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2,855,024

WALKING AID

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2 Sheets-Sheet 1

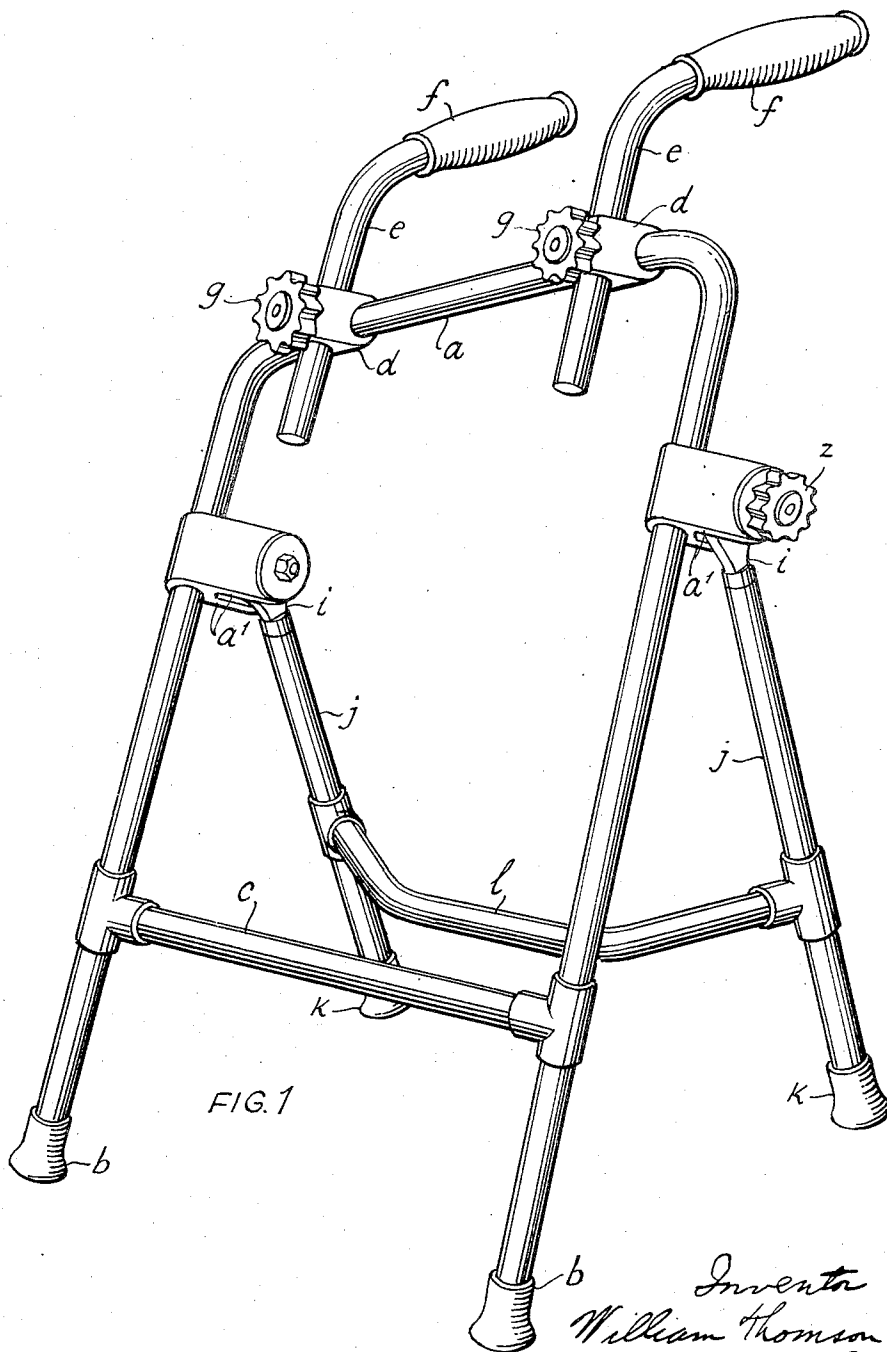


FIG. 1

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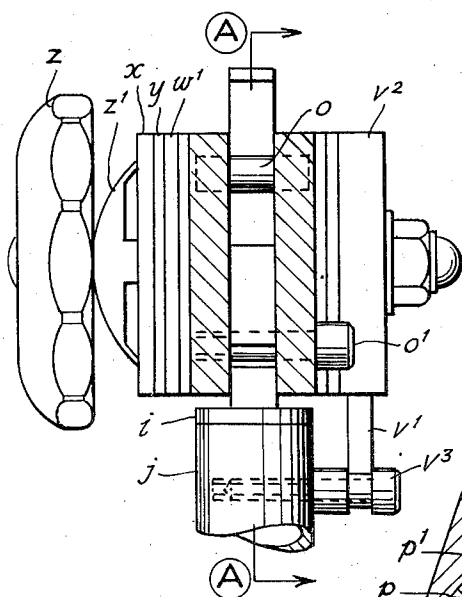


FIG. 2

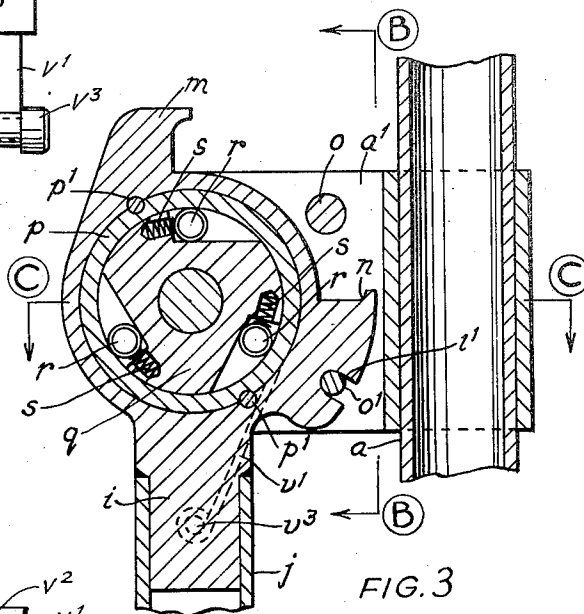


FIG. 3

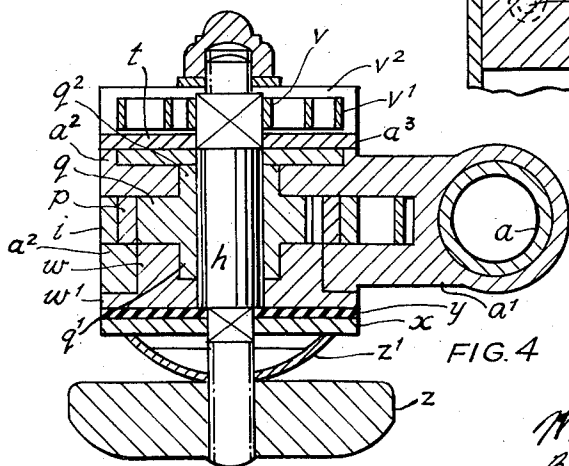


FIG. 4

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WALKING AID

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Claims priority, application Great Britain February 18, 1953

6 Claims. (Cl. 155—22)

This invention relates to a walking aid of the kind having a pair of leg-like members hingedly connected together at their upper ends with handles attached to one and overhanging the other so that pressure applied to the handles alternately to raise and lower the same causes the legs overhung by the handle and then those furthest from the handle to "walk" away from a person manipulating the handles, the maximum and minimum open and closed positions of the legs being positively delimited, the limitation of the maximum distance providing trestle-like stability for supporting weight and the limitation of the minimum distance preventing accidental folding and limiting the length of each pace to a distance consistent with safety and stability for the user. A walking aid operating on such principle forms the subject matter of Patent No. 2,656,874. Such a walking aid is particularly helpful to a patient learning to walk again after an illness or accident.

In the construction described in the specification of the said patent articulated links are provided between the legs to delimit the maximum and minimum distances aforesaid, spring means being preferably provided to resist the opening or separating movement of the legs. In practice it has been found that a user appreciates having considerable resistance to downward pressure on the handles for the opening movement. In fact the desire is to have such resistance greater than it is practical to provide by spring means, because of the high reaction such means would provide which would tend to cause premature closing action and thus interfere with the desired progressive "walking" action of the walking aid.

One object of the present invention is to provide the desired greater resistance aforesaid without the disadvantageous reaction aforesaid.

Another object is to make the degree of resistance adjustable by the user to personal requirements.

A still further object of the invention is to give the user an increased feeling of stability of the walking aid.

According to the invention a walking aid of the kind above referred to is characterised by movement-damping means connected between the legs of the device to provide resistance to separating or opening movement thereof.

Such damping means may provide movement damping in the said one direction only, or a lesser movement damping in the other direction also, and the damping effect may be provided mechanically by relatively movable loaded friction elements, or hydraulically.

The expression, "movement-damping means," is used herein to define means for the absorption of energy as distinct from a resilient element, such as a spring, which resists movement but substantially returns all energy applied to it.

In the accompanying drawing:

Figure 1 is a perspective view of one example of a walking aid of the kind referred to and made in accordance with the present invention;

Figure 2 is a part sectional view of one of the damper elements taken on line B—B of Figure 3;

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Figure 3 is a sectional view taken on line A—A of Figure 2, and

Figure 4 is a sectional view taken on line C—C of Figure 3.

- 5 As shown in the drawing, the walking aid comprises a main tubular inverted U-shaped member *a* which forms the front legs, the ends of which are fitted with rubber feet *b* and the arms of which are connected by a straight cross bar *c*. On the upper portion or base of the U are a pair of clamps *d* in which are located the handle shafts *e* having their ends bent and fitted with grips *f*. Each clamp has a control knob *g* which may be turned to release the clamp, whereby its position on the member *a* may be adjusted and the handles turned and raised or lowered to the most suitable position for the user. Secured to each arm of the member *a* near its upper end is a bracket *a*¹ having a pair of rearwardly extending lugs *a*² which are bifurcated to receive the upper end lugs *i* of tubular rear legs *j* which are fitted with rubber feet *k* and connected near their lower ends by a bent cross bar *l*. Each end lug *i* has hook-shaped stop formations *m*, *n* complementary to studs *o* and *o*¹ fixed in the bracket *a*¹ which limit respectively the open and closed positions of the legs of the aid. The stud *o*¹ is removable to allow the legs to be folded after which it may be re-inserted to engage a notch *i*¹ to secure the legs in such folded position. The stud *o*¹ may conveniently be in the form of a screwed pin with winged head for easy removal and secure replacement. At each pivot position is a movement-damping device consisting of a free wheel and adjustably loaded friction damper. The free wheel comprises an outer ring *p* secured by pins *p*¹ in the lug *i* and an inner member *q* having peripheral notches in each of which is located a clutch roller *r* loaded by a spring *s*. The outer face of one lug *a*² has a plate *a*³ (see Fig. 4) secured to it by screws (not shown) in which is a squared hole for the squared portion of a pivot bolt *h*. The inner member *q* is rotatably mounted on the pivot bolt and its peripheral notches are directed as shown in Fig. 3 so that the rollers *r* provide a free-wheel action when the ring *p* is turned counter-clockwise, as when the legs *j* are moved to close them towards the legs *a*, but engage when the ring *p* is moved clockwise by separating the legs *a* and *j* thereby causing the inner member *q* to turn with the lug *i*. The inner member *q* has hub-like extensions *q*¹ and *q*² at its centre, of which *q*² is journaled in one lug *a*² of the bracket, such lug having a recessed outer facing in which is located a washer *t*. The adjacent squared end of the pivot bolt *h* has therearound a hub *v* to which is attached the inner end of a coil spring *v*¹, the outer end of which passes through a cover *v*² and is secured by a stud *v*³ to the leg *j*. In a larger aperture in the other lug *a*² is a collar *w* having a flange *w*¹, said collar being engaged with flats (not shown) on the hub *q*¹ so as to turn therewith. The adjacent end of the pivot spindle *h* is squared and carries a washer *x*, between which and the collar *w* is a friction disc *y*. The outer end of the pivot spindle *h* is threaded and on it is located an adjusting nut *z* and a spring disc *z*¹. In use, the coil spring *v*¹, the lugs *m*, *n* and the stop pins *o* and *o*¹ perform the same functions as the articulated link of the earlier Patent No. 2,656,874 aforesaid. Opening movement of the legs however causes rotation of the inner member *q* on the pivot spindle *h* which causes rotation of the collar *w* and flange *w*¹ relative to the washer *x* so that friction damping is provided according to the pressure provided by the spring disc *z*¹. Such opening movement through the pin *v*³ stresses the spring *v*¹. The free-wheel action permits the spring *v*¹ to close the legs without turning the inner member *q* and therefore without the resistance of the friction damping means.

Obviously the invention is not limited to the construction details of the example above described though it has

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the advantage that control of the frictional resistance is easily accessible to the user for adjustment to suit individual requirements. Telescopic hydraulic damping means could be used between the legs, said means incorporating a return spring and also determining the open and closed limits of movement. Such hydraulic damping means could provide a lesser degree of damping in the closing direction if desired.

I claim:

1. A walking aid comprising a trestle-like assembly of a pair of leg-like members hingedly connected together at their upper ends with handles attached to one such member and overhanging the other; means positively delimiting maximum and minimum open and closed positions of the legs, and movement-damping means of the energy absorption type connected between the said legs to provide resistance to separating or opening movement thereof.

2. A walking aid according to claim 1, further characterised by means for adjusting the resistance characteristic of the movement-damping device.

3. A walking aid according to claim 2, further characterised in that the movement-damping means has a different resistance characteristic when said legs are moving to said open position than when said legs are moving to said closed position.

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4. A walking aid comprising a trestle-like assembly of a pair of leg-like members hingedly connected together at their upper ends with handles attached to one such member and overhanging the other; means positively delimiting maximum and minimum open and closed positions of the legs, and friction-type movement-damping means connected between the said legs.

5. A walking aid according to claim 4, further characterised by means for adjusting the resistance-characteristic of the movement-damping means.

6. A walking aid according to claim 1 further characterized in that the movement-delimiting means includes a pair of stops one of which is removable and replaceable to permit closing and securing of the legs for transport.

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