

RECENT PATENTS^a

Adjustable Bed-Chair: Henry C. Zur. An adjustable bed/chair in which the articulated platform is positioned through the force of inflatable bags beneath it: the platform can be raised to a nearly vertical position if desired, to facilitate entry or outgoing of a handicapped occupant. Additional inflatable bags cover the platform, and a foam mattress is placed above these. All inflatable bags are supplied from a single motor-operated source through a manifold which allows control of air to and from each bag to obtain a wide variety of attitudes and configurations, as desired. A central portion of the mattress is removable and may be replaced by a toilet. (Patent No. 4,127,906, Dec. 5, 1978; filed July 15, 1976, Appl. No. 705,543; 16 claims.)

Apparatus for Analyzing the Balancing Function of the Human Body: Kazuo Tsuchiya and Noboru Ohnishi, assignors to Yaesu Rehabili Co., Ltd., Tokyo, Japan. The person being tested or trained stands with the feet on a pair of side-by-side footplates. Side bars of adjustable height serve as hand rails. The foot plates and handrails are supplied with a number of load detectors. Load distribution patterns are presented as visual feedback signals which the person can use to adjust body balance and reliance on the handrails. The device is also intended for use in evaluating and analyzing the body's balancing function. (Patent No. 4,122,840, Oct. 31, 1978; filed May 23, 1977; Appl. No. 799,690; 11 claims.)

Apparatus Particularly for Evaluating the Functionality of Man's Locomotive Facilities: Antonio Pedotti. Electronic equipment measures, sums, and displays reliable, quantitatively exact, and easily interpretable results of the force and/or pressure exerted on a rigid platform by a walking or exercising subject. Variations in walking due to physical disability are recorded as is athletic performance (racing, high and long jumps, etc.). (Patent No. 4,136,682, Jan 30, 1979; filed Aug. 30, 1976, Appl. No. 719,030; 2 claims.)

Apparatus for Stiffening Shoe Soles: Leo F. Stanton, assignor to Bush Universal, Inc., Woburn, Mass. An apparatus for forming a shoe shank directly on the bottom of a shoe insole from a strip of initially flexible, uncured, thermosetting material. Radiant heat is employed to activate the shank strip. (Patent No. 4,122,573, Oct. 31, 1978; filed Feb. 3, 1977; Appl. No. 765,095; 21 claims.)

Bath Equipment for Disabled Persons: Lars Ekman and Helge Norman, assignors to Helge Norman, Kungälv, Sweden. A device is provided for the transfer of disabled persons into and out of a bath tub. The bath plate is divided into at least two articulating sections, pivoted around at least one axis fixed to the tub. A hydraulic cylinder raises or lowers the bath plate. (Patent No. 4,128,904, Dec. 12, 1978; filed May 31, 1977; Appl. No. 802,190; 8 claims.)

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

Brace Hinge: Glenn N. Taylor. Two of these hinges are used with a flexible cuff spanning the wearer's joint and attached above and below the joint. Each hinge consists of a number of elongated flexible ribs or strips which extend between housings attached to the cuff above and below the wearer's joint. These strips, preferably made of plastic, are slidably received by the housings, serving thereby as a hinge which accommodates both normal extension and flexion of the joint while preventing sidewise motion. Force required to flex the hinge may be modified by adjustment of the distance between the housings. (Patent No. 4,130,115, Dec. 19, 1978; filed May 2, 1977; Appl. No. 792,824; 13 claims.)

Comfort Support Seat Cushion Assembly: James A. Green, Assignor to Rockwell International Corp., El Segundo, Calif. A cushion is described which is intended to promote adequate weight distribution across the surfaces of the gluteal region and avoid excessive pressure on the ischial tuberosities or coccyx. A contoured support layer, a comfort layer, and a pressure distribution layer of suitably resilient foam materials are employed, with a ventilation layer above all. A porous cloth cover is also provided. In another form of the invention, a number of inflatable tubes are inserted between the layers, and a sequencing means is employed so that transitional waves tend to move blood from the legs toward the heart when the wave massage is in use. (Patent No. 4,132,228, Jan. 2, 1979; filed July 8, 1977; Appl. No. 813,918; 13 claims.)

Dressing-Undressing Apparatus: Michiyasu Ishida, assignor to Mitsubishi Jukogko Kabushiki Kaisha, Tokyo, Japan. The individual cross sections of this mattress may be lowered and raised, either by mechanical or pneumatic power, allowing a single nurse to dress, undress, and otherwise care for a reclining patient. The nurse controls the sections by an arm ring, but both arms are free for patient care. (Patent No. 4,136,409, Jan. 30, 1979; filed Feb. 3, 1978, Appl. No. 875,085; 3 claims.)

Educational Device for Motivating, and for Developing Scribing and Reading Skills in, the Handicapped: William J. Coady. An educational device in the form of a stencil-like training guide, made of tough, semirigid plastic, hard cardboard, etc. Die-cut-out areas form connected cursive symbols forming words. The cut out portions are retained for use with the sheets, preferably attached to the sheets above the corresponding cutout areas, for reinforcing learning visually or tactually especially for sight-deficient students. (Patent No. 4,130,946, Dec. 26, 1978; filed July 11, 1977; Appl. No. 814,424; 6 claims.)

Epidermal Iontophoresis Device: Stephen C. Jacobsen, Robert L. Stephen, R. Todd Johnson, Richard Luntz, and David Knutti, assignors to University of Utah, Salt Lake City, Utah. A device claimed to minimize the difficulties of conducting ionic drugs through the skin incorporates feedback control of current and a safety cut-off circuit to protect the patient from burns, shock, and other adverse effects. (Patent No. 4,141,359, Feb. 27, 1979; filed Aug. 16, 1976, Appl. No. 714,942; 9 claims.)

Fluid Filled Insole: Shirley C. Thedford. A foot-shaped insole is made of two sheets of flexible, fluid-impervious material. Fluid is contained in the space between the sheets. Openings passing through both sheets, sealed together at the edges, create obstructions that control the flow of fluid; the flow produces a massaging action as well as cushioning the foot. Foam material placed between the sheets may also be used to control flow of fluid. The openings which pass through both sheets permit passage of air for a ventilating effect. (Patent No. 4,123,855, Nov. 7, 1978; filed Aug. 10, 1977; Appl. No. 823,349; 13 claims.)

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Invalid Transfer Lift: Dottie J. Vail and Nancy Getches. An apparatus for lifting and transporting an invalid from a wheelchair to a bed or bath and back. It includes a sling seat and a back support, both of canvas. There is a motor-driven winch for raising and lowering the sling, and a separate motor attached to a traverse mechanism for moving the winch and sling while suspended from a horizontal track attached to the ceiling of a room. Invalids having full use of their motor facilities from the waist up may easily lift and transport themselves from one room to another without assistance, using the device, it is noted. (Patent No. 4,125,908, Nov. 21, 1978; filed May 18, 1977; Appl. No. 798,158; 5 claims.)

Linear Electromyographic Biofeedback System: Mark G. Scattergood and David C. Howson. The system provides the patient with accurate audio results as he attempts to move a muscle under study, and the magnitude of muscle activity achieved. Results are also presented visually for the therapist. (Patent No. 4,136,684, Jan. 30, 1979; filed Feb. 7, 1977, Appl. No. 766,500; 3 claims.)

Locking Arrangement for Wheelchair Lift Device: Dale A. Hawks, assignor to General Motors Corp., Detroit, Mich. A locking device for elevator devices in general and particularly for a wheelchair lift device that can be used with a motor vehicle. It employs a locking arrangement for positively maintaining a foldable stairway in a step-forming position and in a deployed load-supporting horizontal position. (Patent No. 4,124,100, Nov. 7, 1978; filed Feb. 13, 1978; Appl. No. 877,239; 3 claims.)

Orthopedic Finger Piece for Writing Instruments: Nelly M. Pacheco. For use with a pencil or other elongated writing instrument, the apparatus is intended to protect the fingers and aid in holding the instrument. The apparatus is made up of a semiresilient sleeve which may be mounted at a desired point longitudinally along the length of the writing instrument, and a device to grippingly engage or release the writing instrument. (Patent No. 4,123,179, Oct. 31, 1978; filed Jan. 5, 1977; Appl. No. 756,824; 3 claims.)

Process and Device for the In Vivo Measurement of Bone Consolidation: Jean-Marie Ory and Jacques Hummer, assignors to Agence Nationale de Valorisation de la Recherche (ANVAR), Neuilly sur Seine (Hauts-de-Seine), France. Bone consolidation may be followed in vivo via a transmitter and power supply in a plate secured to the injured bone. Applying a known force to the bone varies the transmitter signal. An external receiver picks up the signal for sound output, digital display, and/or telemetering. Because of small size, the device causes only minimal discomfort to the patient. (Patent No. 4,141,349, Feb. 27, 1979; filed Nov. 3, 1976, Appl. No. 738,287; 9 claims.)

Prosthetic Knee Apparatus: T. Jerome Weber and Roy D. Roberts, assignor to Hosmer/Dorrance Corp., Campbell, California. A novel braking device permits leg amputees to walk more naturally. The knee mechanism will lock when the upper and lower leg portions in any angular relationship have sufficient weight applied to the upper leg. (Patent No. 4,135, 254, Jan. 23, 1979; filed Jun. 13, 1977, Appl. No. 806,159; 23 claims.)

Rescue and Transportation Device: Oliver E. Burns and Robert C. Day. The object of this invention is to provide a device which can be bundled into a compact size for storage and delivery, which will substantially immobilize the victim's body and also provide protection of the victim's body against trauma/shock and burns, and which will facilitate safe removal of the victim from the scene of injury even when this involves

raising or lowering the person in a vertical position, as through a mine shaft or escape hatch. The device consists of an outer covering of a flexible cloth-like material with overlapping side and end flaps; there is also a rectangular foam pad, and a separate foam head-restraining device. In addition to spaced lateral webbing there is longitudinal webbing. Provision is made for poles for use in carrying the device in the manner of a stretcher. The side flaps have access openings for life sign detection or drug administration. Auxiliary disposable accessory articles are provided for burn or shock/trauma treatment. (Patent No. 4,124,908, Nov. 14, 1978; filed Oct. 6, 1977; Appl. No. 839,797; 10 claims.)

Safety Barrier for A Wheelchair Lift: Donald L. Rohrs, Donald L. Collins, and Harold A. Downing, assignors to Collins Industries, Inc., Hutchinson, Kans. The barrier is in the form of a stop plate which is held in a locked vertical position while the lift is raised from the ground position, to prevent the wheelchair from rolling off the front of the lift. The barrier is not released until the lift contacts the ground surface, at which time the barrier automatically lowers from a vertical position to a horizontal position, so that the wheelchair may be discharged from the lift. (Patent No. 4,124,130, Nov. 7, 1978; filed Feb. 28, 1977; Appl. No. 773,075; 3 claims.)

Structure Suitable for In Vivo Implantation: Charles A. Homsy. A structure suitable for in vivo implantation as a tension member to substitute for tension members such as ligaments and tendons. Use is made of porous material which promotes the growth of living tissue into its pores, and in the case of a structure to be used as a substitute tendon, a substantial portion of the exterior of the structure is made of a material which resists tissue attachment when implanted. In some applications, as with a humeral head prosthesis, the structure may function as a tendon/ligament combination. Forms adapted for use as a hernia patch, skull patch, etc., are also described. (Patent No. 4,127,902, Dec. 5, 1978; filed March 17, 1978; Appl. No. 887, 512; 23 claims.)

Temporary Cervical Immobilizing Orthosis: Paul R. Meyer, assignor to Northwestern University, Evanston, Illinois. Provides easily-applied, self-retaining patient immobilization at the scene of injury, before or after the patient is extricated. The device stabilizes the head, neck, and upper spine. Traction provisions maintain the head-neck-spine relationship during transportation. (Patent No. 4,141,368, Feb. 27, 1979; filed May 23, 1977; Appl. No. 799,592; 9 claims.)

Temporary Walking Aid for Use After Lower Leg Amputations: Gunnar Marsh, Ole Henrikssen, and Urban C. S. Sjöblum, assignors to Landstingens Inkopscentral Lic, Ekonomisk Forening, Solna, Sweden. The object of the invention is to make it possible for the patient to walk with the prosthesis within two or three weeks after the operation, and to continue to use the same socket and prosthesis up to the time of delivery of a final prosthesis of conventional design. The invention employs a simple adjustable telescopic tube and an artificial foot, attached to a reinforced plastic cup-shape which forms the bottom of the socket which receives the bandaged stump. The cup merges into a set of flexible strips arranged to extend upward along at least part of the thigh. Used with the strips is a supporting envelope in the form of an air-tight cushion filled with small plastic balls. Upon evacuation of the air in the cushion, the cushion becomes a relatively rigid shell. When it is necessary to inspect the wound or adjust the socket's fit, air is admitted to the cushion which then loses its rigidity. (Patent No. 4,128,903, Dec. 12, 1978; filed April 26, 1977; Appl. No. 790,910; 4 claims.)

Tip Members for Crutches and the Like: Wilburn C. Willis. A combination of lubri-

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cated mechanical joint and resilient tip member offers efficient mechanical performance and maximum ground engagement perpendicular and at various angles to the walking surface. Removable anchoring pins provide traction on ice and snow. A seal resists loss of lubricant and entry of foreign matter. (Patent No. 4,135,536, Jan. 23, 1979; filed Aug. 18, 1977, Appl. No. 825,681; 18 claims.)

Torque Absorber for Artificial Limbs: Michael T. Wilson. The device achieves a more natural walk for lower-extremity amputees by decreasing rotation of the stump in the socket. Adaptable to both above- and below-knee prostheses, it provides for rotational movement of the socket relative to the prosthetic foot, with a simple resilient return arrangement. (Patent No. 4,134,159, Jan. 16, 1979; filed Jun. 9, 1977, Appl. No. 805,059; 11 claims.)

Total Hip Joint Replacement: Harlan C. Amstutz and Ian C. Clarke, assignors to Regents of the University of California, Berkeley, California. In the procedure described for use with this device, the trochanter is separated from the remainder of the femur and the hip joint is dislocated. Following dislocation, a minimum amount of bone is removed from the femoral ball and sufficient bone is removed from the socket to accommodate a thin hollow insert metal ball or shell which is cemented over the upper end of the femur, and a plastic cup which is cemented into the hip bone socket. Points emphasized are the removal of a minimum amount of bone from the ball at the upper end of the femur, and maintenance in the replacement of substantially the same diameter ball and socket as existed in the original joint. (Patent No. 4,123,806, Nov. 7, 1978; filed Jan. 31, 1977; Appl. No. 764,184; 24 claims.)

Voice Synthesizer: Mark V. Dorais, assignor to Federal Screw Works, Detroit, Michigan. The invention relates to an improved electronic device for phonetically synthesizing human speech. It is described as employing a simplified approach resulting in a relatively uncomplicated and inexpensive device which is readily adaptable to a wide range of commercial uses. Speech produced is described as remarkably natural and less monotonic than previous systems. The system is said to be particularly adapted to use as a text-to-audio converter in connection with a digital computer. An additional feature is the capability of producing high-quality foreign speech as well as English-language speech. (Patent No. 4,128,737, Dec. 5, 1978; filed Aug. 16, 1976; Appl. No. 714,495; 66 claims.)

Voice Synthesizer: Carl L. Ostrowski, assignor to Federal Screw Works, Detroit, Mich. The present invention comprises a synthesizer of the type disclosed in copending U.S. application Ser. No. 714,495, (see above) filed Aug. 16, 1976, but which differs in being simpler in design, smaller in size, and less expensive. It is capable of producing quality speech, according to the description. It is adapted to be driven by an 8-bit digital input command word (as compared to the 12-bit command word preferably employed with the above mentioned larger device) and may be adapted to operate off a 12-V power source, thus being suited for use with a portable power supply. (Patent No. 4,130,730, Dec. 19, 1978; filed Sept. 26, 1977; Appl. No. 836,589, 18 claims.)

Washing Attachment for Artificial Arms: Joseph I. Mitchell. The invention relates to a means to enable a bilateral below-elbow amputee to wash or bathe independently, without subjecting the individual's standard prostheses to wetting, soap, etc. When the amputee wishes to wash or bathe, the standard prostheses are removed and a pair of special artificial arms are donned: these are permanently equipped with washing ele-

ments having one side made of fine sponge and the other of coarse sponge. (Patent No. 4,125,905, Nov. 21, 1978; filed Jan. 28, 1977; Appl. No. 763,403; 2 claims.)

Wheelchair Lift Device: Peter P. Dudynskyj, assignor to General Motors Corp., Detroit, Mich. A wheelchair lift device including a platform located in the stepwell of a motorcoach or bus for raising and lowering a wheelchair between ground level and the floor level of the motorcoach. The device includes foldable hinged sections that are positioned to form steps for use by able-bodied persons using the stepwell, when the sections are not positioned for supporting the wheelchair. (Patent No. 4,124,099, Nov. 7, 1978; filed Oct. 4, 1977; Appl. No. 839,428; 3 claims.)

Wheelchair Lift Device: Peter P. Dudynskyj, assignor to General Motors Corp., Detroit, Mich. A wheelchair lift device including a platform located in the stepwell of a motorcoach or bus for raising and lowering a wheelchair between ground level and the floor level of the motorcoach. The device includes foldable hinged sections which form steps for use by able-bodied persons using the stepwell, when the sections are not positioned to form the platform for supporting the wheelchair. (Patent No. 4,124,098, Nov. 7, 1978; filed Oct. 4, 1977; Appl. No. 839,322; 3 claims.)

Wheelchair Lift Device: Dale A. Hawks, Daniel L. Kline, and James T. Hogan, assignors to General Motors Corp., Detroit, Mich. A wheelchair lift device including a platform located in the stepwell of a motorcoach or bus for raising and lowering a wheelchair between ground level and the floor level of the motorcoach. The device includes foldable hinged sections which form steps for use by able-bodied persons using the stepwell, when the sections are not positioned to form the platform for supporting the wheelchair. (Patent No. 4,124,097, Nov. 7, 1978; filed Oct. 4, 1977; Appl. No. 839,321; 3 claims.)

Wheelchair Lift Device: Peter P. Dudynskyj, Daniel L. Kline, and James T. Hogan, assignors to General Motors Corp., Detroit, Mich. A wheelchair lift device including a platform located in the stepwell of a motorcoach or bus for raising and lowering a wheelchair between ground level and the floor level of the motorcoach. The device includes foldable hinged sections which form steps for use by able-bodied persons using the stepwell, when the sections are not positioned to form the platform for supporting the wheelchair. (Patent No. 4,124,096, Nov. 7, 1978; filed Oct. 4, 1977; Appl. No. 839,320; 3 claims.)

Wheelchairs: John D. Harris, Michael F. Fogden, and Graham E. Mead, assignors to National Research Development Corp., London, England. A power-assisted wheelchair has a pair of larger ground wheels with handwheels mounted thereon, and a pair of smaller castor (castered) wheels carrying motors drivably coupled therewith. Handwheel rotation by the occupant applies manual driving force and differential use of the handwheels is the manner in which steering is effected, which is said to avoid confusion on the part of the user who is accustomed to a conventional manual wheelchair. Handwheel rotation by the occupant also applies and controls the power-assist drive system; the switch operation against a spring bias is said to provide smooth control of power from zero to full power in response to handwheel rotation. (Patent No. 4,125,169, Nov. 14, 1978; filed June 9, 1977; Appl. No. 805,144; 5 claims.)