Science and Technology

EMERGENCY PREVENTION & RESPONSE

MODULAR SYSTEM AND APPARATUS FOR TREATING WOUNDS

PNEUMATICALLY CONTROLLED ADVANCED TOURNIQUET SYSTEM FOR MASS CASUALTY TRIAGE

Tourniquets are an essential component of emergency care and are critical in preventing hemorrhage-related death. If applied too tightly or for extended periods, tourniquets can cause nerve or muscle damage, and loose tourniquets do not properly stop bleeding. Different wound and body sizes further complicate the proper application of a tourniquet. In a public mass trauma event, a bystander's ability to remain calm under duress and apply available first aid is essential to saving lives, furthering the need for smarter tourniquet systems.

The Modular System and Apparatus for Treating Wounds features a pressure-controlled tourniquet that mitigates traditional challenges and simplifies application. The tourniquet applies controlled pressure to wounds while monitoring continued pressure and patient vitals. A single person can carry a compact and lightweight system which requires minimal training. The system's "quick-connect" feature allows a care provider to use multiple pressure tourniquets at once for quick and controlled bleeding control of numerous patients.

KEY BENEFITS

+ Frees first responders for ongoing triage
+ Requires minimal training
+ Designed for use under duress
+ Minimizes damage from unmonitored tourniquet application
+ Meets FDA contamination and deployable medical system requirements
+ Portable design fits easily inside a transportation vehicle

STAGE OF DEVELOPMENT

Prototype

PARTNERSHIP SOUGHT

License

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DHS COMPONENT

USCG

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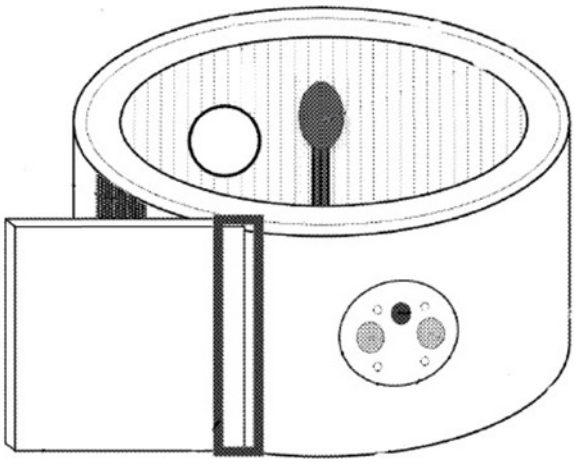
THE TECHNOLOGY

The system includes a robotic gripper and a modular hub that provides power and pressure to the tourniquet. When attached via an electronic and gas hose connection, the modular hub delivers gas to the soft robotic gripper to apply just enough direct pressure to the wounded limb to stop blood flow to the wound site. The tourniquet component features sensors on the tissue contact surface to record tissue temperature and application pressure. When the gripper and modular hub are disconnected, the tourniquet maintains pressure, allowing the user to apply multiple tourniquets or provide care to various patients during a mass casualty incident.



Tourniquet gripper cuff featuring an electrical connection for the system and multiple sensors to collect patient vitals and monitor cuff pressure.

APPLICATIONS

The technology has several potential end users:

+ **First responders and medics**
+ **K9 units**
+ **Bystanders or civilians**

PATENT INFORMATION

US Patent numbers 10,973,528

CONTACT INFORMATION

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TECHNOLOGY SOLUTION

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