred embodiment, it is recognized that the periphery of the inner and outer layers may be joined together by other means, such as by gluing, heat sealing or other suitable means of attachment.

The embodiments shown in Figures 3-6 and 7 provide for multiple impact absorbing polymeric pads 30 that are positioned side by side along a substantial length

of the headband. Small spaces or gaps 32 between each of the adjacently positioned polymeric pads 30 promote flexing of the headband 12 so that the headband 12 can be wrapped around and conform to the contour of the wearer's head, with the headgear 10 providing consistent and full elastic memory throughout the entire length of the headband 12 and around the entire circumference of the wearer's head.

The embodiment shown in Figure 8 provides for a single impact absorbing polymeric pad 30 that extends substantially along the length of the protection area of the headband 12, providing complete and consistent elastic memory throughout the entire length of the headband 12.

In each of the embodiments shown throughout the several views of the drawings, the opposite first and second distal end zones 16, 18 are provided with releasable fasteners for adjustably securing the headband around the user's head so that the headband fits snug (i.e., without slipping), but not too tight. In a preferred embodiment, the releasable fasteners at the opposite first and second distal end zones are hook and loop fasteners. However, it is fully contemplated within the spirit and scope of the invention to provide other types of releasable and adjustable fasteners, such as, but not limited to, snaps or buttons. Alternatively, the ends of the headband may be permanently affixed to one another so that the headband is a continuous and endless loop that is able to stretch and conform to the size and shape of the wearer's head.

The hook and loop releasable fasteners shown throughout the several views of the drawings include a loop component 42 on the outer facing side of the first distal end zone 16 and a hook component 44 on an inner facing side of the second distal end zone 18.

As seen in Figures 3, 5 and 7-8, the central zone 14 of the headband has a curved configuration relative to the opposite first and second distal end zones 16 and 18. This curved configuration allows the headband to properly conform to the wearer's head, when wrapped around the forehead and back of the head, to properly cover the areas of the head that are at the highest level of risk to injury from impact forces. It should be noted that the degree of curvature of the headband, as well as the length of the headband and the width of the headband and the width of the polymeric pads 30 may be varied to conform with the circumference and anatomical shape of different wearer's heads. Moreover, the materials and structure of the universal headgear 10 provide full elastic memory throughout the entire length of the headband 12 and around the entire circumference of the wearer's head.

The outer facing surface of the outer layer 20 may be provided with one or more areas 21 for placement of team or brand names and/or logos.

While the present invention has been shown in accordance with several preferred and practical embodiments, it is recognized that departures from the instant disclosure are fully contemplated within the spirit and scope of the present invention which is not to be limited except as defined in the following claims.

What is claimed is:

1. A protective headgear device comprising:

an elongate headband having an outer facing surface, an inner facing surface, opposite end portions, and a central portion between the end portions, the headband being sized, structured and configured to wrap around the entire circumference of a user's head, including across the forehead, through the temporal regions and across the back of the user's head to define an operative position, and the headband being formed of one or more compressible elastomeric polymeric materials and having full elastic memory throughout its entire length; and

at least one impact absorbing pad on said headband positioned to overly and protect areas around the entire circumference of the user's head when the headband is worn in the operative position, and the at least one impact absorbing pad being compressible and having full elastic memory and being formed of at least one polymer material, and the at least one impact absorbing pad being structured and disposed to absorb and dissipate external forces of impact to the outer facing surface when the headband is worn in the operative position on the user's head.

2. The protective headgear device as recited in Claim 1 further comprising releasable fasteners on the opposite end portions of said headband for adjustably fitting and securing the headband snug around the user's head in the operative position.

3. The protective headgear device as recited in Claim 2 wherein said headband includes an outer layer of material providing the outer facing surface, and an inner layer of material providing the inner facing surface.

5 4. The protective headgear device as recited in Claim 3 wherein the at least one impact absorbing pad is held in fixed position between the outer and inner layers of material.

10 5. The protective headgear device as recited in Claim 4 wherein the outer layer of material is neoprene.

 6. The protective headgear device as recited in Claim 5 wherein the inner layer of material is neoprene.

15 7. The protective headgear device as recited in Claim 6 wherein the headband includes a plurality of said impact absorbing pads positioned adjacent to one another along at least a portion of the length of the headband.

20 8. The protective headgear device as recited in Claim 7 wherein the opposite end portions and the central portion of the headband include at least one of the plurality of impact absorbing pads positioned thereon.

 9. The protective headgear device as recited in Claim 2 wherein the releasable fasteners are hook and loop fasteners.

10. The protective headgear device as recited in Claim 1 wherein the at least one impact absorbing pad has a hardness ranging between 20 and 65, as measured by a TECLOCK durometer.

5 11. A protective headgear device comprising:

an elongate headband having an outer facing surface, an inner facing surface, opposite end portions, and a central portion between the end portions, the headband being sized, structured and configured to wrap around the entire circumference of a user's head, including across the forehead, through the temporal regions and across the back of the user's head to define an operative position, and the headband being formed of one or more compressible elastomeric polymeric materials and having full elastic memory throughout its entire length; and

10 at least one impact absorbing pad on said headband positioned to overly and protect areas around the entire circumference of the user's head when the headband is worn in the operative position, and the at least one impact absorbing pad being compressible and having full elastic memory and being formed of at least one polymer material, and the at least one impact absorbing pad being structured and disposed to absorb and dissipate external forces of impact to the outer facing surface when the headband is worn in the operative position on the user's head; and

20 releasable fasteners on the opposite end portions of said headband for adjustably fitting and securing the headband snug around the user's head in the operative position.

12. The protective headgear device as recited in Claim 11 wherein said headband includes an outer layer of material providing the outer facing surface, and an inner layer of material providing the inner facing surface.

5 13. The protective headgear device as recited in Claim 12 wherein the at least one impact absorbing pad is held in fixed position between the outer and inner layers of material.

10 14. The protective headgear device as recited in Claim 13 wherein the outer layer of material is neoprene.

15 15. The protective headgear device as recited in Claim 14 wherein the inner layer of material is neoprene.

15 16. The protective headgear device as recited in Claim 15 wherein the headband includes a plurality of said impact absorbing pads positioned adjacent to one another along at least a portion of the length of the headband.

20 17. The protective headgear device as recited in Claim 16 wherein the opposite end portions and the central portion of the headband include at least one of the plurality of impact absorbing pads positioned thereon.

18. The protective headgear device as recited in Claim 11 wherein the releasable fasteners are hook and loop fasteners.

19. The protective headgear device as recited in Claim 11 wherein the at least one impact absorbing pad has a hardness ranging between 20 and 65, as measured by a TECLOCK durometer.

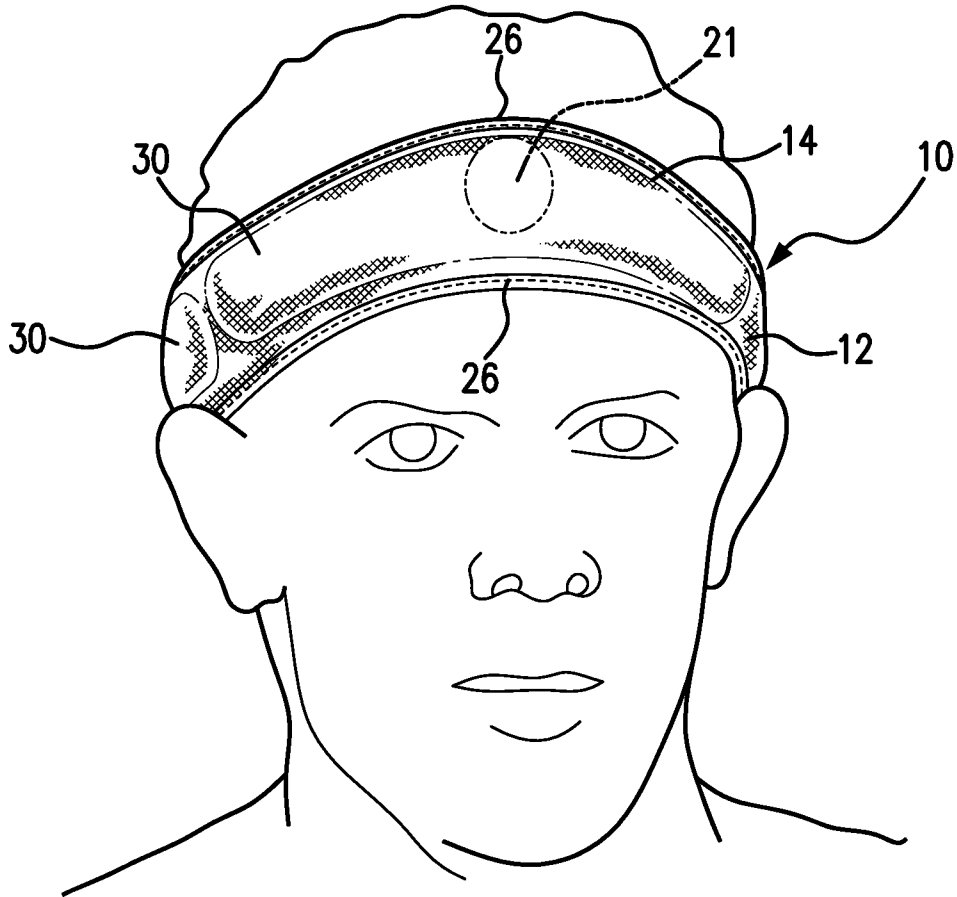


FIG. 1

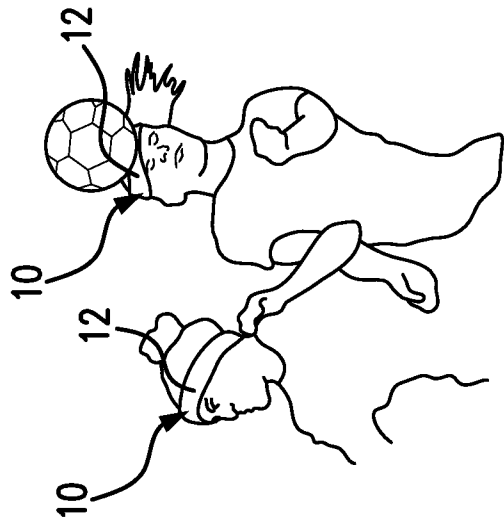


FIG. 2B

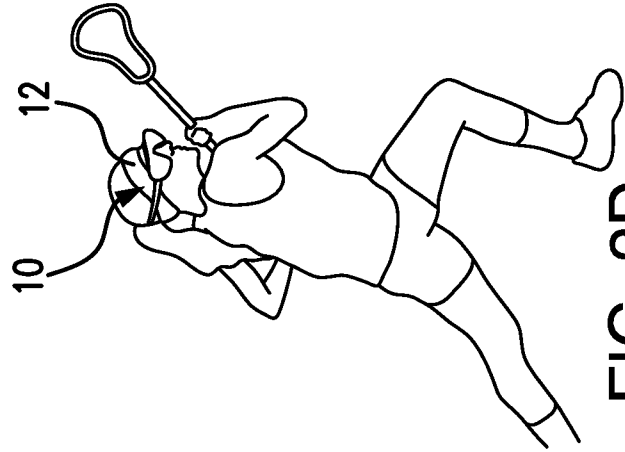


FIG. 2D

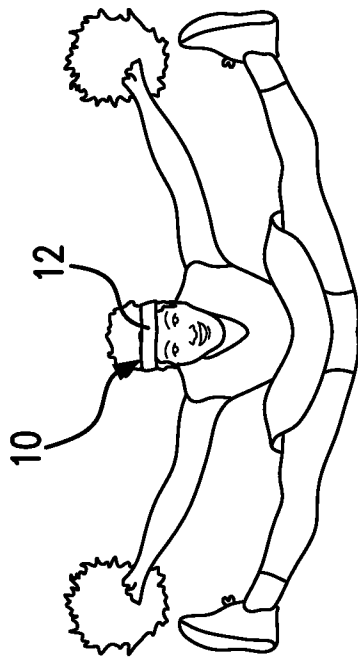


FIG. 2A

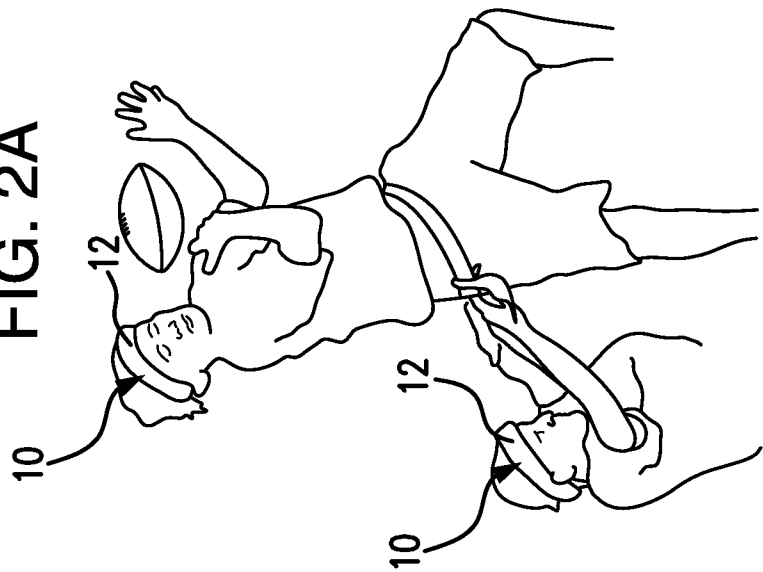


FIG. 2C

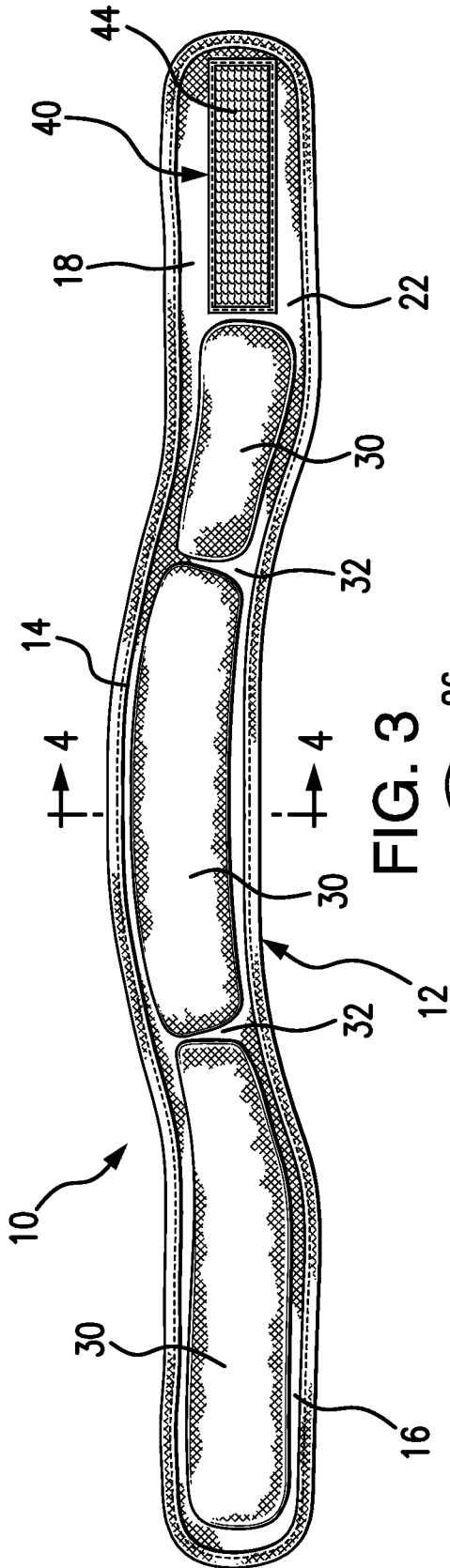


FIG. 3

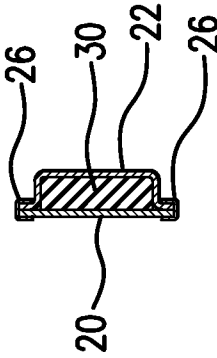


FIG. 4

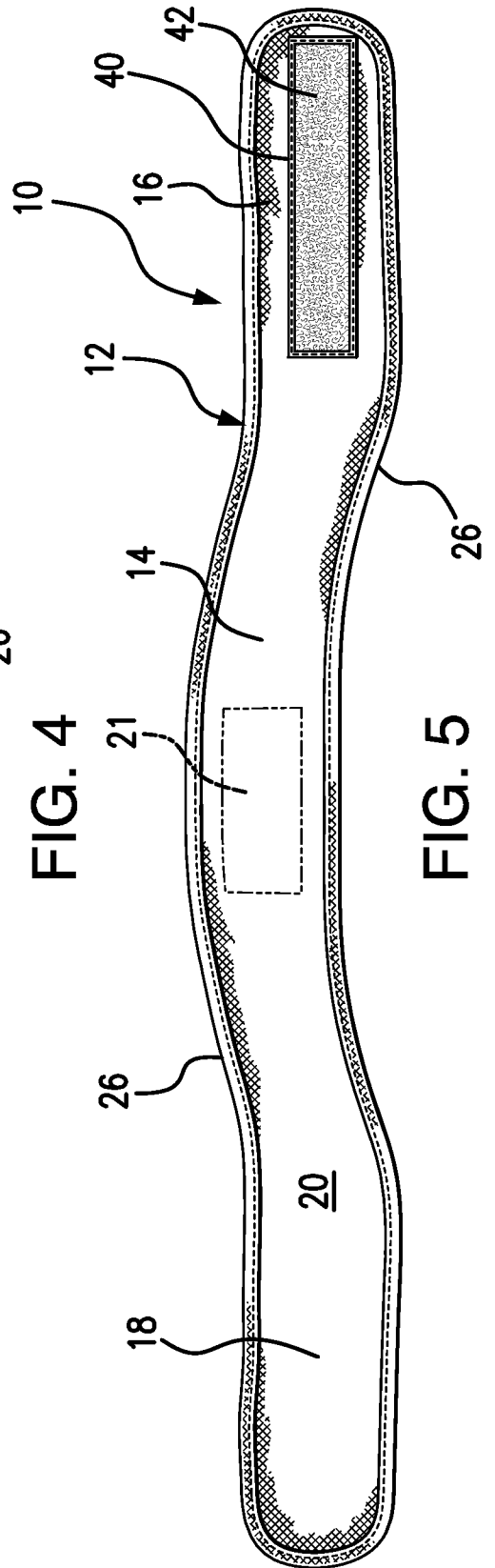
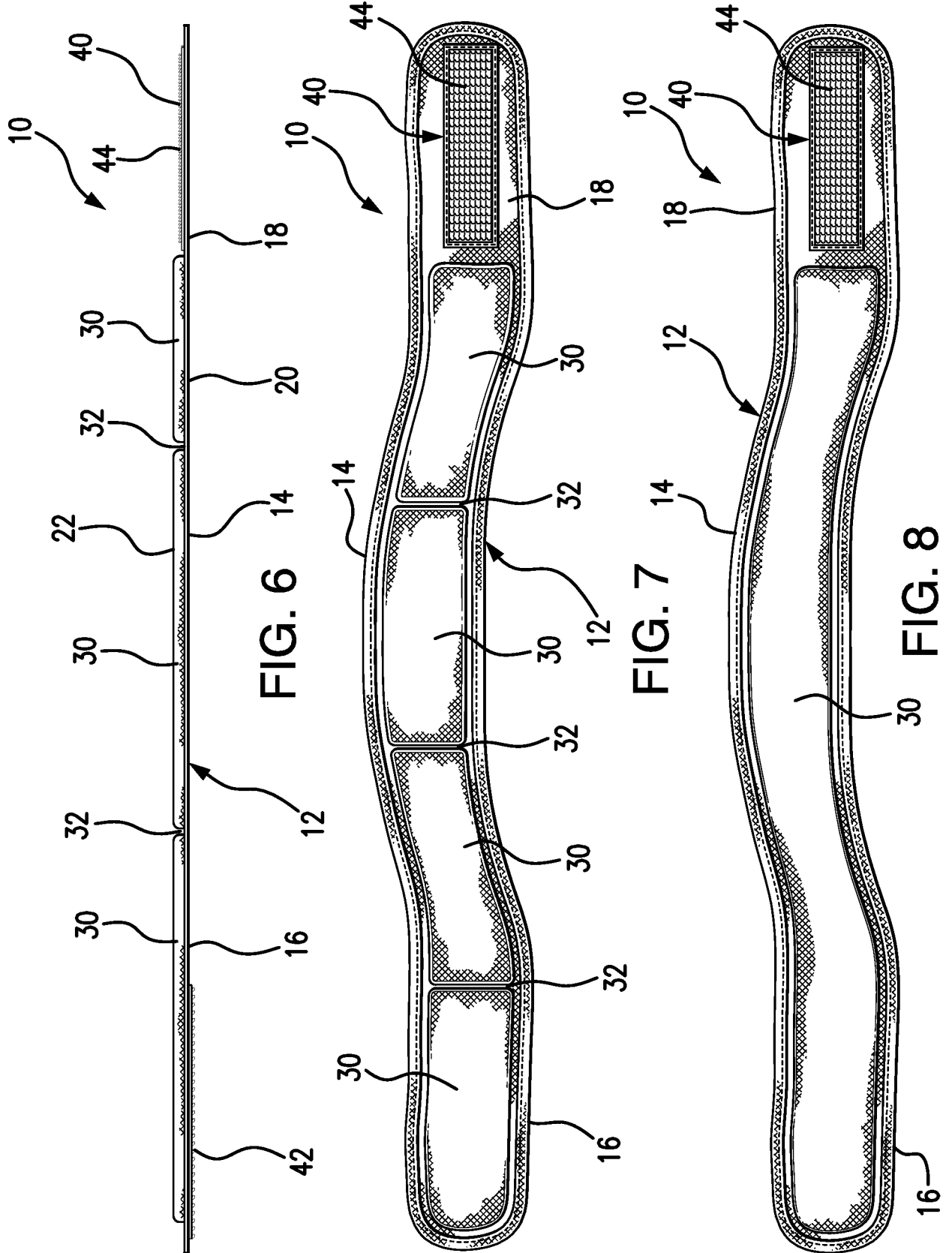


FIG. 5



INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 2015/025752

<p>A. CLASSIFICATION OF SUBJECT MATTER</p> <p style="text-align: center;"><i>A42B 3/00 (2006.01)</i> <i>A42B 3/12 (2006.01)</i></p> <p>According to International Patent Classification (IPC) or to both national classification and IPC</p>																				
<p>B. FIELDS SEARCHED</p> <p>Minimum documentation searched (classification system followed by classification symbols)</p> <p style="text-align: center;">A42B 3/00-3/32</p> <p>Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched</p> <p>Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)</p> <p style="text-align: center;">Espacenet, PatSearch (RUPTO internal)</p>																				
<p>C. DOCUMENTS CONSIDERED TO BE RELEVANT</p> <table border="1"> <thead> <tr> <th>Category*</th> <th>Citation of document, with indication, where appropriate, of the relevant passages</th> <th>Relevant to claim No.</th> </tr> </thead> <tbody> <tr> <td>Y</td> <td>EP 1037089 A1 (TOGANOV VLADIMIR MIHAYLOVICH) 20.09.2000, fig. 1, paragraphs [0012]-[0013]</td> <td>1-19</td> </tr> <tr> <td>Y</td> <td>WO 2005/034666 A1 (BODYCAGE LIMITED et al.) 2 1.04.2005, fig. 1, 2, p. 6, lines 9-16</td> <td>1-19</td> </tr> <tr> <td>Y</td> <td>US 6792624 B2 (JOHN J. SIMMONS) 2 1.09.2004, fig. 1, positions 18, 20, 22, 24</td> <td>2-9, 11-19</td> </tr> <tr> <td>Y</td> <td>US 4765338 A (RICHARD W. TURNER et al.) 23.08.1988, fig. 5, positions 31, 34, fig. 3, position 35</td> <td>3-8, 12-17</td> </tr> <tr> <td>Y</td> <td>US 5594956 A (RAGS N'THINGS INC.) 21.01 .1997, fig. 4, position 16, 18, 20, 22</td> <td>9, 18</td> </tr> </tbody> </table>			Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.	Y	EP 1037089 A1 (TOGANOV VLADIMIR MIHAYLOVICH) 20.09.2000, fig. 1, paragraphs [0012]-[0013]	1-19	Y	WO 2005/034666 A1 (BODYCAGE LIMITED et al.) 2 1.04.2005, fig. 1, 2, p. 6, lines 9-16	1-19	Y	US 6792624 B2 (JOHN J. SIMMONS) 2 1.09.2004, fig. 1, positions 18, 20, 22, 24	2-9, 11-19	Y	US 4765338 A (RICHARD W. TURNER et al.) 23.08.1988, fig. 5, positions 31, 34, fig. 3, position 35	3-8, 12-17	Y	US 5594956 A (RAGS N'THINGS INC.) 21.01 .1997, fig. 4, position 16, 18, 20, 22	9, 18
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<p>* Special categories of cited documents:</p> <table border="0"> <tr> <td>"A" document defining the general state of the art which is not considered to be of particular relevance</td> <td>"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention</td> </tr> <tr> <td>"E" earlier document but published on or after the international filing date</td> <td>"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone</td> </tr> <tr> <td>"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)</td> <td>"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art</td> </tr> <tr> <td>"O" document referring to an oral disclosure, use, exhibition or other means</td> <td>"&" document member of the same patent family</td> </tr> <tr> <td>"P" document published prior to the international filing date but later than the priority date claimed</td> <td></td> </tr> </table>			"A" document defining the general state of the art which is not considered to be of particular relevance	"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention	"E" earlier document but published on or after the international filing date	"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone	"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)	"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art	"O" document referring to an oral disclosure, use, exhibition or other means	"&" document member of the same patent family	"P" document published prior to the international filing date but later than the priority date claimed									
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<p>Date of the actual completion of the international search</p> <p style="text-align: center;">17 December 2015 (17. 12.2015)</p>		<p>Date of mailing of the international search report</p> <p style="text-align: center;">14 January 2016 (14.01 .2016)</p>																		
<p>Name and mailing address of the ISA/RU: Federal Institute of Industrial Property, Berezhkovskaya nab., 30-1, Moscow, G-59, GSP-3, Russia, 125993 Facsimile No: (8-495) 531-63-18, (8-499) 243-33-37</p>		<p>Authorized officer</p> <p style="text-align: center;">P. Bystrov</p> <p>Telephone No. (495)53 1-64-81</p>																		