



Prosthetic hand

This is a human-like prosthetic hand designed for upper limb amputees. Current mechanical prosthetic hands tend to be designed either with appearance in mind, rather than functionality, or are functional but not aesthetically appealing. Prosthetic hands that are both aesthetically appealing and functional are often very costly.

This prosthetic hand, which allows the patient to use the amputated hand to perform everyday activities, is functional and aesthetically appealing whilst remaining easy to use and cost effective. At present the device is mechanically operated. Future developments will involve incorporating myoelectric sensors to operate the hand.

A fully functional prototype has been developed and positive feedback has been received from prosthetists regarding the functionality and usability thereof. Further refinements are being made, along with the development of an external 'glove' for aesthetic appeal.

The device was awarded the Popular Mechanics 'Inventor of the Year' Award in the 'Cutting Edge' category.

Benefits

- It grants patients independence to perform their daily activities
- Ergonomically designed, mimics standard anatomy
- Actuator cables are well aligned to prevent fatigue failure
- Fingers operate independently to grasp a round object
- Several positions
- Low cost of manufacture and easy maintenance
- Good product positioning compared to competitors with superior functionality and aesthetics
- Ability to upgrade to myoelectric sensor-based operation
- 3-D laser sintering technology is used for fabrication allowing the product to be designed and built according to the patient's needs and size
- The prosthetic hand is attached to the patient's amputated limb by using a conventional socket
- A strap/harness, across the user's shoulder is used to actuate motion through flexure of the shoulder muscles

Applications

The device can be used by right or left hand (or forearm) amputees.

Market

- Public healthcare
- Low cost mechanical prosthetics

Keywords:

Prosthetic hand, robust, amputation, functional prosthetic, hand movement

Intellectual Property Rights:

Patent

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Technical description

This invention discloses a mechanical prosthetic hand that comprises four fingers and a thumb, which are movable to enable the hand to take on a position of an open, partially closed and fully closed hand. The hand has a metal cord at the wrist that is either released or pulled in a direction parallel to the fingers. By pulling the cord, the fingers will grip until the hand is closed. The cord works together with a knob, adjacent to the fifth metacarpal (little finger). When the knob is manually rotated or pushed the fingers become locked in position. The thumb is attached by a swivel to rotate and move either towards or away from the fingers.

Opportunities

Further development and commercialisation into a global market.

Intellectual Property Status

Type	Region	Application No	Filing Date	Priority Date
Provisional	Britain	1412034.9	07-Jul-14	07-Jul-14

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