

## RECENT PATENTS <sup>a</sup>

**Artificial Foot:** John L. Orange. An artificial foot with an inelastic core in the center which is the full height and width of the foot, with flat elastic leaf springs projecting forward and rearward from the center of the core. The free ends of the springs are separated from the core by resilient materials. The leaf springs will flex relative to the core under the weight of the wearer when walking. (Patent No. 3,766,569, Oct. 23, 1973; filed Oct. 5, 1972, Appl. No. 295,196; 2 claims.)

**Artificial Foot Having Ankle Flexible Mount:** Michael W. Ryan. An artificial foot with an improved ankle and foot mount to an artificial leg which will provide motion approaching that of the lost limb. A coil spring extends downwardly from rigid attachment to the artificial limb near the ankle at the upper end and attaches rigidly to a plate in the plane of the sole of the foot at the lower end. The sole plate extending from the heel to the ball of the foot, cantilevers from the coil spring to emulate natural foot action during walking. A second sole plate support, accommodating both tension and compression as well as side to side foot motion, extends from a mount on the sole plate at the ball of the foot upwardly at an angle to a mount on the ankle of the foot. This provides improved toe action. Provision is made for mounting either a spring or a variable resistance shock absorber to act in combination with the second spring to emulate natural foot motion. (Patent No. 3,754,286, Aug. 28, 1973; filed Jan. 21, 1972, Appl. No. 219,670; 7 claims.)

**Crutch Tip With Insert:** Ted F. Urban, Assignor to Lamico Inc., Appleton, Wis. A crutch tip designed for application to the ends of crutches which provides an improved action and tip life. There is a resilient rubber crutch tip with a crutch socket having a cup-shaped insert of rigid material. The insert provides a recess to receive the end of the crutch and in addition a V-shaped annular channel is disposed in the outer wall of the insert to reduce the tendency of the insert to tilt. As the crutch is tilted in normal use, the crutch end will apply pressure to the insert rim which in turn spreads the downward and sideways force components through a large area of the flexible tip socket walls. (Patent No. 3,741,226, June 26, 1973; filed Sept. 30, 1971, Appl. No. 185,192; 1 claim.)

**Device for Sensing and Warning of Excessive Ambulation Force:** Erich A. Pfeiffer. A device designed to give warning of excessive ambulation force for limiting the application of weight on a lower limb following recovery from orthopedic surgery. This is accomplished by a fluid-containing load cell which deflects and changes in volume in accordance with the amount of load. A tubular connector connects the load cell fluid with a displacement-measuring device. A particular displacement limit, conveniently signaled with an electrical alarm indicates when predetermined load on the cell is reached. (Patent No. 3,791,375, February 12, 1974; filed September 29, 1971, Appl. No. 184,662; 10 claims.)

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<sup>a</sup> Patents may be ordered by number from the Commissioner of Patents, Washington, D.C. 20231, at 50¢ each.

**End Point Control of Upper Extremity Orthotic Brace Using Head Orientation:**

Jon H. Friedman, Assignor to Iowa State University, Research Foundation, Ames, Iowa. An upper-limb orthosis, particularly well suited to the quadriplegic patient, which provides an end-point control and a means of control by using head orientation. Two gimbals are used which contain potentiometers responsive to azimuth, elevational, and range movements of the head. One gimbal attaches to the head; the other gimbal is attached by a shaft secured to the wheelchair. A control system is connected to the potentiometers to drive the device giving the patient control through coordinated head movements. (Patent No. 3,769,636, Nov. 6, 1973; filed May 2, 1972, Appl. No. 249,654; 10 claims.)

**Leg Prosthesis With Resiliently Mounted Stump Socket:** Theodor Trumpler. A leg prosthesis which overcomes the various disadvantages of the conventional artificial limb and provides an improved bearing for the stump of the amputee as well as a better foot joint function. It comprises a stiff upright leather casing, a sleeve suspended from the upper rim and extending into the casing with free elastic play in all directions, and a foot attached to the lower end of the casing. The foot includes a sole and separate ankle part, a leaf spring extending through the foot horizontally connecting the foot parts, and a rubber cushion mounting the ends of the leaf spring. This combination provides a leg prosthesis which provides bilateral amputees easier walking and makes it possible to engage in sports activities. (Patent No. 3,784,988, Jan. 15, 1974; filed May 15, 1972, Appl. No. 253,468; 9 claims.)

**Lift Device:** John H. Fowler, Jr. An automatic lift device designed for lifting wheelchairs into a vehicle which is completely contained within the vehicle when the vehicle is in motion. After the wheelchair is lifted into the vehicle, the device may be folded and pivoted within the vehicle. A hydraulic motor is connected to each of the housings along their support posts to raise and lower the platform between the ground and the vehicle. Another hydraulic motor is connected between each of the slide housings and the lift arms for moving the lift arms horizontally in and out with respect to the vehicle. A cable extends from the platform to an electrically operated pulley for pivoting the platform about the lift arms between horizontal and vertical positions. (Patent No. 3,710,962, Jan. 16, 1973; filed Feb. 11, 1971, Appl. No. 114,517; 9 claims.)

**Medical Appliance:** George J. F. Sele. A stretcher designed to facilitate the transfer of a patient between a bed and the stretcher. The stretcher includes actuators for controlling the vertical position of the appliance and also for imparting angular movement to transfer means which can be extended from the appliance. In addition, further actuators may be added to convert the stretcher into a wheelchair by rotating back and foot support platforms relative to a central support member. (Patent No. 3,786,523, Jan. 22, 1974; filed Nov. 17, 1971, Appl. No. 199,664; 6 claims.)

**Motorized Wheel Chair Drive:** Ben J. Rosenthal. A motor drive unit which can be easily attached to a wheelchair so that the drive can be used with chairs of different designs. It includes a motor mounting having an angle bracket with one arm which is adapted to be secured to the frame of the wheelchair. A mounting plate for the motor is secured to another arm of the bracket. The motor has a drive wheel which engages a wheel of the wheelchair. A spring biased link holds the motor in a position with respect to the bracket so that the drive wheel bears against the wheel of the chair to propel it. A control arm pivotally supported on the bracket engages the motor mounting plate to move the same so that the drive wheel is away from

the wheel. This disengages the drive, and releases the mounting plate so that the drive may propel the chair. (Patent No. 3,786,887, Jan. 22, 1974; filed Mar. 20, 1972, Appl. No. 236,040; 10 claims.)

**Rehabilitating Chairs For Handicapped Persons:** Karl Edvin Sixten Wrethander. A rehabilitating chair for handicapped persons, comprising a combination of a wheelchair, and a motor-driven lifting device capable of raising and lowering the patient to walking position and sitting position, respectively. It is comprised of at least one toggled lifting arm; its lower part pivotally connected to the chair and its upper part slidable in a pivoted sliding attachment on the chair. Included in the upper part is an armpit support for the patient. (Patent No. 3,787,089, January 22, 1974; filed July 6, 1971, Appl. No. 159,830; 6 claims.)

**Tactile Sensing Means For Prosthetic Limbs:** Walter L. Scott, assignor to National Aeronautics and Space Administration, Anaheim, Calif. An upper-limb prosthesis characterized by a frame mounted inside the socket and having a plurality of flexible digits extended from the distal end. Inside the digits are transducers for detecting tactile stimuli, connected through a power circuit with a slave unit supported by a strap and fixed to the stump. The tactile stimuli detected at the sensing devices are reproduced and applied to the skin which stimulate the sensory organs. (Patent No. 3,751,733, Aug. 14, 1973; filed Feb. 22, 1972, Appl. No. 228,150; 1 claim.)