RECENT PATENTS[a]

Adjustable Leg Brace: Robert L. Konvalin. An adjustable leg brace for rapid attachment to the leg of an individual. The lower part of the brace is secured to the heel of the shoe along with a horizontal adjustment to allow for adjustment of the lower angle upright. The upper angle upright is vertically secured to the lower upright, and between the two, the lowermost part is adjusted for the specific vertical location of the user's ankle joint. A removable Tee-strap bar provides an anchor for an ankle support strap. Adjustable cuffs are secured to the calf and thigh at appropriate locations with means to accommodate the circumference of the user. The brace may be used to support the whole leg or the lower leg alone. (Patent No. 3,844,279, Oct. 29, 1974; filed May 14, 1973, Appl. No. 360,246; 12 claims.)

Artificial Muscle: Jerry D. Helmer and Kenneth E. Hughes, assignors to Battelle Memorial Institute, Columbus, Ohio. A means of totally replacing one member of an antagonistic skeletal muscle pair with an elongated elastic structure comprised of a biologically compatible element in a state of tension opposing the natural member of the muscle pair with the magnitude of the tension force in the range of from 5 to 25 percent of the maximal tension force of a normal muscle, identical to the muscle being replaced. (Patent No. 3,882,551, May 13, 1975; filed Jan. 9, 1974, Appl. No. 432,101; 9 claims.)

Auto-Monitoring Communication Devices for Handicapped Persons: Greg C. Vanderheiden, David F. Lamers, Chris Daniel Geisler, and Andrew M. Volk. A communication device for persons unable to speak, write, or operate a typewriter. The device comprises a panel having a matrix of communication elements, such as letters, numerals, symbols, words, and the like. A corresponding matrix of sensors is mounted under the board. The user operates a slider which is movable on the surface of the panel. Each sensor is sensitive to the proximity of the cursor and is operable by an element of the cursor when such element is moved opposite the communication element which corresponds to the sensor. The sensors are connected to control circuits which operate a red light or another signal to show that one of the sensors has been operated. The control circuits generate a print command signal which causes a character to be printed by either a hard copy printer or a video display, or both. The control circuits preferably actuate a green light which indicates the communication element has been printed. The delay in the printing makes it possible for the handicapped person to move the cursor over the panel without causing any character to be printed until the cursor is brought to rest. Thus, the device prints the communication element in response to cessation of movement of the cursor rather than of movement. (Patent No. 3,854,131, Dec. 10, 1974; filed Apr. 23, 1973, Appl. No. 353,462; 11 claims.)

Bioelectrically Controlled Prosthetic Member: Robert B. Jerard and Cord W. Ohlenbusch, assignors to Liberty Mutual Insurance Company, Boston, Mass. A prosthetic arm having a drive housed within the elbow unit which includes a reversible d.c. permanent magnet

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[a]Patents may be ordered by number from the Commissioner of Patents, Washington, D.C. 20231, at 50 cents each.

torque motor and a transmission including a planetary gear reduction unit, a reverse locking clutch, and a planocentric unit. The transmission is connected to the forearm member with its output shaft part of the pivotal connection. The forearm member houses a battery pack and the circuitry by which the motor is operated in either direction in response to electromyographic signals picked up from the biceps and triceps by electrodes attached to the stump and processed to drive the motor in a direction and at a rate dependent on the dominant EMG signals. The locking clutch is operable to hold the arm flexed against a predetermined load. The elbow unit also houses a tachometer to provide a feedback to modify the power supplied to the motor to enhance the controlability of the amputee of flexing velocities. (Patent No. 3,883,900, May 20, 1975; filed Sept. 7, 1973, Appl. No. 395,236; 21 claims.)

Electrically Driven Artificial Hand for Upper Extremity Prosthesis: Yakov Savelievich Yakobson et al. An artificial hand for an upper-extremity prosthesis, comprising a reversible electric drive controlled by bioelectric potentials produced by muscles, and kinematically associated with an actuating lever of the thumb and with at least one for the thumb-opposing fingers. The mechanical linkage interconnecting the electric drive with the thumb-opposing finger is essentially a disengageable unidirectional linkage capable of insuring that the positive effect of the electric drive on the finger occurs only in the direction of extension. The thumb-opposing finger is coupled to a spring actuating it in the direction of flexion and is provided with a lock to prevent it from being extended under any external force. (Patent No. 3,822,418, July 9, 1974; filed Aug. 31, 1971, Appl. No. 176,530; 12 claims.)

Method of Making a Permanent Prosthetic Socket: Charles C. Asbelle, Michael F. Arrigo, and Gerald K. Porter, assignors to the United States of America as represented by the Secretary of the Navy. A method of making a permanent prosthetic socket where the amputee is supported by a casting fixture and ultraviolet polymerizable material is supplied directly to the amputee's stump over a polypropylene stockinet to form a permanent socket. A special clam-shell ultraviolet lamp is placed in position and the ultraviolet polymerizable material polymerized. (Patent No. 3,823,208, July 9, 1974; filed May 24, 1971, Appl. No. 146,386; 2 claims.)

Pivoted Artificial Limb With Spring Loaded Joint Lock: Dennis William Collins, assignor to Hugh Steeper (Roehampton) Ltd., London, England. An artificial arm or leg consisting of rigid tubular limb members which are pivotally connected together at adjacent ends. The pivotal connection corresponds to an elbow joint or a knee joint. One of the limb members is provided at or near the pivotal connection with a spring-loaded movable locking member adapted to engage and hold fast a toothed segment or wheel provided on and rigid with the other limb member. The locking member has an operating cord which, on being pulled once, releases the locking member so that it engages the toothed segment, and which, on being pulled a second time, moves the locking member clear of the toothed segment so that the two limb members can pivot relatively to each other. (Patent No. 3,833,942, Sept. 10, 1974; filed Jan. 19, 1973, Appl. No. 325,155; 8 claims.)

Resilient Pivot Joint for an Artificial Leg: Albert L. Weber, assignor to Lloyd J. Watkins, Lockport, New York. A pivot joint for an artificial leg comprising a thrust bearing and a pair of joint segments arranged spaced from one another and abutting the thrust bearing. A bolt may be arranged in apertures provided in the joint segments and retained by a nut for pivotally connecting the joint segments together. The joint segments are attached to respective sections of an artificial leg, with the cut preferably made in the lower leg between the ankle and the knee. A resilient sleeve is arranged about the joint segments for restoring a normal or predetermined relationship with respect to one another follow-

ing the application of a torsional force to the joint. (Patent No. 3,842,443, Oct. 22, 1974; filed Aug. 30, 1972, Appl. No. 284,974; 7 claims.)

Symes Ankle Joint: Denis Ronald William May, assignor to J.E. Hanger and Company, Ltd., London, England. The invention provides an artificial ankle joint particularly suitable for patients who have undergone the Symes amputation. An effective ankle pivot center is provided at substantially the natural position by the use of a pair of links pivoted to points on the metal sole plate of an artificial foot and points, spaced nearer together, on a stump socket. (Patent No. 3,874,004, Apr. 1, 1975; filed May 28, 1974, Appl. No. 474,064; 7 claims.)

Universally Movable Ankle Joint for Tube Skeleton Artificial Limbs: Klaus Prahl, assignor to IPOS Gesellschaft for integrierte Prosthesen-Entwicklung und orthopadietechnischen Service m.b.H. and Company, KG, Luneberg, Germany. The invention relates to an ankle joint for endoskeletal artificial limbs in which the joint movements are no longer exclusively controlled by buffer elements but in such a manner that brake units or hydraulic damping units absorb a part of the kinetic energy liberated during the movements. (Patent No. 3,851,337, Dec. 3, 1974; filed July 20, 1973, Appl. No. 381,226; 3 claims.)

Universal Wheelchair for the Severely Disabled: David M. Anderson, assignor to the Government of the United States, Washington, D.C. A universal, adjustable-height powered wheelchair for the severely disabled with a powered elevating mechanism capable of raising the seat and occupant from a height of 6 in. to 26 in. above the ground. It is capable of climbing a 12-in.-high curb and may be used while driving any standard-sized two-door sedan. (Patent No. 3,882,949, May 13, 1975; filed Nov. 16, 1972, Appl. No. 307,202; 36 claims.)