

TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA/82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

Application Number	Not Yet Assigned
Filing Date	Herewith
First Named Inventor	Steven T. Baldi
Title	VENTILATED MODULAR DUAL SHELLLED HELMET SYSTEM
Art Unit	Not Yet Assigned
Examiner Name	Not Yet Assigned
Attorney Docket Number	113762.00005

SIGNATURE of Applicant or Patent Practitioner

Signature	/James R. Yee/	Date (Optional)	November 21, 2017
Name	James R. Yee	Registration Number	34460
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)			

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.



*Total of 1 forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)

- ☒ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above:
- OR
- ☐ I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:

- ☒ The address associated with the above-mentioned Customer Number
- OR

- ☐ The address associated with Customer Number:

OR

Firm or Individual Name				
Address				
City	State	Zip		
Country				
Telephone	Email			

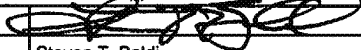
I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

Apalone, Inc.

- ☐ Inventor or Joint Inventor (title not required below)
- ☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)
- ☒ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)
- ☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature		Date (Optional)	
Name	Steven T. Baldi		
Title	President		

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

☐ Total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

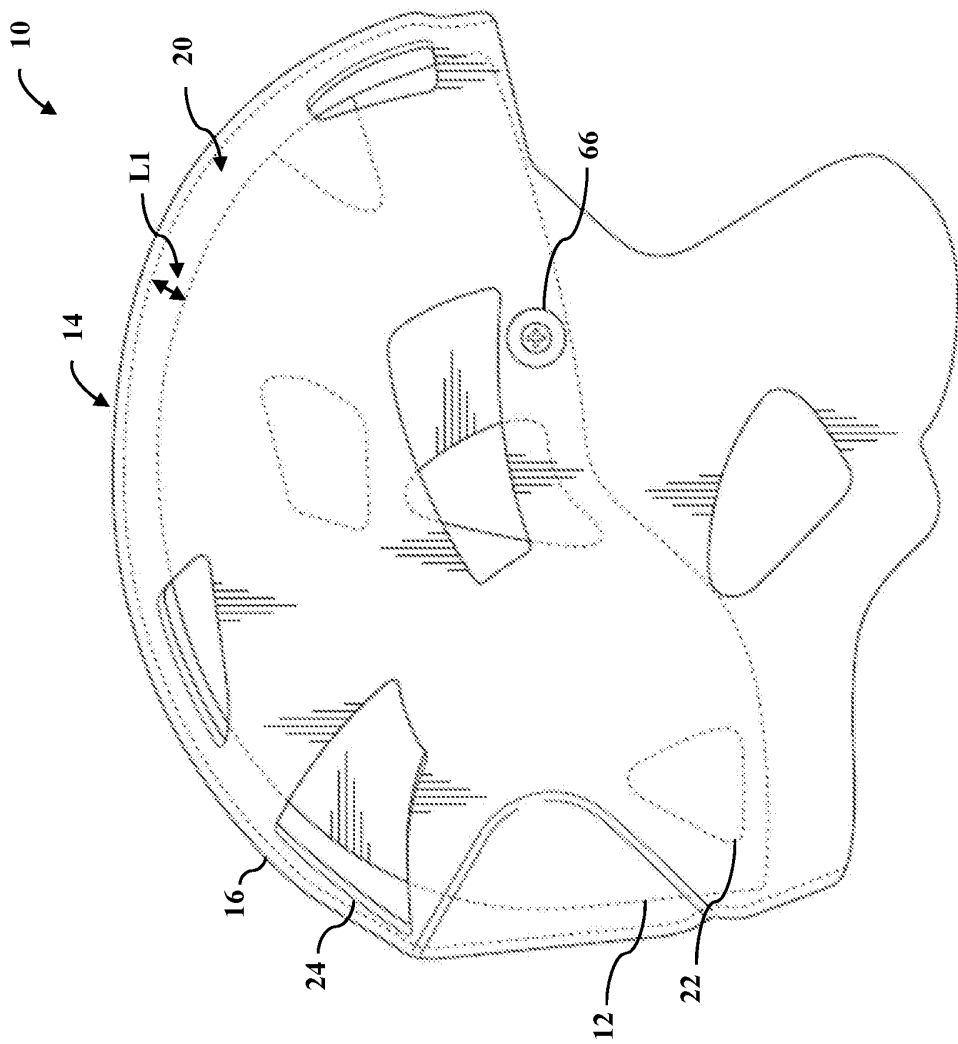


FIG. 1

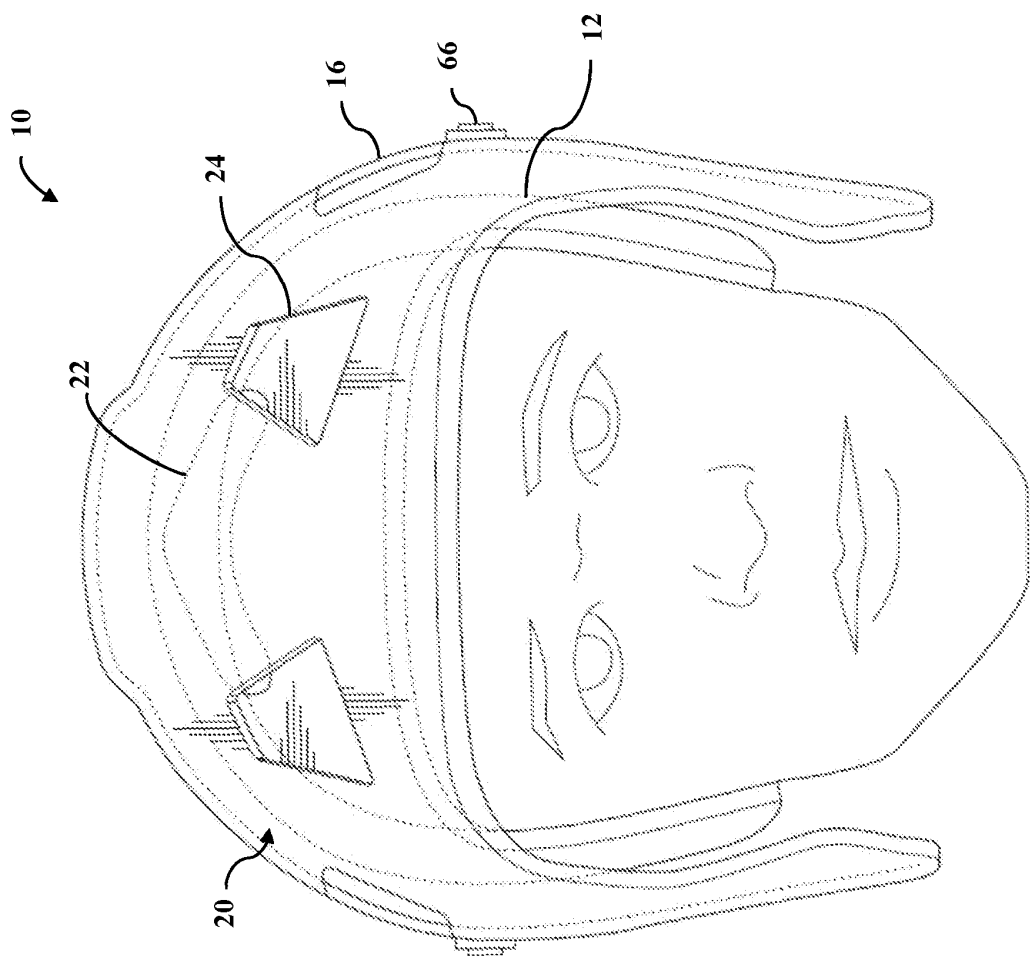


FIG. 2

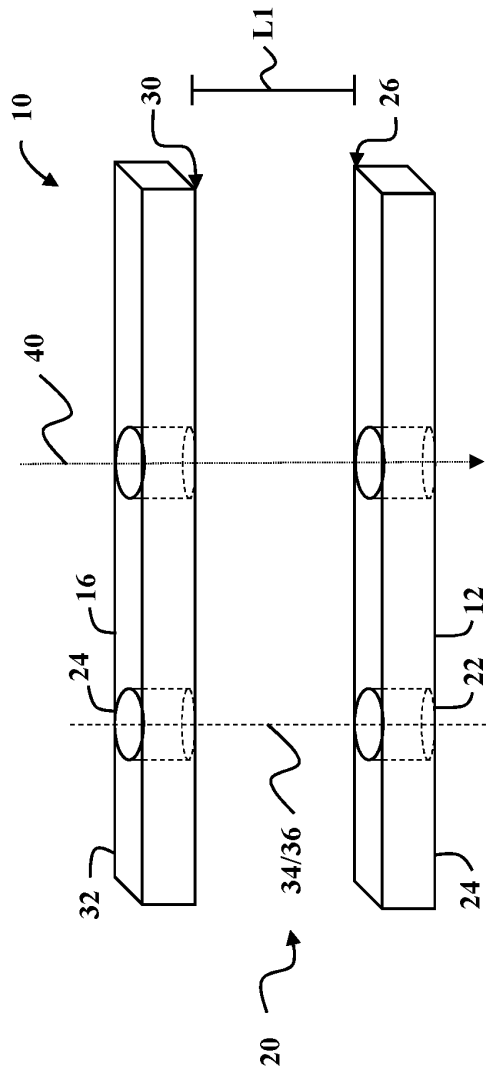


FIG. 3

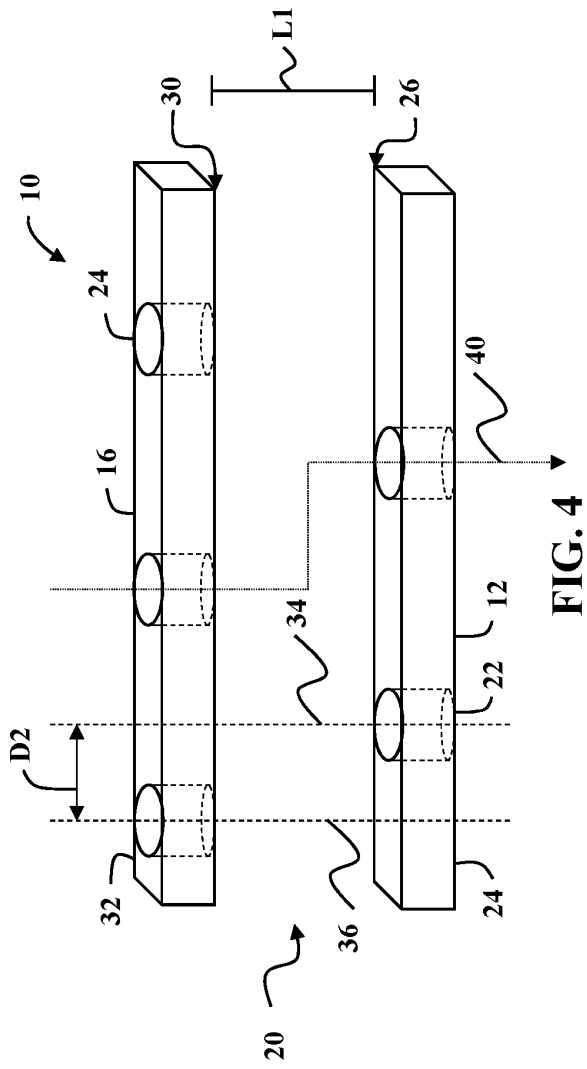
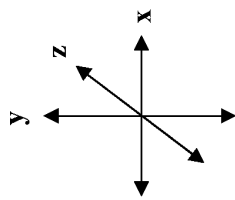


FIG. 4



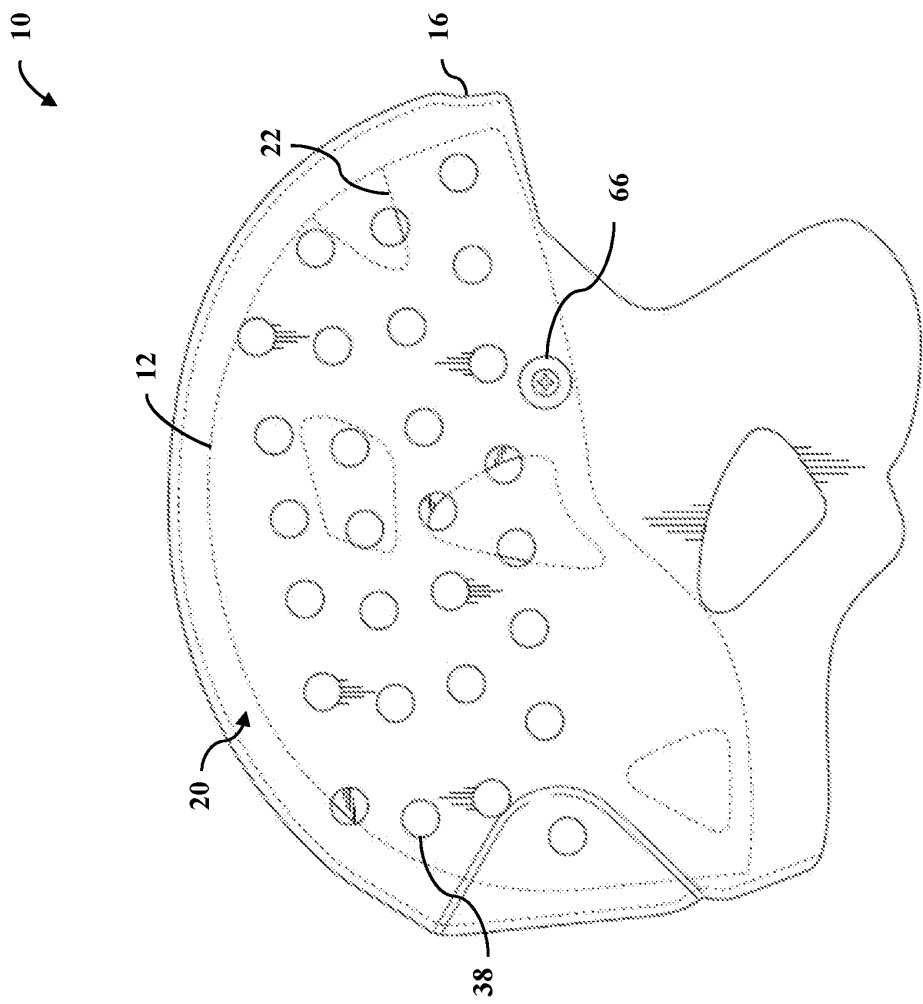


FIG. 5

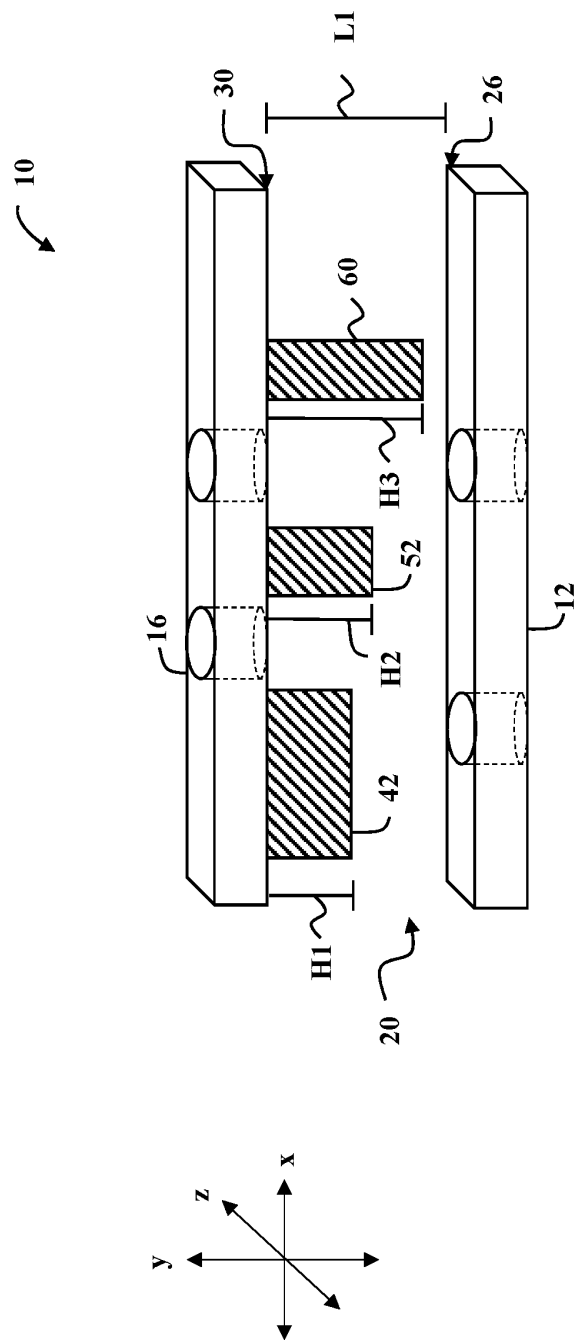


FIG. 6

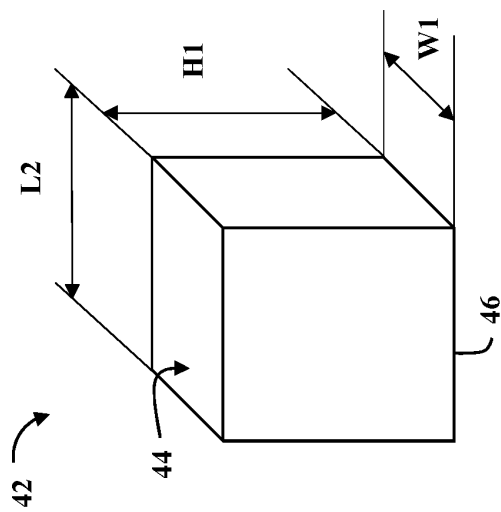


FIG. 7

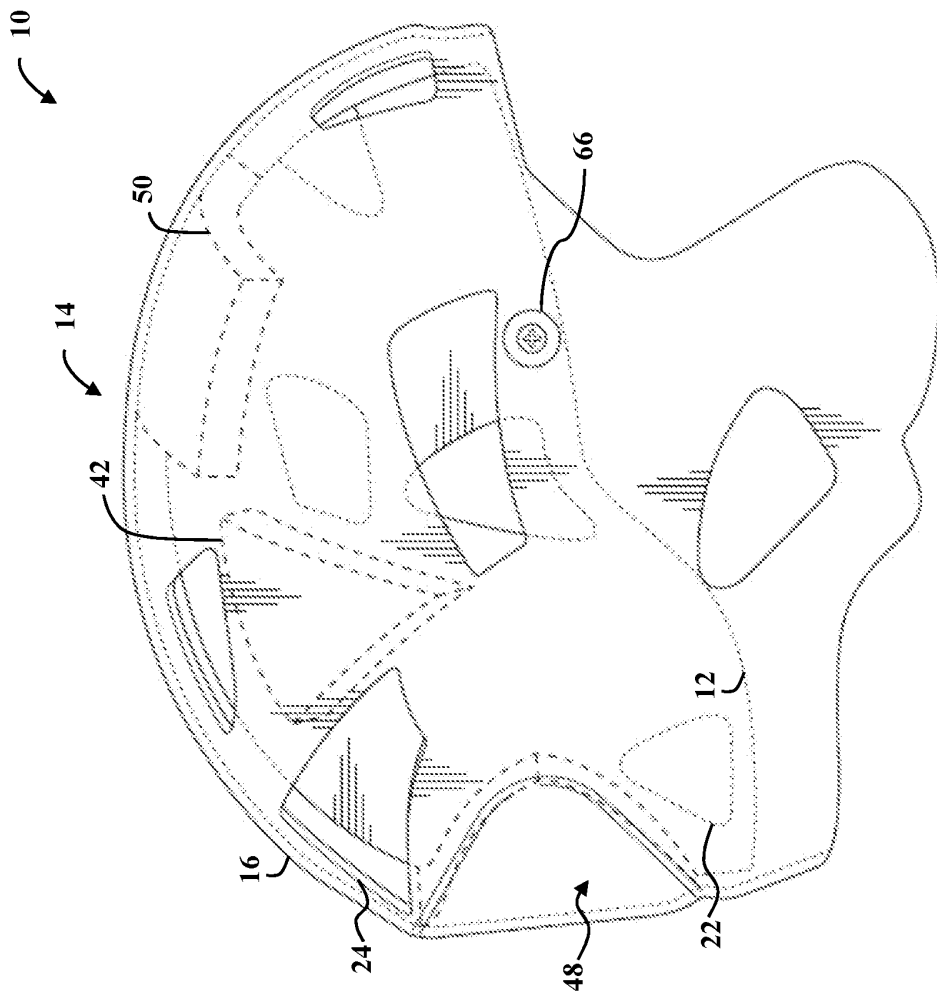


FIG. 8

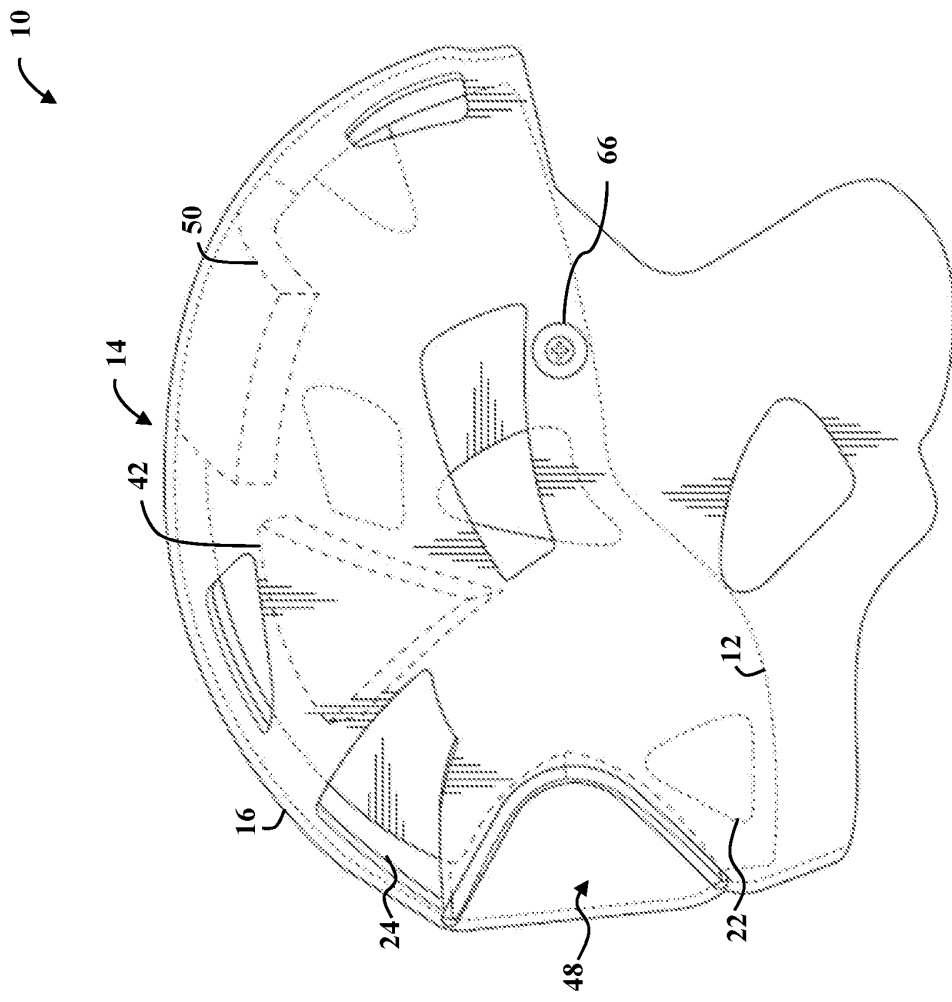


FIG. 9

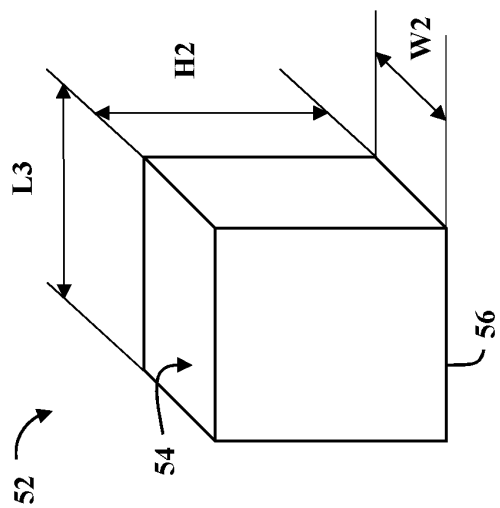


FIG. 10

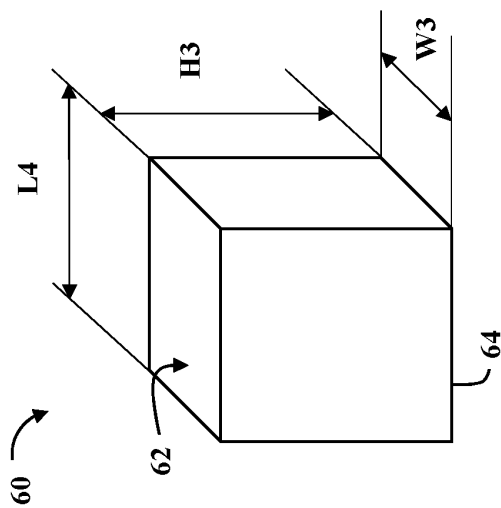
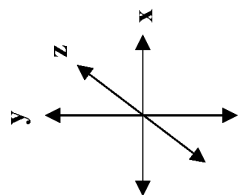


FIG. 11

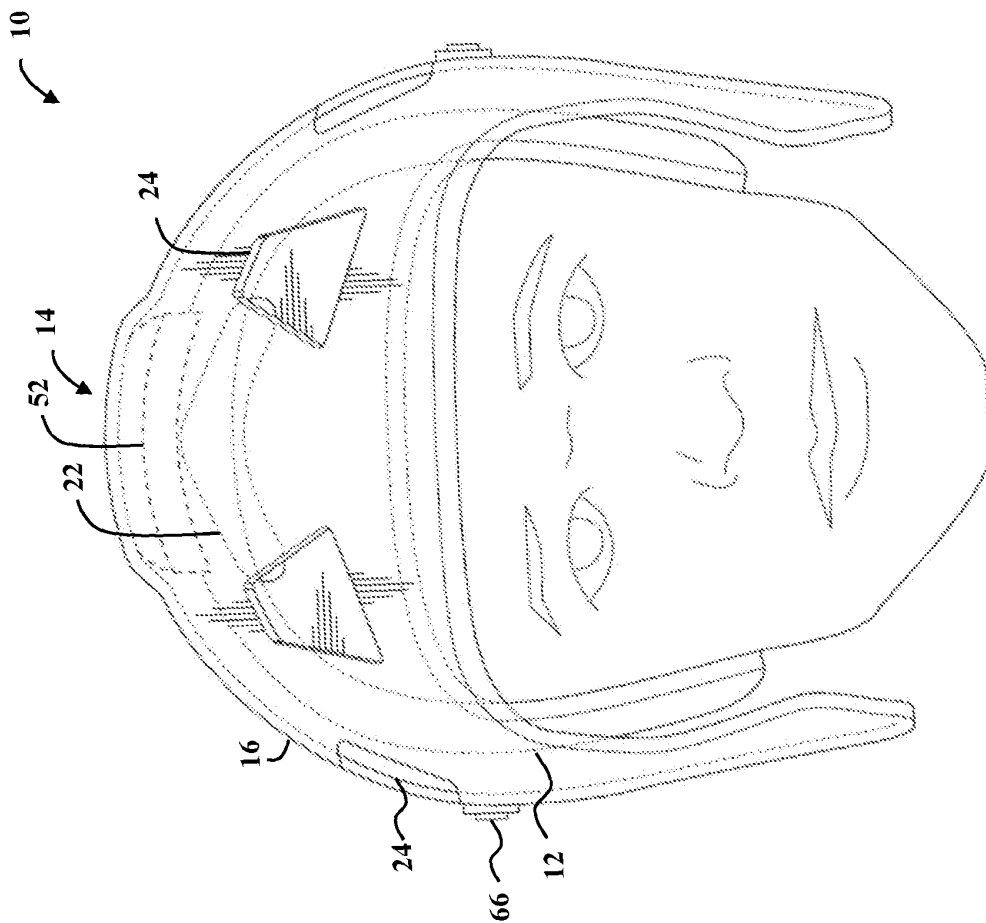


FIG. 12

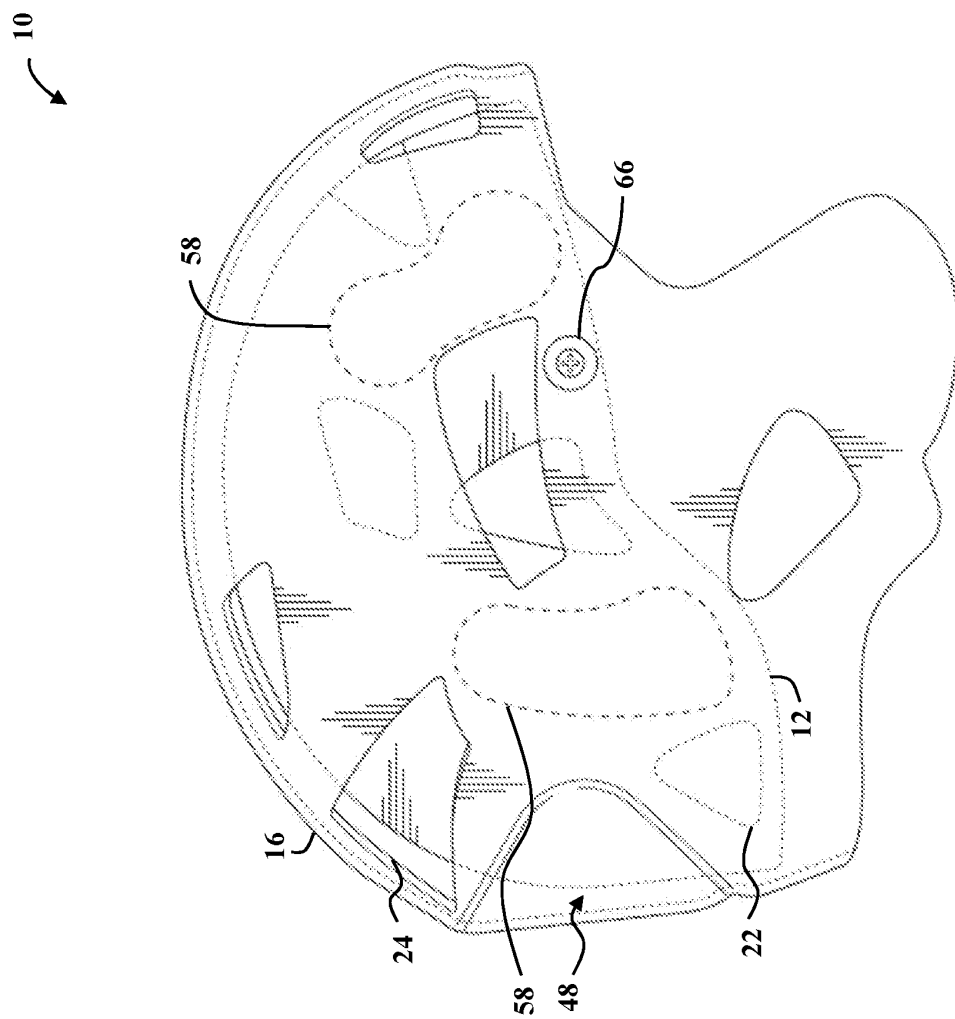


FIG. 13

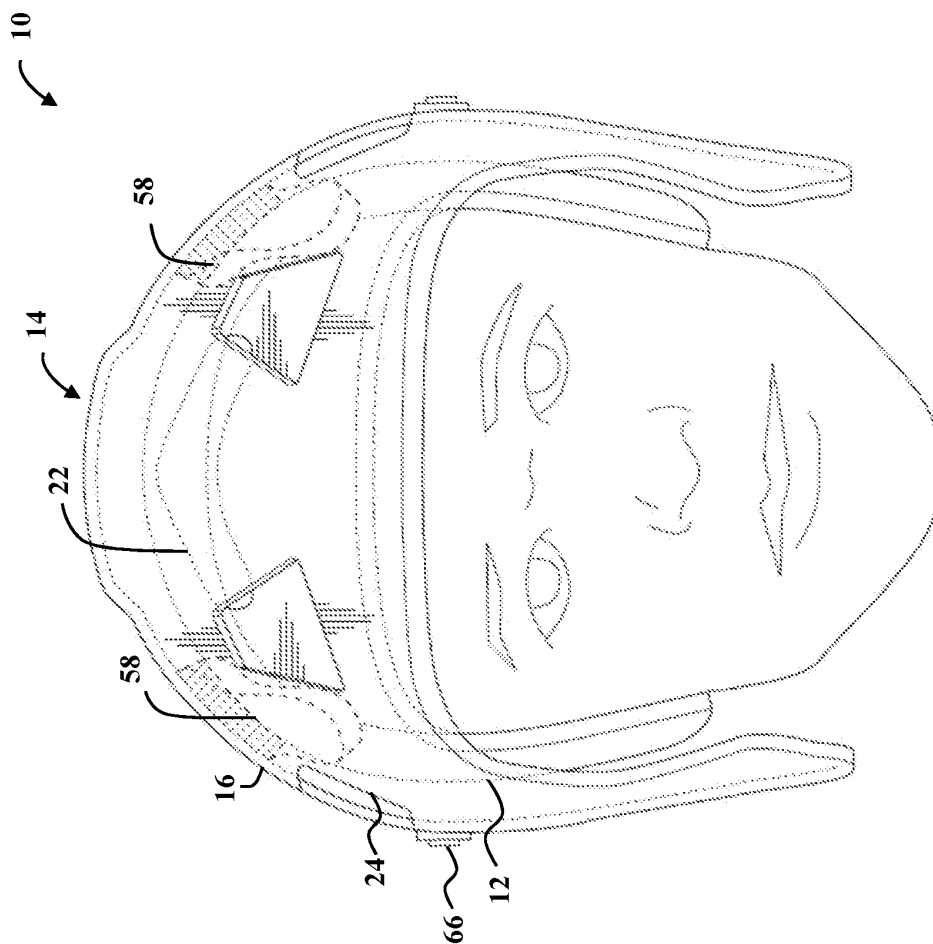


FIG. 14

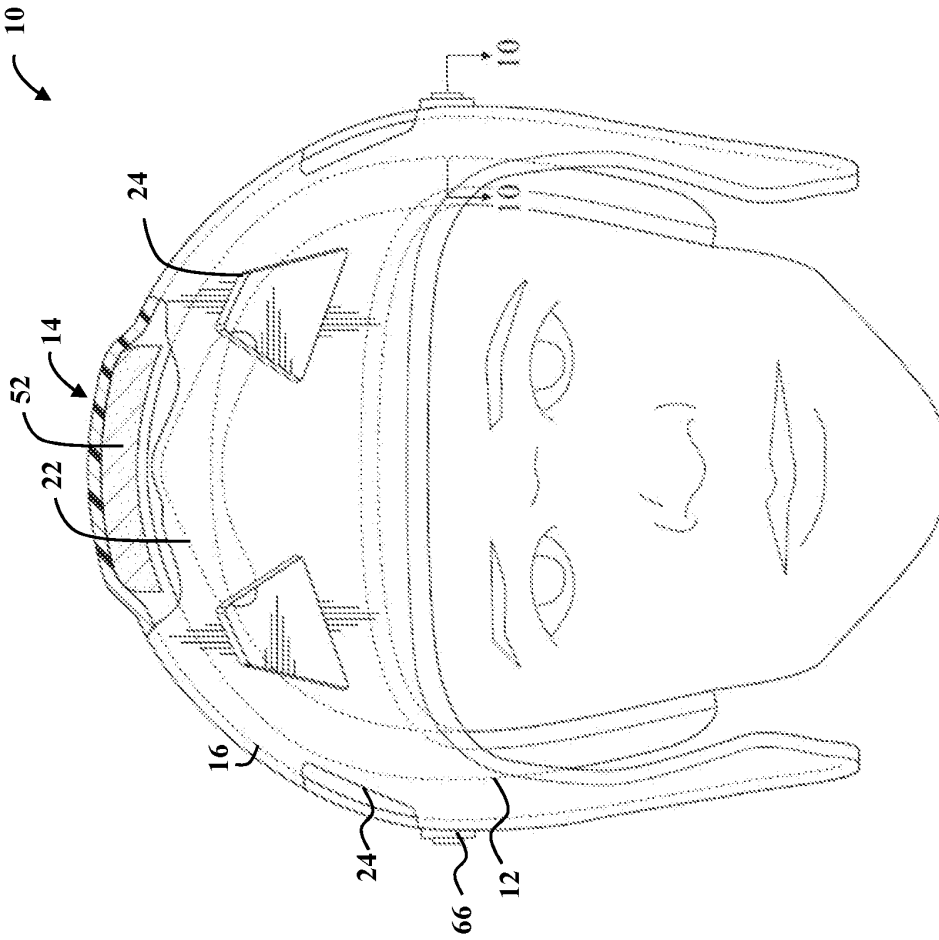


FIG. 15

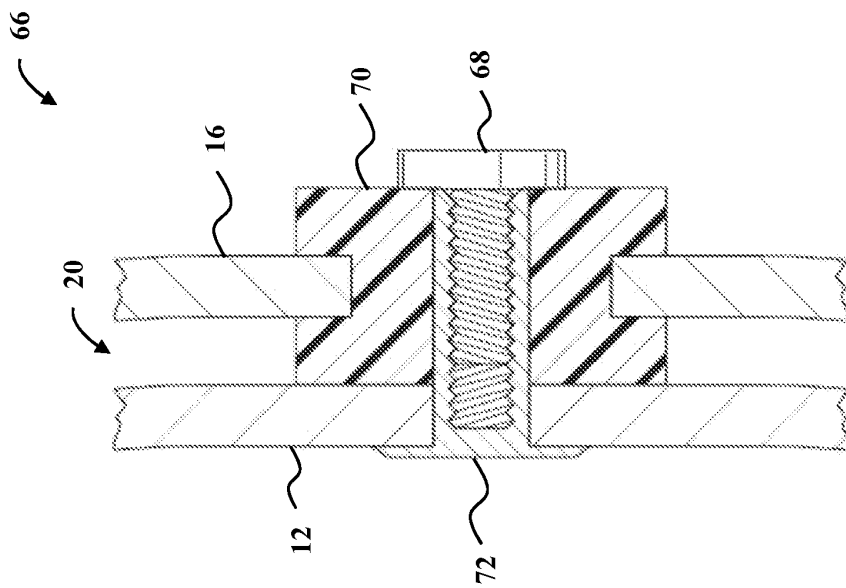


FIG. 16

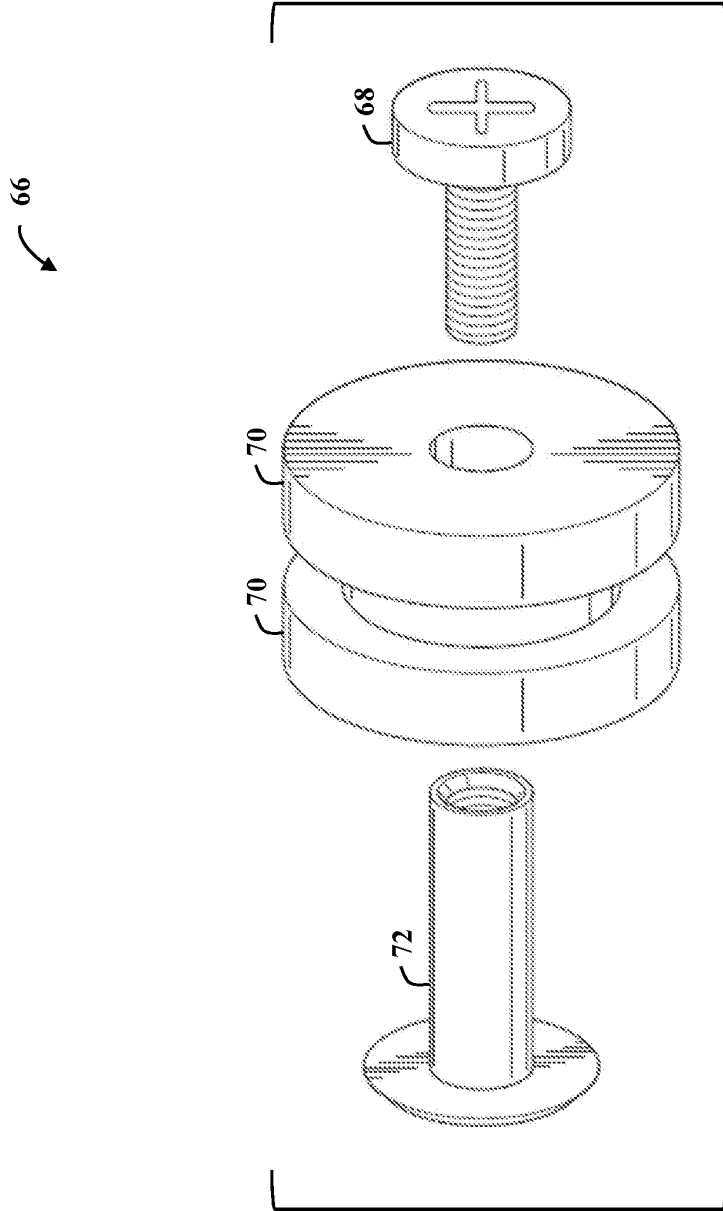


FIG. 17

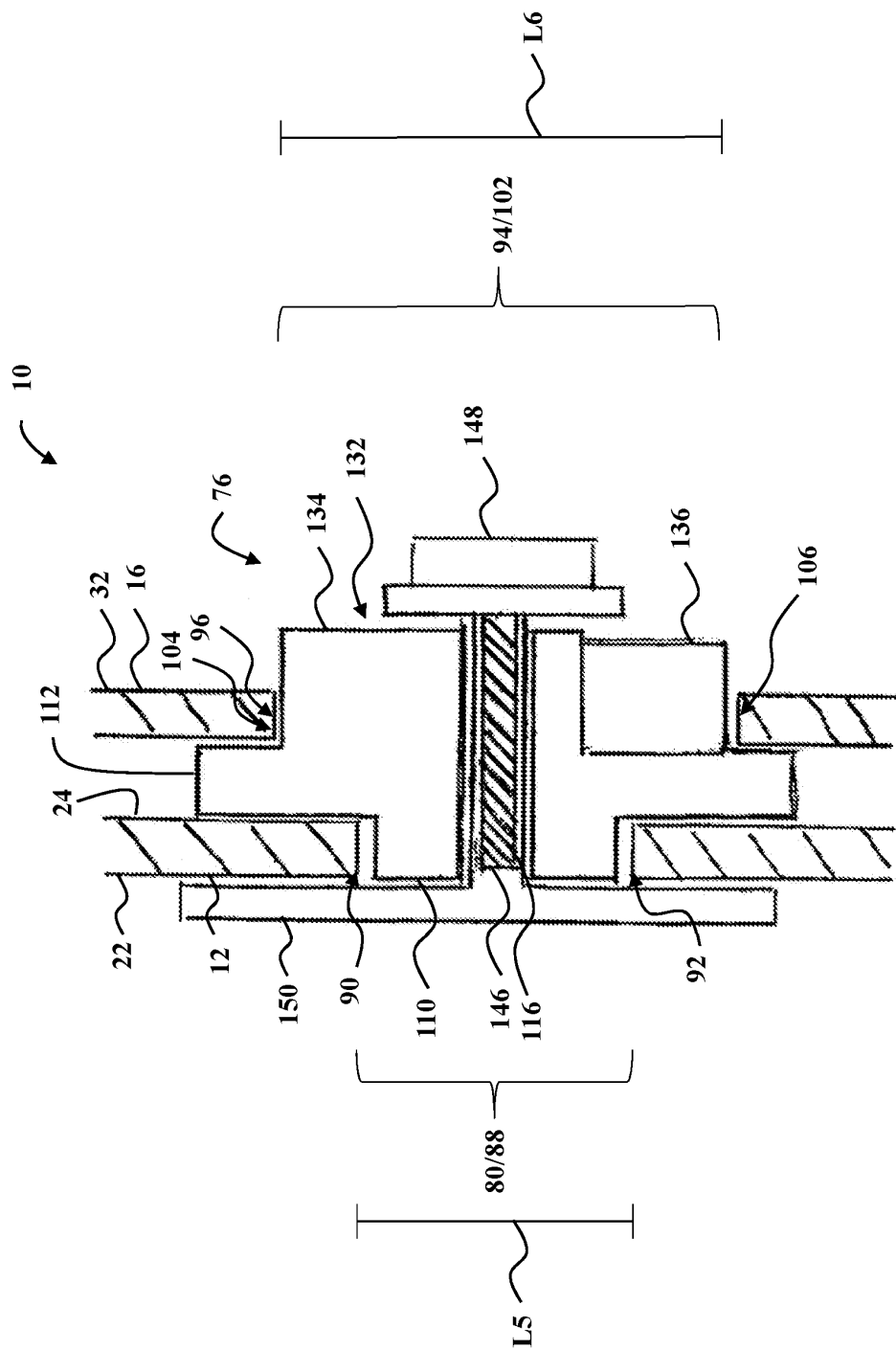


FIG. 18

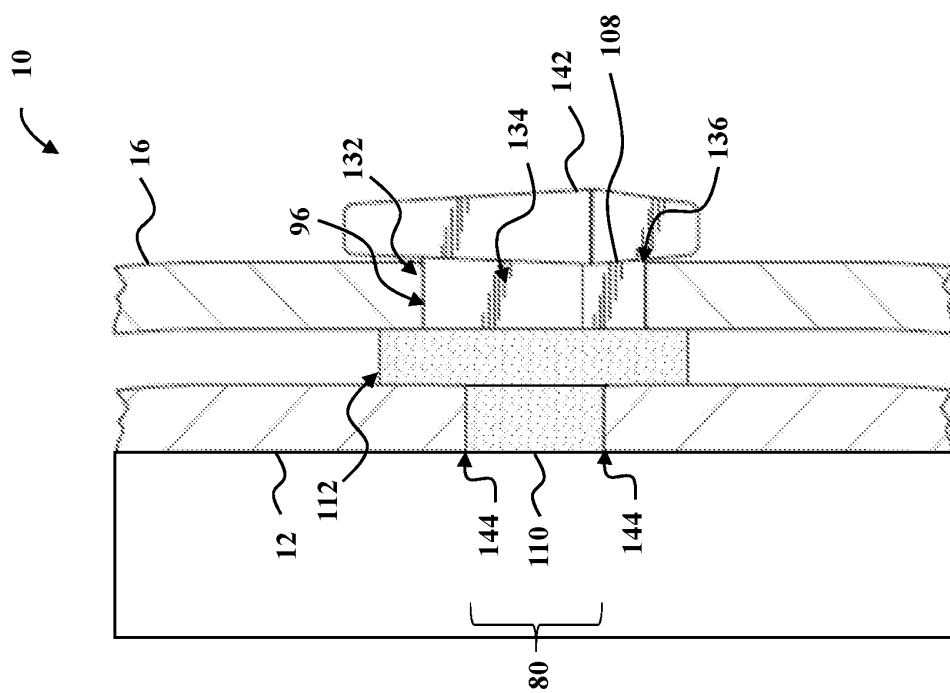


FIG. 19

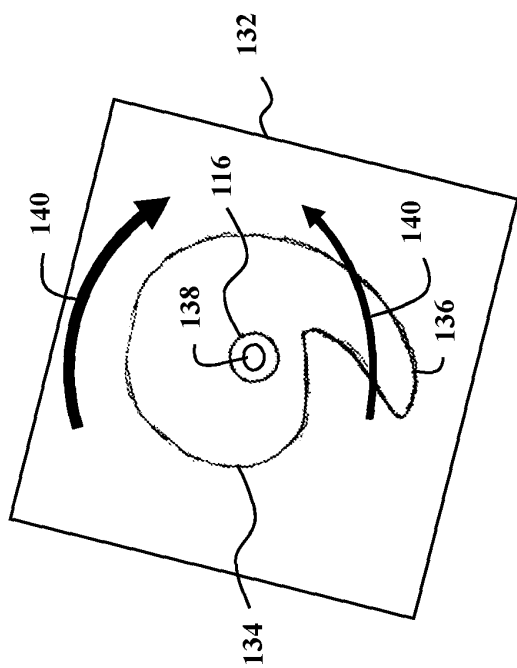


FIG. 20

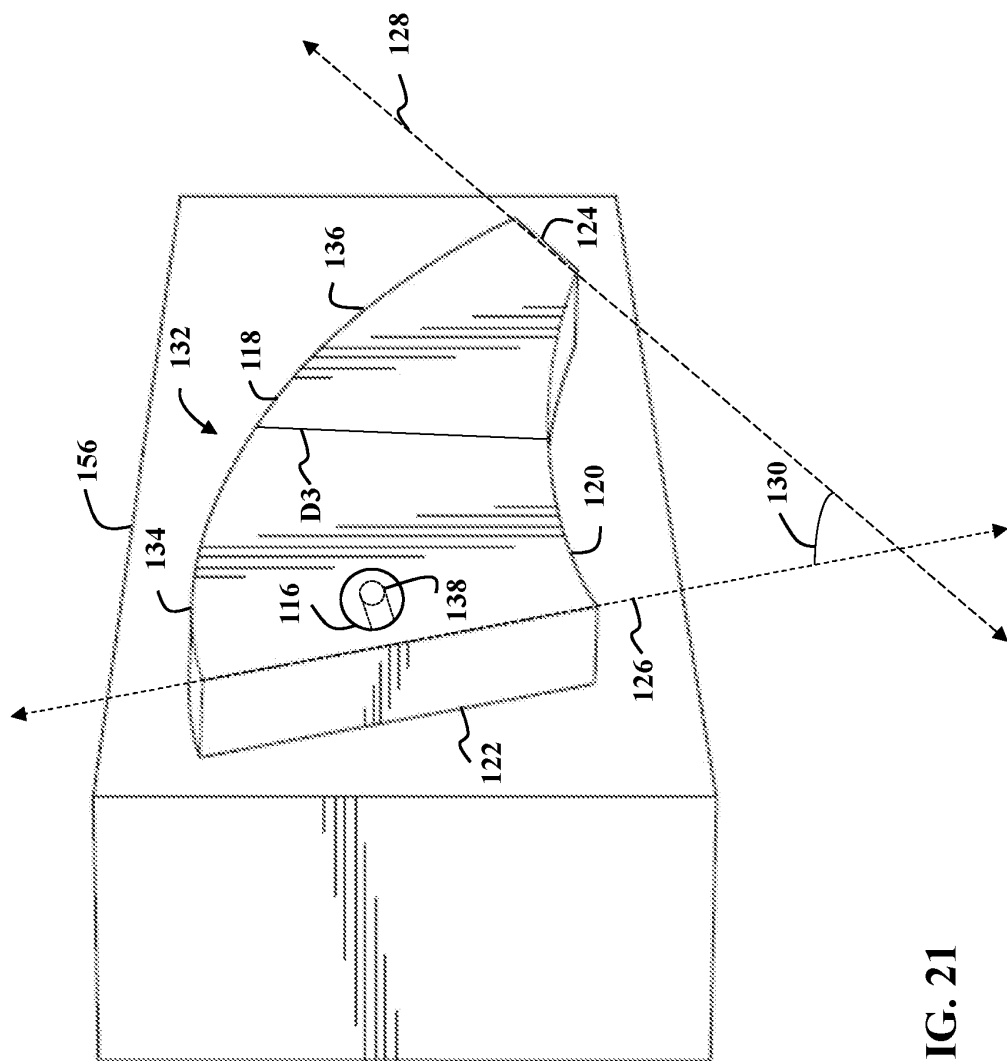


FIG. 21

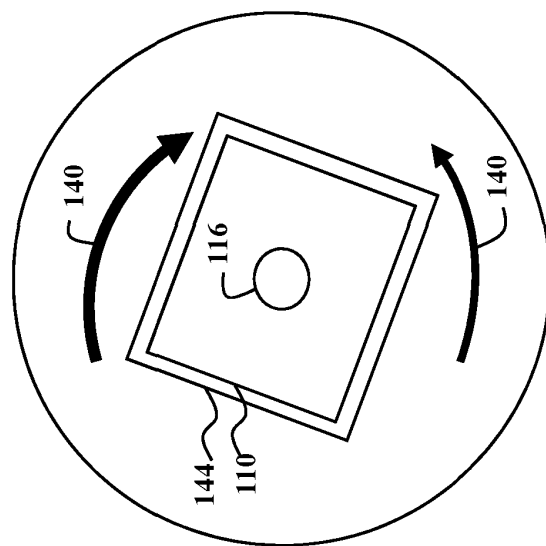


FIG. 23

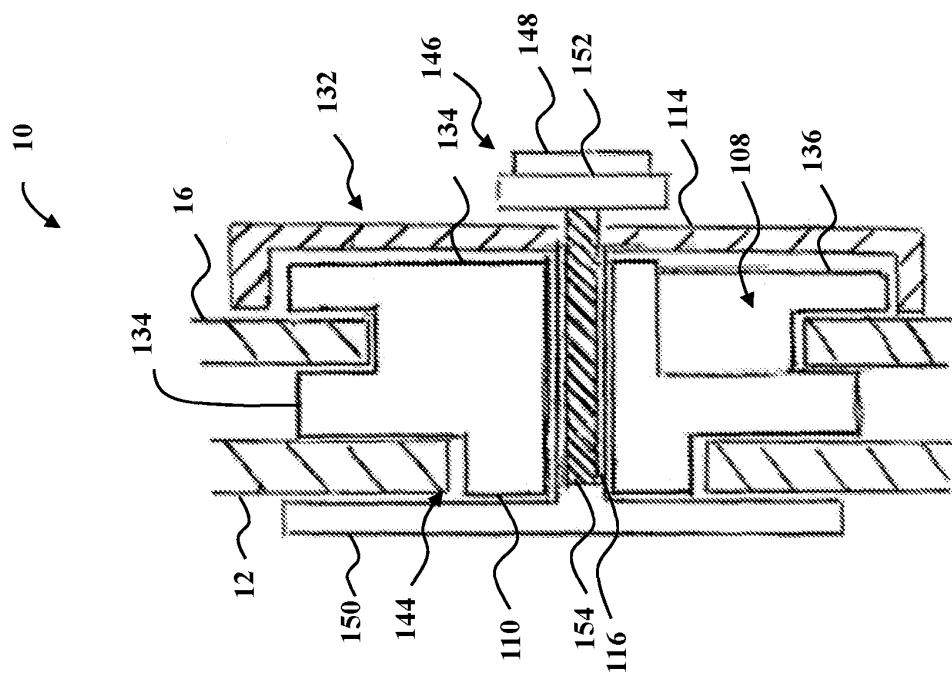


FIG. 24

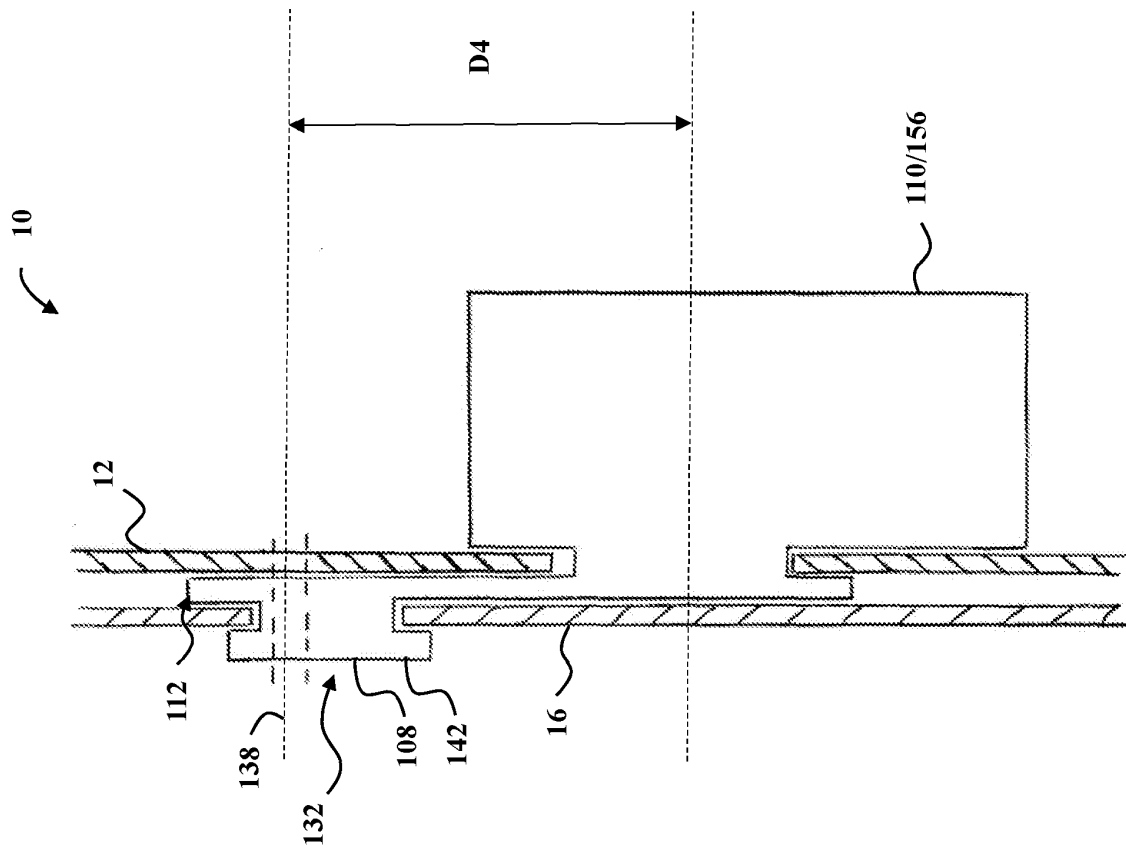
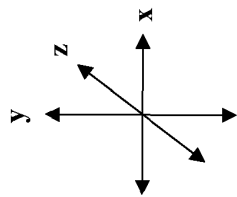


FIG. 25

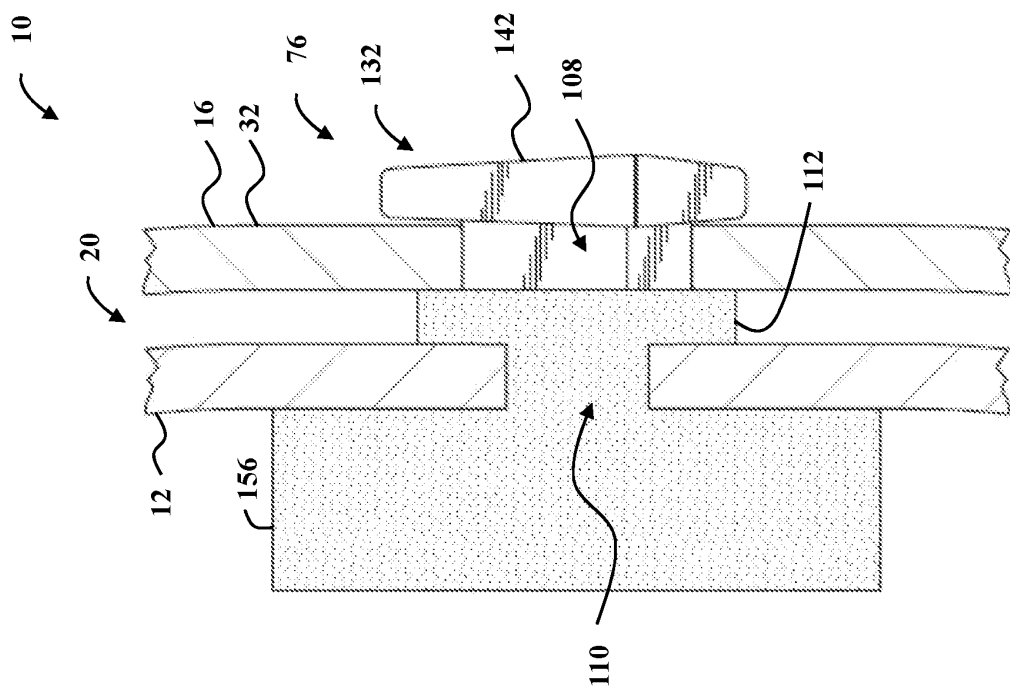


FIG. 27

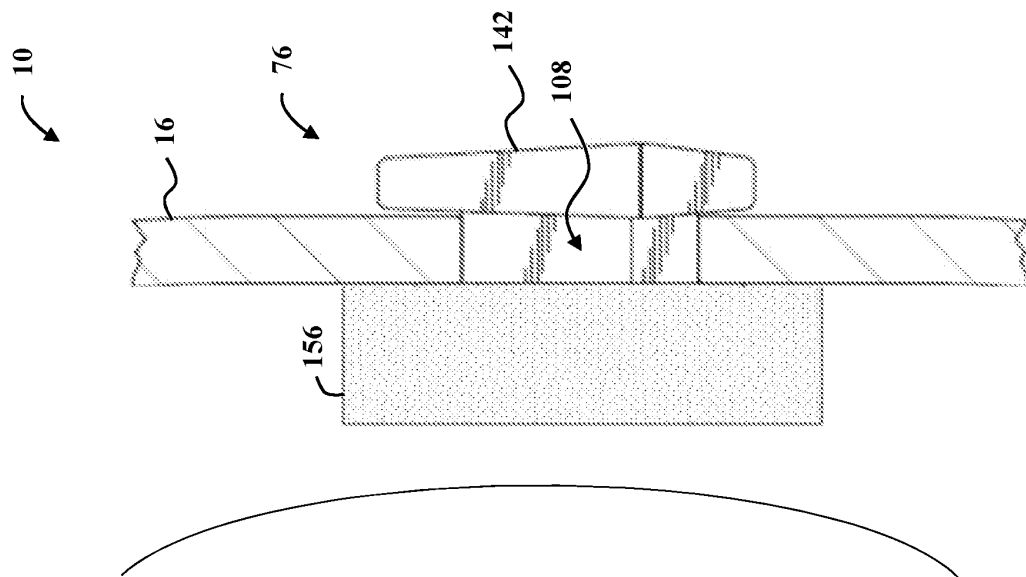


FIG. 28

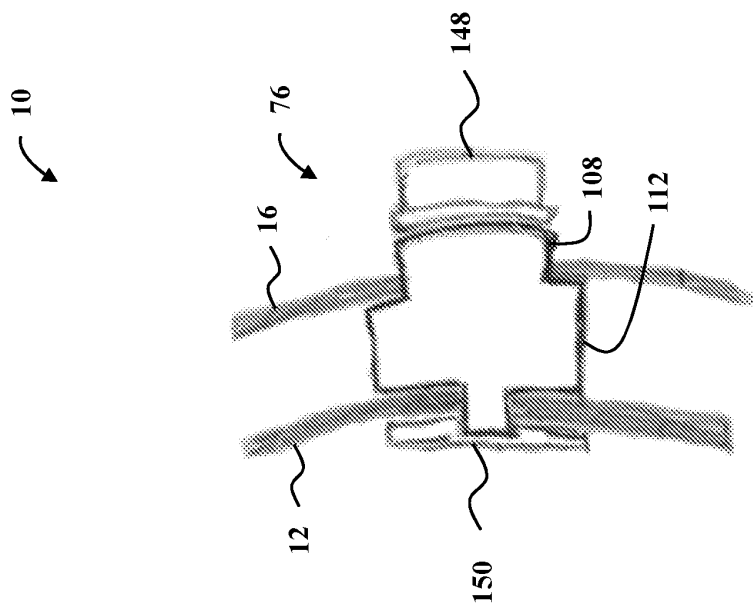


FIG. 29

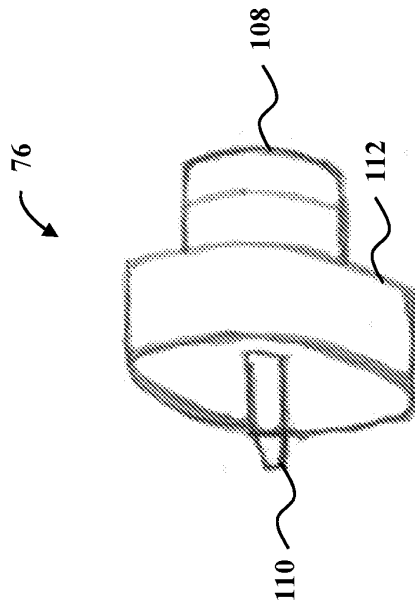


FIG. 30

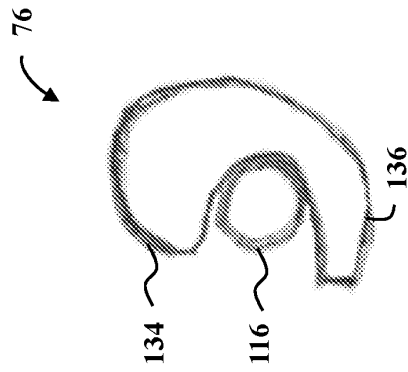


FIG. 31

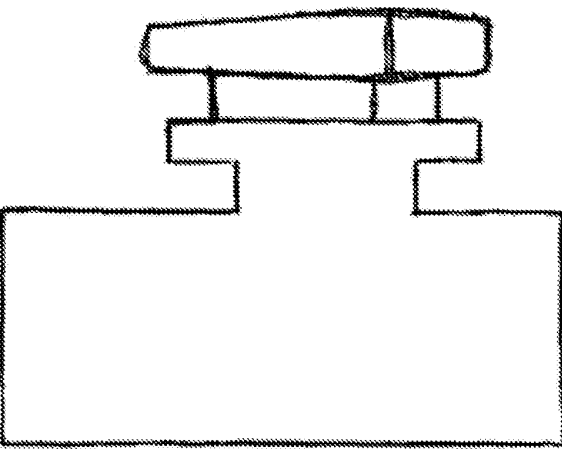


FIG. 32

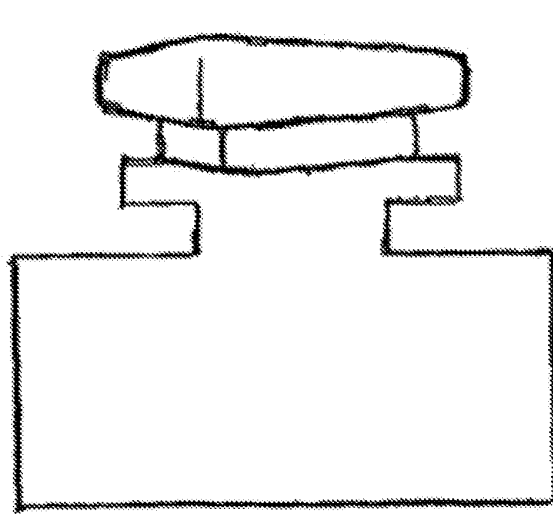


FIG. 33

Electronic Patent Application Fee Transmittal				
Application Number:				
Filing Date:				
Title of Invention:		VENTILATED MODULAR DUAL SHELLLED HELMET SYSTEM		
First Named Inventor/Applicant Name:		Steven T. Baldi		
Filer:		James R. Yee/Amy Galenski		
Attorney Docket Number:		113762.00005		
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
UTILITY FILING FEE (ELECTRONIC FILING)	4011	1	70	70
UTILITY SEARCH FEE	2111	1	300	300
UTILITY EXAMINATION FEE	2311	1	360	360
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				730

Electronic Acknowledgement Receipt	
EFS ID:	31021608
Application Number:	15820256
International Application Number:	
Confirmation Number:	8864
Title of Invention:	VENTILATED MODULAR DUAL SHELLLED HELMET SYSTEM
First Named Inventor/Applicant Name:	Steven T. Baldi
Customer Number:	27305
Filer:	James R. Yee/Amy Galenski
Filer Authorized By:	James R. Yee
Attorney Docket Number:	113762.00005
Receipt Date:	21-NOV-2017
Filing Date:	
Time Stamp:	19:09:05
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	\$730
RAM confirmation Number	112217INTEFSW00007219082789
Deposit Account	082789
Authorized User	Amy Galenski
<p>The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:</p> <p>37 CFR 1.17 (Patent application and reexamination processing fees)</p> <p>37 CFR 1.21 (Miscellaneous fees and charges)</p>	

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	WebADS.pdf	114546	no	7
			f64872f483c1f184e03dd89c25949dd61d223d03		
Warnings:					
Information:					
2		Application.pdf	224871	yes	28
			9416dbf6decfdffaafc7af4efa79af326d2e5ede		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Specification		1	23	
	Claims		24	27	
	Abstract		28	28	
Warnings:					
Information:					
3	Oath or Declaration filed	CombinedDeclarationandAssignment.pdf	96201	no	2
			7f9edaee74318f8ab656599401c40423f2d3339		
Warnings:					
Information:					
4	Power of Attorney	POA.pdf	223795	no	2
			ad1b0059d2eb3bcb955363c7e63131a140281b61		
Warnings:					
Information:					
5	Drawings-other than black and white line drawings	Drawings.pdf	1254031	no	26
			da197fc206909fc47c9176defdbe29594d6bc12a		

Warnings:					
Information:					
6	Fee Worksheet (SB06)	fee-info.pdf	34543	no	2
			218e7b19010f2bd0b897c401de249838017f3c41		
Warnings:					
Information:					
Total Files Size (in bytes):			1947987		
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	113762.00005
		Application Number	
Title of Invention	VENTILATED MODULAR DUAL SHELLLED HELMET SYSTEM		
<p>The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.</p>			

Secrecy Order 37 CFR 5.2:

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Inventor Information:

Inventor 1				
Legal Name				
Prefix	Given Name	Middle Name	Family Name	Suffix
	Steven	T.	Baldi	
Residence Information (Select One) <input checked="" type="radio"/> US Residency <input type="radio"/> Non US Residency <input type="radio"/> Active US Military Service				
City	Peoria	State/Province	IL	Country of Residence ⁱ US
Mailing Address of Inventor:				
Address 1	418 West Northgate Road			
Address 2				
City	Peoria	State/Province	IL	
Postal Code	61614	Country ⁱ	US	
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button. Add				

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a).	
<input type="checkbox"/> An Address is being provided for the correspondence information of this application.	
Customer Number	27305
Email Address	ipdocket@h2law.com Add Email Remove Email

Application Information:

Title of the Invention	VENTILATED MODULAR DUAL SHELLLED HELMET SYSTEM		
Attorney Docket Number	113762.00005	Small Entity Status Claimed	<input checked="" type="checkbox"/>
Application Type	Nonprovisional		
Subject Matter	Utility		
Total Number of Drawing Sheets (if any)	26	Suggested Figure for Publication (if any)	

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	113762.00005
		Application Number	
Title of Invention	VENTILATED MODULAR DUAL SHELLLED HELMET SYSTEM		

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

Request Not to Publish. I hereby request that the attached application not be published under 35 U.S.C.

☐ 122(b) and certify that the invention disclosed in the attached application **has not and will not** be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:						<input checked="" type="radio"/> Customer Number	<input type="radio"/> US Patent Practitioner	<input type="radio"/> Limited Recognition (37 CFR 11.9)
Customer Number		27305						
Prefix	Given Name	Middle Name	Family Name	Suffix	<input type="button" value="Remove"/>			
Registration Number								
Prefix	Given Name	Middle Name	Family Name	Suffix	<input type="button" value="Remove"/>			
Registration Number								
Additional Representative Information blocks may be generated within this form by selecting the Add button.								

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	113762.00005
		Application Number	
Title of Invention	VENTILATED MODULAR DUAL SHELLLED HELMET SYSTEM		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.

When referring to the current application, please leave the application number blank.

Prior Application Status	Pending	Remove	
Application Number	Continuity Type	Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)
	Claims benefit of provisional	62425397	2016-11-22

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button.

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX) the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Application Number	Country ⁱ	Filing Date (YYYY-MM-DD)	Access Code ⁱ (if applicable)

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button.

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

<p>This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013.</p> <p><input type="checkbox"/> NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.</p>
--

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	113762.00005
		Application Number	
Title of Invention	VENTILATED MODULAR DUAL SHELLLED HELMET SYSTEM		

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

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☐ B. Applicant **DOES NOT** authorize the USPTO to transmit to the EPO any search results from the instant patent application. If this box is checked, the USPTO will not be providing the EPO with search results from the instant application.

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	113762.00005
		Application Number	
Title of Invention	VENTILATED MODULAR DUAL SHELLLED HELMET SYSTEM		

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.			
Applicant 1			
<p>If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.</p>			
<div>Clear</div>			
<input checked="" type="radio"/> Assignee	<input type="radio"/> Legal Representative under 35 U.S.C. 117	<input type="radio"/> Joint Inventor	
<input type="radio"/> Person to whom the inventor is obligated to assign.		<input type="radio"/> Person who shows sufficient proprietary interest	
If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:			
Name of the Deceased or Legally Incapacitated Inventor: <input type="text"/>			
If the Applicant is an Organization check here. <input checked="" type="checkbox"/>			
Organization Name	Apalone, Inc.		
Mailing Address Information For Applicant:			
Address 1	418 W Northgate Road		
Address 2			
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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	113762.00005
		Application Number	
Title of Invention	VENTILATED MODULAR DUAL SHELLLED HELMET SYSTEM		

Assignee Information including Non-Applicant Assignee Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.

Assignee 1				
Complete this section if assignee information, including non-applicant assignee information, is desired to be included on the patent application publication. An assignee-applicant identified in the "Applicant Information" section will appear on the patent application publication as an applicant. For an assignee-applicant, complete this section only if identification as an assignee is also desired on the patent application publication.				
If the Assignee or Non-Applicant Assignee is an Organization check here. <input type="checkbox"/>				
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Mailing Address Information For Assignee including Non-Applicant Assignee:				
Address 1				
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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	113762.00005
		Application Number	
Title of Invention	VENTILATED MODULAR DUAL SHELLLED HELMET SYSTEM		

Signature:

NOTE: This Application Data Sheet must be signed in accordance with 37 CFR 1.33(b). **However, if this Application Data Sheet is submitted with the INITIAL filing of the application and either box A or B is not checked in subsection 2 of the "Authorization or Opt-Out of Authorization to Permit Access" section, then this form must also be signed in accordance with 37 CFR 1.14(c).**

This Application Data Sheet **must** be signed by a patent practitioner if one or more of the applicants is a **juristic entity** (e.g., corporation or association). If the applicant is two or more joint inventors, this form must be signed by a patent practitioner, **all** joint inventors who are the applicant, or one or more joint inventor-applicants who have been given power of attorney (e.g., see USPTO Form PTO/AIA/81) on behalf of **all** joint inventor-applicants.

See 37 CFR 1.4(d) for the manner of making signatures and certifications.

Signature	/James R. Yee/			Date (YYYY-MM-DD)	
First Name	James	Last Name	Yee	Registration Number	34460
Additional Signature may be generated within this form by selecting the Add button.					

VENTILATED MODULAR DUAL SHELLLED HELMET SYSTEM

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims priority to U.S. Provisional Patent Application Serial No. 62/425,397, filed November 22, 2016 which is hereby incorporated by reference in its entirety.

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0002] This present invention relates to helmet assemblies, and more specifically, to helmet assemblies that include a ventilated modular shell system (VMS) that may be used in sports and activities, including military activities, that require the protection of a helmet and are conducted in high temperature environments.

2. Description of the Related Art

[0003] A continuous effort should be made to eliminate heat stroke deaths associated with activities requiring the use of a helmet, in particular American football. The Annual Survey of Football Injury Research published by National Center for Catastrophic Sport Injury states 24 football related heat stroke fatalities were documented during the 15-year period from 1986 to 2000. During the subsequent 15-year period from 2001 to 2015, 42 football related heat stroke fatalities were documented, a 175% increase. It has been noted helmets do not affect physiological parameters other than the local skin temperature and sweat rate. Heat loss from the head is one quarter to one third of total metabolic body heat. This is substantially higher than the head's proportion of the total body surface area. Thus the head has considerable heat loss capacity. Related to this is the National Athletic Trainers Association position the participants who wear equipment that does not allow for heat dissipation are at an increased risk for heat illness. Wearing a helmet is also a potential risk factor because a significant amount of heat is

dissipated through the head. Another issue with current helmets is that the helmets are not resistant law impact. For example, a football player that repeatedly received minor hits to the head. Coaches desire the players to wear the actual gear they will play in to train as realistically as possible. As such, there is a need for a helmet that allows athletes to become acclimated to wearing the appropriate gear while not exposing themselves to exertional heatstroke.

[0004] The present invention is aimed at one or more of the problems identified above.

SUMMARY OF THE INVENTION

[0005] In one embodiment, a modular helmet is provided. The module helmet includes an inner shell adapted to be positioned onto a user's head and an outer shell coupled to the inner shell. The outer shell is spaced a distance radially outward from the inner shell to define a climatic zone between the inner shell and the outer shell. A cooling assembly is positioned within the climatic zone between the inner shell and the outer shell. The cooling assembly includes a plurality of cooling packets that are coupled to the outer shell.

[0006] In another embodiment, a modular helmet is provided. The modular helmet includes an inner shell adapted to be positioned onto a user's head, an outer shell, and a cushion assembly. The inner shell includes a plurality of inner vents. The outer shell is coupled to the inner shell and spaced a distance radially from the inner shell to define a climatic zone between the inner shell and the outer shell. The outer shell includes a plurality of outer vents configured to couple the climatic zone in flow communication with ambient air. The cushion assembly is positioned within the climatic zone between the inner shell and the outer shell. The cushion assembly includes a plurality of cushions that are coupled to the outer shell.

[0007] In a further embodiment, a fastening assembly for use with a helmet assembly including an outer shell is provided. The fastening assembly includes an outer support member

adapted to be positioned within a support opening extending through the outer shell. The outer support member includes a base portion defining a pivot axis and a support arm extending outwardly from the base portion. The support arm is configured to contact an inner surface of the support opening to facilitate resisting a rotation of the helmet outer shell about the pivot axis.

BRIEF DESCRIPTION OF THE FIGURES

[0008] Non-limiting and non-exhaustive embodiments of the present invention are described with reference to the following figures. Other advantages of the present disclosure will be readily appreciated, as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings wherein:

[0009] FIG. 1 is a side view of one embodiment of the ventilated modular helmet system in accordance with the teachings of the present disclosure;

[0010] FIG. 2 is a front view of another embodiment of the modular ventilated helmet system in accordance with the teachings of the present disclosure;

[0011] FIG. 3 illustrates a sectional view of a portion of the ventilated modular helmet system including coaxially oriented vents;

[0012] FIG. 4 illustrates a sectional view of a portion of the ventilated modular helmet system including off-set vents;

[0013] FIG. 5 is a side view of the ventilated modular helmet system of Figure 1 including various embodiments of the present disclosure;

[0014] FIG. 6 illustrates another sectional view of a portion of the ventilated modular helmet system showing a cushion assembly and a cooling assembly;

[0015] FIG. 7 illustrates a perspective view of a cooling packet that may be used with the cooling assembly;

[0016] FIG. 8 is a side view of the ventilated modular helmet system of FIG. 1 including various embodiments of the disclosure;

[0017] FIG. 9 is the side view of the ventilated modular helmet system of FIG. 1 indicating the cooling packet insertion slot;

[0018] FIGS. 10 and 11 are perspective views of a cushion that may be used with the cushion assembly;

[0019] FIG. 12 is a front view of the ventilated modular helmet system of FIGS. 8 and 9 with the various components in place;

[0020] FIG. 13 is another side view of the ventilated modular helmet system of FIG. 1 with only the optional cushions in place;

[0021] FIG. 14 is a front view of the ventilated modular helmet system of FIG. 1 with only the optional cushions in place;

[0022] FIG. 15 is a front view of another embodiment of the ventilated modular helmet system of FIG. 13 in accordance with the teachings of the present disclosure;

[0023] FIG. 16 is a cross-sectional view of the attachment mechanism shown in FIG. 15, and taken along section line 10-10;

[0024] FIG. 17-28 illustrate various embodiments of the attachment mechanism of the ventilated modular helmet;

[0025] FIG. 29 illustrates a perspective view of the fastening assembly within the ventilated modular helmet;

[0026] FIG. 30 illustrates a perspective view of the fastening assembly of the ventilated modular helmet;

[0027] FIG. 31 illustrates a front view of the outer support member of the ventilated modular helmet;

[0028] FIG. 32 illustrates a top view of the attachment mechanism of the ventilated modular helmet;

[0029] FIG. 33 illustrates a front view of the attachment mechanism of the ventilated modular helmet.

[0030] Corresponding reference characters indicate corresponding components throughout the several views of the drawings.

DETAILED DESCRIPTION OF THE INVENTION

[0031] In the following description, numerous specific details are set forth in order to provide a thorough understanding of the present invention. It will be apparent, however, to one having ordinary skill in the art that the specific detail need not be employed to practice the present invention. In other instances, well-known materials or methods have not been described in detail in order to avoid obscuring the present invention.

[0032] The following detailed description of the present invention references the accompanying drawing figures that illustrate specific embodiments in which the invention can be practiced. The embodiments are intended to describe aspects of the present invention in sufficient detail to enable those skilled in the art to practice the invention. Other embodiments can be utilized and changes can be made without departing from the spirit and scope of the present invention the present invention is defined by the appended claims and, therefore, the description is not to be taken in a limiting sense and shall not limit the scope of equivalents to which such claims are entitled.

[0033] An aspect of the invention generally pertains to a ventilated modular helmet system that can decrease the effects of atmospheric heat related to sports activities and decrease the incidence of exertional heatstroke.

[0034] Another aspect of the invention generally pertains to a ventilated modular helmet system that creates a microclimate that is conducive to heat dissipation and accelerated sweat evaporation.

[0035] Yet another aspect of the invention generally pertains to ventilated modular helmet system that when worn with the optional padding can decrease the effects of regular impacts inherent to sports and decrease the incidence of concussions experienced by active participants.

[0036] The present invention provides a ventilated modular system (VMS) 10 that uses the external cushioning system, currently known as the modular dual shell helmet system (MDS) as its platform. The VMS includes a highly ventilated modular dual shelled helmet system that can be used in sports and activities, including military activities that require the protection of a helmet and are conducted in high temperature environments. In light of the prior art is significant that the VMS helmet has significantly more ventilation to allow for convection and evaporation. The VMS helmet also allows for the interchange of a highly ventilated outer practice shell for a full contact game shell without incurring the cost of purchasing an entirely new helmet. The VMS system allows a safer, cooler helmet that can be precisely modeled to match the game helmet in both size and weight.

[0037] In various embodiments, as illustrated in FIGS. 1 and 2, the ventilated modular helmet system (VMS) 10 for cooling includes an inner shell 12 and a cooling apparatus 14 coupled to the inner shell 12. The cooling apparatus 14 includes an outer shell 16 coupled to the inner shell 12 and a cooling assembly 18 (not shown). In one embodiment, the cooling apparatus

14 is configured to be coupled to an outer surface of a user's helmet. In the illustrated embodiment, the outer shell 16 is coupled to the inner shell 12 and spaced a distance radially outward from the inner shell 12 to define a climatic zone 20 between the inner shell 12 and the outer shell 16. The cooling assembly 18 is positioned within the climatic zone 20 between the inner shell 12 and the outer shell 16. In one embodiment, the inner shell 12 includes a plurality of inner vents 22 that extend through the inner shell body 12, an inner surface 24, and an outer surface 26. The inner vents 22 are configured to couple the climatic zone 20 in flow communication with an area adjacent to the user's head. In addition, the outer shell 16 may include a plurality of outer vents 28 that extend through the outer shell 16 an inner surface 30, and an outer surface 32. The outer vents 28 are configured to couple the climatic zone 20 in flow communication with ambient air. In one embodiment, at least one inner vent 22 may be aligned coaxially with a corresponding outer vent 28. In addition, one or more inner vents 22 may be aligned offset a distance from a corresponding outer vent 28.

[0038] The inner shell 12 is made out of a flexible material, a semi rigid material, or a rigid material. The flexible material may be easily displaced and act more as a membrane to distribute the applied forces if the system 10 is used with the plurality of cushions. The flexible material may have sufficient elasticity such that it returns to its original shape when deformed upon impact. The material used for the inner shell 12 may include but is not limited to any material having the desired physical properties. For example, the desired physical properties for the inner shell 12 may be made from polymers, plastics, thermoplastics, PVC, vinyl, nylon, or other similar materials. The materials used for the inner shell 12 may include materials that have a smooth outer surface and a high level of mar-resistance. These desired physical properties may reduce the drag coefficient that occurs between two helmets when they collide helping to reduce

rotational forces generated through friction that may cause trauma and influence the probability of neck injury. A low drag coefficient also maximizes air flow through the plurality of inner vents 22, increasing the air movement and the evaporation within the climatic zone 20.

[0039] The outer shell 16 may be made out of a flexible material, a semi rigid material, or a rigid material. The flexible material may be easily displaced and act more as a membrane to distribute the applied forces if the system 10 is used with the plurality of cushions. The flexible material may have sufficient elasticity such that it returns to its original shape when deformed upon impact. The material used for the outer shell 16 may include but is not limited to any material having the desired physical properties. For example, the desired physical properties of the outer shell 16 may include polymers, plastics, thermoplastics, PVC, vinyl, nylon, or other similar materials. The materials used for the outer shell 16 may include materials that have a smooth outer surface and a high level of mar-resistance. These desired physical properties may reduce the drag coefficient that occurs between two helmets when they collide, or between the outer shell 16 and the surrounding air. This helps reduce rotational forces generated through friction that may cause trauma and influence the probability of neck injury. A low drag coefficient also maximizes air flow through the plurality of vents (described herein), increasing the air movement and the evaporation within the climatic zone 20. Unlike traditional helmets, the outer shell 16 of the VMS 10 provides shade to the inner shell 12 allowing a natural lowering of the temperature of the inner shell 12. Further mitigating the inherent heat absorption associated with single shell helmets, which place the exposed outer shell in direct proximity to the head. In addition, the outer shell 16 may be coated with a reflective material. The reflective material may prevent the absorption of solar energy by the outer shell 16 from light that may enter through the pores or the vents.

[0040] With reference to FIGS. 3 and 4, on one embodiment, one or more inner vents 22 may be aligned coaxially with a corresponding outer vent 28. The inner vents 22 each have a center axis 34 and the outer vents 28 each have a center axis 36. In addition, one or more inner vents 22 may be aligned off-set a predetermined distance D2 from a centerline of a corresponding outer vent 24. The inner and outer vents are spaced along an x-axis within the inner shell 12 and the outer shell 16, respectively. As shown in FIG. 3, the inner and outer vents are aligned along the same center axis 34/36 along the y-axis allowing the air to travel from outside of the outer shell 16 through the outer vents 28 into the climatic zone 20. From the climatic zone 20, the air may then exit the climatic zone 20 through the inner vents 22 into the area adjacent to the user's head. In one embodiment, as shown in FIG. 4, the inner vents 22 may be aligned offset from the outer vents 28 along the x-axis. For example, each inner vent 22 and outer vent 28 may have a centerline axis 34/36. The centerline axis 34 of each inner vent 22 may be offset the predetermined distance D2 along the x-axis from the centerline axis 36 of a corresponding outer vent 28. The predetermined distance D2 is the distance between the center axis 36 of the outer vent 28 and the center axis 34 of the next preceding inner vent 22 on the inner shell 12. As shown in FIG. 6, the off-set vents allow the air that enters from the outside of the outer shell 16 to flow over the cooling assembly 20, cooling the air before reaching the user's head from the inner vents 22. This allows the air inside of the VMS 10 to be cooled, therefore cooling the head of the person using the helmet. The air is also able to move from inside of the VMS 10 through the inner shell 12 and the outer shell 16 to the outside of the VMS 10, allowing warmer air to leave the VMS 10.

[0041] In one embodiment, the plurality of inner vents 22 includes a first amount of inner vents and the plurality of outer vents 28 includes a second amount of outer vents that is a different

amount than the first amount of inner vents. For example, the inner shell 12 may include 5 inner vents 22 and the outer shell 16 may include 6 outer vents 28.

[0042] In one embodiment, as shown in FIG. 5 the outer shell 16 may include a plurality of pores 38. The replacement of the vents with pores is to prevent injuries. For example, each pore 38 may be sized and shaped to prevent a user's finger to enter into the pore opening thereby preventing the user's fingers from being caught in the pore opening. The pore 38 includes a minute opening on the surface of the outer shell 16 that allows gases, liquids, or microscopic particles to pass through the pore 38. Similar to the outer vents 28, the pores 38 may be oriented coaxially with a corresponding inner vent 22. In addition, the pores 38 of the outer shell 16 may be oriented off-set a predetermined distance along the x-axis from the inner vents 22. In one embodiment, the inner shell 12 may include a plurality of pores 38 (not shown).

[0043] In the illustrated embodiment, the climatic zone 20 is defined between the inner shell and the outer shell. As shown in FIG. 6, the distance of the climatic zone 20 is the length L1 along the y-axis between the inner surface 30 of the outer shell 16 and the outer surface 26 of the inner shell 12. The length of the climatic zone L1 may vary depending on the goals of the user. For example, FIGS. 1 and 2 show the VMS 10 without any additional components positioned within climatic zone 20. The length L1 is variable to maximize air movement within the climatic zone 20 that may enhance evaporation. When the climatic zone 20 does not include the cooling assembly 18, the climatic zone 20 passively allows an arid layer of air to form between the inner shell 12 and the outer shell 16. As shown by the arrows with broken lines in FIGS. 3 and 4, a flow 40 of air may move freely through the VMS 10. The ambient air may move straight from the outer vents 28 to the oriented corresponding inner vent 22, or the ambient air may move from at least one outer vent 28 to an off-set inner vent 22. The dryer atmosphere

created by the empty climatic zone 20 with the arid layer of air provides a driving force to allow for the evaporation of perspiration from the athletes head. This allows for the natural cooling of the user's head.

[0044] As shown in FIG. 6, the climatic zone 20 may include the cooling assembly 18 that includes a plurality of cooling packets 42. The cooling assembly 18 includes the plurality of cooling packets 42 that are coupled to the inner surface 30 of the outer shell 16. The cooling assembly 18 may also be coupled to the inner shell 12 (not shown). Illustrated in FIG. 7, each cooling packet includes height H1 measured along a y-axis perpendicular to the inner surface 30 of the outer shell 16, a length L2 measured along an x-axis, and a width W1 measured along a z-axis. The height H1 is measured along the y-axis and is defined by the distance between the end 44 of the cooling packet 42 that is coupled to the inner surface 30 of the outer shell 16 and the end opposite 46 the side coupled to the outer shell 16. In one embodiment, each cooling packet 42 may include the same height. In another embodiment, one or more cooling packets may have different heights. In addition, the height H1 may vary depending on the goals of the VMS system 10. The length L2 is the distance of the cooling packet that runs parallel to the outer shell 16 along the x-axis. The width W1 is the thickness of the cooling packet 42 that extends along the z-axis. In one embodiment, each cooling packet may include similar lengths and widths. In another embodiment, one or more cooling packets 42 may include a different length and/or a different width. In addition, each cooling packet 42 may include a substantially similar shape. In another embodiment, one or more cooling packets 42 may include a different shape. The cooling packets 42 may include, but are not limited to, rechargeable cooling packs or desiccant packs. The positioning of the cooling packets 42 on the outer shell 16 may vary. The cooling packets 42 may be oriented coaxially with the inner vents 22 or one or more cooling packets 42 may be off-

set from the inner vents 22 along the x-axis. The cooling packets 42 may also contain a solid, a gas, a liquid, or any substance that serves to lower the temperature of the surrounding environment of the cooling assembly. In addition, the cooling packets 42 may be positioned by removing an attachment mechanism (described herein), separating the inner shell 12 and the outer shell 16, and directly placing the pad in the desired location via adhesion, Velcro™, and/or the existence of a predetermined slot (not shown) that may facilitate securing the cooling packet 42 to the outer shell 16.

[0045] In one embodiment, shown in FIGS. 8 and 9, the outer shell 16 includes at least one opening 48 that allow the placement and retention of the cooling packet 42 without the separation of the inner shell 12 and the outer shell 16. The cooling packets may be placed in the predetermined slots through the opening 48. The opening 48 is protected by a removable cover (not shown). The cooling packet 42 is rechargeable by nature, allowing it to be regenerated between practices or activities. After use, the cooling packets 42 may be removed and re-frozen. Once the player is ready to play and use the helmet (VMS 10), the cooling packets 42 may then be placed inside the opening 48 in the predetermined slots. The weight of a football uniform increases metabolic rate, which increases heat production, and its inherent insulation reduces heat dissipation to the surrounding air, which decreases heat loss. These dual properties lead to greater thermal and cardiovascular strain in hot environments. When environmental conditions warrant, a cold water or ice tub and ice towels should be available to immerse or soak a patient that is suspected to have the heat illness. These two points demonstrate the risk football players are at when training in the heat and the benefits of cooling their enclosed environment, for instance the environment inside of the player's helmets. The cooling packet 42 may lower the impact heat retention caused by the uniform by lowering the temperature within the helmet while

simultaneously improving the conduction. Conduction is the transfer of heat from warmer to cooler objects through direct physical contact. Heat loss from the head is one-quarter to one-third of the total metabolic body heat. This is substantially higher than the head's proportion of total body surface area. The cooling packet 42 being placed inside the VMS 10 may diminish the overall probability of exertional heat illnesses.

[0046] In another embodiment, the cooling packet 42 may include a solid, a liquid, a gas, or any substance that may act as a desiccant. The desiccant may be a hygroscopic substance that induces or sustains a state of dryness (desiccation) in its vicinity. The placement of a rechargeable desiccant packet 50 in the cooling assembly 18 produces an ideal environment for evaporation. Evaporation is the most efficient means of heat transfer. The heat is transferred via the vaporization of sweat. The evaporation of sweat from the skin depends on the water saturation of the air and the velocity of wind speed. For example, the ventilated modular system 10 allows air movement in the football helmet to further cool the athlete. The VMS 10 establishes a microclimate that induces air movement away from the high humidity of the scalp and pulls the moisture to the surface. This allows the increase of the evaporation of sweat and resulting in an increase in heat transfer away from the athlete's head. The increase in heat transfer decreases the core body temperature resulting in a decreased probability of exertional heat injury.

[0047] In one embodiment, with reference to FIG. 6, the VMS 10 may include a plurality of cushions 52 that are coupled to the inner surface 30 of the outer shell 16 and are positioned within the climatic zone 20. The cushions 52 may also be coupled to the outer surface 26 of the inner shell 12 (not shown). The climatic zone 20 may also include only the plurality of cushions 52 that are coupled to the outer shell 16. Illustrated in FIG. 10 and 12, each cushion 52 has a height H2, a length L3, and a width W2. The height H2 is measured along the y-axis and is

defined by the distance between the end 54 of the cushion 52 that is coupled to the inner surface 30 of the outer shell 16 and the end opposite 56 the side coupled to the outer shell 16. The height H2 may vary depending on the goals of the VMS system 10. At least one cushion of the plurality of cushions 52 includes a height that is different than the height of at least one cooling packet of the plurality of cooling packets 42. The length L3 is the distance of the cushion that runs parallel to the outer shell 16 along the x-axis. The width W2 is the thickness of the cushion 52 that extends along the z-axis. The H2, L3, and W2 allow the plurality of cushions 52 to protect the cooling packets 42 by preventing the cooling packets 42 from exploding when the VMS 10 comes into contact with large forces, such as a helmet to helmet impact. The thickness, number of cushions, and position of the cushions may vary. The height H2 of the cushions 52 may be less than or equal to the length L1 of the climatic zone 20. The plurality of cushions 52 may also be a plurality of optional cushions 58, illustrated in FIGS. 13 and 14 that may be removed or placed throughout the climatic zone 20 and placed in a predetermined slot (not shown) that may help secure the optional cushion 58, shown in FIGS. 13 and 14. The plurality of cushions 58 may be optionally coupled to the outer shell 16 allowing them to be removed and replaced. The activity the VMS 10 is being used in conjunction with, may determine the need for the use of the plurality of cushions 52.

[0048] The plurality of cushions 52 may include an absorptive material. The absorptive material may be any known elastic or viscoelastic material such as, but not limited to, gels, open cell foam, close cell foam, vinyl nitrile, StyrofoamTM, rubber, neoprene, foamed polymers, polyurethane foam, latex foam, micro cellular urethane foam (MCUF) or a viscoelastic foam, or any other elastic viscoelastic material having a force absorbing spring-like response. The absorptive material may be a material that can undergo a large elastic deformation in a quick

period of time and has a rather slow elastic response, but may eventually return to the original shape. The distribution of forces applied to the plurality of cushions 52 under a flexible shell may be more locally realized.

[0049] In one embodiment, the ventilated modular system 10 may also include an accelerometer, a Piezometer, and/or similar devices 60. The accelerometer, Piezometer, or similar devices 60 are placed within the climatic zone 20. As shown in FIG. 6, each device 60 has a predetermined height H3, a predetermined length L4, and a predetermined width W3. The height H3 is measured along the y-axis and is defined by the distance between the end 62 of the device 60 that is coupled to the inner surface 30 of the outer shell 16 and the end 64 opposite the side coupled to the outer shell 16. The height H3 may vary depending on the goals of the VMS system 10. The length L4 is the distance of the device 60 that runs parallel to the outer shell 16 along the x-axis. The width W2 is the thickness of the device 60 that extends along the z-axis. These devices allow the measurement of the forces the helmet receives, and therefore the forces the player has been exposed to. This embodiment allows for the evaluation of an athlete immediately if the athlete has been exposed to a force exceeding a predetermined level. For example, the VMS 10 may be able to measure the impact on the athlete's head and record whether the forces extended on the helmet amount to the amount of force for a concussion or not. This embodiment may limit the amount of players continuing to play after receiving a concussion providing safety measures for the players of high impact sports, such as, but not limited to hockey, football, and/or lacrosse.

[0050] The VMS 10 also includes an attachment mechanism 66 coupled to the inner shell 12 and the outer shell 16, as shown in FIGS. 16 and 17. The VMS 10 may include a plurality of attachment mechanisms 66. The attachment mechanism 66 allows the outer shell 16 to be

removably coupled to the inner shell 12. This allows the outer shell 16 to be removed and the configuration of placing the cooling packets 42 and/or the plurality of cushions 52 in any desired position within the climatic zone 20.

[0051] As illustrated in FIGS. 16 and 17, the attachment mechanism 66 may exist in a variety of configurations, including but not limited to a rigid configuration, a flexible configuration, or a combination of both. In one embodiment, the attachment mechanism includes a fastener 68, a plurality of flexible gaskets 70, and a rigid sleeve 72. For example, as illustrated in FIGS. 16 and 17, a rigid configuration of the fastener 68, such as a screw, extends off a chinstrap snap (shown in FIG. 15) allowing rotation in one plane or no rotation at all. The fastener 68 attaches to the rigid sleeve 72 through the flexible gasket 70 to secure the inner shell 12 to the outer shell through the chinstrap opening. The flexible gasket 70 may allow the outer shell 16 to move in all planes. The flexible gasket 70 may include various densities to accommodate the player position. The rigid sleeve 72 extends through the flexible gasket 70, which extends through the outer shell 16 and the inner shell 12 securing the inner shell 12 to the outer shell 16. For example, the rigid sleeve 72 may be a t-bolt that anchors the inner shell 12, the outer shell 16, the flexible gasket 70, and the fastener 68 together. The rigid sleeve 72 may allow movement of the outer shell 16 in only one plane. In addition, the attachment mechanism 66 may be a flexible attachment such as, but not limited to, nylon or plastic, which allows a varying degree of movement in all planes. The attachment mechanism may also be a combination of both a rigid attachment surrounded by a flexible material. The attachment mechanism 66 may be configured to an individual's level of play and position of play. For example, a youth football players VMS 10 may be more flexible than a professional football players VMS 10. The attachment mechanism 66 plays a significant role in the dissipation of rotational forces. The attachment mechanism 66

may be similar to a traditional screw attachment or a quick release attachment. The kind of attachment used may be determined by the goals trying to be achieved. In addition, the attachment mechanism 66 is optional to the VMS 10. The attachment mechanism 66 allows the inner shell 12 and the outer shell 16 to be fixed optionally or permanently. This may be done with the use of a permanent attachment mechanism 74. The permanent attachment mechanism 74 uses a material, such as, an adhesive that fixes the inner shell 12 and the outer shell 16 together (not shown).

[0052] In another embodiment, illustrated in FIGS. 18-28, the attachment mechanism 66 includes a fastening assembly 76 and a fastening device 78. In one embodiment of the VMS 10, the VMS includes the inner shell 12, the outer shell 16, the fastening assembly 76, and the fastening device 78. The inner shell 12 is adapted to be positioned about a user's head. The outer shell 16 is spaced radially outwardly from the helmet inner shell. The fastening assembly 76 is configured to pivotably couple the inner shell 12 and the outer shell 16 to enable the outer shell 16 to move with respect to the inner shell 12.

[0053] The inner shell 12 includes the inner surface 24, the outer surface 26, and a plurality of inner support openings 80. Each inner support opening 80 includes a plurality of support inner surfaces 82 that extend inwardly from the outer surface 26 and outwardly from the inner surface 24. The support inner surface 82 includes a top edge 84 and a bottom edge 86. The top edge 84 is oriented obliquely with the inner surface 24 and the bottom edge 86 is oriented obliquely with the outer surface 26. The support inner surface 82 is further positioned between the inner surface 24 and the outer surface 26 such that the inner support opening 80 is defined between the inner surface 24, the outer surface 26, and the plurality of support inner surfaces 82. The inner support opening 80 is further defined as an inner cavity 88 between a first inner surface 90 and a second

inner surface 92 positioned opposite the first inner surface 90. The inner cavity 88 extends through the helmet inner shell 12 from the climatic zone 20 to the user's head. In addition, the inner cavity 88 or the inner support opening 80 includes a length L5 measured between the first inner surface 90 and the second inner surface 92.

[0054] The outer shell 16 has inner surface 30, the outer surface 32, and a plurality of outer support openings 94. Each outer support opening 94 includes a plurality of support inner surfaces 96 that extend inwardly from the outer surface 32 and outwardly from the inner surface 30. The support inner surface 96 includes a top edge 98 and a bottom edge 100. The top edge 98 is oriented obliquely with the outer surface 32 and the bottom edge 100 is oriented obliquely with the inner surface 30. The support inner surface 96 is positioned between the outer surface 32 and the inner surface 30 such that the outer support opening 94 is defined between the outer surface 32, the inner surface 30, and the plurality of support inner surfaces 96. The outer support opening 94 is further defined as an outer cavity 102 between a first support inner surface 104 and a second support inner surface 106 positioned opposite the first support inner surface 104. The outer cavity 102 through the helmet outer shell 16 from the outside the helmet outer shell 16 to the climatic zone 20. In addition, the outer cavity 102 and/or the outer support opening 96 includes a length L6 measured between the first support inner surface 104 and the second support inner surface 106. The outer support opening length L6 can be the same of different than the length L5 of the inner support opening.

[0055] Illustrated in FIGS. 18-24, the fastening assembly 76 includes an outer support member 108, an inner support member 110, a base member 112, a protective plate 114, and at least one positioning opening 116. The fastening assembly 76 acts similar to the attachment mechanism 66 described above, but also allows the outer shell 16 to resist a rotation that is

independent of the inner shell 12 in all planes. The fastening assembly 76 may include a material such as thermoplastic polyurethane or polyvinyl nitrile, or any material that includes the desired properties.

[0056] In one embodiment, the outer support member 108 includes a non-uniform cross-sectional shape. In addition, the outer support opening 94 may include a shape that is substantially similar to the shape of the outer support member 108. For example, as shown in FIGS. 20, the outer support member 108 may include a non-uniform cross-sectional shape resembling a Figure “9”. In another embodiment, as shown in FIG. 21, the outer support member 108 may include a non-uniform cross-sectional shape having an elongated body including a plurality of arcuate surfaces. In addition, the outer support member 108 may include any shape having the desired physical properties. Referring to FIG. 21, in one embodiment, the outer support member 108 includes an arcuate top 118 and an arcuate bottom 120 and a first planar side 122 and a second planar side 124. The arcuate top 118 and the arcuate bottom 120 have a predetermined distance D3 that varies between the first planar side 122 and the second planar side 124. The first planar side 122 is parallel to a first plane 126, and the second planar side 124 is parallel to a second plane 128. The first plane 126 and the second plane 128 form an oblique angle 130.

[0057] In the illustrated embodiment, as shown in FIG. 19, the outer support member 108 includes a support body 132 that is sized and shaped to be inserted through the outer support opening 94 of the outer shell 16. The support body 132 includes a base portion 134 and a support arm 136. The base portion 134 includes a pivot axis 138, and the support arm 136 extends outwardly along the y-axis from the base portion 134. The outer support member 108 is positioned within the outer support opening 94 extending through the helmet outer shell 16 such that the outer surface of the support arm 136 contacts the inner surface 96 of the outer support

opening 94 to facilitate resisting a rotation 140 of the helmet outer shell 16 about the pivot axis 138. In one embodiment, the outer support member 108 includes a support flange 142 extending outwardly from the support body 132. The support flange 142 is sized and shaped to contact the outer surface 32 of the outer shell 16 to facilitate coupling the fastening assembly 76 to the outer shell 16.

[0058] In the illustrated embodiment, the inner support member 110 extends outwardly from the outer support member 108 towards the user's head. The inner support member 110 is positioned within the inner support opening 80 of the inner shell 12. The inner support member 110 includes an outer surface 144 that is sized and shaped to contact the inner surface 82 of the inner support opening 80 to facilitate resisting a rotation of the outer support member 108 about the pivot axis 138. In one embodiment, the inner support member 110 includes a substantially uniform cross-sectional shape such as for example, a square. In another embodiment, the inner support member 110 includes any shape having the desired physical properties. The inner support member 110 is positioned within the inner support opening 80 extending through the helmet inner shell 12 such that the outer surface 144 of the inner support member 110 is configured to contact the inner surface 82 of the inner support opening 80 to facilitate resisting a rotation of the outer support member 108 about the pivot axis 138.

[0059] The base member 112 is coupled between the inner support member 110 and the outer support member 108 and is positioned within the gap formed between the helmet inner shell 12 and the helmet outer shell 16. In the illustrated embodiment, the base member 112 includes a cross-sectional area that is greater than the cross-sectional area of the outer support member 108 and/or the inner support member 110 to facilitate coupling the inner shell 12 to the outer shell 16.

[0060] The protective plate 114 includes an inner surface that defines a cavity that is sized and shaped to receive a portion of the outer support member 108 therein. The protective plate 114 is positioned adjacent the outer surface 32 of the outer shell 16 and adapted to encapsulate the outer support member 108 within the cavity. In one embodiment, the fastening device 78 is inserted through an opening 116 extending through the protective plate 114 to facilitate coupling the protective plate 114 to the outer surface 32 of the outer shell 16.

[0061] In the illustrated embodiment, the fastening assembly 76 includes the positioning opening 116 extending through the outer support member 108, the base member 112, and the inner support member 110, and orientated along the pivot axis 138. The fastening device 78 is positioned within the positioning opening 116 and configured to couple the fastening assembly 76 to the inner shell 12 and the outer shell 16. In one embodiment, as shown in FIG. 25 the inner support member 110 is spaced a distance D4 from the pivot axis 138 defined by the base portion, and the positioning opening 116 extends through the outer support member 108, the base member 112, and the inner shell 12.

[0062] As shown in FIG. 18, in one embodiment, the fastening device 78 includes a fastener 146, a snap access 148, and a rigid sleeve 150. The fastening device 78 is coupled to the fastening assembly 76 and the helmet inner shell 12. The fastener 146 has a top portion 152 and a bottom portion 154. The fastener 146 has a shape that may include but is not limited to a screw or any shape having the desired physical properties. The snap access 148 has a shape that may include but is not limited to two stacked cylinders or any shape having the desired physical properties, for example a shape that accepts a chin strap snap. The rigid sleeve 150 has a shape that may include but is not limited to a t-bolt or any shape having the desired physical properties.

[0063] In yet another embodiment, the VMS 10 includes an inner cushion 156 that interacts with the inner shell 12 and the fastening assembly 76 to protect the skull or head of the user.

[0064] The inner cushion 156 extends outwardly from the outer support member 108 towards a user's head. The inner cushion 156 is configured to contact the user's head to facilitate resisting a rotation of the outer support member 108 about the pivot axis 138. In one embodiment, inner cushion 156 is similar to the cushions within the cooling assembly 18.

[0065] In one embodiment, as shown in FIG. 28, the VMS 10 may not include the helmet inner shell 12 or the fastening device 78. This may allow the inner cushion 156 to act as the inner support member 110 and resist the rotation of the outer support member 108. The inner cushion 156 is positioned within the gap between the outer shell 16 and the user's head.

[0066] The ventilated modular system 10 may include a first shell having an outer surface, a second shell outward of the outer surface of the first shell and offset distance, a layer disposed between the outer surface of the first shell and the second shell which may contain absorptive material, a coolant material, padding, and air layer, or any combination of these materials and an attachment mechanism to couple the second shell to the first shell. The second shell may be permanently or temporarily coupled to the first shell. The second shell may be outward of the first shell by a variable distance determined by the materials used in the layer disposed between the outer surface of the first shell and the second shell. The second shell may have a portion which is removable and replaceable with respect to the first shell. The first shell maybe rigid, semi-rigid, or flexible. The second shell may be rigid, semi-rigid, or flexible. The first shell may contain vents, pores or a combination of both. These vents and pores may be of any size and be located at any position. The second shell may contain vents, pores or a combination of both. These vents and pores may be of any size and be located at any position. In the event the second

shell is rigid, it may have a thickness which fractures upon application of a particular force, the particular force may be less than or equal to a predetermined threshold force at which a user should undergo further evaluation.

[0067] The ventilated modular system 10 may include the middle layer or climatic layer including a uniform thickness, or alternatively different thicknesses of different areas of the shell, for example at the top of the second shell in the side of the second shell. The ventilated modular system may also include one or more cushions, coolant packs, or desiccant packs strategically positioned. These components may be located underneath the second shell or they may be coupled to the second shell, wherein the component may include a cover layer. The one or more components may be strategically positioned at various locations between the first and second shells. The components may be used in conjunction with an accelerometer, piezometer, or similar devices between the first and second shells. The components may be customizable to one of the level of play and the size of the player. These aspects are merely illustrative on innumerable aspects associated with the present invention and should not be deemed as limiting in any manner. These and other aspects, features and advantages of the present invention will become apparent from the following detailed description when taken in conjunction with reference drawings.

[0068] The present invention has been described in an illustrative manner. It is to be understood that the terminology, which has been used, is intended to be in the nature of words of description rather than of limitation.

[0069] Many modifications and variations of the present invention are possible in light of the above teachings. Therefore, the present invention may be practiced other than as specifically described.

CLAIMS

What is claimed is:

1. A modular helmet comprising:
an inner shell adapted to be positioned onto a user's head;
an outer shell coupled to the inner shell, the outer shell spaced a distance radially outward from the inner shell to define a climatic zone between the inner shell and the outer shell; and
a cooling assembly positioned within the climatic zone between the inner shell and the outer shell, the cooling assembly including a plurality of cooling packets that are coupled to the outer shell.
2. The modular helmet of claim 1, including a plurality of cushions that are coupled to the outer shell and positioned within the climatic zone.
3. The modular helmet of claim 2, wherein at least one cushion of the plurality of cushions includes a height that is different than a height of at least one cooling packet of the plurality of cooling packets.
4. The modular helmet of claim 1, wherein the inner shell includes a plurality of inner vents configured to couple the climatic zone in flow communication with an area adjacent the users head.
5. The modular helmet of claim 4, wherein the outer shell includes a plurality of outer vents configured to couple the climatic zone in flow communication with ambient air.

6. The modular helmet of claim 5, wherein at least one inner vent is orientated coaxially with a corresponding outer vent.

7. The modular helmet of claim 1, further including an attachment mechanism coupled to the inner shell and the outer shell, wherein the outer shell is removably coupled to the inner shell.

8. A modular helmet comprising:

an inner shell adapted to be positioned onto a user's head, the inner shell includes a plurality of inner vents;

an outer shell coupled to the inner shell, the outer shell spaced a distance radially from the inner shell to define a climatic zone between the inner shell and the outer shell, the outer shell includes a plurality of outer vents configured to couple the climatic zone in flow communication with ambient air; and

a cushion assembly positioned within the climatic zone between the inner shell and the outer shell, the cushion assembly including a plurality of cushions that are coupled to the outer shell.

9. The modular helmet of claim 8, including a plurality of cooling packets that are coupled to the outer shell and positioned within the climatic zone.

10. The modular helmet of claim 9, wherein at least one cushion of the plurality of cushions includes a height that is different than a height of at least one cooling packet of the plurality of cooling packets.

11. The modular helmet of claim 8, wherein the plurality of inner vents includes a first amount of inner vents and the plurality of outer vents includes a second amount of outer vents that is a different than the first amount of inner vents.

12. The modular helmet of claim 8, further including an attachment mechanism coupled to the inner shell and the outer shell, wherein the outer shell is removably coupled to the inner shell.

13. A fastening assembly for use with a helmet assembly including an outer shell, the fastening assembly comprising:

an outer support member adapted to be positioned within a support opening extending through the outer shell, the outer support member including a base portion defining a pivot axis and a support arm extending outwardly from the base portion, the support arm configured to contact an inner surface of the support opening to facilitate resisting a rotation of the helmet outer shell about the pivot axis.

14. The fastening assembly of claim 13, wherein the support opening includes a shape that is substantially similar to a shape of the outer support member.

15. The fastening assembly of claim 13, wherein helmet assembly includes a helmet inner shell that is spaced radially inward from the helmet outer shell and adapted to be positioned about a user's head, the fastening assembly including an inner support member extending outwardly

from the outer support member towards the user's head, the inner support member positioned within an inner support opening extending through the helmet inner shell.

16. The fastening assembly of claim 15, wherein the inner support member includes an outer surface in contact with an inner surface of the inner support opening to facilitate resisting a rotation of the outer support member about the pivot axis.

17. The fastening assembly of claim 16, wherein the fastening assembly includes a base member between the inner support member and the outer support member, the base member positioned within a gap defined between the helmet inner shell and the helmet outer shell.

18. The fastening assembly of claim 17, wherein the inner support member is spaced a distance from the pivot axis defined by the base portion.

19. The fastening assembly of claim 17, further comprising:
a positioning opening extending through the outer support member, the base member, and the inner support member, and orientated along the pivot axis; and
a fastening device positioned within the positioning opening and configured to couple the fastening assembly to the inner and outer shells.

20. The fastening assembly of claim 19, further comprising a cushion extending outwardly from the outer support member towards a user's head, the cushion configured to contact the user's head to facilitate resisting a rotation of the outer support member about the pivot axis.

VENTILATED MODULAR DUAL SHELLLED HELMET SYSTEM

ABSTRACT

A modular helmet is described herein. The module helmet includes an inner shell adapted to be positioned onto a user's head and an outer shell coupled to the inner shell. The outer shell is spaced a distance radially outward from the inner shell to define a climatic zone between the inner shell and the outer shell. A cooling assembly is positioned within the climatic zone between the inner shell and the outer shell. The cooling assembly includes a plurality of cooling packets that are coupled to the outer shell.

**COMBINED DECLARATION AND (37 CFR §1.63) AND ASSIGNMENT FOR UTILITY OR
DESIGN APPLICATION USING AN
APPLICATION DATA SHEET (37 CFR §1.76)**

**Title of
Invention**

VENTILATED MODULAR DUAL SHELLLED HELMET SYSTEM

As the below named inventor(s), I/we hereby declare that:

This declaration ☒ The attached application, or
is directed to:

☐ United States application or PCT international application
number _____ filed on _____.

The above identified application was made or authorized to be made by me/us.

I/We believe that I/we are the original inventor(s) of a claimed invention in the application.

I/We have reviewed and understand the contents of the application, including the claims.

I/We are aware of the duty to disclose to the Office all information known to us to be material to patentability as defined in 37 CFR §1.56.

I/We hereby acknowledge that any willful false statement made in this declaration is punishable under 18 U.S.C. 1001 by fine or imprisonment of not more than five (5) years, or both and may jeopardize the validity of the application or any patent issuing thereon.

For the sum of One Dollar (\$1.00) and other good and valuable consideration, receipt of which is hereby acknowledged, the below named inventor(s), do hereby assign, sell and set over to:
Apalone, Inc. (Company Name),
and having a place of business at:
418 W Northgate Road, Peoria, IL 61614

hereinafter referred to as ASSIGNEE, its successors, assigns or other legal representatives, the entire right, title and interest, domestic and foreign, in and to the inventions and discoveries in the above referenced application, including the right of said ASSIGNEE, its successors, assigns or other legal representatives to file foreign patent applications corresponding to said application, and the right to claim the priority date of said application and any legal equivalents thereof, and any and all Letters Patent or Patents in the United States of America and all foreign countries which may be granted therefor and thereon, to any application claiming priority to said application, and to any and all divisions, continuations, and continuations-in-part of said application, or re-issues or extensions of said Letters Patent or Patents, the same to be held and enjoyed by the ASSIGNEE, as fully and entirely as the same would have been held by us had this Assignment and sale not been made.

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**Title of
Invention**

VENTILATED MODULAR DUAL SHELLLED HELMET SYSTEM

And I/we hereby covenant and agree that I/we, our heirs, successors, assigns or other legal representatives will at any time upon the request and at the expense of the ASSIGNEE, its successors, assigns, or other legal representatives execute and deliver any and all papers and do all lawful acts that may be necessary or desirable to perfect the title to said invention and to obtain Letters Patent therefor.

And I/we hereby authorize and request the Commissioner of Patents to issue said Letters Patent to the ASSIGNEE in accordance with this Agreement.

I/We hereby authorize and request Howard & Howard Attorneys PLLC, to insert herein above the application number and filing date of said application when known.

And I/we hereby represent and warrant that I/we have not granted any rights inconsistent with the rights granted herein.

Please address all correspondence and telephone calls and, upon recordation, please return this document to:

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Citizenship: US

Inventor: Steven T. Baldi

Date: NOVEMBER 20TH, 2017

Signature: 

LEGAL NAME OF INVENTOR

Residence Address: _____

Citizenship: _____

Inventor: _____ Date: _____

Signature: _____

LEGAL NAME OF INVENTOR

Residence Address: _____

Citizenship: _____

Inventor: _____ Date: _____

Signature: _____

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Application Number: 15820256

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PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
 Stylesheet Version v1.2

EPAS ID: PAT4700439

SUBMISSION TYPE:	NEW ASSIGNMENT	
NATURE OF CONVEYANCE:	ASSIGNMENT	
CONVEYING PARTY DATA		
	Name	Execution Date
	STEVEN T. BALDI	11/20/2017
RECEIVING PARTY DATA		
Name:	APALONE, INC.	
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State/Country:	ILLINOIS	
Postal Code:	61614	
PROPERTY NUMBERS Total: 1		
	Property Type	Number
	Application Number:	15820256
CORRESPONDENCE DATA		
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<i>Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.</i>		
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ATTORNEY DOCKET NUMBER:	113762.00005	
NAME OF SUBMITTER:	JAMES R. YEE	
SIGNATURE:	/James R. Yee/	
DATE SIGNED:	11/21/2017	
	This document serves as an Oath/Declaration (37 CFR 1.63).	
Total Attachments: 2		
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Inventor: Steven T. Baldi

Date: NOVEMBER 20TH, 2017

Signature: 

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Citizenship: _____

Inventor: _____ Date: _____

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
15/820,256	11/21/2017	Steven T. Baldi	113762.00005

CONFIRMATION NO. 8864

FORMALITIES LETTER



OC000000096213420

27305

HOWARD & HOWARD ATTORNEYS PLLC
450 West Fourth Street
Royal Oak, MI 48067

Date Mailed: 12/26/2017

NOTICE OF OMITTED ITEM(S) IN A NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

A filing date has been accorded to the above-identified nonprovisional application papers; however, the following item(s) appear to have been omitted from the application:

- Figure(s) **22, 26** described in the specification.

Applicant must reply to this notice within the time period set forth in this notice to avoid abandonment of this application. Applicant must select one of the three following options and the reply must comply with the requirements set forth in the selected option and any other requirements set forth in this notice. The reply should also indicate which option applicant has selected.

I. Petition for date of deposit: Should applicant contend that the above-noted omitted item(s) was in fact deposited in the U.S. Patent and Trademark Office (USPTO) with the nonprovisional application papers, a copy of this Notice and a petition (and the petition fee set forth in 37 CFR 1.17(f) with evidence of such deposit **must** be filed within **TWO MONTHS** of the date of this Notice. The petition fee will be refunded if it is determined that the item(s) was received by the USPTO. **THIS TWO MONTH PERIOD IS EXTENDABLE UNDER 37 CFR 1.136(a) or (b).**

Applicant should review their application file and determine whether their file differs from USPTO's records. In some situations there may be a mislabeling of the drawings and/or a failure to describe in the brief description each of the figures as labeled.

The brief description of the drawings in the specification must correspond with the figures and the figures must be labeled in accordance with 37 CFR 1.84(u)(1). For example, if the brief description describes Figure 1 and Figure 2 only, but the drawings show Fig. 1 and Fig. 2A and Fig. 2B, then the specification must be amended to refer to Figure 2A and Figure 2B and delete the reference to Figure 2 and a substitute specification in compliance with 37 CFR 1.52, 1.121(b)(3), and 1.125, is required. As another example, if a drawing is labeled Figure 2, but there are actually multiple figures within the labeled Figure 2 having labels A, B, and C, then the drawings must be relabeled in accordance with 37 CFR 1.84(u)(1) (e.g., Fig. 2A, Fig. 2B, and Fig. 2C). If the specification does not refer to the figures as relabeled, then the specification must be amended to refer to the relabeled figures (e.g., Fig. 2A, Fig. 2B, and Fig. 2C) and a substitute specification in compliance with 37 CFR 1.52, 1.121(b)(3), and 1.125, is required. A petition for date of deposit under option I should **NOT** be filed in either situation or in similar situations where there is simply a mislabeling of the drawings and/or a failure to describe in the brief description each of the figures. Instead, applicant should file a reply under option III.A below (including replacement drawing sheets and/or a substitute specification as required in III.A.2).

II. Petition for later filing date: Should applicant desire to supply the omitted item(s) and accept the date that such omitted item(s) was filed in the USPTO as the filing date of the above-identified application, a copy of this Notice, the omitted item(s), and a petition under 37 CFR 1.182 with the petition fee set forth in 37 CFR 1.17(f) requesting the later filing date **must** be filed within **TWO MONTHS** of the date of this Notice. **THIS TWO MONTH PERIOD IS EXTENDABLE UNDER 37 CFR 1.136(a) or (b).**

Applicant is advised that generally the filing fee required for an application is the filing fee in effect on the filing date accorded the application and that payment of the requisite basic filing fee on a date later than the filing date of the application requires payment of a surcharge (37 CFR 1.16(f)). To avoid processing delays and payment of a surcharge, applicant should submit any balance due for the requisite filing fee based on the later filing date being requested when submitting the omitted item(s) and the petition (and petition fee) requesting the later filing date.

III. Acceptance of application as deposited: Applicant may accept the application as deposited in the USPTO by filing an appropriate amendment as set forth in either (A) or (B) below within **TWO MONTHS** of the date of this Notice. **THIS TWO MONTH PERIOD IS EXTENDABLE UNDER 37 CFR 1.136(a) or (b)**. The application will maintain a filing date as of the date of deposit of the application papers in the USPTO, and original application papers (i.e., the original disclosure of the invention) will include only those application papers present in the USPTO on the date of deposit. A petition is not required for this option.

(A) If applicant wants to accept the application as deposited without adding the subject matter that was in the omitted item (e.g., a missing page or figure), applicant is required to submit one or more of the following items without adding any new matter (see 35 U.S.C. 132(a)):

1. For a missing page of the specification,
 - a) a substitute specification including claims that amends the specification to renumber the pages consecutively and cancels any incomplete sentences, and
 - b) a statement that the substitute specification includes no new matter, in compliance with 37 CFR 1.121(b)(3) and 1.125;
2. For a missing figure of the drawings (including a mislabeled figure),
 - a) replacement drawing sheets in compliance with 37 CFR 1.121(d) to renumber the drawing figures consecutively (if necessary),
 - b) a substitute specification excluding claims that amends the specification to cancel any references to any omitted drawing(s) and corrects the references in the specification to the drawing figures to correspond with any relabeled drawing figures, and
 - c) a statement that the substitute specification includes no new matter, in compliance with 37 CFR 1.121(b)(3) and 1.125;
3. For a missing page of the claim listing only, a replacement claim listing with the claims renumbered consecutively or, if amendment to the claims is also necessary, then a complete claim listing in compliance with 37 CFR 1.121(c);
4. For a missing or unreadable compact disc,
 - a) a substitute specification (excluding the claims) deleting the reference to the compact disc and the files contained on the compact disc, and
 - b) a statement that the substitute specification includes no new matter, in compliance with 37 CFR 1.121(b)(3) and 1.125; and
5. For a missing or unreadable file submitted on a compact disc,
 - a) a substitute specification (excluding the claims) deleting the reference to the missing or unreadable file, and a statement that the substitute specification includes no new matter, in compliance with 37 CFR 1.121(b)(3) and 1.125; and
 - b) a replacement transmittal letter listing all of the files except the missing or unreadable file in compliance with 37 CFR 1.52(e)(3)(ii).

(B) Alternatively, if applicant wants to accept the application as deposited but wishes to add the subject matter in the omitted item (e.g., a missing page or figure) by relying on an incorporation by reference under 37 CFR 1.57 or

other portions of the original disclosure, applicant is required to submit one or more of the following items without adding any new matter (see 35 U.S.C. 132(a)):

1. To add the subject matter in a missing page of specification,
 - a) a substitute specification excluding claims and
 - b) a statement that the substitute specification includes no new matter, in compliance with 37 CFR 1.121(b)(3) and 1.125;
2. To add a missing figure of the drawings, new and replacement drawing sheets in compliance with 37 CFR 1.121(d);
3. To add the subject matter in a missing page of the claim listing, a complete claim listing in compliance with 37 CFR 1.121(c) (e.g., a claim in the missing page should be submitted as a new claim);
4. To add the subject matter in a missing or unreadable compact disc,
 - a) a replacement compact disc and a duplicate copy of the compact disc, in compliance with 37 CFR 1.52(e); and
 - b) a statement that the replacement compact disc contains no new matter in compliance with 37 CFR 1.52(e)(4); and,
5. To add the subject matter in a missing or unreadable file submitted on a compact disc,
 - a) a replacement compact disc that contains all of the files listed in the specification including the missing or unreadable file and a duplicate copy of the compact disc, in compliance with 37 CFR 1.52(e); and
 - b) a statement that the replacement compact disc contains no new matter in compliance with 37 CFR 1.52(e)(4).

If applicant is relying on an incorporation by reference under 37 CFR 1.57 to add the omitted subject matter, then applicant must also comply with the requirements of 37 CFR 1.57.

Applicant is cautioned that correction of the above items may cause the specification and drawings page count to exceed 100 pages. If the specification and drawings exceed 100 pages, applicant will need to submit the required application size fee.

Replies must be received in the USPTO within the set time period or must include a proper Certificate of Mailing or Transmission under 37 CFR 1.8 with a mailing or transmission date within the set time period. For more information and a suggested format, see Form PTO/SB/92 and MPEP 512.

Replies should be mailed to:

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web, including a copy of this Notice and selecting the document description "Applicant response to Pre-Exam Formalities Notice".
<https://portal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html>

For more information about EFS-Web please call the USPTO Electronic Business Center at 1-866-217-9197 or visit our website at <http://www.uspto.gov/ebc>.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/agoitom/



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
15/820,256	11/21/2017	3765	730	113762.00005	20	3

CONFIRMATION NO. 8864

FILING RECEIPT



0000000098213419

27305
HOWARD & HOWARD ATTORNEYS PLLC
450 West Fourth Street
Royal Oak, MI 48067

Date Mailed: 12/26/2017

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Steven T. Baldi, Peoria, IL;

Applicant(s)

Apalone, Inc., Peoria, IL;

Power of Attorney: The patent practitioners associated with Customer Number 27305

Domestic Priority data as claimed by applicant

This appln claims benefit of 62/425,397 11/22/2016

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 12/20/2017

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 15/820,256**

Projected Publication Date: To Be Determined - pending completion of Omitted Items

page 1 of 3

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

VENTILATED MODULAR DUAL SHELLLED HELMET SYSTEM

Preliminary Class

002

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER
Title 35, United States Code, Section 184
Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

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The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit <http://www.SelectUSA.gov> or call +1-202-482-6800.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875						Application or Docket Number 15/820,256	
APPLICATION AS FILED - PART I							
(Column 1)		(Column 2)		SMALL ENTITY		OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA		RATE(\$)	FEE(\$)		RATE(\$)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A	70		N/A
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A	300		N/A
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A	360		N/A
TOTAL CLAIMS (37 CFR 1.16(i))	20	minus 20 =	*	x 40 =	0.00	OR	
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3	minus 3 =	*	x 210 =	0.00		
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).				0.00		
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))					0.00		
				TOTAL	730		TOTAL
* If the difference in column 1 is less than zero, enter "0" in column 2.							
APPLICATION AS AMENDED - PART II							
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY	
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE(\$)	ADDITIONAL FEE(\$)
	Total (37 CFR 1.16(i))	*	Minus	**	=	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =	
	Application Size Fee (37 CFR 1.16(s))						
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	
(Column 1)		(Column 2)		(Column 3)		OTHER THAN SMALL ENTITY	
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		RATE(\$)	ADDITIONAL FEE(\$)
	Total (37 CFR 1.16(i))	*	Minus	**	=	x =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x =	
	Application Size Fee (37 CFR 1.16(s))						
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
						TOTAL ADD'L FEE	
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.							

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor : Steven T. Baldi
Appl. No. : 15/820,256
Filed : November 21, 2017
Title : VENTILATED MODULAR DUAL SHELLLED HELMET SYSTEM
Docket No. : 113762.00005
Art Unit : 3765
Examiner : Not Yet Assigned

**RESPONSE TO NOTICE OF OMITTED ITEM(S) IN A NONPROVISIONAL
APPLICATION AND PRELIMINARY AMENDMENT**

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In response to the Notice of Omitted Item(s) in a Non-Provisional Application mailed December 26, 2017, Applicant wishes to amend the above-identified application as follows. This amendment has been prepared in accordance with the amendment format of 37 C.F.R. §1.121 to place the application in condition for examination.

Amendments to the Specification – begin on page **2**;

Amendments to the Drawings – are reflected on page **5**;

Claims – a listing of the claims begin on page **6**; and

Remarks/Arguments – being on page **11** of this paper.

IN THE SPECIFICATION:

Applicant respectfully requests approval of the following amendments to the specification. Applicant hereby submits a Substitute Specification incorporating the amendments to the specification. In addition, Applicant submits a Marked-up Specification showing the changes made to the specification. No new matter has been added to the specification being in compliance with 37 C.F.R. 1.121(b)(3) and 1.125.

Please amend the following paragraphs set forth under the heading “BRIEF DESCRIPTION OF THE FIGURES” as follows:

[0024] FIG. ~~17-28~~ 17-26 illustrate various embodiments of the attachment mechanism of the ventilated modular helmet;

[0025] FIG. ~~[[29]]~~ 27 illustrates a perspective view of the fastening assembly within the ventilated modular helmet;

[0026] FIG. ~~[[30]]~~ 28 illustrates a perspective view of the fastening assembly of the ventilated modular helmet;

[0027] FIG. ~~[[31]]~~ 29 illustrates a front view of the outer support member of the ventilated modular helmet;

[0028] FIG. ~~[[32]]~~ 30 illustrates a top view of the attachment mechanism of the ventilated modular helmet;

[0029] FIG. ~~[[33]]~~ 31 illustrates a front view of the attachment mechanism of the ventilated modular helmet.

Please amend the following paragraphs set forth under the heading “DETAILED DESCRIPTION OF THE INVENTION” as follows:

[0052] In another embodiment, illustrated in FIGS. ~~48-28~~ 18-26, the attachment mechanism 66 includes a fastening assembly 76 and a fastening device 78. In one embodiment of the VMS 10, the VMS includes the inner shell 12, the outer shell 16, the fastening assembly 76, and the fastening device 78. The inner shell 12 is adapted to be positioned about a user’s head. The outer shell 16 is spaced radially outwardly from the helmet inner shell. The fastening assembly 76 is configured to pivotably couple the inner shell 12 and the outer shell 16 to enable the outer shell 16 to move with respect to the inner shell 12.

[0055] Illustrated in FIGS. ~~48-24~~ 18-23, the fastening assembly 76 includes an outer support member 108, an inner support member 110, a base member 112, a protective plate 114, and at least one positioning opening 116. The fastening assembly 76 acts similar to the attachment mechanism 66 described above, but also allows the outer shell 16 to resist a rotation that is independent of the inner shell 12 in all planes. The fastening assembly 76 may include a material such as thermoplastic polyurethane or polyvinyl nitrile, or any material that includes the desired properties.

[0061] In the illustrated embodiment, the fastening assembly 76 includes the positioning opening 116 extending through the outer support member 108, the base member 112, and the inner support member 110, and orientated along the pivot axis 138. The fastening device 78 is positioned within the positioning opening 116 and configured to couple the fastening assembly 76 to the inner shell 12 and the outer shell 16. In one embodiment, as shown in FIG. ~~[[25]]~~ 24 the inner support member 110 is spaced a distance D4 from the pivot axis 138 defined by the

base portion, and the positioning opening 116 extends through the outer support member 108, the base member 112, and the inner shell 12.

[0065] In one embodiment, as shown in FIG. ~~[[28]]~~ 26, the VMS 10 may not include the helmet inner shell 12 or the fastening device 78. This may allow the inner cushion 156 to act as the inner support member 110 and resist the rotation of the outer support member 108. The inner cushion 156 is positioned within the gap between the outer shell 16 and the user's head.

AMENDMENTS TO THE DRAWINGS

Applicant respectfully requests approval of the following amendments to the drawings. Original FIGS. 23-25 and 27-33 have been amended to address the issues in the Notice of Omitted Item(s) in a Non-Provisional Application mailed December 26, 2017. Original FIGS. 1-21, 23-25, and 27-33 should have been labeled FIGS. 1-31 in accordance with 37 C.F.R. 1.84(u)(1) to include consecutive Arabic numerals, such as, for example, original FIG. 23 should have been labeled FIG. 22.

In addition, original FIGS. 18, 20, 24, 25, and 29-33 have been amended to include formal drawings. Replacement Sheets 18, 20, and 22-31 have been submitted to overcome the issues noted and in compliance with 37 C.F.R. 1.84(u)(1) by numbering the different views in consecutive Arabic numerals, starting with 1, as set forth in the Notice of Omitted Item(s). Applicant hereby submits Replacement Sheets incorporating the amendments to the Figures. No new matter has been added.

IN THE CLAIMS

1. (Original). A modular helmet comprising:

an inner shell adapted to be positioned onto a user's head;

an outer shell coupled to the inner shell, the outer shell spaced a distance radially outward from the inner shell to define a climatic zone between the inner shell and the outer shell; and

a cooling assembly positioned within the climatic zone between the inner shell and the outer shell, the cooling assembly including a plurality of cooling packets that are coupled to the outer shell.
2. (Original). The modular helmet of claim 1, including a plurality of cushions that are coupled to the outer shell and positioned within the climatic zone.
3. (Original). The modular helmet of claim 2, wherein at least one cushion of the plurality of cushions includes a height that is different than a height of at least one cooling packet of the plurality of cooling packets.
4. (Original). The modular helmet of claim 1, wherein the inner shell includes a plurality of inner vents configured to couple the climatic zone in flow communication with an area adjacent the users head.
5. (Original). The modular helmet of claim 4, wherein the outer shell includes a plurality of outer vents configured to couple the climatic zone in flow communication with ambient air.

6. (Original). The modular helmet of claim 5, wherein at least one inner vent is orientated coaxially with a corresponding outer vent.

7. (Original). The modular helmet of claim 1, further including an attachment mechanism coupled to the inner shell and the outer shell, wherein the outer shell is removably coupled to the inner shell.

8. (Original). A modular helmet comprising:
an inner shell adapted to be positioned onto a user's head, the inner shell includes a plurality of inner vents;

an outer shell coupled to the inner shell, the outer shell spaced a distance radially from the inner shell to define a climatic zone between the inner shell and the outer shell, the outer shell includes a plurality of outer vents configured to couple the climatic zone in flow communication with ambient air; and

a cushion assembly positioned within the climatic zone between the inner shell and the outer shell, the cushion assembly including a plurality of cushions that are coupled to the outer shell.

9. (Original). The modular helmet of claim 8, including a plurality of cooling packets that are coupled to the outer shell and positioned within the climatic zone.

10. (Original). The modular helmet of claim 9, wherein at least one cushion of the plurality of cushions includes a height that is different than a height of at least one cooling packet of the plurality of cooling packets.

11. (Original). The modular helmet of claim 8, wherein the plurality of inner vents includes a first amount of inner vents and the plurality of outer vents includes a second amount of outer vents that is a different than the first amount of inner vents.

12. (Original). The modular helmet of claim 8, further including an attachment mechanism coupled to the inner shell and the outer shell, wherein the outer shell is removably coupled to the inner shell.

13. (Original). A fastening assembly for use with a helmet assembly including an outer shell, the fastening assembly comprising:

an outer support member adapted to be positioned within a support opening extending through the outer shell, the outer support member including a base portion defining a pivot axis and a support arm extending outwardly from the base portion, the support arm configured to contact an inner surface of the support opening to facilitate resisting a rotation of the helmet outer shell about the pivot axis.

14. (Original). The fastening assembly of claim 13, wherein the support opening includes a shape that is substantially similar to a shape of the outer support member.

15. (Original). The fastening assembly of claim 13, wherein helmet assembly includes a helmet inner shell that is spaced radially inward from the helmet outer shell and adapted to be positioned about a user's head, the fastening assembly including an inner support member extending outwardly from the outer support member towards the user's head, the inner support member positioned within an inner support opening extending through the helmet inner shell.

16. (Original). The fastening assembly of claim 15, wherein the inner support member includes an outer surface in contact with an inner surface of the inner support opening to facilitate resisting a rotation of the outer support member about the pivot axis.

17. (Original). The fastening assembly of claim 16, wherein the fastening assembly includes a base member between the inner support member and the outer support member, the base member positioned within a gap defined between the helmet inner shell and the helmet outer shell.

18. (Original). The fastening assembly of claim 17, wherein the inner support member is spaced a distance from the pivot axis defined by the base portion.

19. (Original). The fastening assembly of claim 17, further comprising:
a positioning opening extending through the outer support member, the base member, and the inner support member, and orientated along the pivot axis; and
a fastening device positioned within the positioning opening and configured to couple the fastening assembly to the inner and outer shells.

Inventor: Steven T. Baldi
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Filed: November 21, 2017
Page 10

20. (Original). The fastening assembly of claim 19, further comprising a cushion extending outwardly from the outer support member towards a user's head, the cushion configured to contact the user's head to facilitate resisting a rotation of the outer support member about the pivot axis.

Inventor: Steven T. Baldi
Serial No: 15/820,256
Filed: November 21, 2017
Page 11

REMARKS

No new matter is added by this amendment. The present application was filed on November 21, 2017. This Amendment is in response to the Notice of Omitted Item(s) in a Non-Provisional Application mailed December 26, 2017.

By this Amendment, no claims have been amended. The claims remaining in consideration are claims 1-20, of which claims 1, 8, and 13 are independent.

In the specification, paragraphs [0024]-[0029], [0052], [0055], [0061], and [0065] have been amended to address the issues noted in the Notice of Omitted Item(s) in a Non-Provisional Application. Applicant submits a marked-up version showing the changes made to the specification and a clean copy of a substitute specification.

Replacement Sheets 18, 20, and 22-31 have been submitted to address the issues noted in the Notice of Omitted Item(s) and to be in compliance with 37 C.F.R. 1.84(u)(1) by numbering the different views in consecutive Arabic numerals, starting with 1.

All issues outlined in the Notice of Omitted Item(s) in a Non-Provisional Application have been addressed by this amendment. The Applicant respectfully asserts that the present application is in condition for review and allowance.

If any additional fees are necessary, the Commissioner is hereby authorized to charge such fees to Deposit Account No. 08-2789 in the name of Howard & Howard Attorneys PLLC.

Respectfully submitted,

HOWARD & HOWARD ATTORNEYS PLLC

February 21, 2018
Date

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VENTILATED MODULAR DUAL SHELLLED HELMET SYSTEM

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims priority to U.S. Provisional Patent Application Serial No. 62/425,397, filed November 22, 2016 which is hereby incorporated by reference in its entirety.

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0002] This present invention relates to helmet assemblies, and more specifically, to helmet assemblies that include a ventilated modular shell system (VMS) that may be used in sports and activities, including military activities, that require the protection of a helmet and are conducted in high temperature environments.

2. Description of the Related Art

[0003] A continuous effort should be made to eliminate heat stroke deaths associated with activities requiring the use of a helmet, in particular American football. The Annual Survey of Football Injury Research published by National Center for Catastrophic Sport Injury states 24 football related heat stroke fatalities were documented during the 15-year period from 1986 to 2000. During the subsequent 15-year period from 2001 to 2015, 42 football related heat stroke fatalities were documented, a 175% increase. It has been noted helmets do not affect physiological parameters other than the local skin temperature and sweat rate. Heat loss from the head is one quarter to one third of total metabolic body heat. This is substantially higher than the head's proportion of the total body surface area. Thus the head has considerable heat loss capacity. Related to this is the National Athletic Trainers Association position the participants who wear equipment that does not allow for heat dissipation are at an increased risk for heat illness. Wearing a helmet is also a potential risk factor because a significant amount of heat is

dissipated through the head. Another issue with current helmets is that the helmets are not resistant law impact. For example, a football player that repeatedly received minor hits to the head. Coaches desire the players to wear the actual gear they will play in to train as realistically as possible. As such, there is a need for a helmet that allows athletes to become acclimated to wearing the appropriate gear while not exposing themselves to exertional heatstroke.

[0004] The present invention is aimed at one or more of the problems identified above.

SUMMARY OF THE INVENTION

[0005] In one embodiment, a modular helmet is provided. The module helmet includes an inner shell adapted to be positioned onto a user's head and an outer shell coupled to the inner shell. The outer shell is spaced a distance radially outward from the inner shell to define a climatic zone between the inner shell and the outer shell. A cooling assembly is positioned within the climatic zone between the inner shell and the outer shell. The cooling assembly includes a plurality of cooling packets that are coupled to the outer shell.

[0006] In another embodiment, a modular helmet is provided. The modular helmet includes an inner shell adapted to be positioned onto a user's head, an outer shell, and a cushion assembly. The inner shell includes a plurality of inner vents. The outer shell is coupled to the inner shell and spaced a distance radially from the inner shell to define a climatic zone between the inner shell and the outer shell. The outer shell includes a plurality of outer vents configured to couple the climatic zone in flow communication with ambient air. The cushion assembly is positioned within the climatic zone between the inner shell and the outer shell. The cushion assembly includes a plurality of cushions that are coupled to the outer shell.

[0007] In a further embodiment, a fastening assembly for use with a helmet assembly including an outer shell is provided. The fastening assembly includes an outer support member

adapted to be positioned within a support opening extending through the outer shell. The outer support member includes a base portion defining a pivot axis and a support arm extending outwardly from the base portion. The support arm is configured to contact an inner surface of the support opening to facilitate resisting a rotation of the helmet outer shell about the pivot axis.

BRIEF DESCRIPTION OF THE FIGURES

[0008] Non-limiting and non-exhaustive embodiments of the present invention are described with reference to the following figures. Other advantages of the present disclosure will be readily appreciated, as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings wherein:

[0009] FIG. 1 is a side view of one embodiment of the ventilated modular helmet system in accordance with the teachings of the present disclosure;

[0010] FIG. 2 is a front view of another embodiment of the modular ventilated helmet system in accordance with the teachings of the present disclosure;

[0011] FIG. 3 illustrates a sectional view of a portion of the ventilated modular helmet system including coaxially oriented vents;

[0012] FIG. 4 illustrates a sectional view of a portion of the ventilated modular helmet system including off-set vents;

[0013] FIG. 5 is a side view of the ventilated modular helmet system of Figure 1 including various embodiments of the present disclosure;

[0014] FIG. 6 illustrates another sectional view of a portion of the ventilated modular helmet system showing a cushion assembly and a cooling assembly;

[0015] FIG. 7 illustrates a perspective view of a cooling packet that may be used with the cooling assembly;

SUBSTITUTE SPECIFICATION – MARKED-UP VERSION

[0016] FIG. 8 is a side view of the ventilated modular helmet system of FIG. 1 including various embodiments of the disclosure;

[0017] FIG. 9 is the side view of the ventilated modular helmet system of FIG. 1 indicating the cooling packet insertion slot;

[0018] FIGS. 10 and 11 are perspective views of a cushion that may be used with the cushion assembly;

[0019] FIG. 12 is a front view of the ventilated modular helmet system of FIGS. 8 and 9 with the various components in place;

[0020] FIG. 13 is another side view of the ventilated modular helmet system of FIG. 1 with only the optional cushions in place;

[0021] FIG. 14 is a front view of the ventilated modular helmet system of FIG. 1 with only the optional cushions in place;

[0022] FIG. 15 is a front view of another embodiment of the ventilated modular helmet system of FIG. 13 in accordance with the teachings of the present disclosure;

[0023] FIG. 16 is a cross-sectional view of the attachment mechanism shown in FIG. 15, and taken along section line 10-10;

[0024] FIG. ~~17-28~~ 17-26 illustrate various embodiments of the attachment mechanism of the ventilated modular helmet;

[0025] FIG. ~~[[29]]~~ 27 illustrates a perspective view of the fastening assembly within the ventilated modular helmet;

[0026] FIG. ~~[[30]]~~ 28 illustrates a perspective view of the fastening assembly of the ventilated modular helmet;

[0027] FIG. [[31]] 29 illustrates a front view of the outer support member of the ventilated modular helmet;

[0028] FIG. [[32]] 30 illustrates a top view of the attachment mechanism of the ventilated modular helmet;

[0029] FIG. [[33]] 31 illustrates a front view of the attachment mechanism of the ventilated modular helmet.

[0030] Corresponding reference characters indicate corresponding components throughout the several views of the drawings.

DETAILED DESCRIPTION OF THE INVENTION

[0031] In the following description, numerous specific details are set forth in order to provide a thorough understanding of the present invention. It will be apparent, however, to one having ordinary skill in the art that the specific detail need not be employed to practice the present invention. In other instances, well-known materials or methods have not been described in detail in order to avoid obscuring the present invention.

[0032] The following detailed description of the present invention references the accompanying drawing figures that illustrate specific embodiments in which the invention can be practiced. The embodiments are intended to describe aspects of the present invention in sufficient detail to enable those skilled in the art to practice the invention. Other embodiments can be utilized and changes can be made without departing from the spirit and scope of the present invention the present invention is defined by the appended claims and, therefore, the description is not to be taken in a limiting sense and shall not limit the scope of equivalents to which such claims are entitled.

[0033] An aspect of the invention generally pertains to a ventilated modular helmet system that can decrease the effects of atmospheric heat related to sports activities and decrease the incidence of exertional heatstroke.

[0034] Another aspect of the invention generally pertains to a ventilated modular helmet system that creates a microclimate that is conducive to heat dissipation and accelerated sweat evaporation.

[0035] Yet another aspect of the invention generally pertains to ventilated modular helmet system that when worn with the optional padding can decrease the effects of regular impacts inherent to sports and decrease the incidence of concussions experienced by active participants.

[0036] The present invention provides a ventilated modular system (VMS) 10 that uses the external cushioning system, currently known as the modular dual shell helmet system (MDS) as its platform. The VMS includes a highly ventilated modular dual shelled helmet system that can be used in sports and activities, including military activities that require the protection of a helmet and are conducted in high temperature environments. In light of the prior art is significant that the VMS helmet has significantly more ventilation to allow for convection and evaporation. The VMS helmet also allows for the interchange of a highly ventilated outer practice shell for a full contact game shell without incurring the cost of purchasing an entirely new helmet. The VMS system allows a safer, cooler helmet that can be precisely modeled to match the game helmet in both size and weight.

[0037] In various embodiments, as illustrated in FIGS. 1 and 2, the ventilated modular helmet system (VMS) 10 for cooling includes an inner shell 12 and a cooling apparatus 14 coupled to the inner shell 12. The cooling apparatus 14 includes an outer shell 16 coupled to the inner shell 12 and a cooling assembly 18 (not shown). In one embodiment, the cooling apparatus

14 is configured to be coupled to an outer surface of a user's helmet. In the illustrated embodiment, the outer shell 16 is coupled to the inner shell 12 and spaced a distance radially outward from the inner shell 12 to define a climatic zone 20 between the inner shell 12 and the outer shell 16. The cooling assembly 18 is positioned within the climatic zone 20 between the inner shell 12 and the outer shell 16. In one embodiment, the inner shell 12 includes a plurality of inner vents 22 that extend through the inner shell body 12, an inner surface 24, and an outer surface 26. The inner vents 22 are configured to couple the climatic zone 20 in flow communication with an area adjacent to the user's head. In addition, the outer shell 16 may include a plurality of outer vents 28 that extend through the outer shell 16 an inner surface 30, and an outer surface 32. The outer vents 28 are configured to couple the climatic zone 20 in flow communication with ambient air. In one embodiment, at least one inner vent 22 may be aligned coaxially with a corresponding outer vent 28. In addition, one or more inner vents 22 may be aligned offset a distance from a corresponding outer vent 28.

[0038] The inner shell 12 is made out of a flexible material, a semi rigid material, or a rigid material. The flexible material may be easily displaced and act more as a membrane to distribute the applied forces if the system 10 is used with the plurality of cushions. The flexible material may have sufficient elasticity such that it returns to its original shape when deformed upon impact. The material used for the inner shell 12 may include but is not limited to any material having the desired physical properties. For example, the desired physical properties for the inner shell 12 may be made from polymers, plastics, thermoplastics, PVC, vinyl, nylon, or other similar materials. The materials used for the inner shell 12 may include materials that have a smooth outer surface and a high level of mar-resistance. These desired physical properties may reduce the drag coefficient that occurs between two helmets when they collide helping to reduce

rotational forces generated through friction that may cause trauma and influence the probability of neck injury. A low drag coefficient also maximizes air flow through the plurality of inner vents 22, increasing the air movement and the evaporation within the climatic zone 20.

[0039] The outer shell 16 may be made out of a flexible material, a semi rigid material, or a rigid material. The flexible material may be easily displaced and act more as a membrane to distribute the applied forces if the system 10 is used with the plurality of cushions. The flexible material may have sufficient elasticity such that it returns to its original shape when deformed upon impact. The material used for the outer shell 16 may include but is not limited to any material having the desired physical properties. For example, the desired physical properties of the outer shell 16 may include polymers, plastics, thermoplastics, PVC, vinyl, nylon, or other similar materials. The materials used for the outer shell 16 may include materials that have a smooth outer surface and a high level of mar-resistance. These desired physical properties may reduce the drag coefficient that occurs between two helmets when they collide, or between the outer shell 16 and the surrounding air. This helps reduce rotational forces generated through friction that may cause trauma and influence the probability of neck injury. A low drag coefficient also maximizes air flow through the plurality of vents (described herein), increasing the air movement and the evaporation within the climatic zone 20. Unlike traditional helmets, the outer shell 16 of the VMS 10 provides shade to the inner shell 12 allowing a natural lowering of the temperature of the inner shell 12. Further mitigating the inherent heat absorption associated with single shell helmets, which place the exposed outer shell in direct proximity to the head. In addition, the outer shell 16 may be coated with a reflective material. The reflective material may prevent the absorption of solar energy by the outer shell 16 from light that may enter through the pores or the vents.

[0040] With reference to FIGS. 3 and 4, on one embodiment, one or more inner vents 22 may be aligned coaxially with a corresponding outer vent 28. The inner vents 22 each have a center axis 34 and the outer vents 28 each have a center axis 36. In addition, one or more inner vents 22 may be aligned off-set a predetermined distance D2 from a centerline of a corresponding outer vent 24. The inner and outer vents are spaced along an x-axis within the inner shell 12 and the outer shell 16, respectively. As shown in FIG. 3, the inner and outer vents are aligned along the same center axis 34/36 along the y-axis allowing the air to travel from outside of the outer shell 16 through the outer vents 28 into the climatic zone 20. From the climatic zone 20, the air may then exit the climatic zone 20 through the inner vents 22 into the area adjacent to the user's head. In one embodiment, as shown in FIG. 4, the inner vents 22 may be aligned offset from the outer vents 28 along the x-axis. For example, each inner vent 22 and outer vent 28 may have a centerline axis 34/36. The centerline axis 34 of each inner vent 22 may be offset the predetermined distance D2 along the x-axis from the centerline axis 36 of a corresponding outer vent 28. The predetermined distance D2 is the distance between the center axis 36 of the outer vent 28 and the center axis 34 of the next preceding inner vent 22 on the inner shell 12. As shown in FIG. 6, the off-set vents allow the air that enters from the outside of the outer shell 16 to flow over the cooling assembly 20, cooling the air before reaching the user's head from the inner vents 22. This allows the air inside of the VMS 10 to be cooled, therefore cooling the head of the person using the helmet. The air is also able to move from inside of the VMS 10 through the inner shell 12 and the outer shell 16 to the outside of the VMS 10, allowing warmer air to leave the VMS 10.

[0041] In one embodiment, the plurality of inner vents 22 includes a first amount of inner vents and the plurality of outer vents 28 includes a second amount of outer vents that is a different

amount than the first amount of inner vents. For example, the inner shell 12 may include 5 inner vents 22 and the outer shell 16 may include 6 outer vents 28.

[0042] In one embodiment, as shown in FIG. 5 the outer shell 16 may include a plurality of pores 38. The replacement of the vents with pores is to prevent injuries. For example, each pore 38 may be sized and shaped to prevent a user's finger to enter into the pore opening thereby preventing the user's fingers from being caught in the pore opening. The pore 38 includes a minute opening on the surface of the outer shell 16 that allows gases, liquids, or microscopic particles to pass through the pore 38. Similar to the outer vents 28, the pores 38 may be oriented coaxially with a corresponding inner vent 22. In addition, the pores 38 of the outer shell 16 may be oriented off-set a predetermined distance along the x-axis from the inner vents 22. In one embodiment, the inner shell 12 may include a plurality of pores 38 (not shown).

[0043] In the illustrated embodiment, the climatic zone 20 is defined between the inner shell and the outer shell. As shown in FIG. 6, the distance of the climatic zone 20 is the length L1 along the y-axis between the inner surface 30 of the outer shell 16 and the outer surface 26 of the inner shell 12. The length of the climatic zone L1 may vary depending on the goals of the user. For example, FIGS. 1 and 2 show the VMS 10 without any additional components positioned within climatic zone 20. The length L1 is variable to maximize air movement within the climatic zone 20 that may enhance evaporation. When the climatic zone 20 does not include the cooling assembly 18, the climatic zone 20 passively allows an arid layer of air to form between the inner shell 12 and the outer shell 16. As shown by the arrows with broken lines in FIGS. 3 and 4, a flow 40 of air may move freely through the VMS 10. The ambient air may move straight from the outer vents 28 to the oriented corresponding inner vent 22, or the ambient air may move from at least one outer vent 28 to an off-set inner vent 22. The dryer atmosphere

created by the empty climatic zone 20 with the arid layer of air provides a driving force to allow for the evaporation of perspiration from the athletes head. This allows for the natural cooling of the user's head.

[0044] As shown in FIG. 6, the climatic zone 20 may include the cooling assembly 18 that includes a plurality of cooling packets 42. The cooling assembly 18 includes the plurality of cooling packets 42 that are coupled to the inner surface 30 of the outer shell 16. The cooling assembly 18 may also be coupled to the inner shell 12 (not shown). Illustrated in FIG. 7, each cooling packet includes height H1 measured along a y-axis perpendicular to the inner surface 30 of the outer shell 16, a length L2 measured along an x-axis, and a width W1 measured along a z-axis. The height H1 is measured along the y-axis and is defined by the distance between the end 44 of the cooling packet 42 that is coupled to the inner surface 30 of the outer shell 16 and the end opposite 46 the side coupled to the outer shell 16. In one embodiment, each cooling packet 42 may include the same height. In another embodiment, one or more cooling packets may have different heights. In addition, the height H1 may vary depending on the goals of the VMS system 10. The length L2 is the distance of the cooling packet that runs parallel to the outer shell 16 along the x-axis. The width W1 is the thickness of the cooling packet 42 that extends along the z-axis. In one embodiment, each cooling packet may include similar lengths and widths. In another embodiment, one or more cooling packets 42 may include a different length and/or a different width. In addition, each cooling packet 42 may include a substantially similar shape. In another embodiment, one or more cooling packets 42 may include a different shape. The cooling packets 42 may include, but are not limited to, rechargeable cooling packs or desiccant packs. The positioning of the cooling packets 42 on the outer shell 16 may vary. The cooling packets 42 may be oriented coaxially with the inner vents 22 or one or more cooling packets 42 may be off-

set from the inner vents 22 along the x-axis. The cooling packets 42 may also contain a solid, a gas, a liquid, or any substance that serves to lower the temperature of the surrounding environment of the cooling assembly. In addition, the cooling packets 42 may be positioned by removing an attachment mechanism (described herein), separating the inner shell 12 and the outer shell 16, and directly placing the pad in the desired location via adhesion, Velcro™, and/or the existence of a predetermined slot (not shown) that may facilitate securing the cooling packet 42 to the outer shell 16.

[0045] In one embodiment, shown in FIGS. 8 and 9, the outer shell 16 includes at least one opening 48 that allow the placement and retention of the cooling packet 42 without the separation of the inner shell 12 and the outer shell 16. The cooling packets may be placed in the predetermined slots through the opening 48. The opening 48 is protected by a removable cover (not shown). The cooling packet 42 is rechargeable by nature, allowing it to be regenerated between practices or activities. After use, the cooling packets 42 may be removed and re-frozen. Once the player is ready to play and use the helmet (VMS 10), the cooling packets 42 may then be placed inside the opening 48 in the predetermined slots. The weight of a football uniform increases metabolic rate, which increases heat production, and its inherent insulation reduces heat dissipation to the surrounding air, which decreases heat loss. These dual properties lead to greater thermal and cardiovascular strain in hot environments. When environmental conditions warrant, a cold water or ice tub and ice towels should be available to immerse or soak a patient that is suspected to have the heat illness. These two points demonstrate the risk football players are at when training in the heat and the benefits of cooling their enclosed environment, for instance the environment inside of the player's helmets. The cooling packet 42 may lower the impact heat retention caused by the uniform by lowering the temperature within the helmet while

simultaneously improving the conduction. Conduction is the transfer of heat from warmer to cooler objects through direct physical contact. Heat loss from the head is one-quarter to one-third of the total metabolic body heat. This is substantially higher than the heads proportion total body surface area. The cooling packet 42 being placed inside the VMS 10 may diminish the overall probability of exertional heat illnesses.

[0046] In another embodiment, the cooling packet 42 may include a solid, a liquid, a gas, or any substance that may act as a desiccant. The desiccant may be a hygroscopic substance that induces or sustains a state of dryness (desiccation) in its vicinity. The placement of a rechargeable desiccant packet 50 in the cooling assembly 18 produces an ideal environment for evaporation. Evaporation is the most efficient means of heat transfer. The heat is transferred via the vaporization of sweat. The evaporation of sweat from the skin depends on the water saturation of the air and the velocity of wind speed. For example, the ventilated modular system 10 allows air movement in the football helmet to further cool the athlete. The VMS 10 establishes a microclimate that induces air movement away from the high humidity of the scalp and pulls the moisture to the surface. This allows the increase of the evaporation of sweat and resulting in an increase in heat transfer away from the athlete's head. The increase in heat transfer decreases the core body temperature resulting in a decreased probability of exertional heat injury.

[0047] In one embodiment, with reference to FIG. 6, the VMS 10 may include a plurality of cushions 52 that are coupled to the inner surface 30 of the outer shell 16 and are positioned within the climatic zone 20. The cushions 52 may also be coupled to the outer surface 26 of the inner shell 12 (not shown). The climatic zone 20 may also include only the plurality of cushions 52 that are coupled to the outer shell 16. Illustrated in FIG. 10 and 12, each cushion 52 has a height H2, a length L3, and a width W2. The height H2 is measured along the y-axis and is

defined by the distance between the end 54 of the cushion 52 that is coupled to the inner surface 30 of the outer shell 16 and the end opposite 56 the side coupled to the outer shell 16. The height H2 may vary depending on the goals of the VMS system 10. At least one cushion of the plurality of cushions 52 includes a height that is different than the height of at least one cooling packet of the plurality of cooling packets 42. The length L3 is the distance of the cushion that runs parallel to the outer shell 16 along the x-axis. The width W2 is the thickness of the cushion 52 that extends along the z-axis. The H2, L3, and W2 allow the plurality of cushions 52 to protect the cooling packets 42 by preventing the cooling packets 42 from exploding when the VMS 10 comes into contact with large forces, such as a helmet to helmet impact. The thickness, number of cushions, and position of the cushions may vary. The height H2 of the cushions 52 may be less than or equal to the length L1 of the climatic zone 20. The plurality of cushions 52 may also be a plurality of optional cushions 58, illustrated in FIGS. 13 and 14 that may be removed or placed throughout the climatic zone 20 and placed in a predetermined slot (not shown) that may help secure the optional cushion 58, shown in FIGS. 13 and 14. The plurality of cushions 58 may be optionally coupled to the outer shell 16 allowing them to be removed and replaced. The activity the VMS 10 is being used in conjunction with, may determine the need for the use of the plurality of cushions 52.

[0048] The plurality of cushions 52 may include an absorptive material. The absorptive material may be any known elastic or viscoelastic material such as, but not limited to, gels, open cell foam, close cell foam, vinyl nitrile, Styrofoam™, rubber, neoprene, foamed polymers, polyurethane foam, latex foam, micro cellular urethane foam (MCUF) or a viscoelastic foam, or any other elastic viscoelastic material having a force absorbing spring-like response. The absorptive material may be a material that can undergo a large elastic deformation in a quick

period of time and has a rather slow elastic response, but may eventually return to the original shape. The distribution of forces applied to the plurality of cushions 52 under a flexible shell may be more locally realized.

[0049] In one embodiment, the ventilated modular system 10 may also include an accelerometer, a Piezometer, and/or similar devices 60. The accelerometer, Piezometer, or similar devices 60 are placed within the climatic zone 20. As shown in FIG. 6, each device 60 has a predetermined height H3, a predetermined length L4, and a predetermined width W3. The height H3 is measured along the y-axis and is defined by the distance between the end 62 of the device 60 that is coupled to the inner surface 30 of the outer shell 16 and the end 64 opposite the side coupled to the outer shell 16. The height H3 may vary depending on the goals of the VMS system 10. The length L4 is the distance of the device 60 that runs parallel to the outer shell 16 along the x-axis. The width W2 is the thickness of the device 60 that extends along the z-axis. These devices allow the measurement of the forces the helmet receives, and therefore the forces the player has been exposed to. This embodiment allows for the evaluation of an athlete immediately if the athlete has been exposed to a force exceeding a predetermined level. For example, the VMS 10 may be able to measure the impact on the athlete's head and record whether the forces extended on the helmet amount to the amount of force for a concussion or not. This embodiment may limit the amount of players continuing to play after receiving a concussion providing safety measures for the players of high impact sports, such as, but not limited to hockey, football, and/or lacrosse.

[0050] The VMS 10 also includes an attachment mechanism 66 coupled to the inner shell 12 and the outer shell 16, as shown in FIGS. 16 and 17. The VMS 10 may include a plurality of attachment mechanisms 66. The attachment mechanism 66 allows the outer shell 16 to be

removably coupled to the inner shell 12. This allows the outer shell 16 to be removed and the configuration of placing the cooling packets 42 and/or the plurality of cushions 52 in any desired position within the climatic zone 20.

[0051] As illustrated in FIGS. 16 and 17, the attachment mechanism 66 may exist in a variety of configurations, including but not limited to a rigid configuration, a flexible configuration, or a combination of both. In one embodiment, the attachment mechanism includes a fastener 68, a plurality of flexible gaskets 70, and a rigid sleeve 72. For example, as illustrated in FIGS. 16 and 17, a rigid configuration of the fastener 68, such as a screw, extends off a chinstrap snap (shown in FIG. 15) allowing rotation in one plane or no rotation at all. The fastener 68 attaches to the rigid sleeve 72 through the flexible gasket 70 to secure the inner shell 12 to the outer shell through the chinstrap opening. The flexible gasket 70 may allow the outer shell 16 to move in all planes. The flexible gasket 70 may include various densities to accommodate the player position. The rigid sleeve 72 extends through the flexible gasket 70, which extends through the outer shell 16 and the inner shell 12 securing the inner shell 12 to the outer shell 16. For example, the rigid sleeve 72 may be a t-bolt that anchors the inner shell 12, the outer shell 16, the flexible gasket 70, and the fastener 68 together. The rigid sleeve 72 may allow movement of the outer shell 16 in only one plane. In addition, the attachment mechanism 66 may be a flexible attachment such as, but not limited to, nylon or plastic, which allows a varying degree of movement in all planes. The attachment mechanism may also be a combination of both a rigid attachment surrounded by a flexible material. The attachment mechanism 66 may be configured to an individual's level of play and position of play. For example, a youth football players VMS 10 may be more flexible than a professional football players VMS 10. The attachment mechanism 66 plays a significant role in the dissipation of rotational forces. The attachment mechanism 66

may be similar to a traditional screw attachment or a quick release attachment. The kind of attachment used may be determined by the goals trying to be achieved. In addition, the attachment mechanism 66 is optional to the VMS 10. The attachment mechanism 66 allows the inner shell 12 and the outer shell 16 to be fixed optionally or permanently. This may be done with the use of a permanent attachment mechanism 74. The permanent attachment mechanism 74 uses a material, such as, an adhesive that fixes the inner shell 12 and the outer shell 16 together (not shown).

[0052] In another embodiment, illustrated in FIGS. ~~48-28~~ 18-26, the attachment mechanism 66 includes a fastening assembly 76 and a fastening device 78. In one embodiment of the VMS 10, the VMS includes the inner shell 12, the outer shell 16, the fastening assembly 76, and the fastening device 78. The inner shell 12 is adapted to be positioned about a user's head. The outer shell 16 is spaced radially outwardly from the helmet inner shell. The fastening assembly 76 is configured to pivotably couple the inner shell 12 and the outer shell 16 to enable the outer shell 16 to move with respect to the inner shell 12.

[0053] The inner shell 12 includes the inner surface 24, the outer surface 26, and a plurality of inner support openings 80. Each inner support opening 80 includes a plurality of support inner surfaces 82 that extend inwardly from the outer surface 26 and outwardly from the inner surface 24. The support inner surface 82 includes a top edge 84 and a bottom edge 86. The top edge 84 is oriented obliquely with the inner surface 24 and the bottom edge 86 is oriented obliquely with the outer surface 26. The support inner surface 82 is further positioned between the inner surface 24 and the outer surface 26 such that the inner support opening 80 is defined between the inner surface 24, the outer surface 26, and the plurality of support inner surfaces 82. The inner support opening 80 is further defined as an inner cavity 88 between a first inner surface 90 and a second

inner surface 92 positioned opposite the first inner surface 90. The inner cavity 88 extends through the helmet inner shell 12 from the climatic zone 20 to the user's head. In addition, the inner cavity 88 or the inner support opening 80 includes a length L5 measured between the first inner surface 90 and the second inner surface 92.

[0054] The outer shell 16 has inner surface 30, the outer surface 32, and a plurality of outer support openings 94. Each outer support opening 94 includes a plurality of support inner surfaces 96 that extend inwardly from the outer surface 32 and outwardly from the inner surface 30. The support inner surface 96 includes a top edge 98 and a bottom edge 100. The top edge 98 is oriented obliquely with the outer surface 32 and the bottom edge 100 is oriented obliquely with the inner surface 30. The support inner surface 96 is positioned between the outer surface 32 and the inner surface 30 such that the outer support opening 94 is defined between the outer surface 32, the inner surface 30, and the plurality of support inner surfaces 96. The outer support opening 94 is further defined as an outer cavity 102 between a first support inner surface 104 and a second support inner surface 106 positioned opposite the first support inner surface 104. The outer cavity 102 through the helmet outer shell 16 from the outside the helmet outer shell 16 to the climatic zone 20. In addition, the outer cavity 102 and/or the outer support opening 96 includes a length L6 measured between the first support inner surface 104 and the second support inner surface 106. The outer support opening length L6 can be the same of different than the length L5 of the inner support opening.

[0055] Illustrated in FIGS. ~~48-24~~ 18-23, the fastening assembly 76 includes an outer support member 108, an inner support member 110, a base member 112, a protective plate 114, and at least one positioning opening 116. The fastening assembly 76 acts similar to the attachment mechanism 66 described above, but also allows the outer shell 16 to resist a rotation that is

independent of the inner shell 12 in all planes. The fastening assembly 76 may include a material such as thermoplastic polyurethane or polyvinyl nitrile, or any material that includes the desired properties.

[0056] In one embodiment, the outer support member 108 includes a non-uniform cross-sectional shape. In addition, the outer support opening 94 may include a shape that is substantially similar to the shape of the outer support member 108. For example, as shown in FIGS. 20, the outer support member 108 may include a non-uniform cross-sectional shape resembling a Figure “9”. In another embodiment, as shown in FIG. 21, the outer support member 108 may include a non-uniform cross-sectional shape having an elongated body including a plurality of arcuate surfaces. In addition, the outer support member 108 may include any shape having the desired physical properties. Referring to FIG. 21, in one embodiment, the outer support member 108 includes an arcuate top 118 and an arcuate bottom 120 and a first planar side 122 and a second planar side 124. The arcuate top 118 and the arcuate bottom 120 have a predetermined distance D3 that varies between the first planar side 122 and the second planar side 124. The first planar side 122 is parallel to a first plane 126, and the second planar side 124 is parallel to a second plane 128. The first plane 126 and the second plane 128 form an oblique angle 130.

[0057] In the illustrated embodiment, as shown in FIG. 19, the outer support member 108 includes a support body 132 that is sized and shaped to be inserted through the outer support opening 94 of the outer shell 16. The support body 132 includes a base portion 134 and a support arm 136. The base portion 134 includes a pivot axis 138, and the support arm 136 extends outwardly along the y-axis from the base portion 134. The outer support member 108 is positioned within the outer support opening 94 extending through the helmet outer shell 16 such that the outer surface of the support arm 136 contacts the inner surface 96 of the outer support

opening 94 to facilitate resisting a rotation 140 of the helmet outer shell 16 about the pivot axis 138. In one embodiment, the outer support member 108 includes a support flange 142 extending outwardly from the support body 132. The support flange 142 is sized and shaped to contact the outer surface 32 of the outer shell 16 to facilitate coupling the fastening assembly 76 to the outer shell 16.

[0058] In the illustrated embodiment, the inner support member 110 extends outwardly from the outer support member 108 towards the user's head. The inner support member 110 is positioned within the inner support opening 80 of the inner shell 12. The inner support member 110 includes an outer surface 144 that is sized and shaped to contact the inner surface 82 of the inner support opening 80 to facilitate resisting a rotation of the outer support member 108 about the pivot axis 138. In one embodiment, the inner support member 110 includes a substantially uniform cross-sectional shape such as for example, a square. In another embodiment, the inner support member 110 includes any shape having the desired physical properties. The inner support member 110 is positioned within the inner support opening 80 extending through the helmet inner shell 12 such that the outer surface 144 of the inner support member 110 is configured to contact the inner surface 82 of the inner support opening 80 to facilitate resisting a rotation of the outer support member 108 about the pivot axis 138.

[0059] The base member 112 is coupled between the inner support member 110 and the outer support member 108 and is positioned within the gap formed between the helmet inner shell 12 and the helmet outer shell 16. In the illustrated embodiment, the base member 112 includes a cross-sectional area that is greater than the cross-sectional area of the outer support member 108 and/or the inner support member 110 to facilitate coupling the inner shell 12 to the outer shell 16.

[0060] The protective plate 114 includes an inner surface that defines a cavity that is sized and shaped to receive a portion of the outer support member 108 therein. The protective plate 114 is positioned adjacent the outer surface 32 of the outer shell 16 and adapted to encapsulate the outer support member 108 within the cavity. In one embodiment, the fastening device 78 is inserted through an opening 116 extending through the protective plate 114 to facilitate coupling the protective plate 114 to the outer surface 32 of the outer shell 16.

[0061] In the illustrated embodiment, the fastening assembly 76 includes the positioning opening 116 extending through the outer support member 108, the base member 112, and the inner support member 110, and orientated along the pivot axis 138. The fastening device 78 is positioned within the positioning opening 116 and configured to couple the fastening assembly 76 to the inner shell 12 and the outer shell 16. In one embodiment, as shown in FIG. ~~[[25]]~~ 24 the inner support member 110 is spaced a distance D4 from the pivot axis 138 defined by the base portion, and the positioning opening 116 extends through the outer support member 108, the base member 112, and the inner shell 12.

[0062] As shown in FIG. 18, in one embodiment, the fastening device 78 includes a fastener 146, a snap access 148, and a rigid sleeve 150. The fastening device 78 is coupled to the fastening assembly 76 and the helmet inner shell 12. The fastener 146 has a top portion 152 and a bottom portion 154. The fastener 146 has a shape that may include but is not limited to a screw or any shape having the desired physical properties. The snap access 148 has a shape that may include but is not limited to two stacked cylinders or any shape having the desired physical properties, for example a shape that accepts a chin strap snap. The rigid sleeve 150 has a shape that may include but is not limited to a t-bolt or any shape having the desired physical properties.

[0063] In yet another embodiment, the VMS 10 includes an inner cushion 156 that interacts with the inner shell 12 and the fastening assembly 76 to protect the skull or head of the user.

[0064] The inner cushion 156 extends outwardly from the outer support member 108 towards a user's head. The inner cushion 156 is configured to contact the user's head to facilitate resisting a rotation of the outer support member 108 about the pivot axis 138. In one embodiment, inner cushion 156 is similar to the cushions within the cooling assembly 18.

[0065] In one embodiment, as shown in FIG. ~~[[28]]~~ 26, the VMS 10 may not include the helmet inner shell 12 or the fastening device 78. This may allow the inner cushion 156 to act as the inner support member 110 and resist the rotation of the outer support member 108. The inner cushion 156 is positioned within the gap between the outer shell 16 and the user's head.

[0066] The ventilated modular system 10 may include a first shell having an outer surface, a second shell outward of the outer surface of the first shell and offset distance, a layer disposed between the outer surface of the first shell and the second shell which may contain absorptive material, a coolant material, padding, and air layer, or any combination of these materials and an attachment mechanism to couple the second shell to the first shell. The second shell may be permanently or temporarily coupled to the first shell. The second shell may be outward of the first shell by a variable distance determined by the materials used in the layer disposed between the outer surface of the first shell and the second shell. The second shell may have a portion which is removable and replaceable with respect to the first shell. The first shell maybe rigid, semi-rigid, or flexible. The second shell may be rigid, semi-rigid, or flexible. The first shell may contain vents, pores or a combination of both. These vents and pores may be of any size and be located at any position. The second shell may contain vents, pores or a combination of both. These vents and pores may be of any size and be located at any position. In the event the second

shell is rigid, it may have a thickness which fractures upon application of a particular force, the particular force may be less than or equal to a predetermined threshold force at which a user should undergo further evaluation.

[0067] The ventilated modular system 10 may include the middle layer or climatic layer including a uniform thickness, or alternatively different thicknesses of different areas of the shell, for example at the top of the second shell in the side of the second shell. The ventilated modular system may also include one or more cushions, coolant packs, or desiccant packs strategically positioned. These components may be located underneath the second shell or they may be coupled to the second shell, wherein the component may include a cover layer. The one or more components may be strategically positioned at various locations between the first and second shells. The components may be used in conjunction with an accelerometer, piezometer, or similar devices between the first and second shells. The components may be customizable to one of the level of play and the size of the player. These aspects are merely illustrative on innumerable aspects associated with the present invention and should not be deemed as limiting in any manner. These and other aspects, features and advantages of the present invention will become apparent from the following detailed description when taken in conjunction with reference drawings.

[0068] The present invention has been described in an illustrative manner. It is to be understood that the terminology, which has been used, is intended to be in the nature of words of description rather than of limitation.

[0069] Many modifications and variations of the present invention are possible in light of the above teachings. Therefore, the present invention may be practiced other than as specifically described.

CLAIMS

What is claimed is:

1. A modular helmet comprising:
an inner shell adapted to be positioned onto a user's head;
an outer shell coupled to the inner shell, the outer shell spaced a distance radially outward from the inner shell to define a climatic zone between the inner shell and the outer shell; and
a cooling assembly positioned within the climatic zone between the inner shell and the outer shell, the cooling assembly including a plurality of cooling packets that are coupled to the outer shell.
2. The modular helmet of claim 1, including a plurality of cushions that are coupled to the outer shell and positioned within the climatic zone.
3. The modular helmet of claim 2, wherein at least one cushion of the plurality of cushions includes a height that is different than a height of at least one cooling packet of the plurality of cooling packets.
4. The modular helmet of claim 1, wherein the inner shell includes a plurality of inner vents configured to couple the climatic zone in flow communication with an area adjacent the users head.
5. The modular helmet of claim 4, wherein the outer shell includes a plurality of outer vents configured to couple the climatic zone in flow communication with ambient air.

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6. The modular helmet of claim 5, wherein at least one inner vent is orientated coaxially with a corresponding outer vent.

7. The modular helmet of claim 1, further including an attachment mechanism coupled to the inner shell and the outer shell, wherein the outer shell is removably coupled to the inner shell.

8. A modular helmet comprising:

an inner shell adapted to be positioned onto a user's head, the inner shell includes a plurality of inner vents;

an outer shell coupled to the inner shell, the outer shell spaced a distance radially from the inner shell to define a climatic zone between the inner shell and the outer shell, the outer shell includes a plurality of outer vents configured to couple the climatic zone in flow communication with ambient air; and

a cushion assembly positioned within the climatic zone between the inner shell and the outer shell, the cushion assembly including a plurality of cushions that are coupled to the outer shell.

9. The modular helmet of claim 8, including a plurality of cooling packets that are coupled to the outer shell and positioned within the climatic zone.

10. The modular helmet of claim 9, wherein at least one cushion of the plurality of cushions includes a height that is different than a height of at least one cooling packet of the plurality of cooling packets.

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11. The modular helmet of claim 8, wherein the plurality of inner vents includes a first amount of inner vents and the plurality of outer vents includes a second amount of outer vents that is a different than the first amount of inner vents.

12. The modular helmet of claim 8, further including an attachment mechanism coupled to the inner shell and the outer shell, wherein the outer shell is removably coupled to the inner shell.

13. A fastening assembly for use with a helmet assembly including an outer shell, the fastening assembly comprising:

an outer support member adapted to be positioned within a support opening extending through the outer shell, the outer support member including a base portion defining a pivot axis and a support arm extending outwardly from the base portion, the support arm configured to contact an inner surface of the support opening to facilitate resisting a rotation of the helmet outer shell about the pivot axis.

14. The fastening assembly of claim 13, wherein the support opening includes a shape that is substantially similar to a shape of the outer support member.

15. The fastening assembly of claim 13, wherein helmet assembly includes a helmet inner shell that is spaced radially inward from the helmet outer shell and adapted to be positioned about a user's head, the fastening assembly including an inner support member extending outwardly

from the outer support member towards the user's head, the inner support member positioned within an inner support opening extending through the helmet inner shell.

16. The fastening assembly of claim 15, wherein the inner support member includes an outer surface in contact with an inner surface of the inner support opening to facilitate resisting a rotation of the outer support member about the pivot axis.

17. The fastening assembly of claim 16, wherein the fastening assembly includes a base member between the inner support member and the outer support member, the base member positioned within a gap defined between the helmet inner shell and the helmet outer shell.

18. The fastening assembly of claim 17, wherein the inner support member is spaced a distance from the pivot axis defined by the base portion.

19. The fastening assembly of claim 17, further comprising:
a positioning opening extending through the outer support member, the base member, and the inner support member, and orientated along the pivot axis; and
a fastening device positioned within the positioning opening and configured to couple the fastening assembly to the inner and outer shells.

20. The fastening assembly of claim 19, further comprising a cushion extending outwardly from the outer support member towards a user's head, the cushion configured to contact the user's head to facilitate resisting a rotation of the outer support member about the pivot axis.

VENTILATED MODULAR DUAL SHELLLED HELMET SYSTEM

ABSTRACT

A modular helmet is described herein. The module helmet includes an inner shell adapted to be positioned onto a user's head and an outer shell coupled to the inner shell. The outer shell is spaced a distance radially outward from the inner shell to define a climatic zone between the inner shell and the outer shell. A cooling assembly is positioned within the climatic zone between the inner shell and the outer shell. The cooling assembly includes a plurality of cooling packets that are coupled to the outer shell.

VENTILATED MODULAR DUAL SHELLLED HELMET SYSTEM

CROSS-REFERENCE TO RELATED APPLICATION

[0001] This application claims priority to U.S. Provisional Patent Application Serial No. 62/425,397, filed November 22, 2016 which is hereby incorporated by reference in its entirety.

BACKGROUND OF THE INVENTION

1. Field of the Invention

[0002] This present invention relates to helmet assemblies, and more specifically, to helmet assemblies that include a ventilated modular shell system (VMS) that may be used in sports and activities, including military activities, that require the protection of a helmet and are conducted in high temperature environments.

2. Description of the Related Art

[0003] A continuous effort should be made to eliminate heat stroke deaths associated with activities requiring the use of a helmet, in particular American football. The Annual Survey of Football Injury Research published by National Center for Catastrophic Sport Injury states 24 football related heat stroke fatalities were documented during the 15-year period from 1986 to 2000. During the subsequent 15-year period from 2001 to 2015, 42 football related heat stroke fatalities were documented, a 175% increase. It has been noted helmets do not affect physiological parameters other than the local skin temperature and sweat rate. Heat loss from the head is one quarter to one third of total metabolic body heat. This is substantially higher than the head's proportion of the total body surface area. Thus the head has considerable heat loss capacity. Related to this is the National Athletic Trainers Association position the participants who wear equipment that does not allow for heat dissipation are at an increased risk for heat illness. Wearing a helmet is also a potential risk factor because a significant amount of heat is

dissipated through the head. Another issue with current helmets is that the helmets are not resistant law impact. For example, a football player that repeatedly received minor hits to the head. Coaches desire the players to wear the actual gear they will play in to train as realistically as possible. As such, there is a need for a helmet that allows athletes to become acclimated to wearing the appropriate gear while not exposing themselves to exertional heatstroke.

[0004] The present invention is aimed at one or more of the problems identified above.

SUMMARY OF THE INVENTION

[0005] In one embodiment, a modular helmet is provided. The module helmet includes an inner shell adapted to be positioned onto a user's head and an outer shell coupled to the inner shell. The outer shell is spaced a distance radially outward from the inner shell to define a climatic zone between the inner shell and the outer shell. A cooling assembly is positioned within the climatic zone between the inner shell and the outer shell. The cooling assembly includes a plurality of cooling packets that are coupled to the outer shell.

[0006] In another embodiment, a modular helmet is provided. The modular helmet includes an inner shell adapted to be positioned onto a user's head, an outer shell, and a cushion assembly. The inner shell includes a plurality of inner vents. The outer shell is coupled to the inner shell and spaced a distance radially from the inner shell to define a climatic zone between the inner shell and the outer shell. The outer shell includes a plurality of outer vents configured to couple the climatic zone in flow communication with ambient air. The cushion assembly is positioned within the climatic zone between the inner shell and the outer shell. The cushion assembly includes a plurality of cushions that are coupled to the outer shell.

[0007] In a further embodiment, a fastening assembly for use with a helmet assembly including an outer shell is provided. The fastening assembly includes an outer support member

adapted to be positioned within a support opening extending through the outer shell. The outer support member includes a base portion defining a pivot axis and a support arm extending outwardly from the base portion. The support arm is configured to contact an inner surface of the support opening to facilitate resisting a rotation of the helmet outer shell about the pivot axis.

BRIEF DESCRIPTION OF THE FIGURES

[0008] Non-limiting and non-exhaustive embodiments of the present invention are described with reference to the following figures. Other advantages of the present disclosure will be readily appreciated, as the same becomes better understood by reference to the following detailed description when considered in connection with the accompanying drawings wherein:

[0009] FIG. 1 is a side view of one embodiment of the ventilated modular helmet system in accordance with the teachings of the present disclosure;

[0010] FIG. 2 is a front view of another embodiment of the modular ventilated helmet system in accordance with the teachings of the present disclosure;

[0011] FIG. 3 illustrates a sectional view of a portion of the ventilated modular helmet system including coaxially oriented vents;

[0012] FIG. 4 illustrates a sectional view of a portion of the ventilated modular helmet system including off-set vents;

[0013] FIG. 5 is a side view of the ventilated modular helmet system of Figure 1 including various embodiments of the present disclosure;

[0014] FIG. 6 illustrates another sectional view of a portion of the ventilated modular helmet system showing a cushion assembly and a cooling assembly;

[0015] FIG. 7 illustrates a perspective view of a cooling packet that may be used with the cooling assembly;

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[0016] FIG. 8 is a side view of the ventilated modular helmet system of FIG. 1 including various embodiments of the disclosure;

[0017] FIG. 9 is the side view of the ventilated modular helmet system of FIG. 1 indicating the cooling packet insertion slot;

[0018] FIGS. 10 and 11 are perspective views of a cushion that may be used with the cushion assembly;

[0019] FIG. 12 is a front view of the ventilated modular helmet system of FIGS. 8 and 9 with the various components in place;

[0020] FIG. 13 is another side view of the ventilated modular helmet system of FIG. 1 with only the optional cushions in place;

[0021] FIG. 14 is a front view of the ventilated modular helmet system of FIG. 1 with only the optional cushions in place;

[0022] FIG. 15 is a front view of another embodiment of the ventilated modular helmet system of FIG. 13 in accordance with the teachings of the present disclosure;

[0023] FIG. 16 is a cross-sectional view of the attachment mechanism shown in FIG. 15, and taken along section line 10-10;

[0024] FIG. 17-26 illustrate various embodiments of the attachment mechanism of the ventilated modular helmet;

[0025] FIG. 27 illustrates a perspective view of the fastening assembly within the ventilated modular helmet;

[0026] FIG. 28 illustrates a perspective view of the fastening assembly of the ventilated modular helmet;

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[0027] FIG. 29 illustrates a front view of the outer support member of the ventilated modular helmet;

[0028] FIG. 30 illustrates a top view of the attachment mechanism of the ventilated modular helmet;

[0029] FIG. 31 illustrates a front view of the attachment mechanism of the ventilated modular helmet.

[0030] Corresponding reference characters indicate corresponding components throughout the several views of the drawings.

DETAILED DESCRIPTION OF THE INVENTION

[0031] In the following description, numerous specific details are set forth in order to provide a thorough understanding of the present invention. It will be apparent, however, to one having ordinary skill in the art that the specific detail need not be employed to practice the present invention. In other instances, well-known materials or methods have not been described in detail in order to avoid obscuring the present invention.

[0032] The following detailed description of the present invention references the accompanying drawing figures that illustrate specific embodiments in which the invention can be practiced. The embodiments are intended to describe aspects of the present invention in sufficient detail to enable those skilled in the art to practice the invention. Other embodiments can be utilized and changes can be made without departing from the spirit and scope of the present invention the present invention is defined by the appended claims and, therefore, the description is not to be taken in a limiting sense and shall not limit the scope of equivalents to which such claims are entitled.

[0033] An aspect of the invention generally pertains to a ventilated modular helmet system that can decrease the effects of atmospheric heat related to sports activities and decrease the incidence of exertional heatstroke.

[0034] Another aspect of the invention generally pertains to a ventilated modular helmet system that creates a microclimate that is conducive to heat dissipation and accelerated sweat evaporation.

[0035] Yet another aspect of the invention generally pertains to ventilated modular helmet system that when worn with the optional padding can decrease the effects of regular impacts inherent to sports and decrease the incidence of concussions experienced by active participants.

[0036] The present invention provides a ventilated modular system (VMS) 10 that uses the external cushioning system, currently known as the modular dual shell helmet system (MDS) as its platform. The VMS includes a highly ventilated modular dual shelled helmet system that can be used in sports and activities, including military activities that require the protection of a helmet and are conducted in high temperature environments. In light of the prior art is significant that the VMS helmet has significantly more ventilation to allow for convection and evaporation. The VMS helmet also allows for the interchange of a highly ventilated outer practice shell for a full contact game shell without incurring the cost of purchasing an entirely new helmet. The VMS system allows a safer, cooler helmet that can be precisely modeled to match the game helmet in both size and weight.

[0037] In various embodiments, as illustrated in FIGS. 1 and 2, the ventilated modular helmet system (VMS) 10 for cooling includes an inner shell 12 and a cooling apparatus 14 coupled to the inner shell 12. The cooling apparatus 14 includes an outer shell 16 coupled to the inner shell 12 and a cooling assembly 18 (not shown). In one embodiment, the cooling apparatus

14 is configured to be coupled to an outer surface of a user's helmet. In the illustrated embodiment, the outer shell 16 is coupled to the inner shell 12 and spaced a distance radially outward from the inner shell 12 to define a climatic zone 20 between the inner shell 12 and the outer shell 16. The cooling assembly 18 is positioned within the climatic zone 20 between the inner shell 12 and the outer shell 16. In one embodiment, the inner shell 12 includes a plurality of inner vents 22 that extend through the inner shell body 12, an inner surface 24, and an outer surface 26. The inner vents 22 are configured to couple the climatic zone 20 in flow communication with an area adjacent to the user's head. In addition, the outer shell 16 may include a plurality of outer vents 28 that extend through the outer shell 16 an inner surface 30, and an outer surface 32. The outer vents 28 are configured to couple the climatic zone 20 in flow communication with ambient air. In one embodiment, at least one inner vent 22 may be aligned coaxially with a corresponding outer vent 28. In addition, one or more inner vents 22 may be aligned offset a distance from a corresponding outer vent 28.

[0038] The inner shell 12 is made out of a flexible material, a semi rigid material, or a rigid material. The flexible material may be easily displaced and act more as a membrane to distribute the applied forces if the system 10 is used with the plurality of cushions. The flexible material may have sufficient elasticity such that it returns to its original shape when deformed upon impact. The material used for the inner shell 12 may include but is not limited to any material having the desired physical properties. For example, the desired physical properties for the inner shell 12 may be made from polymers, plastics, thermoplastics, PVC, vinyl, nylon, or other similar materials. The materials used for the inner shell 12 may include materials that have a smooth outer surface and a high level of mar-resistance. These desired physical properties may reduce the drag coefficient that occurs between two helmets when they collide helping to reduce

rotational forces generated through friction that may cause trauma and influence the probability of neck injury. A low drag coefficient also maximizes air flow through the plurality of inner vents 22, increasing the air movement and the evaporation within the climatic zone 20.

[0039] The outer shell 16 may be made out of a flexible material, a semi rigid material, or a rigid material. The flexible material may be easily displaced and act more as a membrane to distribute the applied forces if the system 10 is used with the plurality of cushions. The flexible material may have sufficient elasticity such that it returns to its original shape when deformed upon impact. The material used for the outer shell 16 may include but is not limited to any material having the desired physical properties. For example, the desired physical properties of the outer shell 16 may include polymers, plastics, thermoplastics, PVC, vinyl, nylon, or other similar materials. The materials used for the outer shell 16 may include materials that have a smooth outer surface and a high level of mar-resistance. These desired physical properties may reduce the drag coefficient that occurs between two helmets when they collide, or between the outer shell 16 and the surrounding air. This helps reduce rotational forces generated through friction that may cause trauma and influence the probability of neck injury. A low drag coefficient also maximizes air flow through the plurality of vents (described herein), increasing the air movement and the evaporation within the climatic zone 20. Unlike traditional helmets, the outer shell 16 of the VMS 10 provides shade to the inner shell 12 allowing a natural lowering of the temperature of the inner shell 12. Further mitigating the inherent heat absorption associated with single shell helmets, which place the exposed outer shell in direct proximity to the head. In addition, the outer shell 16 may be coated with a reflective material. The reflective material may prevent the absorption of solar energy by the outer shell 16 from light that may enter through the pores or the vents.

[0040] With reference to FIGS. 3 and 4, on one embodiment, one or more inner vents 22 may be aligned coaxially with a corresponding outer vent 28. The inner vents 22 each have a center axis 34 and the outer vents 28 each have a center axis 36. In addition, one or more inner vents 22 may be aligned off-set a predetermined distance D2 from a centerline of a corresponding outer vent 24. The inner and outer vents are spaced along an x-axis within the inner shell 12 and the outer shell 16, respectively. As shown in FIG. 3, the inner and outer vents are aligned along the same center axis 34/36 along the y-axis allowing the air to travel from outside of the outer shell 16 through the outer vents 28 into the climatic zone 20. From the climatic zone 20, the air may then exit the climatic zone 20 through the inner vents 22 into the area adjacent to the user's head. In one embodiment, as shown in FIG. 4, the inner vents 22 may be aligned offset from the outer vents 28 along the x-axis. For example, each inner vent 22 and outer vent 28 may have a centerline axis 34/36. The centerline axis 34 of each inner vent 22 may be offset the predetermined distance D2 along the x-axis from the centerline axis 36 of a corresponding outer vent 28. The predetermined distance D2 is the distance between the center axis 36 of the outer vent 28 and the center axis 34 of the next preceding inner vent 22 on the inner shell 12. As shown in FIG. 6, the off-set vents allow the air that enters from the outside of the outer shell 16 to flow over the cooling assembly 20, cooling the air before reaching the user's head from the inner vents 22. This allows the air inside of the VMS 10 to be cooled, therefore cooling the head of the person using the helmet. The air is also able to move from inside of the VMS 10 through the inner shell 12 and the outer shell 16 to the outside of the VMS 10, allowing warmer air to leave the VMS 10.

[0041] In one embodiment, the plurality of inner vents 22 includes a first amount of inner vents and the plurality of outer vents 28 includes a second amount of outer vents that is a different

amount than the first amount of inner vents. For example, the inner shell 12 may include 5 inner vents 22 and the outer shell 16 may include 6 outer vents 28.

[0042] In one embodiment, as shown in FIG. 5 the outer shell 16 may include a plurality of pores 38. The replacement of the vents with pores is to prevent injuries. For example, each pore 38 may be sized and shaped to prevent a user's finger to enter into the pore opening thereby preventing the user's fingers from being caught in the pore opening. The pore 38 includes a minute opening on the surface of the outer shell 16 that allows gases, liquids, or microscopic particles to pass through the pore 38. Similar to the outer vents 28, the pores 38 may be oriented coaxially with a corresponding inner vent 22. In addition, the pores 38 of the outer shell 16 may be oriented off-set a predetermined distance along the x-axis from the inner vents 22. In one embodiment, the inner shell 12 may include a plurality of pores 38 (not shown).

[0043] In the illustrated embodiment, the climatic zone 20 is defined between the inner shell and the outer shell. As shown in FIG. 6, the distance of the climatic zone 20 is the length L1 along the y-axis between the inner surface 30 of the outer shell 16 and the outer surface 26 of the inner shell 12. The length of the climatic zone L1 may vary depending on the goals of the user. For example, FIGS. 1 and 2 show the VMS 10 without any additional components positioned within climatic zone 20. The length L1 is variable to maximize air movement within the climatic zone 20 that may enhance evaporation. When the climatic zone 20 does not include the cooling assembly 18, the climatic zone 20 passively allows an arid layer of air to form between the inner shell 12 and the outer shell 16. As shown by the arrows with broken lines in FIGS. 3 and 4, a flow 40 of air may move freely through the VMS 10. The ambient air may move straight from the outer vents 28 to the oriented corresponding inner vent 22, or the ambient air may move from at least one outer vent 28 to an off-set inner vent 22. The dryer atmosphere

created by the empty climatic zone 20 with the arid layer of air provides a driving force to allow for the evaporation of perspiration from the athletes head. This allows for the natural cooling of the user's head.

[0044] As shown in FIG. 6, the climatic zone 20 may include the cooling assembly 18 that includes a plurality of cooling packets 42. The cooling assembly 18 includes the plurality of cooling packets 42 that are coupled to the inner surface 30 of the outer shell 16. The cooling assembly 18 may also be coupled to the inner shell 12 (not shown). Illustrated in FIG. 7, each cooling packet includes height H1 measured along a y-axis perpendicular to the inner surface 30 of the outer shell 16, a length L2 measured along an x-axis, and a width W1 measured along a z-axis. The height H1 is measured along the y-axis and is defined by the distance between the end 44 of the cooling packet 42 that is coupled to the inner surface 30 of the outer shell 16 and the end opposite 46 the side coupled to the outer shell 16. In one embodiment, each cooling packet 42 may include the same height. In another embodiment, one or more cooling packets may have different heights. In addition, the height H1 may vary depending on the goals of the VMS system 10. The length L2 is the distance of the cooling packet that runs parallel to the outer shell 16 along the x-axis. The width W1 is the thickness of the cooling packet 42 that extends along the z-axis. In one embodiment, each cooling packet may include similar lengths and widths. In another embodiment, one or more cooling packets 42 may include a different length and/or a different width. In addition, each cooling packet 42 may include a substantially similar shape. In another embodiment, one or more cooling packets 42 may include a different shape. The cooling packets 42 may include, but are not limited to, rechargeable cooling packs or desiccant packs. The positioning of the cooling packets 42 on the outer shell 16 may vary. The cooling packets 42 may be oriented coaxially with the inner vents 22 or one or more cooling packets 42 may be off-

set from the inner vents 22 along the x-axis. The cooling packets 42 may also contain a solid, a gas, a liquid, or any substance that serves to lower the temperature of the surrounding environment of the cooling assembly. In addition, the cooling packets 42 may be positioned by removing an attachment mechanism (described herein), separating the inner shell 12 and the outer shell 16, and directly placing the pad in the desired location via adhesion, Velcro™, and/or the existence of a predetermined slot (not shown) that may facilitate securing the cooling packet 42 to the outer shell 16.

[0045] In one embodiment, shown in FIGS. 8 and 9, the outer shell 16 includes at least one opening 48 that allow the placement and retention of the cooling packet 42 without the separation of the inner shell 12 and the outer shell 16. The cooling packets may be placed in the predetermined slots through the opening 48. The opening 48 is protected by a removable cover (not shown). The cooling packet 42 is rechargeable by nature, allowing it to be regenerated between practices or activities. After use, the cooling packets 42 may be removed and re-frozen. Once the player is ready to play and use the helmet (VMS 10), the cooling packets 42 may then be placed inside the opening 48 in the predetermined slots. The weight of a football uniform increases metabolic rate, which increases heat production, and its inherent insulation reduces heat dissipation to the surrounding air, which decreases heat loss. These dual properties lead to greater thermal and cardiovascular strain in hot environments. When environmental conditions warrant, a cold water or ice tub and ice towels should be available to immerse or soak a patient that is suspected to have the heat illness. These two points demonstrate the risk football players are at when training in the heat and the benefits of cooling their enclosed environment, for instance the environment inside of the player's helmets. The cooling packet 42 may lower the impact heat retention caused by the uniform by lowering the temperature within the helmet while

simultaneously improving the conduction. Conduction is the transfer of heat from warmer to cooler objects through direct physical contact. Heat loss from the head is one-quarter to one-third of the total metabolic body heat. This is substantially higher than the heads proportion total body surface area. The cooling packet 42 being placed inside the VMS 10 may diminish the overall probability of exertional heat illnesses.

[0046] In another embodiment, the cooling packet 42 may include a solid, a liquid, a gas, or any substance that may act as a desiccant. The desiccant may be a hygroscopic substance that induces or sustains a state of dryness (desiccation) in its vicinity. The placement of a rechargeable desiccant packet 50 in the cooling assembly 18 produces an ideal environment for evaporation. Evaporation is the most efficient means of heat transfer. The heat is transferred via the vaporization of sweat. The evaporation of sweat from the skin depends on the water saturation of the air and the velocity of wind speed. For example, the ventilated modular system 10 allows air movement in the football helmet to further cool the athlete. The VMS 10 establishes a microclimate that induces air movement away from the high humidity of the scalp and pulls the moisture to the surface. This allows the increase of the evaporation of sweat and resulting in an increase in heat transfer away from the athlete's head. The increase in heat transfer decreases the core body temperature resulting in a decreased probability of exertional heat injury.

[0047] In one embodiment, with reference to FIG. 6, the VMS 10 may include a plurality of cushions 52 that are coupled to the inner surface 30 of the outer shell 16 and are positioned within the climatic zone 20. The cushions 52 may also be coupled to the outer surface 26 of the inner shell 12 (not shown). The climatic zone 20 may also include only the plurality of cushions 52 that are coupled to the outer shell 16. Illustrated in FIG. 10 and 12, each cushion 52 has a height H2, a length L3, and a width W2. The height H2 is measured along the y-axis and is

defined by the distance between the end 54 of the cushion 52 that is coupled to the inner surface 30 of the outer shell 16 and the end opposite 56 the side coupled to the outer shell 16. The height H2 may vary depending on the goals of the VMS system 10. At least one cushion of the plurality of cushions 52 includes a height that is different than the height of at least one cooling packet of the plurality of cooling packets 42. The length L3 is the distance of the cushion that runs parallel to the outer shell 16 along the x-axis. The width W2 is the thickness of the cushion 52 that extends along the z-axis. The H2, L3, and W2 allow the plurality of cushions 52 to protect the cooling packets 42 by preventing the cooling packets 42 from exploding when the VMS 10 comes into contact with large forces, such as a helmet to helmet impact. The thickness, number of cushions, and position of the cushions may vary. The height H2 of the cushions 52 may be less than or equal to the length L1 of the climatic zone 20. The plurality of cushions 52 may also be a plurality of optional cushions 58, illustrated in FIGS. 13 and 14 that may be removed or placed throughout the climatic zone 20 and placed in a predetermined slot (not shown) that may help secure the optional cushion 58, shown in FIGS. 13 and 14. The plurality of cushions 58 may be optionally coupled to the outer shell 16 allowing them to be removed and replaced. The activity the VMS 10 is being used in conjunction with, may determine the need for the use of the plurality of cushions 52.

[0048] The plurality of cushions 52 may include an absorptive material. The absorptive material may be any known elastic or viscoelastic material such as, but not limited to, gels, open cell foam, close cell foam, vinyl nitrile, Styrofoam™, rubber, neoprene, foamed polymers, polyurethane foam, latex foam, micro cellular urethane foam (MCUF) or a viscoelastic foam, or any other elastic viscoelastic material having a force absorbing spring-like response. The absorptive material may be a material that can undergo a large elastic deformation in a quick

period of time and has a rather slow elastic response, but may eventually return to the original shape. The distribution of forces applied to the plurality of cushions 52 under a flexible shell may be more locally realized.

[0049] In one embodiment, the ventilated modular system 10 may also include an accelerometer, a Piezometer, and/or similar devices 60. The accelerometer, Piezometer, or similar devices 60 are placed within the climatic zone 20. As shown in FIG. 6, each device 60 has a predetermined height H3, a predetermined length L4, and a predetermined width W3. The height H3 is measured along the y-axis and is defined by the distance between the end 62 of the device 60 that is coupled to the inner surface 30 of the outer shell 16 and the end 64 opposite the side coupled to the outer shell 16. The height H3 may vary depending on the goals of the VMS system 10. The length L4 is the distance of the device 60 that runs parallel to the outer shell 16 along the x-axis. The width W2 is the thickness of the device 60 that extends along the z-axis. These devices allow the measurement of the forces the helmet receives, and therefore the forces the player has been exposed to. This embodiment allows for the evaluation of an athlete immediately if the athlete has been exposed to a force exceeding a predetermined level. For example, the VMS 10 may be able to measure the impact on the athlete's head and record whether the forces extended on the helmet amount to the amount of force for a concussion or not. This embodiment may limit the amount of players continuing to play after receiving a concussion providing safety measures for the players of high impact sports, such as, but not limited to hockey, football, and/or lacrosse.

[0050] The VMS 10 also includes an attachment mechanism 66 coupled to the inner shell 12 and the outer shell 16, as shown in FIGS. 16 and 17. The VMS 10 may include a plurality of attachment mechanisms 66. The attachment mechanism 66 allows the outer shell 16 to be

removably coupled to the inner shell 12. This allows the outer shell 16 to be removed and the configuration of placing the cooling packets 42 and/or the plurality of cushions 52 in any desired position within the climatic zone 20.

[0051] As illustrated in FIGS. 16 and 17, the attachment mechanism 66 may exist in a variety of configurations, including but not limited to a rigid configuration, a flexible configuration, or a combination of both. In one embodiment, the attachment mechanism includes a fastener 68, a plurality of flexible gaskets 70, and a rigid sleeve 72. For example, as illustrated in FIGS. 16 and 17, a rigid configuration of the fastener 68, such as a screw, extends off a chinstrap snap (shown in FIG. 15) allowing rotation in one plane or no rotation at all. The fastener 68 attaches to the rigid sleeve 72 through the flexible gasket 70 to secure the inner shell 12 to the outer shell through the chinstrap opening. The flexible gasket 70 may allow the outer shell 16 to move in all planes. The flexible gasket 70 may include various densities to accommodate the player position. The rigid sleeve 72 extends through the flexible gasket 70, which extends through the outer shell 16 and the inner shell 12 securing the inner shell 12 to the outer shell 16. For example, the rigid sleeve 72 may be a t-bolt that anchors the inner shell 12, the outer shell 16, the flexible gasket 70, and the fastener 68 together. The rigid sleeve 72 may allow movement of the outer shell 16 in only one plane. In addition, the attachment mechanism 66 may be a flexible attachment such as, but not limited to, nylon or plastic, which allows a varying degree of movement in all planes. The attachment mechanism may also be a combination of both a rigid attachment surrounded by a flexible material. The attachment mechanism 66 may be configured to an individual's level of play and position of play. For example, a youth football players VMS 10 may be more flexible than a professional football players VMS 10. The attachment mechanism 66 plays a significant role in the dissipation of rotational forces. The attachment mechanism 66

may be similar to a traditional screw attachment or a quick release attachment. The kind of attachment used may be determined by the goals trying to be achieved. In addition, the attachment mechanism 66 is optional to the VMS 10. The attachment mechanism 66 allows the inner shell 12 and the outer shell 16 to be fixed optionally or permanently. This may be done with the use of a permanent attachment mechanism 74. The permanent attachment mechanism 74 uses a material, such as, an adhesive that fixes the inner shell 12 and the outer shell 16 together (not shown).

[0052] In another embodiment, illustrated in FIGS. 18-26, the attachment mechanism 66 includes a fastening assembly 76 and a fastening device 78. In one embodiment of the VMS 10, the VMS includes the inner shell 12, the outer shell 16, the fastening assembly 76, and the fastening device 78. The inner shell 12 is adapted to be positioned about a user's head. The outer shell 16 is spaced radially outwardly from the helmet inner shell. The fastening assembly 76 is configured to pivotably couple the inner shell 12 and the outer shell 16 to enable the outer shell 16 to move with respect to the inner shell 12.

[0053] The inner shell 12 includes the inner surface 24, the outer surface 26, and a plurality of inner support openings 80. Each inner support opening 80 includes a plurality of support inner surfaces 82 that extend inwardly from the outer surface 26 and outwardly from the inner surface 24. The support inner surface 82 includes a top edge 84 and a bottom edge 86. The top edge 84 is oriented obliquely with the inner surface 24 and the bottom edge 86 is oriented obliquely with the outer surface 26. The support inner surface 82 is further positioned between the inner surface 24 and the outer surface 26 such that the inner support opening 80 is defined between the inner surface 24, the outer surface 26, and the plurality of support inner surfaces 82. The inner support opening 80 is further defined as an inner cavity 88 between a first inner surface 90 and a second

inner surface 92 positioned opposite the first inner surface 90. The inner cavity 88 extends through the helmet inner shell 12 from the climatic zone 20 to the user's head. In addition, the inner cavity 88 or the inner support opening 80 includes a length L5 measured between the first inner surface 90 and the second inner surface 92.

[0054] The outer shell 16 has inner surface 30, the outer surface 32, and a plurality of outer support openings 94. Each outer support opening 94 includes a plurality of support inner surfaces 96 that extend inwardly from the outer surface 32 and outwardly from the inner surface 30. The support inner surface 96 includes a top edge 98 and a bottom edge 100. The top edge 98 is oriented obliquely with the outer surface 32 and the bottom edge 100 is oriented obliquely with the inner surface 30. The support inner surface 96 is positioned between the outer surface 32 and the inner surface 30 such that the outer support opening 94 is defined between the outer surface 32, the inner surface 30, and the plurality of support inner surfaces 96. The outer support opening 94 is further defined as an outer cavity 102 between a first support inner surface 104 and a second support inner surface 106 positioned opposite the first support inner surface 104. The outer cavity 102 through the helmet outer shell 16 from the outside the helmet outer shell 16 to the climatic zone 20. In addition, the outer cavity 102 and/or the outer support opening 96 includes a length L6 measured between the first support inner surface 104 and the second support inner surface 106. The outer support opening length L6 can be the same of different than the length L5 of the inner support opening.

[0055] Illustrated in FIGS. 18-23, the fastening assembly 76 includes an outer support member 108, an inner support member 110, a base member 112, a protective plate 114, and at least one positioning opening 116. The fastening assembly 76 acts similar to the attachment mechanism 66 described above, but also allows the outer shell 16 to resist a rotation that is

independent of the inner shell 12 in all planes. The fastening assembly 76 may include a material such as thermoplastic polyurethane or polyvinyl nitrile, or any material that includes the desired properties.

[0056] In one embodiment, the outer support member 108 includes a non-uniform cross-sectional shape. In addition, the outer support opening 94 may include a shape that is substantially similar to the shape of the outer support member 108. For example, as shown in FIGS. 20, the outer support member 108 may include a non-uniform cross-sectional shape resembling a Figure “9”. In another embodiment, as shown in FIG. 21, the outer support member 108 may include a non-uniform cross-sectional shape having an elongated body including a plurality of arcuate surfaces. In addition, the outer support member 108 may include any shape having the desired physical properties. Referring to FIG. 21, in one embodiment, the outer support member 108 includes an arcuate top 118 and an arcuate bottom 120 and a first planar side 122 and a second planar side 124. The arcuate top 118 and the arcuate bottom 120 have a predetermined distance D3 that varies between the first planar side 122 and the second planar side 124. The first planar side 122 is parallel to a first plane 126, and the second planar side 124 is parallel to a second plane 128. The first plane 126 and the second plane 128 form an oblique angle 130.

[0057] In the illustrated embodiment, as shown in FIG. 19, the outer support member 108 includes a support body 132 that is sized and shaped to be inserted through the outer support opening 94 of the outer shell 16. The support body 132 includes a base portion 134 and a support arm 136. The base portion 134 includes a pivot axis 138, and the support arm 136 extends outwardly along the y-axis from the base portion 134. The outer support member 108 is positioned within the outer support opening 94 extending through the helmet outer shell 16 such that the outer surface of the support arm 136 contacts the inner surface 96 of the outer support

opening 94 to facilitate resisting a rotation 140 of the helmet outer shell 16 about the pivot axis 138. In one embodiment, the outer support member 108 includes a support flange 142 extending outwardly from the support body 132. The support flange 142 is sized and shaped to contact the outer surface 32 of the outer shell 16 to facilitate coupling the fastening assembly 76 to the outer shell 16.

[0058] In the illustrated embodiment, the inner support member 110 extends outwardly from the outer support member 108 towards the user's head. The inner support member 110 is positioned within the inner support opening 80 of the inner shell 12. The inner support member 110 includes an outer surface 144 that is sized and shaped to contact the inner surface 82 of the inner support opening 80 to facilitate resisting a rotation of the outer support member 108 about the pivot axis 138. In one embodiment, the inner support member 110 includes a substantially uniform cross-sectional shape such as for example, a square. In another embodiment, the inner support member 110 includes any shape having the desired physical properties. The inner support member 110 is positioned within the inner support opening 80 extending through the helmet inner shell 12 such that the outer surface 144 of the inner support member 110 is configured to contact the inner surface 82 of the inner support opening 80 to facilitate resisting a rotation of the outer support member 108 about the pivot axis 138.

[0059] The base member 112 is coupled between the inner support member 110 and the outer support member 108 and is positioned within the gap formed between the helmet inner shell 12 and the helmet outer shell 16. In the illustrated embodiment, the base member 112 includes a cross-sectional area that is greater than the cross-sectional area of the outer support member 108 and/or the inner support member 110 to facilitate coupling the inner shell 12 to the outer shell 16.

[0060] The protective plate 114 includes an inner surface that defines a cavity that is sized and shaped to receive a portion of the outer support member 108 therein. The protective plate 114 is positioned adjacent the outer surface 32 of the outer shell 16 and adapted to encapsulate the outer support member 108 within the cavity. In one embodiment, the fastening device 78 is inserted through an opening 116 extending through the protective plate 114 to facilitate coupling the protective plate 114 to the outer surface 32 of the outer shell 16.

[0061] In the illustrated embodiment, the fastening assembly 76 includes the positioning opening 116 extending through the outer support member 108, the base member 112, and the inner support member 110, and orientated along the pivot axis 138. The fastening device 78 is positioned within the positioning opening 116 and configured to couple the fastening assembly 76 to the inner shell 12 and the outer shell 16. In one embodiment, as shown in FIG. 24 the inner support member 110 is spaced a distance D4 from the pivot axis 138 defined by the base portion, and the positioning opening 116 extends through the outer support member 108, the base member 112, and the inner shell 12.

[0062] As shown in FIG. 18, in one embodiment, the fastening device 78 includes a fastener 146, a snap access 148, and a rigid sleeve 150. The fastening device 78 is coupled to the fastening assembly 76 and the helmet inner shell 12. The fastener 146 has a top portion 152 and a bottom portion 154. The fastener 146 has a shape that may include but is not limited to a screw or any shape having the desired physical properties. The snap access 148 has a shape that may include but is not limited to two stacked cylinders or any shape having the desired physical properties, for example a shape that accepts a chin strap snap. The rigid sleeve 150 has a shape that may include but is not limited to a t-bolt or any shape having the desired physical properties.

[0063] In yet another embodiment, the VMS 10 includes an inner cushion 156 that interacts with the inner shell 12 and the fastening assembly 76 to protect the skull or head of the user.

[0064] The inner cushion 156 extends outwardly from the outer support member 108 towards a user's head. The inner cushion 156 is configured to contact the user's head to facilitate resisting a rotation of the outer support member 108 about the pivot axis 138. In one embodiment, inner cushion 156 is similar to the cushions within the cooling assembly 18.

[0065] In one embodiment, as shown in FIG. 26, the VMS 10 may not include the helmet inner shell 12 or the fastening device 78. This may allow the inner cushion 156 to act as the inner support member 110 and resist the rotation of the outer support member 108. The inner cushion 156 is positioned within the gap between the outer shell 16 and the user's head.

[0066] The ventilated modular system 10 may include a first shell having an outer surface, a second shell outward of the outer surface of the first shell and offset distance, a layer disposed between the outer surface of the first shell and the second shell which may contain absorptive material, a coolant material, padding, and air layer, or any combination of these materials and an attachment mechanism to couple the second shell to the first shell. The second shell may be permanently or temporarily coupled to the first shell. The second shell may be outward of the first shell by a variable distance determined by the materials used in the layer disposed between the outer surface of the first shell and the second shell. The second shell may have a portion which is removable and replaceable with respect to the first shell. The first shell maybe rigid, semi-rigid, or flexible. The second shell may be rigid, semi-rigid, or flexible. The first shell may contain vents, pores or a combination of both. These vents and pores may be of any size and be located at any position. The second shell may contain vents, pores or a combination of both. These vents and pores may be of any size and be located at any position. In the event the second

shell is rigid, it may have a thickness which fractures upon application of a particular force, the particular force may be less than or equal to a predetermined threshold force at which a user should undergo further evaluation.

[0067] The ventilated modular system 10 may include the middle layer or climatic layer including a uniform thickness, or alternatively different thicknesses of different areas of the shell, for example at the top of the second shell in the side of the second shell. The ventilated modular system may also include one or more cushions, coolant packs, or desiccant packs strategically positioned. These components may be located underneath the second shell or they may be coupled to the second shell, wherein the component may include a cover layer. The one or more components may be strategically positioned at various locations between the first and second shells. The components may be used in conjunction with an accelerometer, piezometer, or similar devices between the first and second shells. The components may be customizable to one of the level of play and the size of the player. These aspects are merely illustrative on innumerable aspects associated with the present invention and should not be deemed as limiting in any manner. These and other aspects, features and advantages of the present invention will become apparent from the following detailed description when taken in conjunction with reference drawings.

[0068] The present invention has been described in an illustrative manner. It is to be understood that the terminology, which has been used, is intended to be in the nature of words of description rather than of limitation.

[0069] Many modifications and variations of the present invention are possible in light of the above teachings. Therefore, the present invention may be practiced other than as specifically described.

CLAIMS

What is claimed is:

1. A modular helmet comprising:
an inner shell adapted to be positioned onto a user's head;
an outer shell coupled to the inner shell, the outer shell spaced a distance radially outward from the inner shell to define a climatic zone between the inner shell and the outer shell; and
a cooling assembly positioned within the climatic zone between the inner shell and the outer shell, the cooling assembly including a plurality of cooling packets that are coupled to the outer shell.
2. The modular helmet of claim 1, including a plurality of cushions that are coupled to the outer shell and positioned within the climatic zone.
3. The modular helmet of claim 2, wherein at least one cushion of the plurality of cushions includes a height that is different than a height of at least one cooling packet of the plurality of cooling packets.
4. The modular helmet of claim 1, wherein the inner shell includes a plurality of inner vents configured to couple the climatic zone in flow communication with an area adjacent the users head.
5. The modular helmet of claim 4, wherein the outer shell includes a plurality of outer vents configured to couple the climatic zone in flow communication with ambient air.

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6. The modular helmet of claim 5, wherein at least one inner vent is orientated coaxially with a corresponding outer vent.

7. The modular helmet of claim 1, further including an attachment mechanism coupled to the inner shell and the outer shell, wherein the outer shell is removably coupled to the inner shell.

8. A modular helmet comprising:

an inner shell adapted to be positioned onto a user's head, the inner shell includes a plurality of inner vents;

an outer shell coupled to the inner shell, the outer shell spaced a distance radially from the inner shell to define a climatic zone between the inner shell and the outer shell, the outer shell includes a plurality of outer vents configured to couple the climatic zone in flow communication with ambient air; and

a cushion assembly positioned within the climatic zone between the inner shell and the outer shell, the cushion assembly including a plurality of cushions that are coupled to the outer shell.

9. The modular helmet of claim 8, including a plurality of cooling packets that are coupled to the outer shell and positioned within the climatic zone.

10. The modular helmet of claim 9, wherein at least one cushion of the plurality of cushions includes a height that is different than a height of at least one cooling packet of the plurality of cooling packets.

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11. The modular helmet of claim 8, wherein the plurality of inner vents includes a first amount of inner vents and the plurality of outer vents includes a second amount of outer vents that is a different than the first amount of inner vents.

12. The modular helmet of claim 8, further including an attachment mechanism coupled to the inner shell and the outer shell, wherein the outer shell is removably coupled to the inner shell.

13. A fastening assembly for use with a helmet assembly including an outer shell, the fastening assembly comprising:

an outer support member adapted to be positioned within a support opening extending through the outer shell, the outer support member including a base portion defining a pivot axis and a support arm extending outwardly from the base portion, the support arm configured to contact an inner surface of the support opening to facilitate resisting a rotation of the helmet outer shell about the pivot axis.

14. The fastening assembly of claim 13, wherein the support opening includes a shape that is substantially similar to a shape of the outer support member.

15. The fastening assembly of claim 13, wherein helmet assembly includes a helmet inner shell that is spaced radially inward from the helmet outer shell and adapted to be positioned about a user's head, the fastening assembly including an inner support member extending outwardly

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from the outer support member towards the user's head, the inner support member positioned within an inner support opening extending through the helmet inner shell.

16. The fastening assembly of claim 15, wherein the inner support member includes an outer surface in contact with an inner surface of the inner support opening to facilitate resisting a rotation of the outer support member about the pivot axis.

17. The fastening assembly of claim 16, wherein the fastening assembly includes a base member between the inner support member and the outer support member, the base member positioned within a gap defined between the helmet inner shell and the helmet outer shell.

18. The fastening assembly of claim 17, wherein the inner support member is spaced a distance from the pivot axis defined by the base portion.

19. The fastening assembly of claim 17, further comprising:
a positioning opening extending through the outer support member, the base member, and the inner support member, and orientated along the pivot axis; and
a fastening device positioned within the positioning opening and configured to couple the fastening assembly to the inner and outer shells.

20. The fastening assembly of claim 19, further comprising a cushion extending outwardly from the outer support member towards a user's head, the cushion configured to contact the user's head to facilitate resisting a rotation of the outer support member about the pivot axis.

VENTILATED MODULAR DUAL SHELLLED HELMET SYSTEM

ABSTRACT

A modular helmet is described herein. The module helmet includes an inner shell adapted to be positioned onto a user's head and an outer shell coupled to the inner shell. The outer shell is spaced a distance radially outward from the inner shell to define a climatic zone between the inner shell and the outer shell. A cooling assembly is positioned within the climatic zone between the inner shell and the outer shell. The cooling assembly includes a plurality of cooling packets that are coupled to the outer shell.

REPLACEMENT SHEET

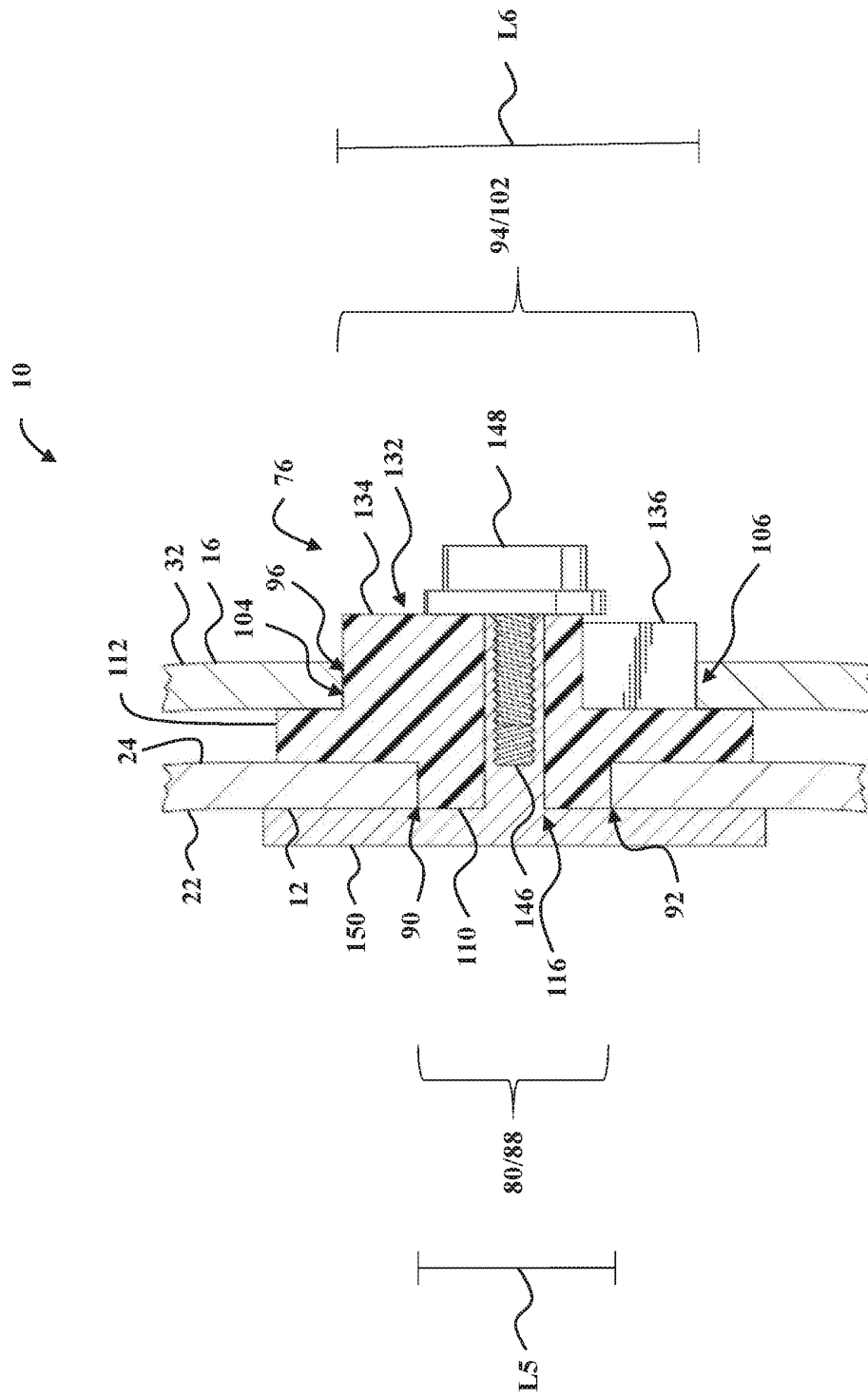


FIG. 18

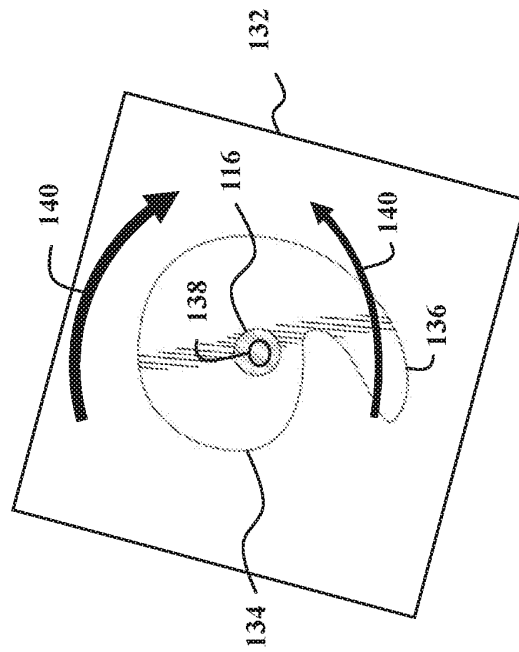


FIG. 20

REPLACEMENT SHEET

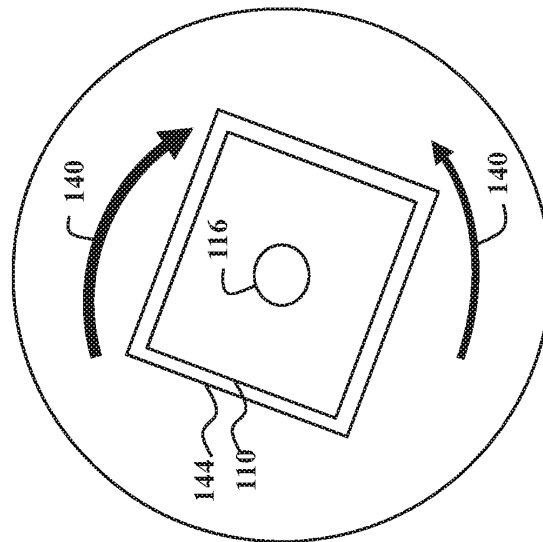


FIG. 22

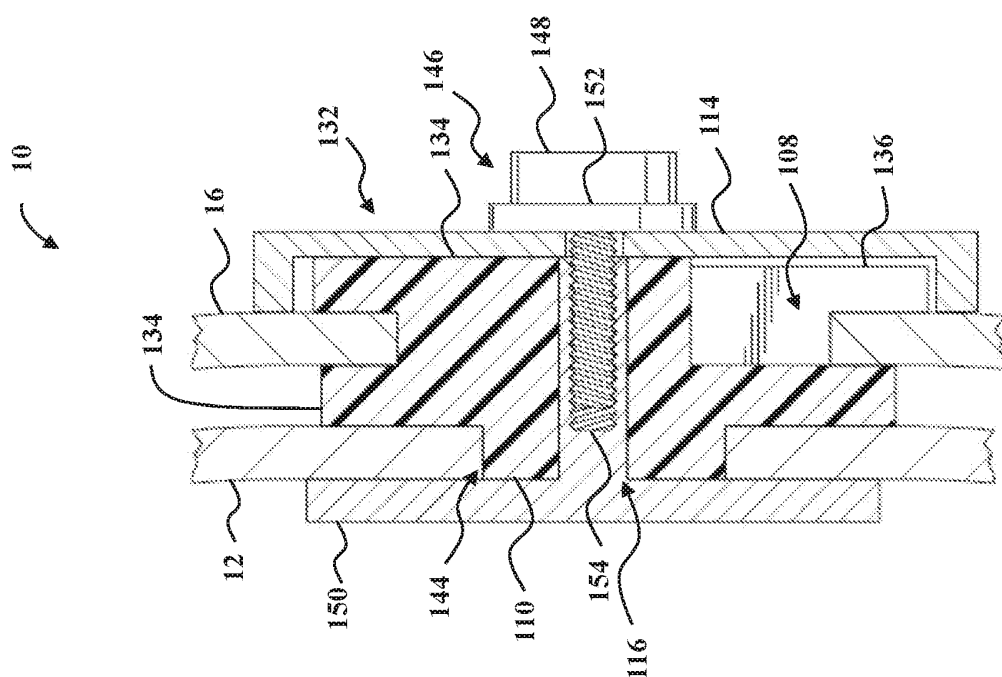


FIG. 23

REPLACEMENT SHEET

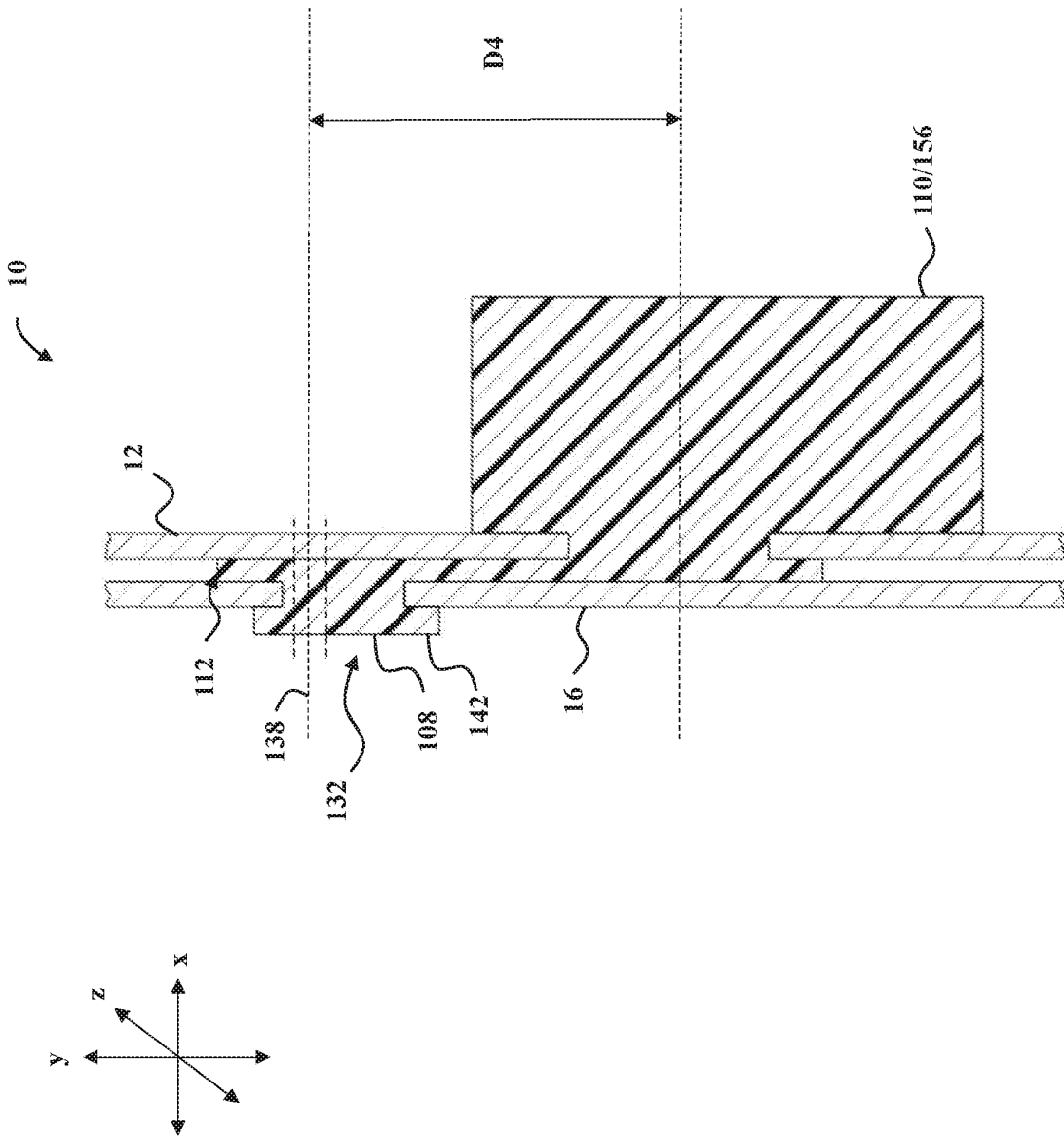


FIG. 24

REPLACEMENT SHEET

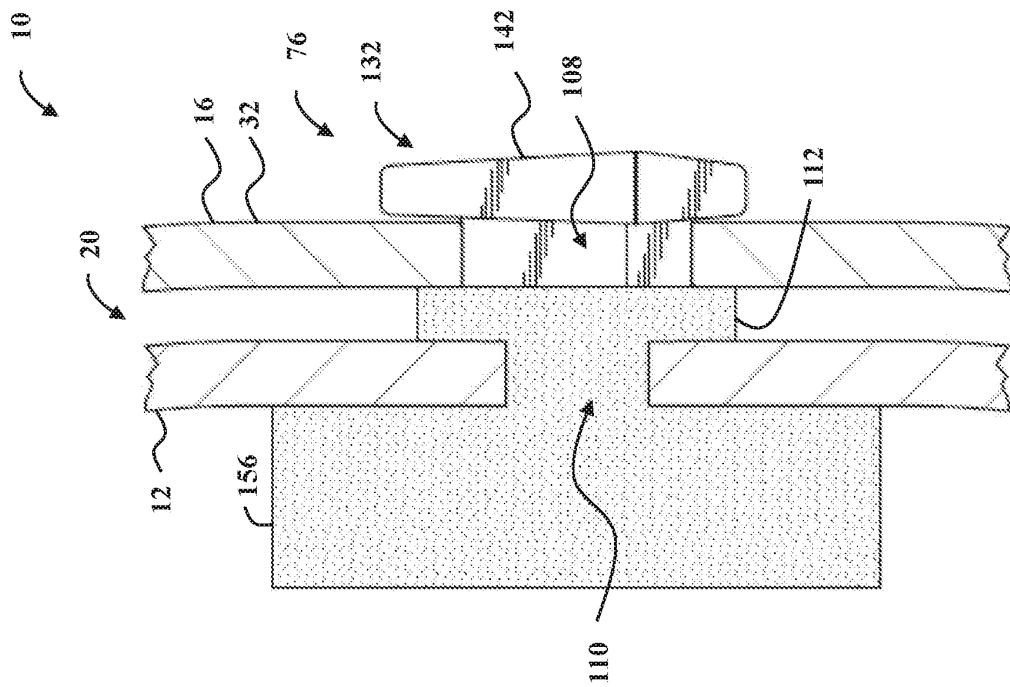


FIG. 25

REPLACEMENT SHEET

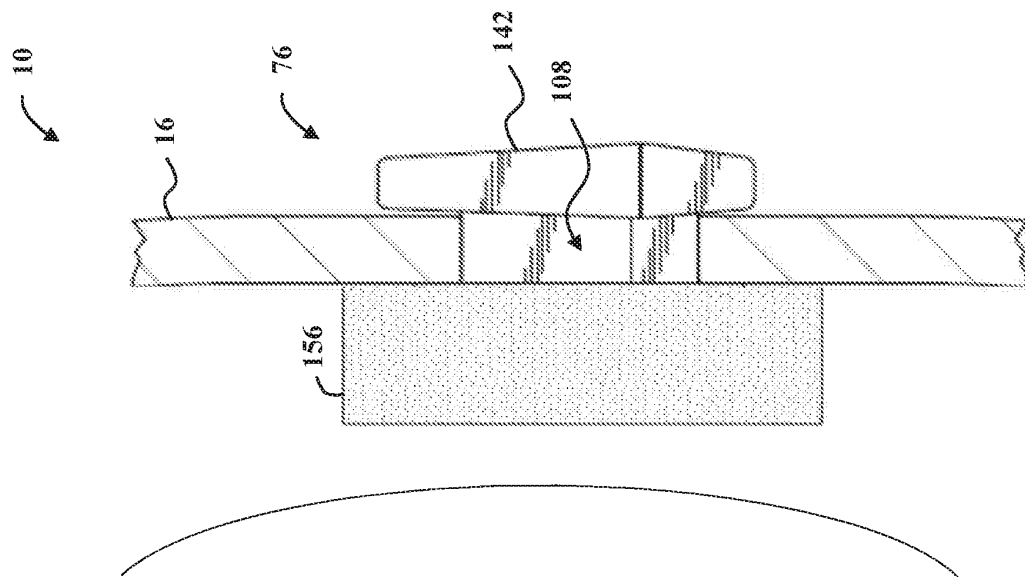


FIG. 26

REPLACEMENT SHEET

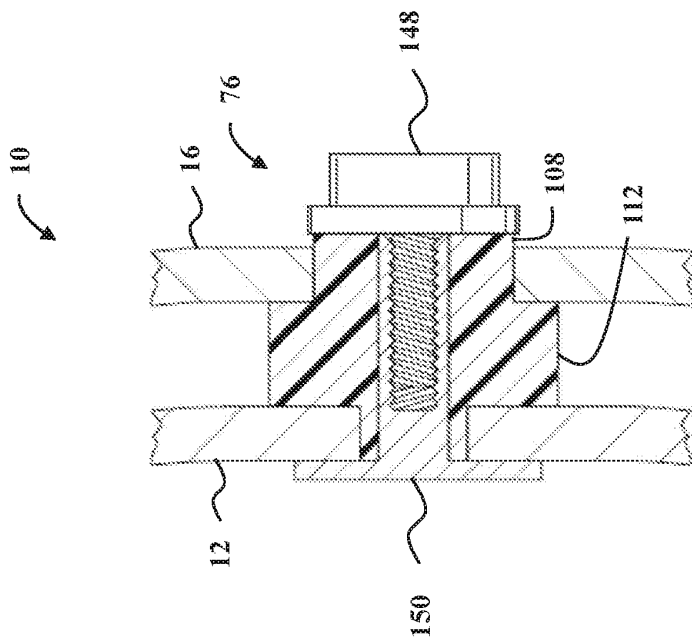


FIG. 27

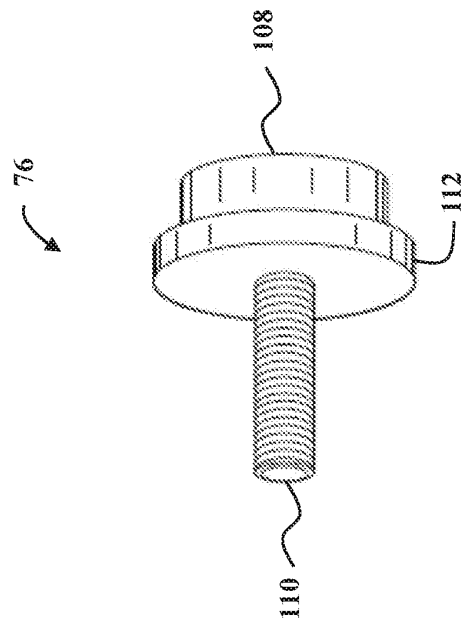


FIG. 28

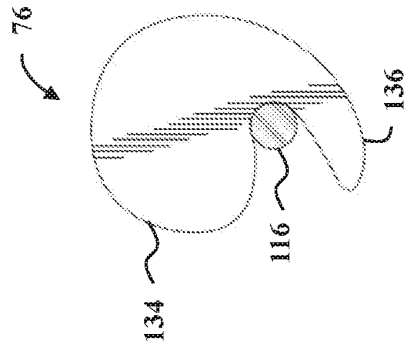


FIG. 29

REPLACEMENT SHEET

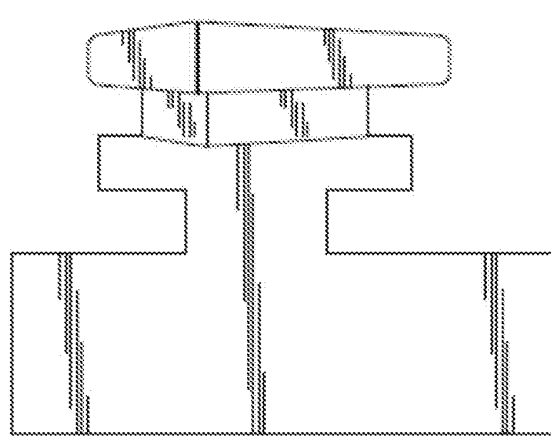


FIG. 31

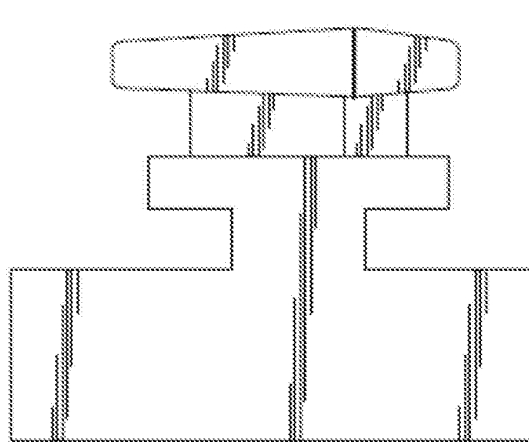


FIG. 30

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	Filing Date	2017-11-21
	First Named Inventor	Steven T. Baldi
	Art Unit	3765
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	113762.00005

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	Filing Date	2017-11-21
	First Named Inventor	Steven T. Baldi
	Art Unit	3765
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	15820256
	Filing Date	2017-11-21
	First Named Inventor	Steven T. Baldi
	Art Unit	3765
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	113762.00005

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/James R. Yee/	Date (YYYY-MM-DD)	2018-02-21
Name/Print	James R. Yee	Registration Number	34460

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether the Freedom of Information Act requires disclosure of these records.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Acknowledgement Receipt	
EFS ID:	31848120
Application Number:	15820256
International Application Number:	
Confirmation Number:	8864
Title of Invention:	VENTILATED MODULAR DUAL SHELLLED HELMET SYSTEM
First Named Inventor/Applicant Name:	Steven T. Baldi
Customer Number:	27305
Filer:	James R. Yee/Chris Acuff
Filer Authorized By:	James R. Yee
Attorney Docket Number:	113762.00005
Receipt Date:	21-FEB-2018
Filing Date:	21-NOV-2017
Time Stamp:	16:02:19
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Applicant Response to Pre-Exam Formalities Notice	NoticeofOmitteditemsinaNonprovisionalApplication.pdf	850569	no	4
			851d25d075145d7539f3ab024d02650f59c9d87		

Warnings:

Information:					
2	Preliminary Amendment	Apalone05-PreliminaryAmendment.pdf	154210	no	11
			52faf7804fa348d4f24405abb22f466a5a4e3a9e		
Warnings:					
Information:					
3	Specification	Apalone05-SubstituteSpecification-Marked-UpVersion.pdf	207160	no	28
			84b0d5c91530b418bbbc9fe5041e556684a569c3f		
Warnings:					
Information:					
4	Specification	Apalone05-SubstituteSpecification-CleanVersion.pdf	206402	no	28
			22d680733fd65f6dd6490e33a8e495d8e88ee523		
Warnings:					
Information:					
5	Drawings-other than black and white line drawings	Apalone05-ReplacementSheets_Drawings.pdf	475435	no	10
			9a4d3d6470f03af070d6336a42748a6a0e4e6a1f		
Warnings:					
Information:					
6	Information Disclosure Statement (IDS) Form (SB08)	Apalone05-IDS.pdf	612326	no	4
			2519034928cc4008b79d7245335352a6290dd67b		
Warnings:					
Information:					
Total Files Size (in bytes):			2506102		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
15/820,256	11/21/2017	Steven T. Baldi	113762.00005

CONFIRMATION NO. 8864

FORMALITIES LETTER



0000000096213420

27305

HOWARD & HOWARD ATTORNEYS PLLC
450 West Fourth Street
Royal Oak, MI 48067

Date Mailed: 12/26/2017

NOTICE OF OMITTED ITEM(S) IN A NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

A filing date has been accorded to the above-identified nonprovisional application papers; however, the following item(s) appear to have been omitted from the application:

- Figure(s) **22, 26** described in the specification.

Applicant must reply to this notice within the time period set forth in this notice to avoid abandonment of this application. Applicant must select one of the three following options and the reply must comply with the requirements set forth in the selected option and any other requirements set forth in this notice. The reply should also indicate which option applicant has selected.

I. Petition for date of deposit: Should applicant contend that the above-noted omitted item(s) was in fact deposited in the U.S. Patent and Trademark Office (USPTO) with the nonprovisional application papers, a copy of this Notice and a petition (and the petition fee set forth in 37 CFR 1.17(f) with evidence of such deposit **must** be filed within **TWO MONTHS** of the date of this Notice. The petition fee will be refunded if it is determined that the item(s) was received by the USPTO. **THIS TWO MONTH PERIOD IS EXTENDABLE UNDER 37 CFR 1.136(a) or (b).**

Applicant should review their application file and determine whether their file differs from USPTO's records. In some situations there may be a mislabeling of the drawings and/or a failure to describe in the brief description each of the figures as labeled.

The brief description of the drawings in the specification must correspond with the figures and the figures must be labeled in accordance with 37 CFR 1.84(u)(1). For example, if the brief description describes Figure 1 and Figure 2 only, but the drawings show Fig. 1 and Fig. 2A and Fig. 2B, then the specification must be amended to refer to Figure 2A and Figure 2B and delete the reference to Figure 2 and a substitute specification in compliance with 37 CFR 1.52, 1.121(b)(3), and 1.125, is required. As another example, if a drawing is labeled Figure 2, but there are actually multiple figures within the labeled Figure 2 having labels A, B, and C, then the drawings must be relabeled in accordance with 37 CFR 1.84(u)(1) (e.g., Fig. 2A, Fig. 2B, and Fig. 2C). If the specification does not refer to the figures as relabeled, then the specification must be amended to refer to the relabeled figures (e.g., Fig. 2A, Fig. 2B, and Fig. 2C) and a substitute specification in compliance with 37 CFR 1.52, 1.121(b)(3), and 1.125, is required. A petition for date of deposit under option I should **NOT** be filed in either situation or in similar situations where there is simply a mislabeling of the drawings and/or a failure to describe in the brief description each of the figures. Instead, applicant should file a reply under option III.A below (including replacement drawing sheets and/or a substitute specification as required in III.A.2).

II. Petition for later filing date: Should applicant desire to supply the omitted item(s) and accept the date that such omitted item(s) was filed in the USPTO as the filing date of the above-identified application, a copy of this Notice, the omitted item(s), and a petition under 37 CFR 1.182 with the petition fee set forth in 37 CFR 1.17(f) requesting the later filing date **must** be filed within **TWO MONTHS** of the date of this Notice. **THIS TWO MONTH PERIOD IS EXTENDABLE UNDER 37 CFR 1.136(a) or (b).**

Applicant is advised that generally the filing fee required for an application is the filing fee in effect on the filing date accorded the application and that payment of the requisite basic filing fee on a date later than the filing date of the application requires payment of a surcharge (37 CFR 1.16(f)). To avoid processing delays and payment of a surcharge, applicant should submit any balance due for the requisite filing fee based on the later filing date being requested when submitting the omitted item(s) and the petition (and petition fee) requesting the later filing date.

III. Acceptance of application as deposited: Applicant may accept the application as deposited in the USPTO by filing an appropriate amendment as set forth in either (A) or (B) below within **TWO MONTHS** of the date of this Notice. **THIS TWO MONTH PERIOD IS EXTENDABLE UNDER 37 CFR 1.136(a) or (b)**. The application will maintain a filing date as of the date of deposit of the application papers in the USPTO, and original application papers (i.e., the original disclosure of the invention) will include only those application papers present in the USPTO on the date of deposit. A petition is not required for this option.

(A) If applicant wants to accept the application as deposited without adding the subject matter that was in the omitted item (e.g., a missing page or figure), applicant is required to submit one or more of the following items without adding any new matter (see 35 U.S.C. 132(a)):

1. For a missing page of the specification,
 - a) a substitute specification including claims that amends the specification to renumber the pages consecutively and cancels any incomplete sentences, and
 - b) a statement that the substitute specification includes no new matter, in compliance with 37 CFR 1.121(b)(3) and 1.125;
2. For a missing figure of the drawings (including a mislabeled figure),
 - a) replacement drawing sheets in compliance with 37 CFR 1.121(d) to renumber the drawing figures consecutively (if necessary),
 - b) a substitute specification excluding claims that amends the specification to cancel any references to any omitted drawing(s) and corrects the references in the specification to the drawing figures to correspond with any relabeled drawing figures, and
 - c) a statement that the substitute specification includes no new matter, in compliance with 37 CFR 1.121(b)(3) and 1.125;
3. For a missing page of the claim listing only, a replacement claim listing with the claims renumbered consecutively or, if amendment to the claims is also necessary, then a complete claim listing in compliance with 37 CFR 1.121(c);
4. For a missing or unreadable compact disc,
 - a) a substitute specification (excluding the claims) deleting the reference to the compact disc and the files contained on the compact disc, and
 - b) a statement that the substitute specification includes no new matter, in compliance with 37 CFR 1.121(b)(3) and 1.125; and
5. For a missing or unreadable file submitted on a compact disc,
 - a) a substitute specification (excluding the claims) deleting the reference to the missing or unreadable file, and a statement that the substitute specification includes no new matter, in compliance with 37 CFR 1.121(b)(3) and 1.125; and
 - b) a replacement transmittal letter listing all of the files except the missing or unreadable file in compliance with 37 CFR 1.52(e)(3)(ii).

(B) Alternatively, if applicant wants to accept the application as deposited but wishes to add the subject matter in the omitted item (e.g., a missing page or figure) by relying on an incorporation by reference under 37 CFR 1.57 or

other portions of the original disclosure, applicant is required to submit one or more of the following items without adding any new matter (see 35 U.S.C. 132(a)):

1. To add the subject matter in a missing page of specification,
 - a) a substitute specification excluding claims and
 - b) a statement that the substitute specification includes no new matter, in compliance with 37 CFR 1.121(b)(3) and 1.125;
2. To add a missing figure of the drawings, new and replacement drawing sheets in compliance with 37 CFR 1.121(d);
3. To add the subject matter in a missing page of the claim listing, a complete claim listing in compliance with 37 CFR 1.121(c) (e.g., a claim in the missing page should be submitted as a new claim);
4. To add the subject matter in a missing or unreadable compact disc,
 - a) a replacement compact disc and a duplicate copy of the compact disc, in compliance with 37 CFR 1.52(e); and
 - b) a statement that the replacement compact disc contains no new matter in compliance with 37 CFR 1.52(e)(4); and,
5. To add the subject matter in a missing or unreadable file submitted on a compact disc,
 - a) a replacement compact disc that contains all of the files listed in the specification including the missing or unreadable file and a duplicate copy of the compact disc, in compliance with 37 CFR 1.52(e); and
 - b) a statement that the replacement compact disc contains no new matter in compliance with 37 CFR 1.52(e)(4).

If applicant is relying on an incorporation by reference under 37 CFR 1.57 to add the omitted subject matter, then applicant must also comply with the requirements of 37 CFR 1.57.

Applicant is cautioned that correction of the above items may cause the specification and drawings page count to exceed 100 pages. If the specification and drawings exceed 100 pages, applicant will need to submit the required application size fee.

Replies must be received in the USPTO within the set time period or must include a proper Certificate of Mailing or Transmission under 37 CFR 1.8 with a mailing or transmission date within the set time period. For more information and a suggested format, see Form PTO/SB/92 and MPEP 512.

Replies should be mailed to:

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web, including a copy of this Notice and selecting the document description "Applicant response to Pre-Exam Formalities Notice".
<https://portal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html>

For more information about EFS-Web please call the USPTO Electronic Business Center at 1-866-217-9197 or visit our website at <http://www.uspto.gov/ebc>.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/agoitom/

SCORE Placeholder Sheet for IFW Content

Application Number: 15820256

Document Date: 02/21/2018

The presence of this form in the IFW record indicates that the following document type was received in electronic format on the date identified above. This content is stored in the SCORE database.

Since this was an electronic submission, there is no physical artifact folder, no artifact folder is recorded in PALM, and no paper documents or physical media exist. The TIFF images in the IFW record were created from the original documents that are stored in SCORE.

- Drawing

At the time of document entry (noted above):

- USPTO employees may access SCORE content via eDAN using the Supplemental Content tab, or via the SCORE web page.
- External customers may access SCORE content via PAIR using the Supplemental Content tab.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY.DOCKET.NO	TOT CLAIMS	IND CLAIMS
15/820,256	11/21/2017	3765	730	113762.00005	20	3

CONFIRMATION NO. 8864

UPDATED FILING RECEIPT



0000000097602565

27305

HOWARD & HOWARD ATTORNEYS PLLC
450 West Fourth Street
Royal Oak, MI 48067

Date Mailed: 02/26/2018

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Inventor(s)

Steven T. Baldi, Peoria, IL;

Applicant(s)

Apalone, Inc., Peoria, IL;

Power of Attorney: The patent practitioners associated with Customer Number 27305

Domestic Priority data as claimed by applicant

This appln claims benefit of 62/425,397 11/22/2016

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 12/20/2017

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 15/820,256**

Projected Publication Date: 06/07/2018

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

VENTILATED MODULAR DUAL SHELLLED HELMET SYSTEM

Preliminary Class

002

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

LICENSE FOR FOREIGN FILING UNDER
Title 35, United States Code, Section 184
Title 37, Code of Federal Regulations, 5.11 & 5.15

GRANTED

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

SelectUSA

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop technology, manufacture products, deliver services, and grow your business, visit <http://www.SelectUSA.gov> or call +1-202-482-6800.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875						Application or Docket Number 15/820,256	
APPLICATION AS FILED - PART I							
(Column 1)		(Column 2)		SMALL ENTITY		OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE(\$)	FEE(\$)		RATE(\$)	FEE(\$)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	75		N/A	
SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A	330		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	380		N/A	
TOTAL CLAIMS (37 CFR 1.16(i))	20	minus 20 = *	x 50 =	0.00			
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3	minus 3 = *	x 230 =	0.00			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
			TOTAL	785		TOTAL	
* If the difference in column 1 is less than zero, enter "0" in column 2.							
APPLICATION AS AMENDED - PART II							
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY	
AMENDMENT A	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)
	Total (37 CFR 1.16(i))	*	Minus **	=	x =		x =
	Independent (37 CFR 1.16(h))	*	Minus ***	=	x =		x =
	Application Size Fee (37 CFR 1.16(s))						
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
				TOTAL ADD'L FEE			TOTAL ADD'L FEE
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY	
AMENDMENT B	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)
	Total (37 CFR 1.16(i))	*	Minus **	=	x =		x =
	Independent (37 CFR 1.16(h))	*	Minus ***	=	x =		x =
	Application Size Fee (37 CFR 1.16(s))						
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
				TOTAL ADD'L FEE			TOTAL ADD'L FEE
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.							



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
15/820,256	11/21/2017	Steven T. Baldi	113762.00005

CONFIRMATION NO. 8864

27305
HOWARD & HOWARD ATTORNEYS PLLC
450 West Fourth Street
Royal Oak, MI 48067

PUBLICATION NOTICE



OC000000100098777

Title:VENTILATED MODULAR DUAL SHELLLED HELMET SYSTEM

Publication No.US-2018-0153246-A1

Publication Date:06/07/2018

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently <http://www.uspto.gov/patft/>.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/820,256	11/21/2017	Steven T. Baldi	113762.00005	8864
27305	7590	09/06/2019	EXAMINER	
HOWARD & HOWARD ATTORNEYS PLLC			PATEL, TAJASH D	
450 West Fourth Street				
Royal Oak, MI 48067				
			ART UNIT	PAPER NUMBER
			3732	
			NOTIFICATION DATE	DELIVERY MODE
			09/06/2019	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

IPDocket@HowardandHoward.com
dtrost@HowardandHoward.com

Notice of Pre-AIA or AIA Status

The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103 which forms the basis for all obviousness rejections set forth in this Office action:

A patent for a claimed invention may not be obtained, notwithstanding that the claimed invention is not identically disclosed as set forth in section 102, if the differences between the claimed invention and the prior art are such that the claimed invention as a whole would have been obvious before the effective filing date of the claimed invention to a person having ordinary skill in the art to which the claimed invention pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1 and 7 are rejected under 35 U.S.C. 103 as being unpatentable over Zebuhr (US 4,133,055). Zebuhr discloses a modular helmet including an inner shell (34) adapted to be positioned onto the head with an outer shell (12) coupled to the inner shell as shown in 2. The outer shell (12) spaced a distance radially outward from the inner shell (34) defines a climatic zone between the inner shell and the outer shell having a cooling assembly (20) removably positioned within the climatic zone between the inner shell and the outer shell, col. 2, lines 36-48. Further, the cooling assembly defines a plurality of cooling packets/pockets (24) that are coupled to the outer shell, col. 2, lines 49-64 and as shown in figure 2.

It would have been obvious to one skilled in the art before the effective date of the claimed invention that the cooling assembly of Zebuhr removably positioned within the climatic zone and retained by the inner shell being resecurable can attached but not limited to the outer shell, etc. in order to make the device cost effective or depending on particular application thereof.

With regard to claim 7, col. 3, lines 41-45 of Zebuhr discloses the inner shell (34) secured along one or more edges to the shell of the helmet. Therefore, it would have been obvious to one skilled in the art before the effective date of the claimed invention that the inner shell removably secured to at least one edge of the outer shell of Zebuhr can include but not limited to attachment mechanism with hook and loop material, snaps, etc. in order to easily remove the cooling assembly as required or depending on end use thereof.

3. Claims 13-14 are rejected under 35 U.S.C. 103 as being unpatentable over Roth et al. (US 2,625,683). Roth et al. (hereinafter Roth) discloses a fastening assembly for use with a helmet assembly including an outer shell (4), the fastening assembly/screw/bolt (12) includes an outer support member (13) adapted to be positioned within a support opening extending through the outer shell as shown in figure 4. Further, the outer support member includes a base portion at distal end thereof defining a pivot axis and a support arm/nut extending outwardly from the base portion. The support arm is configured to contact an inner surface of the support opening of an helmet inner shell (3) to facilitate resisting a rotation of the helmet outer shell about the pivot axis as also shown in figure 4. Also, the support opening defining a circular shape is substantially similar to the circular shape of the outer support member (13) extending through the helmet outer and inner shells (3,4).

It would have been obvious to one skilled in the art before the effective date of the claimed invention that the fastening assembly of Roth will substantially maintain the desired wall space as a spacer between the helmet outer and inner shells or as required for a particular application thereof.

Allowable Subject Matter

4. Claims 2-6 and 15-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.
5. Claims 8-12 are allowed.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TEJASH PATEL whose telephone number is (571)272-4993.

The examiner can normally be reached on Monday-Thursday 9am -5pm.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Clinton Ostrup can be reached on (571) 272-5559. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

August 28, 2019

/TAJASH D PATEL/
Primary Examiner, Art Unit 3732

Notice of References Cited	Application/Control No. 15/820,256	Applicant(s)/Patent Under Reexamination Baldi, Steven T.	
	Examiner TEJASH PATEL	Art Unit 3732	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-4133055-A	01-1979	Zebuhr; William H.	A42B3/121	2/411
*	B	US-20150223549-A1	08-2015	Osterhout; Tyler	A42B3/285	62/3.1
*	C	US-8943617-B2	02-2015	Harty; Robert D.	A42B3/285	2/468
*	D	US-6397399-B1	06-2002	Lampe; John K.	A42B1/008	2/171.2
*	E	US-4354284-A	10-1982	Gooding; Elwyn R.	A42B3/00	2/413
*	F	US-8117677-B2	02-2012	Toth; Gregory T.	A42B3/285	2/413
*	G	US-2625683-A	01-1953	ROTH HERMAN P	A42B3/12	2/6.1
	H					
	I					
	J					
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FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
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*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

<i>Search Notes</i> 	Application/Control No. 15/820,256	Applicant(s)/Patent Under Reexamination Baldi, Steven T.
	Examiner TEJASH PATEL	Art Unit 3732

CPC - Searched*		
Symbol	Date	Examiner
A42B3/121, A42B3/285	08/28/2019	TP

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
PALM Searched for inventor name and applicable related cases	08/28/2019	TP

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

	/TAJASH D PATEL/ Primary Examiner, Art Unit 3732
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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	15820256
	Filing Date	2017-11-21
	First Named Inventor	Steven T. Baldi
	Art Unit	3765
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	113762.00005

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Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages,Columns,Lines where Relevant Passages or Relevant Figures Appear	
/T.D.P/	1	8938817	B1	2015-01-27	Baldi		
/T.D.P/	2	9220311	B1	2015-12-29	Baldi		
/T.D.P/	3	D758669	S	2016-06-07	Collette et al.		
/T.D.P/	4	D764116	S	2016-08-16	Collette et al.		

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	15820256
	Filing Date	2017-11-21
	First Named Inventor	Steven T. Baldi
	Art Unit	3765
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	113762.00005

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Examiner Initials*	Cite No	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc), date, pages(s), volume-issue number(s), publisher, city and/or country where published.	T ⁵
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EXAMINER SIGNATURE

Examiner Signature	/TAJASH D PATEL/	Date Considered	09/02/2019
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*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	15820256
	Filing Date	2017-11-21
	First Named Inventor	Steven T. Baldi
	Art Unit	3765
	Examiner Name	Not Yet Assigned
	Attorney Docket Number	113762.00005

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(1).

OR

☐ That no item of information contained in the information disclosure statement was cited in a communication from a foreign patent office in a counterpart foreign application, and, to the knowledge of the person signing the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e)(2).

See attached certification statement.

The fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ A certification statement is not submitted herewith.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/James R. Yee/	Date (YYYY-MM-DD)	2018-02-21
Name/Print	James R. Yee	Registration Number	34460

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 1 hour to complete, including gathering, preparing and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

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6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
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Electronic Patent Application Fee Transmittal				
Application Number:		15820256		
Filing Date:		21-Nov-2017		
Title of Invention:		VENTILATED MODULAR DUAL SHELLLED HELMET SYSTEM		
First Named Inventor/Applicant Name:		Steven T. Baldi		
Filer:		James R. Yee/Chris Acuff		
Attorney Docket Number:		113762.00005		
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
INDEPENDENT CLAIMS IN EXCESS OF 3	2201	1	230	230
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				230

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EFS ID:	37897834
Application Number:	15820256
International Application Number:	
Confirmation Number:	8864
Title of Invention:	VENTILATED MODULAR DUAL SHELLLED HELMET SYSTEM
First Named Inventor/Applicant Name:	Steven T. Baldi
Customer Number:	27305
Filer:	James R. Yee/Chris Acuff
Filer Authorized By:	James R. Yee
Attorney Docket Number:	113762.00005
Receipt Date:	02-DEC-2019
Filing Date:	21-NOV-2017
Time Stamp:	14:30:59
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	DA
Payment was successfully received in RAM	\$230
RAM confirmation Number	E2019B2E31290742
Deposit Account	082789
Authorized User	Chris Acuff
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Amendment/Req. Reconsideration-After Non-Final Reject	Apalone05-Amendment.pdf	122351	no	7
			45425fe6a101c493f0ce1c0045f4ba99ec75acd		

Warnings:**Information:**

2	Fee Worksheet (SB06)	fee-info.pdf	30360	no	2
			11c986e7041e8fd14e38925cf1ff93a2bd079583		

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Inventor : Steven T. Baldi
Appl. No. : 15/820,256
Filed : November 21, 2017
Title : VENTILATED MODULAR DUAL SHELLLED HELMET SYSTEM
Docket No. : 113762.00005
Art Unit : 3732
Examiner : Patel, Tajash D.

AMENDMENT

Mail Stop Amendment
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

In response to the Office Action dated September 6, 2019, please consider the accompanying amendment and remarks. A version of all pending claims and their current status are presented having necessary markings to show any changes made in compliance with 37 C.F.R. §1.121. This amendment has been prepared in accordance with the amendment format of 37 C.F.R. §1.121 to place the application in condition for allowance.

Amendments to the Claims – are reflected in the listing of claims which begins on page 2; and
Remarks/Arguments - begin on page 6 of this paper.

IN THE CLAIMS

1. (Canceled).
2. (Currently Amended). A [[The]] modular helmet ~~of claim 1~~, comprising:
an inner shell adapted to be positioned onto a user's head;
an outer shell coupled to the inner shell, the outer shell spaced a distance radially outward
from the inner shell to define a climatic zone between the inner shell and the outer shell; and
a cooling assembly positioned within the climatic zone between the inner shell and the
outer shell, the cooling assembly including a plurality of cooling packets that are coupled to the
outer shell; and
including a plurality of cushions that are coupled to the outer shell and positioned within
the climatic zone.
3. (Original). The modular helmet of claim 2, wherein at least one cushion of the plurality of cushions includes a height that is different than a height of at least one cooling packet of the plurality of cooling packets.
4. (Currently Amended). A [[The]] modular helmet ~~of claim 1~~, comprising:
an inner shell adapted to be positioned onto a user's head;
an outer shell coupled to the inner shell, the outer shell spaced a distance radially outward
from the inner shell to define a climatic zone between the inner shell and the outer shell; and
a cooling assembly positioned within the climatic zone between the inner shell and the
outer shell, the cooling assembly including a plurality of cooling packets that are coupled to the
outer shell, wherein the inner shell includes a plurality of inner vents configured to couple the
climatic zone in flow communication with an area adjacent the users head.

5. (Original). The modular helmet of claim 4, wherein the outer shell includes a plurality of outer vents configured to couple the climatic zone in flow communication with ambient air.

6. (Original). The modular helmet of claim 5, wherein at least one inner vent is orientated coaxially with a corresponding outer vent.

7. (Currently Amended). The modular helmet of claim [[1]]2, further including an attachment mechanism coupled to the inner shell and the outer shell, wherein the outer shell is removably coupled to the inner shell.

8. (Original). A modular helmet comprising:
an inner shell adapted to be positioned onto a user's head, the inner shell includes a plurality of inner vents;

an outer shell coupled to the inner shell, the outer shell spaced a distance radially from the inner shell to define a climatic zone between the inner shell and the outer shell, the outer shell includes a plurality of outer vents configured to couple the climatic zone in flow communication with ambient air; and

a cushion assembly positioned within the climatic zone between the inner shell and the outer shell, the cushion assembly including a plurality of cushions that are coupled to the outer shell.

9. (Original). The modular helmet of claim 8, including a plurality of cooling packets that are coupled to the outer shell and positioned within the climatic zone.

10. (Original). The modular helmet of claim 9, wherein at least one cushion of the plurality of cushions includes a height that is different than a height of at least one cooling packet of the plurality of cooling packets.

11. (Original). The modular helmet of claim 8, wherein the plurality of inner vents includes a first amount of inner vents and the plurality of outer vents includes a second amount of outer vents that is a different than the first amount of inner vents.

12. (Original). The modular helmet of claim 8, further including an attachment mechanism coupled to the inner shell and the outer shell, wherein the outer shell is removably coupled to the inner shell.

13. (Canceled).

14. (Currently Amended). The fastening assembly of claim ~~[[13]]~~15, wherein the support opening includes a shape that is substantially similar to a shape of the outer support member.

15. (Currently Amended). A [[The]] fastening assembly of claim 13, for use with a helmet assembly including an outer shell, the fastening assembly comprising:

an outer support member adapted to be positioned within a support opening extending through the outer shell, the outer support member including a base portion defining a pivot axis and a support arm extending outwardly from the base portion, the support arm configured to contact an inner surface of the support opening to facilitate resisting a rotation of the helmet outer shell about the pivot axis, wherein helmet assembly includes a helmet inner shell that is spaced radially inward from the helmet outer shell and adapted to be positioned about a user's head, the fastening assembly including an inner support member extending outwardly from the outer support member towards the user's head, the inner support member positioned within an inner support opening extending through the helmet inner shell.

16. (Original). The fastening assembly of claim 15, wherein the inner support member includes an outer surface in contact with an inner surface of the inner support opening to facilitate resisting a rotation of the outer support member about the pivot axis.

17. (Original). The fastening assembly of claim 16, wherein the fastening assembly includes a base member between the inner support member and the outer support member, the base member positioned within a gap defined between the helmet inner shell and the helmet outer shell.

18. (Original). The fastening assembly of claim 17, wherein the inner support member is spaced a distance from the pivot axis defined by the base portion.

19. (Original). The fastening assembly of claim 17, further comprising:
a positioning opening extending through the outer support member, the base member, and the inner support member, and orientated along the pivot axis; and
a fastening device positioned within the positioning opening and configured to couple the fastening assembly to the inner and outer shells.

20. (Canceled).

21. (New). The modular helmet of claim 4, further including an attachment mechanism coupled to the inner shell and the outer shell, wherein the outer shell is removably coupled to the inner shell.

Inventor: Steven T. Baldi
Serial No: 15/820,256
Filed: November 21, 2017
Page 6

REMARKS

No new matter is added by this amendment. The present application was filed on November 21, 2017 with original claims 1-20. By this Amendment, claims 2, 4, 7 and 14-15 have been amended, 1, 13 and 20 have been canceled and new claim 21 has been added. The claims remaining in consideration are claims 2-12, 14-19 and 21 of which claims 2, 4, 8 and 15 are independent. Reconsideration is respectfully requested.

The Examiner indicated that claims 8-12 were allowed. This is noted with appreciation. The Examiner also indicated that claims 2-6 and 15-19 contained allowable subject matter and would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claim.

Claim 2 and claim 4 have each been rewritten in independent form. Thus, Applicant respectfully asserts that claims 2 and 4 are allowable. Claim 3 and amended claim 7 are dependent upon allowable claim 2. Claims 5, 6 and new claim 21 are dependent upon allowable claim 4. Thus, Applicant also respectfully asserts that claims 5, 6 and 21 are allowable.

Claim 15 has also been rewritten in independent form. Thus, Applicant respectfully asserts that claim 15 is allowable. Amended claim 14 and claims 16-19 are ultimately dependent upon allowable claim 15. Thus, Applicant respectfully asserts that claims 16-19 are also allowable.

All of the Examiner's rejections and objections having been made moot, Applicant respectfully asserts that the present application is in condition for allowance. An early Notice of Allowance is respectfully asserted.

Inventor: Steven T. Baldi
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Page 7

Applicant believes that no fees are due; however, if any become required, the Commissioner is hereby authorized to charge any additional fees or credit any overpayments to Deposit Account 08-2789.

Respectfully submitted,

HOWARD & HOWARD ATTORNEYS PLLC

December 2, 2019
Date

/James R. Yee/
James R. Yee, Registration No. 34,460
450 West Fourth Street
Royal Oak, Michigan 48067
(248) 645-1483

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875				Application or Docket Number 15/820,256		Filing Date 11/21/2017		<input type="checkbox"/> To be Mailed		
ENTITY: <input type="checkbox"/> LARGE <input checked="" type="checkbox"/> SMALL <input type="checkbox"/> MICRO										
APPLICATION AS FILED - PART I										
		(Column 1)	(Column 2)							
FOR		NUMBER FILED	NUMBER EXTRA	RATE (\$)		FEE (\$)				
<input type="checkbox"/> BASIC FEE (37 CFR 1.16(a), (b), or (c))		N/A	N/A	N/A						
<input type="checkbox"/> SEARCH FEE (37 CFR 1.16(k), (l), or (m))		N/A	N/A	N/A						
<input type="checkbox"/> EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))		N/A	N/A	N/A						
TOTAL CLAIMS (37 CFR 1.16(i))		minus 20 = *		x \$40 =						
INDEPENDENT CLAIMS (37 CFR 1.16(h))		minus 3 = *		x \$210 =						
<input type="checkbox"/> APPLICATION SIZE FEE (37 CFR 1.16(s))		If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).								
<input type="checkbox"/> MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))										
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL						
APPLICATION AS AMENDED - PART II										
AMENDMENT	12/02/2019	(Column 1) CLAIMS REMAINING AFTER AMENDMENT	(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE (\$)		ADDITIONAL FEE (\$)			
	Total (37 CFR 1.16(i))	* 18	Minus ** 20	= 0	x \$50 =		0			
	Independent (37 CFR 1.16(h))	* 4	Minus *** 4	= 0	x \$230 =		0			
	<input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))									
	<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))									
						TOTAL ADD'L FEE		0		
AMENDMENT		(Column 1) CLAIMS REMAINING AFTER AMENDMENT	(Column 2) HIGHEST NUMBER PREVIOUSLY PAID FOR	(Column 3) PRESENT EXTRA	RATE (\$)		ADDITIONAL FEE (\$)			
	Total (37 CFR 1.16(i))	*	Minus **	=	x \$0 =					
	Independent (37 CFR 1.16(h))	*	Minus ***	=	x \$0 =					
	<input type="checkbox"/> Application Size Fee (37 CFR 1.16(s))									
	<input type="checkbox"/> FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))									
						TOTAL ADD'L FEE				
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3.						LIE				
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".						/ANTJUAN M RIVERA/				
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".										
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.										

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.



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NOTICE OF ALLOWANCE AND FEE(S) DUE

27305 7590 12/18/2019
HOWARD & HOWARD ATTORNEYS PLLC
450 West Fourth Street
Royal Oak, MI 48067

EXAMINER

PATEL, TAJASH D

ART UNIT

PAPER NUMBER

3732

DATE MAILED: 12/18/2019

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/820,256	11/21/2017	Steven T. Baldi	113762.00005	8864

TITLE OF INVENTION: VENTILATED MODULAR DUAL SHELLLED HELMET SYSTEM

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$500	\$0.00	\$0.00	\$500	03/18/2020

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

27305 7590 12/18/2019
HOWARD & HOWARD ATTORNEYS PLLC
450 West Fourth Street
Royal Oak, MI 48067

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/820,256	11/21/2017	Steven T. Baldi	113762.00005	8864

TITLE OF INVENTION: VENTILATED MODULAR DUAL SHELLED HELMET SYSTEM

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$500	\$0.00	\$0.00	\$500	03/18/2020

EXAMINER	ART UNIT	CLASS-SUBCLASS
PATEL, TAJASH D	3732	002-007000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.

☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-09 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,

1 _____

(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

2 _____

3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. Fees submitted: ☐ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

4b. Method of Payment: (Please first reapply any previously paid fee shown above)

☐ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

5. Change in Entity Status (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment. **NOTE:** If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____

Date _____

Typed or printed name _____

Registration No. _____



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/820,256	11/21/2017	Steven T. Baldi	113762.00005	8864
27305	7590	12/18/2019	EXAMINER	
HOWARD & HOWARD ATTORNEYS PLLC			PATEL, TAJASH D	
450 West Fourth Street			ART UNIT	
Royal Oak, MI 48067			PAPER NUMBER	
			3732	
DATE MAILED: 12/18/2019				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 30 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. **DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.** Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b) (2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Notice of Allowability	Application No. 15/820,256	Applicant(s) Baldi, Steven T.	
	Examiner TEJASH PATEL	Art Unit 3732	AIA (FITF) Status Yes

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to Amendment filed on 12/2/19.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on ____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.

3. ☒ The allowed claim(s) is/are 2-12, 14-19 and 21. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov**.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

a) ☐ All b) ☐ Some *c) ☐ None of the:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. ____.

3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).

* Certified copies not received: ____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date ____.

Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) 2. <input type="checkbox"/> Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date ____. 3. <input type="checkbox"/> Examiner's Comment Regarding Requirement for Deposit of Biological Material ____. 4. <input type="checkbox"/> Interview Summary (PTO-413), Paper No./Mail Date _____.	5. <input type="checkbox"/> Examiner's Amendment/Comment 6. <input type="checkbox"/> Examiner's Statement of Reasons for Allowance 7. <input type="checkbox"/> Other _____.
--	---

/TAJASH D PATEL/
Primary Examiner, Art Unit 3732

Notice of References Cited	Application/Control No. 15/820,256	Applicant(s)/Patent Under Reexamination Baldi, Steven T.	
	Examiner TEJASH PATEL	Art Unit 3732	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-20120233774-A1	09-2012	Zerhusen; Robert Mark	A61G7/0507	5/425
	B					
	C					
	D					
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	F					
	G					
	H					
	I					
	J					
	K					
	L					
	M					


FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	CPC Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	


*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Issue Classification 	Application/Control No. 15/820,256	Applicant(s)/Patent Under Reexamination Baldi, Steven T.
	Examiner TEJASH PATEL	Art Unit 3732

CPC						
Symbol					Type	Version
A42B	/	3	/	285	F	2013-01-01
A42B	/	3	/	10	I	2013-01-01
A63B	/	71	/	10	I	2013-01-01
A61F	/	7	/	10	I	2013-01-01
A42B	/	3	/	04	I	2013-01-01
A61F	/	2007	/	0238	A	2013-01-01
A61F	/	2007	/	0002	A	2013-01-01
A61F	/	2007	/	0233	A	2013-01-01
A61F	/	2007	/	0008	A	2013-01-01

CPC Combination Sets				
Symbol	Type	Set	Ranking	Version
/				

NONE (Assistant Examiner) (Date)		Total Claims Allowed: 18	
/TAJASH D PATEL/ Primary Examiner, Art Unit 3732 (Primary Examiner) (Date)		09 December 2019 O.G. Print Claim(s) 3	O.G. Print Figure 1


Issue Classification 	Application/Control No. 15/820,256	Applicant(s)/Patent Under Reexamination Baldi, Steven T.
	Examiner TEJASH PATEL	Art Unit 3732

INTERNATIONAL CLASSIFICATION			
CLAIMED			
A42B		3	12
NON-CLAIMED			

US ORIGINAL CLASSIFICATION	
CLASS	SUBCLASS


CROSS REFERENCES(S)						
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)					

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	18	
/TAJASH D PATEL/ Primary Examiner, Art Unit 3732 (Primary Examiner)	09 December 2019 (Date)	O.G. Print Claim(s) 3	O.G. Print Figure 1

Issue Classification 	Application/Control No. 15/820,256	Applicant(s)/Patent Under Reexamination Baldi, Steven T.
	Examiner TEJASH PATEL	Art Unit 3732

<input type="checkbox"/> Claims renumbered in the same order as presented by applicant <input type="checkbox"/> CPA <input type="checkbox"/> T.D. <input type="checkbox"/> R.1.47															
CLAIMS															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
-	1	9	10	17	19										
1	2	10	11	-	20										
2	3	11	12	18	21										
3	4	-	13												
4	5	12	14												
5	6	13	15												
6	7	14	16												
7	8	15	17												
8	9	16	18												

NONE (Assistant Examiner) (Date)		Total Claims Allowed: 18	
/TAJASH D PATEL/ Primary Examiner, Art Unit 3732 (Primary Examiner) (Date)		09 December 2019 O.G. Print Claim(s) 3	O.G. Print Figure 1

<i>Search Notes</i> 	Application/Control No. 15/820,256	Applicant(s)/Patent Under Reexamination Baldi, Steven T.
	Examiner TEJASH PATEL	Art Unit 3732

CPC - Searched*		
Symbol	Date	Examiner
A42B3/121, A42B3/285	08/28/2019	TP
Updated above search from 8/28/19	12/09/2019	TP

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
PALM Searched for inventor name and applicable related cases	08/28/2019	TP

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
A42B	3/121	12/09/2019	TP

	/TAJASH D PATEL/ Primary Examiner, Art Unit 3732
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Bibliographic Data

Application No: 15/820,256

Foreign Priority claimed: ☐ Yes ☒ No

35 USC 119 (a-d) conditions met: ☐ Yes ☒ No ☐ Met After Allowance

Verified and Acknowledged:

/TAJASH D PATEL/

Examiner's Signature

Initials

Title:

VENTILATED MODULAR DUAL SHELLLED HELMET SYSTEM

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
11/21/2017	002	3732	113762.00005
RULE			

APPLICANTS

Apalone, Inc., Peoria, IL,

INVENTORS

Steven T. Baldi Peoria, IL, UNITED STATES

CONTINUING DATA

This application has PRO of 62425397 11/22/2016

FOREIGN APPLICATIONS

IF REQUIRED, FOREIGN LICENSE GRANTED**

12/20/2017

** SMALL ENTITY **

STATE OR COUNTRY

UNITED STATES

ADDRESS

HOWARD & HOWARD ATTORNEYS PLLC

450 West Fourth Street

Royal Oak, MI 48067

UNITED STATES

FILING FEE RECEIVED

\$730

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 5 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Use Block 1 for any change of address)

27395 7590 12/18/2019
HOWARD & HOWARD ATTORNEYS PLLC
450 West Fourth Street
Royal Oak, MI 48067

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/030,256	11/21/2017	Steven T. Baldi	113762.00005	8864

TITLE OF INVENTION: VENTILATED MODULAR DUAL SHELLED HELMET SYSTEM

APPLN TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$500	\$0.00	\$0.00	\$500	03/16/2020

EXAMINER	ART UNIT	CLASS-BL/CLASS
PATEL, TAJASH D	3732	002-007000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47, Rev 03-09 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list
(1) The names of up to 3 registered patent attorneys or agents OR, alternatively,
(2) The name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1 Howard & Howard Attorneys PLLC
2
3

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE
Apalone, Inc.

(B) RESIDENCE: (CITY and STATE OR COUNTRY)
Peoria, Illinois

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government

Att. Fees submitted: ☒ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies

Att. Method of Payment: (Please first supply any previously paid fee shown above)

- ☒ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)
- ☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. 08-2789

5. Change in Entity Status (from status indicated above)

- ☐ Applicant certifying micro entity status. See 37 CFR 1.29
- ☐ Applicant asserting small entity status. See 37 CFR 1.27
- ☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see forms PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____
Typed or printed name James R. Yee

Date March 5, 2020
Registration No. 34460

Electronic Patent Application Fee Transmittal				
Application Number:		15820256		
Filing Date:		21-Nov-2017		
Title of Invention:		VENTILATED MODULAR DUAL SHELLLED HELMET SYSTEM		
First Named Inventor/Applicant Name:		Steven T. Baldi		
Filer:		James R. Yee/Kerstin Malkiewicz		
Attorney Docket Number:		113762.00005		
Filed as Small Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
UTILITY APPL ISSUE FEE	2501	1	500	500

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				500


Electronic Acknowledgement Receipt	
EFS ID:	38775016
Application Number:	15820256
International Application Number:	
Confirmation Number:	8864
Title of Invention:	VENTILATED MODULAR DUAL SHELLLED HELMET SYSTEM
First Named Inventor/Applicant Name:	Steven T. Baldi
Customer Number:	27305
Filer:	James R. Yee/Kerstin Malkiewicz
Filer Authorized By:	James R. Yee
Attorney Docket Number:	113762.00005
Receipt Date:	05-MAR-2020
Filing Date:	21-NOV-2017
Time Stamp:	09:23:55
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$ 500
RAM confirmation Number	E202035024566392
Deposit Account	
Authorized User	

The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	PartBTransmittal.pdf	270820	no	1
			8848aec051b85fba9ae7f99e616a5a19f6e49b6b		
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30194	no	2
			0904e4f0604dc44ca36443a0d70c4d3095fc b47c		
Warnings:					
Information:					
Total Files Size (in bytes):			301014		
<p>This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.</p> <p><u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.</p> <p><u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.</p> <p><u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.</p>					

Issue Classification 	Application/Control No. 15/820,256	Applicant(s)/Patent Under Reexamination Baldi, Steven T.
	Examiner TEJASH PATEL	Art Unit 3732

<input type="checkbox"/> Claims renumbered in the same order as presented by applicant <input type="checkbox"/> CPA <input type="checkbox"/> T.D. <input type="checkbox"/> R.1.47															
CLAIMS															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
-	1	9	10	17	19										
1	2	10	11	-	20										
2	3	11	12	18	21										
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4	5	12 13	14												
5	6	13 12	15												
6	7	14	16												
7	8	15	17												
8	9	16	18												

Change(s) applied
 to document,
 /A.E.G./
 2/7/2020

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	18	
/TAJASH D PATEL/ Primary Examiner, Art Unit 3732		09 December 2019	
(Primary Examiner)	(Date)	O.G. Print Claim(s) 3	O.G. Print Figure 1



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APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
15/820,256	04/14/2020	10617167	113762.00005	8864

27305 7590 03/25/2020
HOWARD & HOWARD ATTORNEYS PLLC
450 WEST FOURTH STREET
ROYAL OAK, MI 48067

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment is 228 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

Steven T. Baldi, Peoria, IL;
Apalone, Inc., Peoria, IL;

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