ACTEX

ADAPTIVE DEFENSE

ACTEX, Inc. is a cutting-edge technology company that has developed a pre-anticipatory adaptive defense system utilizing a core new paradigm of thinking employing Natural Intelligence™.

The Natural Intelligence™ system is the next evolution beyond artificial intelligence, capable of anticipating need to respond through sensors that mimic human senses that 'sees' what is going to occur before an event occurs, thus enabling time to 'think' in forming proactive defense strategies. ACTEX Natural Intelligence™ system anticipates impact by seeing an event before impact and to control a benchmark level below brain damage to prevent Chronic Traumatic Encephalopathy (CTE) neutralizing brain trauma that causes the CTE disease.

The Natural Intelligence™ system includes a combination of the following:

- "Safe Helmet" Patent US 10,244,810 B2
- Laser Detection and Ranging technology enabling real time communication between all participants
- Utilizes Existing Helmet/Protective Equipment

Our Natural Intelligence™ system in conjunction with existing helmet technologies will reduce the problem of CTE and concussions across multiple sports and industries.

There are numerous applications for the Natural Intelligence™ system forming strategic partnerships in cooperation with existing helmet/protective gear manufacturers. Industries impacted by the development of ACTEX technology include (but are not limited to):

- The National Football League
- The National Hockey League
- Collegiate Athletics
- NASCAR and Formula One Racing
- U.S. Department of Defense
- Bicycle
- Lacrosse
- Police
- National Guard
- Security Services

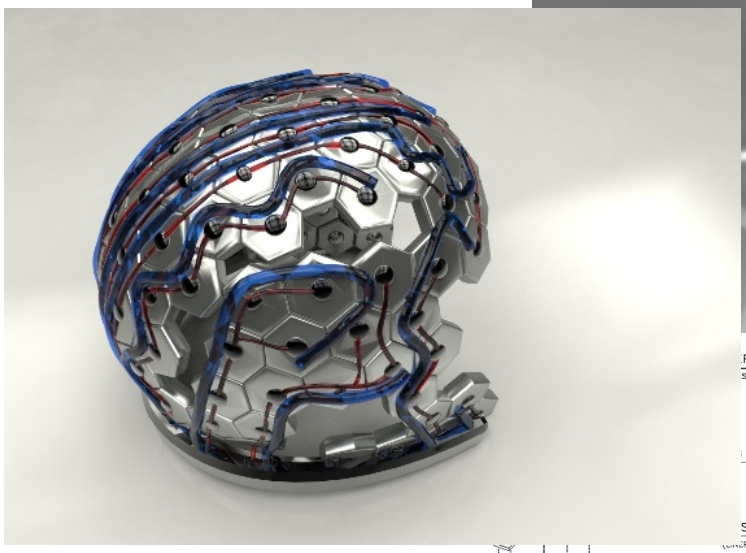
Our proprietary Natural Intelligence™ system will directly address the various physical, emotional and public relations hurdles that professional sports face as they address the widespread problem of (CTE) and other concussion related brain trauma injuries. While the application of the technology is relatively specific, the broad reaching development opportunities presented by our Natural Intelligence™ system and the cooperative development of the technology with additional vendors, manufacturers and the scientific community are expansive. Our patent attorneys have projected an additional 70+ patent opportunities based upon the existing core patent already in place. There is no market capitalization limit on the development of the core technology and additional subsidiary development opportunities.

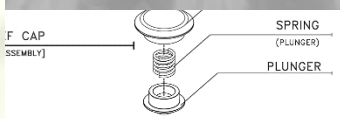
Our Natural Intelligence™ technology represents a new way of thinking and a revolutionary yet scientific approach to CTE and brain trauma prevention. ACTEX Natural Intelligence™ systems replaces old style diffusing protective technologies as the new standard of industry and the base for all future protective technology development.

3456 Fishinger Road, Columbus, OH 43212 ◦ 614-747-2598 ◦ dmartin@ACTEX.tech

ACTEX

ADAPTIVE DEFENSE





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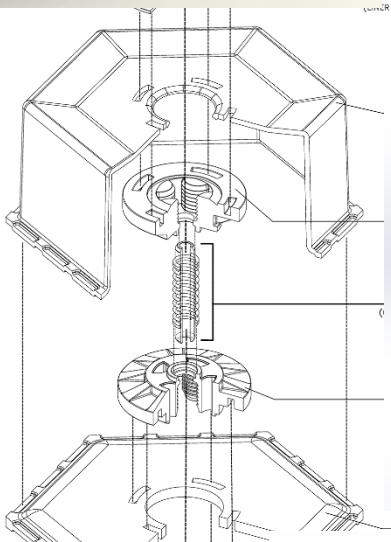
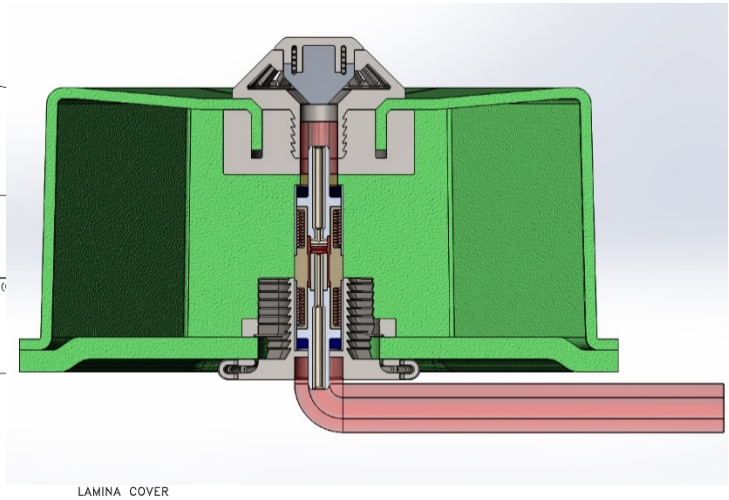
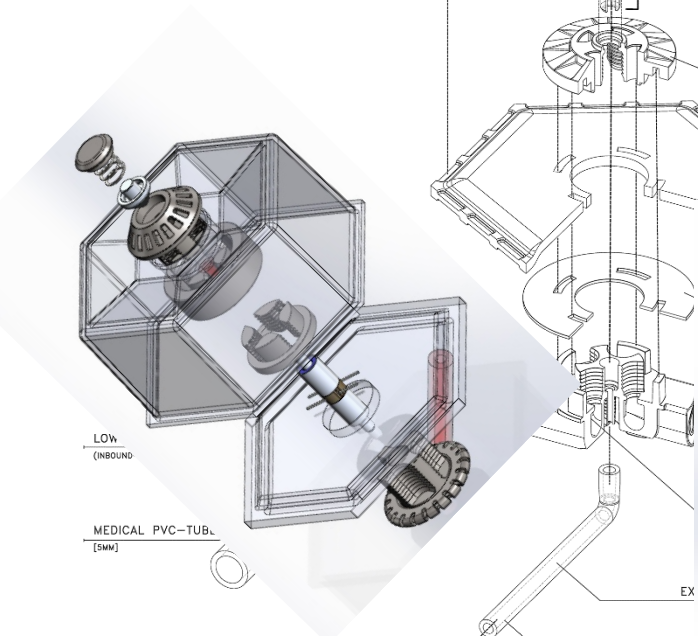
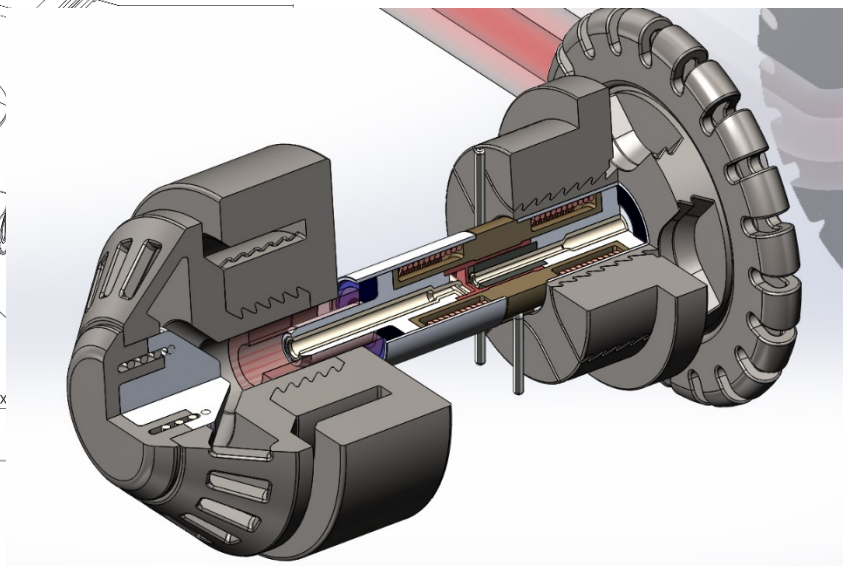




LAMINA COVER





HIGH–PRESSURE VALVE
(INBOUND–FLOW)

SOLENOID VALVE
[LEE–120 SERIES]

United States of America

To Promote the Progress of Science and Useful Arts

The Director

of the United States Patent and Trademark Office has received an application for a patent for a new and useful invention. The title and description of the invention are enclosed. The requirements of law have been complied with, and it has been determined that a patent on the invention shall be granted under the law.

Therefore, this United States

Patent

grants to the person(s) having title to this patent the right to exclude others from making, using, offering for sale, or selling the invention throughout the United States of America or importing the invention into the United States of America, and if the invention is a process, of the right to exclude others from using, offering for sale or selling throughout the United States of America, products made by that process, for the term set forth in 35 U.S.C. 154(a)(2) or (c)(1), subject to the payment of maintenance fees as provided by 35 U.S.C. 41(b). See the Maintenance Fee Notice on the inside of the cover.

Andrei Iancu

DIRECTOR OF THE UNITED STATES PATENT AND TRADEMARK OFFICE

US010244810B2

(12) **United States Patent**
Martin

(10) **Patent No.: US 10,244,810 B2**
(45) **Date of Patent: Apr. 2, 2019**

(54) **SMART HELMET**

(71) Applicant: **Donald K Martin**, Columbus, OH (US)

(72) Inventor: **Donald K Martin**, Columbus, OH (US)

(*) Notice: Subject to any disclaimer, the term of this patent is extended or adjusted under 35 U.S.C. 154(b) by 196 days.

(21) Appl. No.: **15/388,080**

(22) Filed: **Dec. 22, 2016**

(65) **Prior Publication Data**

US 2017/0295881 A1 Oct. 19, 2017

Related U.S. Application Data

(60) Provisional application No. 62/387,312, filed on Dec. 23, 2015.

(51) **Int. Cl.**

A42B 3/04	(2006.01)
A42B 3/12	(2006.01)
A63B 71/08	(2006.01)
G05B 19/048	(2006.01)

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

CPC ***A42B 3/122*** (2013.01); ***A42B 3/046*** (2013.01); ***A63B 71/081*** (2013.01); ***G05B 19/048*** (2013.01); *A63B 2225/62* (2013.01); *G05B 2219/24015* (2013.01); *G05B 2219/24024* (2013.01)

(58) **Field of Classification Search**

CPC A42B 3/046; A42B 3/121; A42B 3/122; A63B 71/081

See application file for complete search history.

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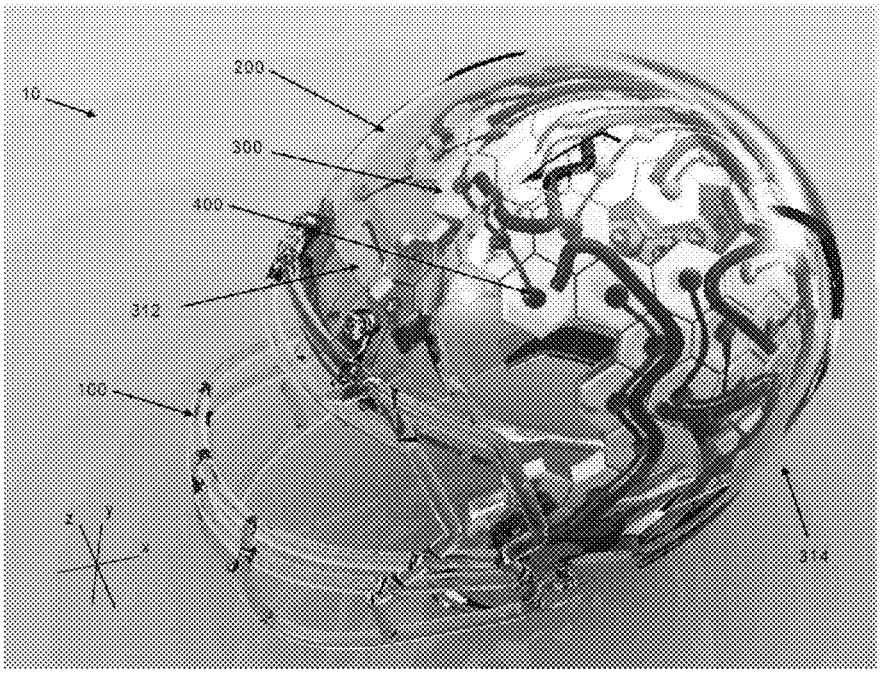
* cited by examiner

Primary Examiner — Ryan A Reis

(57) **ABSTRACT**

Systems, methods, and devices for protecting a user head are provided. In one example, a computer-implemented method can comprise receiving, by a system operatively coupled to a processor, a set of data detected by one or more sensor embedded within the helmet device. The computer-implemented method can also comprise adjusting, by the system, a pressure condition within a first set of inflatable cells of the helmet device based on the set of data.

20 Claims, 15 Drawing Sheets



THE OHIO STATE UNIVERSITY
FISHER COLLEGE OF BUSINESS

January 17, 2017

TEC Institute
256 Mason Hall
250 West Woodruff Avenue
Columbus, OH 43210
614-292-4085 Phone
614-292-4664 Fax
fisher.osu.edu

Mr. Donald Martin
Founder, President/CEO
ACTEX, LLC
3456 Fishinger Rd.
Columbus, OH 43221-4722

Dear Mr. Martin:

I am pleased to provide this letter of commitment to you and your team at ACTEX, LLC. On behalf of the Ohio State University and in accordance with our contract research and development protocol, the Technology Entrepreneurship and Commercialization (TEC) Institute and the Center for Design and Manufacturing Excellence (CDME) agree to offer project design and leadership, quality science and engineering services, and strategic commercialization expertise in support of the development and commercialization of ACTEX's "adaptive defense" technology.

The TEC Institute provides training, development and project management services for the commercialization of early-stage technologies. Since our inception in 2008, we have nurtured hundreds of technology entrepreneurs and evaluated the commercial potential of more than 40 0 emerging technologies. We work closely with the venture community throughout Ohio and the Midwest region to assist in attracting substantial follow-on resources for our clients. Our work with CDME has focused primarily on validating the investment-worthy business models, predicate on sound product development and market positioning, for which the technology and market risk are substantially mitigated.

CDME (see separate letter for more detail) is a hybrid university and industry applied research center created to ensure promising technologies are commercialized. Led by business leaders and technology entrepreneurs, CDME is able to innovate at an industrial pace. The Center was created to maximize the positive impact on industry resulting from the nearly $1 billion in annual research conducted at Ohio State and the billions more performed at Federal labs in Ohio. CDME partners with the TEC Institute for a holistic solution to industry partners looking to rapidly innovate and effectively commercialize new technologies, exploiting the engineering and business strategy assets of one of our nation's most talented research institutions.

We have examined the preliminary materials that you have shared about ACTEX and believe there is a strong fit between the commercialization strategy and product development expertise and capabilities of our programs. We look forward to speaking with you more specifically about your long-term intentions and developing project plans that can meet the needs of ACTEX and its investors.

Sincerely,

Dr. S. Michael Camp
Founder and Executive Director
The TEC Institute
The Langdale Academy
I-Corps@Ohio

THE OHIO STATE UNIVERSITY
Center for Design and Manufacturing Excellence
1314 Kinnear Rd., Columbus, OH 43212
cdme.osu.edu

From: Eric Wagner, Collaboration Manager, CDME
To: Michael Camp, Executive Director, TEC Institute
Subject: CDME Collaboration and Support for ACTEX
Date: January 12, 2017

The Center for Design and Manufacturing Excellence (CDME) is a hybrid university and industry applied research center created to ensure promising technologies are commercialized. Led by business leaders and entrepreneurs, with a dedicated staff of product engineers and participation by research faculty, CDME is able to move at the speed of industry while continuing to innovate. In support of the TEC-Institute's engagement with ACTEX as a potential client, CDME is capable of providing value added support.

CDME is currently situated in a 100,000 sq. foot mixed-use facility which houses manufacturing equipment in an industry/university learning lab. CDME was created to maximize the positive impact on industry resulting from research conducted at the universities and federal laboratories in the State of Ohio. The center has access to the facilities, equipment, researchers and students throughout the 14 colleges that comprise The Ohio State University. These arrangements ensure the most efficient execution of projects for industry partners.

Programs at CDME are managed via industry best practices for new product introduction and our industry partners are actively involved in the outcomes. Research is performed via a gated product development process that ensures the outcomes from projects result in deliverables that create tangible value for our internal and industry partners. In addition partnering with the TEC-Institute, CDME would most likely utilize the following resources in support of an ACTEX development project:

Manufacturing Design Cell – CDME has workstations with the latest mechanical and electrical design software packages installed ensuring the design team can seamlessly hand off the design to the prototyping team. The work here will include design of various hardware and software systems proposed in ACTEX.

Manufacturing Prototyping Cell – CDME has multiple rapid prototyping capabilities for electrical and mechanical systems. This includes extrusion, casting, board design, board integration, etc. The work here will include development of the various label manufacturing technologies and integration into the components being tracked as well as development of the scanning and processing systems required for this technology.

Electrical and Computer Engineering Department – CDME would anticipate working with the Electro-Science laboratory and the Computer Science department research faculty from Ohio State on this initiate. CDME has very good working relationships with researchers experienced in lasers, RF communication, predictive analytics, real time processing, etc. Based on the scope of any program developed, CDME would actively manage engagement with these faculty.

We look forward to moving forward on this initiative with you and the ACTEX team. Please do not hesitate to contact me with any questions.

Respectfully,

Eric Wagner

December 29, 2016

Donald K Martin
Actex Co.
3777 B Business Park Drive
Columbus, Ohio 43204

RE: Feasability of Adaptive Helmet

Mr. Martin,

We have superficially reviewed the information that you provided us concerning your proposed adaptive helmet technology. While the challenges are many, we believe the underlying concepts are sufficiently promising to warrant exploration. Specifically, we believe that a helmet that can adapt to provide additional localized protection in response to a predicted impact has real merit. Interestingly, many of the elements of your concept exist already but have yet to be applied in such a way. That being said, distilling this concept into practice, will be an arduous, expensive, and lengthy journey, as to our knowledge, no one has attempted such a bold solution to this complex problem.

Whenever you are prepared to move forward, we welcome the opportunity be break new ground with you.

Best regards,

Christopher M. Relyea

Digitally signed by Christopher M. Relyea
DN: cn=Christopher M. Relyea, o=Concept Engineering, Inc., ou=President, email=crelyea@conceptengr.com, c=US
Date: 2016.12.29 07:26:38 -05'00'

President

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Concept Engineering
The Essential Element in ROI

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OhioHealth
BELIEVE IN WE™

February 9, 2017

Mr. Donald K Martin
President/CEO
ACTEX LLC
3777B Business Park Drive
Columbus, Ohio 43204

Dear Mr. Martin,

After review of the ACTEX adaptive defense system technology, I am excited about the potential benefits of the system. The use of technology which significantly reduces head injury and brain trauma is on the forefront of neuroscience, for good reason.

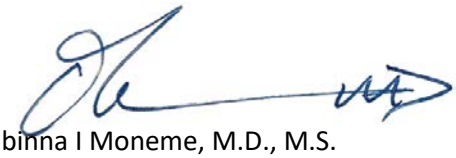
The “Natural System Intelligence” technology brings a creative, new solution to a widespread problem. This technology has the potential to become integrated into multiple applications, which is quite impressive.

The unique feature of the system is the ability to “sense” or anticipate contact, which can dramatically reduce the force of insults to the central nervous system rendered by trauma.

As a neurologist, I see patients daily that suffer from the sequelae of concussions and traumatic brain injury. As we become more aware of the negative impact of concussive and sub concussive blows to the head in the development of CTE (Chronic traumatic encephalopathy), the obvious need for a technology like this is apparent.

From the information that I have reviewed, I believe that this technology has great promise, and I endorse ongoing development of the ACTEX adaptive defense system technology.

Regards,



Obinna I Moneme, M.D., M.S.

January 11, 2017

Mr. Donald K. Martin
ACTEX Company
3777B Business Park Drive
Columbus, Ohio 43204

Dear Mr. Martin:

After extensive review of the ACTEX adaptive defense system technology, I believe the technology has tremendous potential for injury reduction due to contact.

Certainly this technology has athletic, military, construction, and recreational applications. Not only can the "Natural Intelligence System" affect the severity of head trauma injuries the technology, in my opinion, can be applied to other protective body armour situations.

This system is designed to anticipate contact in an attempt to lessen the devastating potential complications of blunt trauma.

From the provisional/non-provisional patent information, I believe the assumptions and future technology have great promise and steps should be taken for the further development of this technology.

Respectfully,

Mark J. Triffon, M.D.

SIDDHARTHA KAMISETTI, ESQ.
Patent Attorney

March 25, 2017

Mr. Donald K. Martin
President/CEO
ACTEX, LLC
3777B Business Park Drive
Columbus, Ohio 43204

Dear Dr. Martin,

After reviewing the ACTEX adaptive defense system technology and associated intellectual property, I can see the potential opportunity for the development of several patents within a patent portfolio associated with your technology. The technology appears to include a hardware device construct (e.g., the helmet with computational capabilities), one or more software components (e.g., software applications capable of being executed by the helmet device), several industry applications, as well as potential big data implications. Furthermore, there also seems to be potential for combinatorial inventions that integrate your technology with currently evolving cutting edge technologies such as machine learning, artificial intelligence, virtual reality, and pattern recognition technologies.

While this letter in no way constitutes a legal opinion and although I haven't seen a working prototype of the technology, as a fan of technological innovations, I find the inventive concept intriguing. I also see a technology of this kind (e.g., a hardware device programmable via integrated software products) as a favorable candidate for the filing of a family of patents intended to build a proprietary fence around the device and several associated concepts. Accordingly, I endorse the exploration of a patent development strategy associated with the ACTEX adaptive defense system technology.

Regards,

Siddhartha Kamisetti, Esq.