

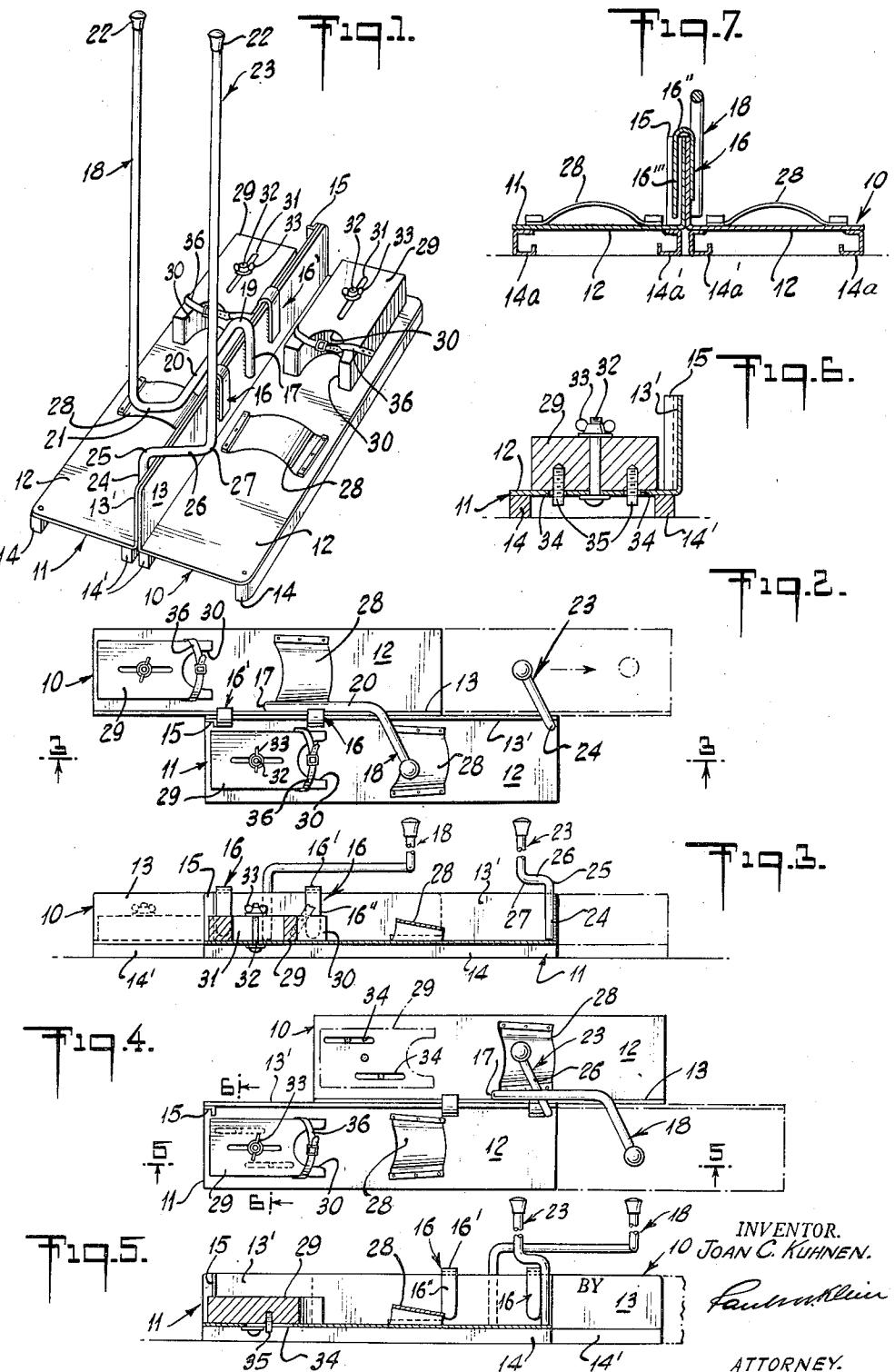
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WALKING AID

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## WALKING AID

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**1**

This invention relates to devices primarily intended to serve as a walking aid or exerciser for defective, malformed or paralysis-afflicted limbs, but which devices may be also advantageously employed in the teaching of sports such as skiing, ice skating, snow shoe walking, etc.

Walking aids or exercising devices of the type indicated are known in the art. They usually consist of relatively heavily constructed ski-like members provided with means for accommodating and attaching the feet of the patient, and also are usually equipped with handle bars or hand supports arranged at the front part of their structures. The disadvantage of such devices having handle bars located directly in front of each ski member lies in the fact that when one of the legs is moved forward, such as the left leg, while the patient's left hand holds the handle bar in front of him, his left arm is caused to move forward simultaneously with his left leg. The same simultaneous forward movement of the right leg and of the right arm occurs when the right ski is advanced. Such simultaneous movements of the arms with the legs are contrary to the natural cooperative movement of the limbs, that is, a simultaneous forward movement of the left foot with the right arm and the simultaneous movement of the right foot with the left arm.

The device of the present invention is intended to induce and to enforce the patient's natural limb movements as outlined above so that when his left leg moves forward his right arm will move forward also, and when the right leg advances the left arm will do likewise. In addition, the device contemplates provisions for forcibly guiding the movement of the legs in parallel planes and to limit the movement of the limbs.

The prime object of this invention, therefore, is to provide a walking aid in the form of an exercising ski device composed of right and left foot supports, wherein means are arranged for forcibly guiding these supports longitudinally to move in parallel relation to one another, and which foot supports are equipped with handle bars so arranged that the handle bar of the left foot support extends forward and over the front end of the right foot support, whereas the handle bar of the right foot support crosses over and is disposed above the forward end of the left foot support.

Another object of this invention is to provide the ski members of the device with means for limiting their movement in respect to one another.

A further object of this invention is to provide

**2**

in connection with the ski members of the device, guided and adjustable foot accommodating means equipped with straps, said means being arranged to facilitate their adjustment for any foot sizes within certain limits.

The foregoing and still further objects of the present invention will become more fully apparent from the ensuing description in conjunction with the accompanying drawings showing one of the many possible embodiments thereof, and wherein:

Fig. 1 is a perspective view of the device in its presently preferred form;

Fig. 2 is a top view thereof with the right-hand ski in forward position;

Fig. 3 is a section taken approximately along line 3—3 of Fig. 2;

Fig. 4 is a top view of the device with the left-hand ski in forward position;

Fig. 5 is a section taken approximately along line 5—5 of Fig. 4;

Fig. 6 is a vertical sectional view taken approximately on line 6—6 of Fig. 4; and

Fig. 7 is a typical vertical cross section of a modified form of the skis.

Referring now more specifically to the figures, the left-hand ski is indicated at 10, while numeral 11 denotes the right-hand ski. These skis are designed to cooperate with one another and comprise horizontal portions or flanges 12 and vertical portions or flanges 13 and 13' in adjacency with each other. Horizontal flanges 12 are supported by outer and inner runners or rails 14 and 14', respectively, which are attached to the bottom faces of the flanges in any suitable manner. It will be noted that at the rear end of vertical or upright portion 13' there is arranged a stop 15, the purpose of which will be explained presently.

40 Fixedly secured to vertical flange 13 of the left-hand ski are inverted U-shaped front and rear guide members 16 and 16', the bent portions of which extending above the upper edges of vertical flanges 13 and 13', as at 16". Their free legs 16''' extend downwardly towards but are slightly distanced from horizontal flanges 12 of the right-hand ski. (See Fig. 7.) U-shaped members 16 and 16' serve for guiding the two skis in parallel relation in respect to one another.

45 Located between the two guide members 16 and 16' and fixedly secured to the vertical flange 13 at 17 is a right-hand rigid handle bar 18. That bar is so constructed that its lower part extends above the two vertical flanges 13 and 13' 50 of the skis and passes over their upper edges, as

at 19, and continuous horizontally forward, as at 20 and 21, and finally is directed upwards, so that its handle end, provided with a knob 22 made of rubber or other suitable material, is located above the front end of horizontal flange 12 of the right-hand ski 11.

Secured near the front end of vertical flange 13' of right-hand ski 11 is another rigid handle bar 23 which crosses over both upright flanges and extends above and over the horizontal flange 10 of left-hand ski 10. The lower attached end 24 of handle bar 23 is bent at 25. From that bend extends a horizontal portion 26, which latter is bent upward at 27 into the vertical part of the bar. Bend 25 is so curved that the vertical portion of bar 23 is located above the forward end of left ski 10. The attached vertical portion 24 of bar 23 serves as front stop for the frontal guide member 16, whereas the aforementioned stop 15 at the rear end of vertical flange 13' provides a back stop for rear guide member 16'.

Secured to the top faces of both horizontal flanges 12 of the skis are semi-loops 28 made either of rubber, leather, canvas or any other suitable material. These semi-loops serve for accommodating the front portions or toes of the patient's foot.

At the rear end of the skis there are provided adjustable blocks 29 having heel-accommodating recesses 30. Blocks 29 are preferably slotted at 31 to accommodate bolts 32, engaged by wing nuts 33, by means of which latter blocks 29 are held in adjusted position. In order to guide the blocks in parallel relation to vertical flanges 13 and 13' of the skis there are provided in horizontal flanges 12 two offset slots 34, see Figs. 4, 5 and 6, into which slots extend studs 35 projecting from the lower faces of blocks 29. Blocks 29 are provided with adjustable straps 36 which serve for fastening the skis to the feet.

#### Modification

The modified form shown in Fig. 7 corresponds in all details to the construction shown in Figs. 1 to 6, with the exception that the rails or runners 14a and 14'a are hollow and of a substantially C-shaped cross section.

#### Operation

The use of the present device and its function is relatively simple. The toes of the user's feet are slipped into semi-loops 28, whereupon blocks 29 are adjusted so that the heels firmly fit into recesses 30. Now straps 36 are fastened about the ankles of the feet.

The user grips knobs 22 of the vertical handle portions and the device and the user are thus ready for walking or otherwise exercises. When the right foot advances to the full-line position shown in Fig. 2, handle 23 gripped by the left hand causes that hand and arm to move forward also. When the left foot and ski advance, as shown in full lines in Fig. 4, handle 18, gripped by the right hand, causes the forward movement of that hand and arm. The successive, alternate forward movements of the left and right skis are indicated in Figs. 2 and 3 in broken lines.

#### Conclusion

From the above description of the device and its use, it will be seen that the walking aid, comprising right and left foot supports with handles extending from the right foot support over the left foot support, and from the left foot support over the right foot support, induces coordinate

natural movements of the lower limbs with the upper limbs, that is when the left foot advances, the right arm is caused to move forward, and when the right foot advances, the left arm is forced to swing forward. In that manner unnatural action of the upper limbs in respect to the movement of the lower limbs are avoided, whereby the training of an afflicted patient is greatly facilitated in that the limbs are forced by the present device to follow their natural movements.

The device as illustrated and described presents only one of the many possible forms in which the walking aid may be constructed. 15 When the device is to be employed for uses other than those of aiding in the exercises of afflicted limbs, changes and improvements may become necessary, such as the lengthening of the skis and refinements in the foot supports, without 20 departing from the basic principle of the invention of providing the skis with handles so arranged as to forcibly induce a coordinate, natural movement of the hands and arms with the movement of the feet. Obviously such changes 25 and improvements reside within the broad scope of this invention as defined in the annexed claims.

I claim:

1. A walking aid comprising right and left foot 30 supports provided with adjacent vertical guide flanges, each support having a rigid handle, the handle of each foot support extending over both guide flanges and over the other foot support and guide means in cooperation with said guide flanges for keeping the supports in parallel relation to each other.

2. The combination with left and right foot supports having upright guide flanges, of a rigid handle provided with and extending upwardly 40 from each of the supports, the handle of the left foot support crossing the upright flanges and extending over the right foot support, the handle of the right foot support also crossing the upright flanges and extending over the left foot support and guide means in cooperation with said guide flanges for keeping the supports in parallel relation to each other.

3. In a walking aid, two cooperating foot supports, each support being composed of horizontal 50 and vertical flanges, the vertical flanges being forcibly guided in respect to one another, each support having a rigid handle extending upwardly along its vertical flange and having a substantially horizontally disposed portion which

55 crosses over the vertical flanges of both supports and terminates above the horizontal flange of the other support, and a vertical handle portion projecting upwardly from the terminus of that horizontally disposed portion and guide 60 means in cooperation with said guide flanges for keeping the supports in parallel relation to each other.

4. In a walking aid, two cooperating left and right foot supports, each support comprising horizontal and vertical flanges, means provided with the vertical flanges of the supports for guiding the latter in respect to one another, and other means arranged with the vertical flanges for limiting their movement relative to one another, 70 each support having a substantially vertically disposed rigid handle, the handle of the left support extending over the horizontal flange of the right support and the handle of the right support extending over the horizontal flange of the 75 left support.

5. In a walking aid, two cooperating left and right foot supports having adjacent guide flanges, a substantially vertical rigid handle provided with each support and having a crossing portion locating it over the other foot support, means for guiding the guide flanges in substantially a parallel movement relative to one another, and stop means provided with the guide flanges for limiting that movement.

6. In a walking aid, a pair of cooperating left and right foot supports adapted for movement in closely adjacent parallel relation to one another, each support comprising horizontal and vertical elements, the latter elements having guide means for keeping the supports in adjacency while either still or moving, and stop means for limiting their relative movement, anti-friction supporting rails at the bottoms of the horizontal elements, and rigid, upwardly directed handles extending from both supports and crossing from one support over the horizontal element of the other support.

7. In a walking aid, a pair of cooperating left and right foot supports adapted for movement in closely adjacent parallel relation to one another, each support comprising horizontal and vertical

elements, the latter elements having guide means for keeping the supports in adjacency while either still or moving, and stop means for limiting their relative movement, anti-friction supporting rails at the bottoms of the horizontal elements, and rigid, substantially upwardly directed handles provided with both supports and extending from the vertical element of one support across the vertical elements of both supports and terminating with their ends a substantial distance above the horizontal element of the other support.

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