

April 20, 1937.

T. F. KISH

2,077,569

WHEEL SUPPORTED CRUTCH

Filed Dec. 4, 1934.

2 Sheets-Sheet 1

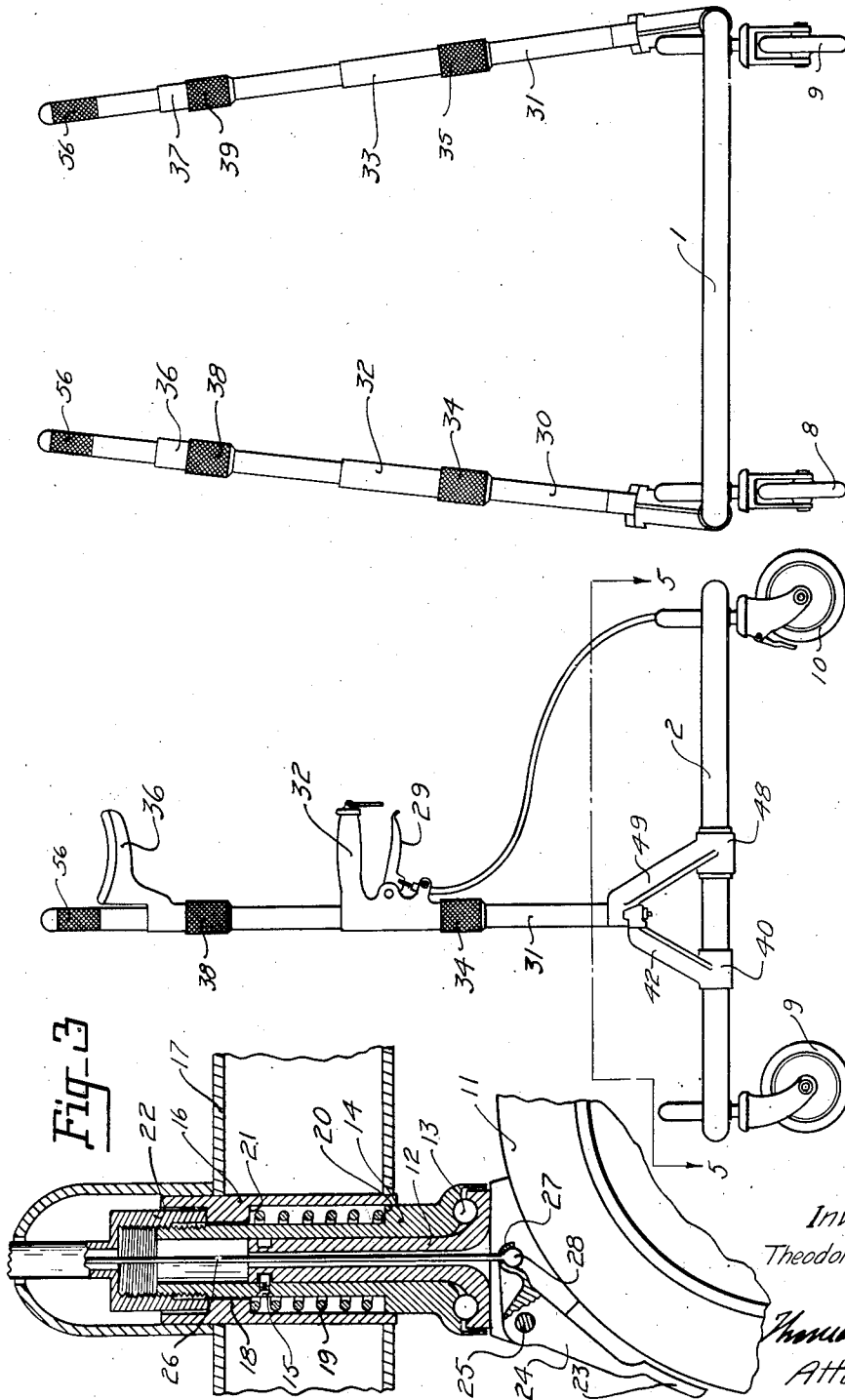


Fig-2

Fig-1

Fig-3

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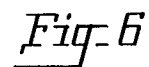
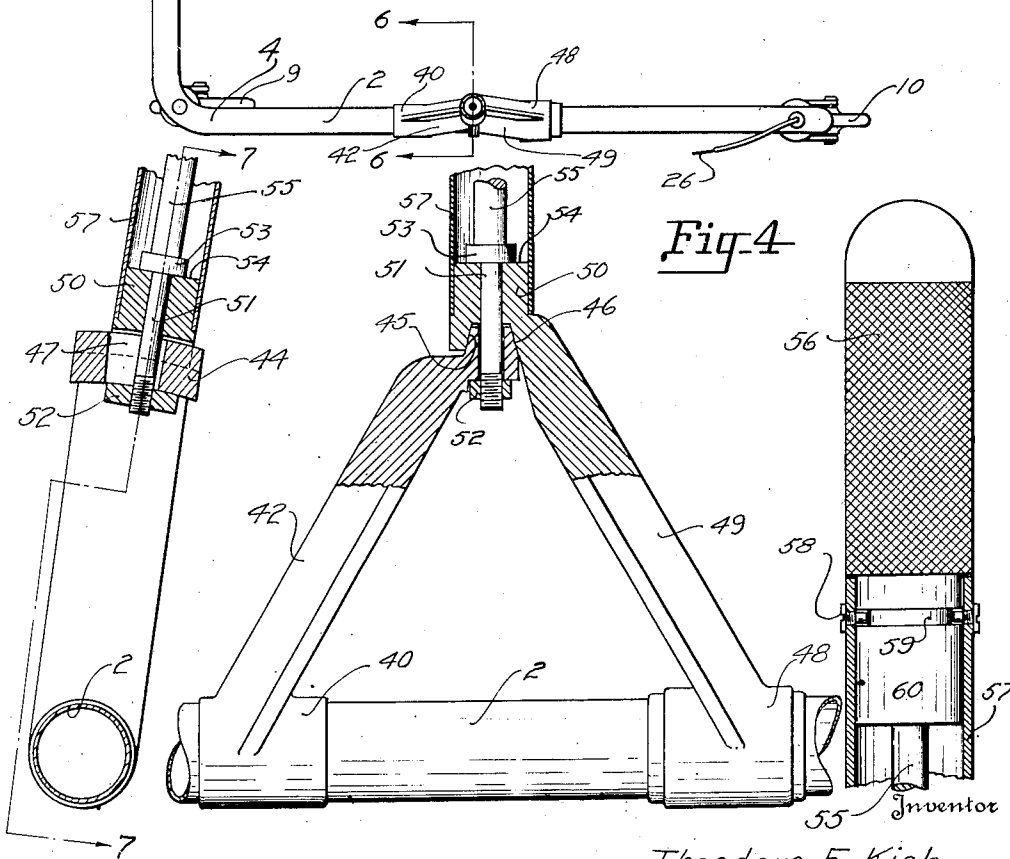
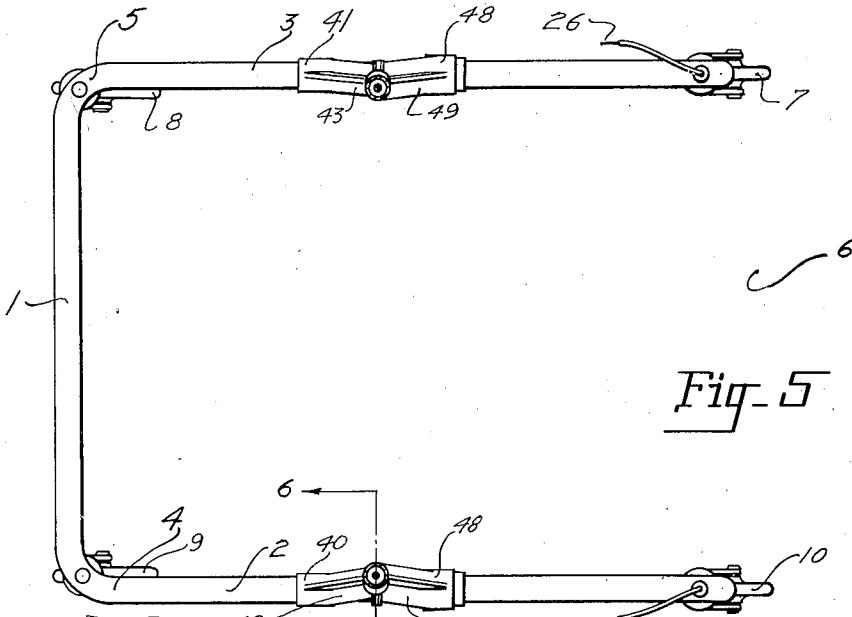


Fig-7

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UNITED STATES PATENT OFFICE

2,077,569

WHEEL SUPPORTED CRUTCH

Theodore F. Kish, Portland, Oreg.

Application December 4, 1934, Serial No. 755,927

3 Claims. (Cl. 155—22)

My invention relates to supporting devices for assisting invalids and others in walking and has for its primary purpose the provision of a mobile supporting device which has a pair of adjustable crutch members upwardly extending from a base frame. Trunnion wheels are disposed at each corner of the frame. A cushioning device is associated with each of the trunnion wheels. The crutch members are adjustable transversely at their top ends to accommodate users of different widths and the height of the crutch saddles and of the hand stirrups associated therewith are adjustable vertically relative to the crutch members to accommodate users of different heights.

One of the objects of my invention consists in providing a device that may be used by invalids and others and through the use of which they may propel themselves with facility and with minimum effort.

A still further object of my invention consists in so arranging the crutch elements that the users may readily adjust the same to their respective heights, arm lengths and chest widths.

A still further object of my invention consists in providing a trunnion support that may be adjusted to effect a cushioning of the device while in use, thereby eliminating nerve shock incident to the use of ordinary crutches.

A still further object of my invention consists in providing optional and selective means for regarding the progression of my device, thereby rendering its use free from obvious objections.

With these and incidental objects in view, the invention consists in certain novel features of construction and combination of parts, the essential elements of which are set forth in the appended claims, and a preferred form of embodiment of which is hereinafter shown with reference to the drawings which accompany and form a part of this specification.

In the drawings:

Fig. 1 is a side view of the assembled device.

Fig. 2 is an end view of the assembled device.

Fig. 3 is a fragmentary sectional side view of the corner of the frame and of the trunnion wheel and support adapted thereto.

Fig. 4 is a fragmentary side view partially in section of the upper end of the crutch.

Fig. 5 is a sectional plan view of the assembled device. This view is taken on line 5—5 of Fig. 1, looking in the direction indicated.

Fig. 6 is a sectional end view of the lower end of the crutch and illustrates the adjustable connection disposed between the crutch and the

frame. This view is taken on line 6—6 of Fig. 5, looking in the direction indicated.

Fig. 7 is a sectional side view of the mechanism illustrated in Fig. 6. This view is taken on line 7—7 of Fig. 6, looking in the direction indicated.

Like reference characters refer to like parts throughout the several views.

I preferably form the base frame of my device from a single piece of any suitable material, preferably light tubing. The frame is comprised of a single piece embodying a central front member, and parallelly disposed rearwardly extending legs 2 and 3. The legs 2 and 3 are formed integral with the front member by providing right angular bends 4 and 5. This construction leaves the frame open-ended at 6, to permit the user walking or being moved directly thereinto or to facilitate the assembly being moved directly to the user while he is in a sitting or reclining position. A trunnion wheel or caster support is disposed at each corner of the frame, as illustrated at 7, 8, 9 and 10. These trunnion wheels are preferably rubber tired as illustrated at 11 and are provided with anti-friction bearings relative to the frame to facilitate freedom and ease of movement of the assembly. The arms of each of the trunnion wheels have an upwardly extending stem 12 and an annular ball receiving race is disposed upon its upper periphery into which balls 13 are placed. A thimble 14 is disposed about the stem and a companion annular ball receiving race is disposed upon its underside into which the balls 13 are positioned. The thimble is secured to the stem by any suitable means as through the use of a screw fastening 15. A sleeve 16 is adapted to the frame 17 and is fixedly secured relative thereto.

A collar 18 is disposed within the sleeve and a compressible element, as a coil spring 19 is disposed between the thimble 14 and the sleeve 16. The thimble has a shoulder 20 disposed upon its outer surface and upon which rests one end of the coil spring 19. The oppositely disposed end of the coil spring engages the underside 21 of the collar 18. A desired preloading may be placed upon the spring 19 by the threading of a cap 22 to the upper end of the thimble 14. This adjusts the spring to the tensions required by the weight of the user of the device.

It may be desirable to place a brake upon one or more of the wheels. When so desired, a brake shoe 23 is placed in juxtaposition to the tire 11. The brake shoe is secured to a bell crank 24 and the bell crank is hingedly secured about a brake shoe supporting pin 25. An actuating pull rod 26

is disposed longitudinally of the stem 12. One end of the actuating pull rod is secured to the bell crank as illustrated at 27, by the placing of a ball 28 within the ball receiving recess disposed upon the end of the bell crank 24. This actuating pull rod terminates in an actuating hand lever 29 and permits the user of the device to apply a braking pressure to one or more of the trunnion wheels, as is required.

A pair of crutch members 30 and 31 extend upwardly from the frame. Hand stirrups 32 and 33 are secured to the respective crutch members. The stirrups are adapted for being moved longitudinally of the crutch members and are locked relative thereto in desired placement by threaded clamps 34 and 35 respectively. Crutch saddles 36 and 37 are adapted to the upper ends of the crutch members. The crutch saddles are placed under the arm pits of the user and are adjustable to the user's height by being adapted for motion longitudinally of the crutch members, and are locked relative thereto by the clamping sleeves 38 and 39 respectively. This vertical adjustment of the stirrups 32 and 33 and of the crutch saddles 36 and 37 adapts the crutch members to the arm pit height and to the arm length of the user. The transverse distance between the crutch saddles may be adjusted through the mechanism illustrated in Figs. 4, 6 and 7. Sleeves 40 and 41 are fixed to the rearwardly extending legs 2 and 3 respectively.

Arms 42 and 43 each terminates in a quadrant head 44 upon its upper end. The upper, outer side walls 45 and 46 of the quadrant are uniformly tapered and an adjusting slot 47 is disposed within the head. A second pair of sleeves 48 are rotatably disposed upon the rearwardly extending legs 2 and 3 and arms 49 extend upwardly from the sleeves 48. Heads 50 terminate the upper ends of the arms 49. A fitted recess is disposed in the under side of the head 50 into which the quadrant 44 is fitted. The head 50 is provided with a pilot and shoulder against which tubular crutch member 51 is adapted to be fixed. The head 50 is provided with a hole, radial to the center line of rotation of the sleeve 48 and in registry alignment longitudinally of the base frame with the slot 47 in the quadrant 44, and threaded rod 51 is disposed therethrough, terminating in internally threaded member 52. A collar 53 is fixed to the threaded rod 51 and is adapted to bear up on upper face 54 of the head 50. A rod 55 is fixed to the collar 53 and terminates at its upper end in a knurled hand grip 56 which crowns crutch member 57. The knurled hand grip 56 is free to rotate relative to the crutch member 57, but is restrained from longitudinal motion relative thereto by any suitable means as by shoulder screws 58 engaging a groove 59 disposed within a piloted end 60 of the knurled hand grip 56.

While the form of mechanism herein shown and described is admirably adapted to fulfill the objects primarily stated, it is to be understood that it is not intended to confine the invention to the embodiment shown, but to cover all forms coming within the scope of the claims which follow.

What I claim is:

1. In a device of the class described, the combination of a U-shaped trunnion supported tubular frame, a pair of sleeves disposed upon the opposite sides of the frame, arms upwardly extending from each of the sleeves and said arms adapted for cooperative engagement with said sleeves, a pair of crutch members associated with and upwardly extending from the arms and attachable relative thereto, a knurled hand grip terminating the upper end of each of the crutch members, a rod depending from each of the knurled hand grips extending longitudinally of the crutch members and passing through the ends of the respective pairs of arms, each of said rods being threaded on its lower end and a nut secured to the lower end of each of the rods and cooperating means for tightening the crutch members to the arms when the knurled hand grip is turned in one direction and for loosening the same when it is turned in the opposite direction, a crutch saddle rotatably mounted upon each of the crutch members and adjustable longitudinally of each of the crutch members, a hand stirrup disposed upon each of the crutch members adjustable longitudinally thereof, means for locking the crutch saddle and the hand stirrup in adjusted placement upon each of the crutch members, and a brake actuating hand lever associated with each of the hand stirrups and means communicating the hand brake lever with a brake disposed at one of the trunnion supporting wheels.

2. In a device of the class described, the combination of a trunnion wheel supported tubular open ended frame, said frame having rearwardly extending legs, supports for crutch members secured to each of the legs and rotatable therearound, crutch members upwardly extending from each of the crutch supports and lockable relative thereto, a crutch saddle and a hand stirrup disposed in spaced relationship upon the crutch members and rotatable therearound and each being adjustable longitudinally thereof, means for locking the saddle support and the hand stirrups in adjusted placement relative to the crutch members and a brake actuating hand lever associated with each of the hand stirrups and cooperating means associated with the hand lever for applying braking pressure to some of the trunnion supporting wheels.

3. In a device of the class described, the combination of a U-shaped open ended tubular frame, a crutch having a crutch saddle and a hand stirrup adjustably secured thereto disposed in registry alignment with each other and disposed upon the U-shaped tubular frame, trunnion wheels secured to the U-shaped tubular frame, each of the trunnion wheels being secured to and having upwardly extending stems, a thimble disposed about the stem and adapted for longitudinal movement relative to the stem, a coil spring disposed about the thimble and resting upon its respective ends upon shoulders disposed upon the stem and upon the sleeve and a cap threaded to the thimble to provide means for predetermining the cushioning of the coil spring.

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