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(54) **HIP AND THIGH SUPPORT FOR CRUTCHES**

(57)

ABSTRACT

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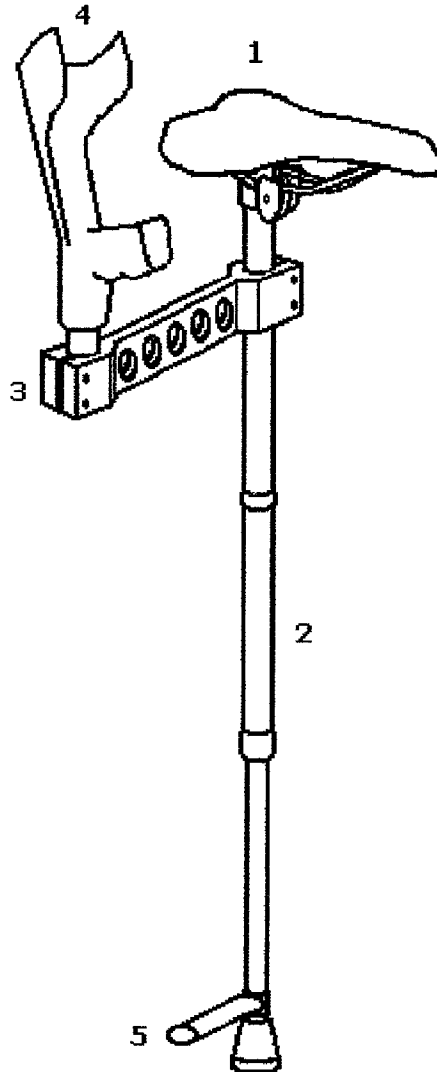
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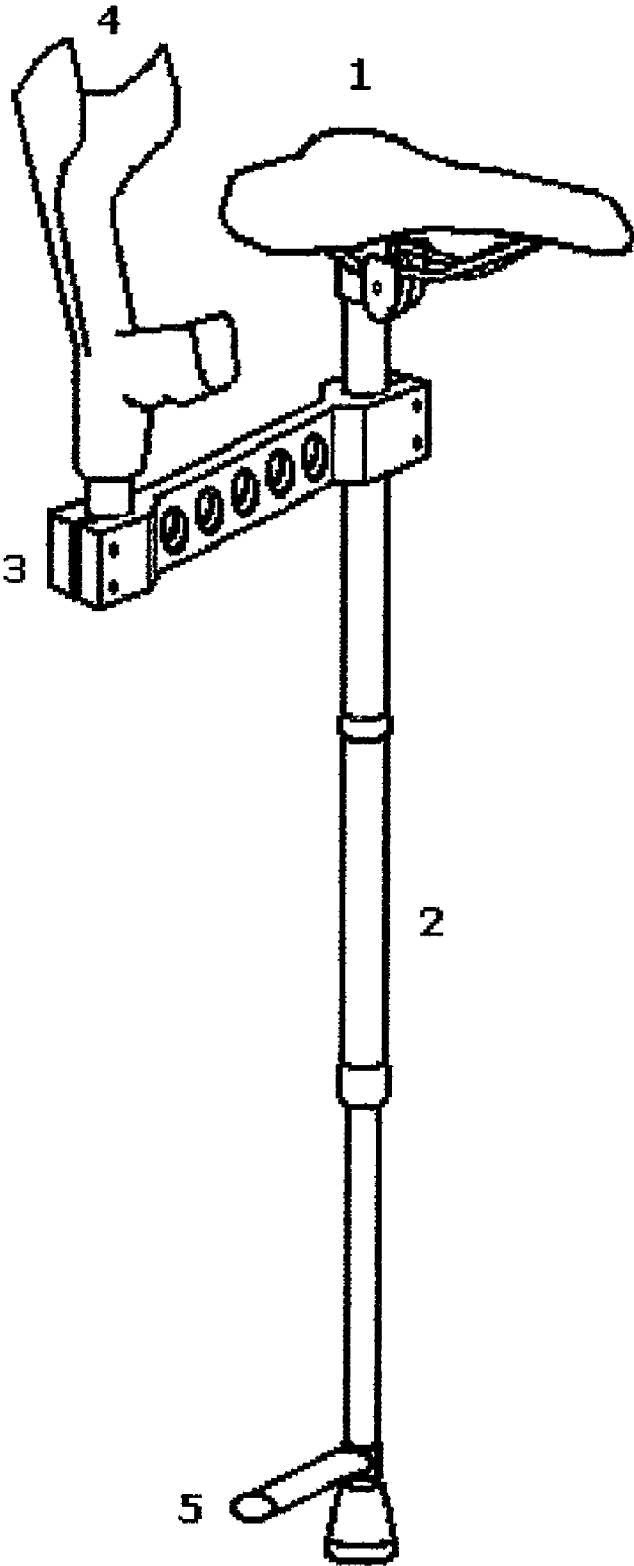
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The invention relates to a detachable hip or thigh support mounted on top of a conventional forearm or elbow crutch instead of the crutch handle, which is removed and used on a strut attached to the crutch tube. The preferred embodiment of the invention uses a bicycle saddle as support. The user sits on the saddle much in the same manner as he would sit on a bicycle. He may rest his foot on an additional foot rest at the tip of the crutch. The invention allows a fully non-weightbearing gait which requires far less strength, especially in the arms, than the three-point gait with conventional crutches. The user controls the crutch tube of the device with the handle and the foot rest. It is recommendable to use an additional conventional crutch on the unaffected side for better control of balance.





HIP AND THIGH SUPPORT FOR CRUTCHES**CROSS-REFERENCE TO RELATED APPLICATIONS**

[0001] Not Applicable

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

[0002] Not Applicable

REFERENCE TO SEQUENCE LISTING, A TABLE, OR A COMPUTER PROGRAM LISTING COMPACT DISK APPENDIX

[0003] Not Applicable

BACKGROUND OF THE INVENTION

[0004] 1. Field of Invention

[0005] The invention relates to a detachable hip and thigh support which can be attached to a conventional forearm or elbow crutch after removal of the crutch handle. The support contains a cushioned saddle equal or similar to those used in bicycles. When the user is seated on the support, the unaffected leg touches the ground, whereupon the affected leg is kept non-weightbearing.

[0006] The main advantage of the invention is that hardly any force is required in the arms and that a non-weightbearing gait can be achieved with much less effort than in the three-point gait with two conventional crutches. Prolonged standing is made more comfortable because the user can rest on the saddle much in the same manner as he would sit on a bicycle.

[0007] 2. Description of Prior Art

[0008] The idea to use a knee or lower leg support in crutches as a weight protecting means is not new. A 1568 painting by Pieter Bruegel the Elder, "The Beggars" (Louvre, Paris) depicts several wooden crutches with lower leg supports, and other later paintings by different artists show wooden axillary crutches with knee or lower leg rests. Since then, many further supports have been developed.

[0009] However, only a few of these devices can achieve weight protection of the whole leg. Apart from the three-point gait with a pair of crutches, only the Thomas Splint has achieved a more widespread use. However, a Thomas Splint is somewhat difficult to fasten and not very convenient to wear. As it is a fairly expensive device which must be custom made, its use is restricted to patients who have to remain non-weightbearing for a prolonged time, e.g. children with Perthes' disease or adults with comminuted femoral or tibial fractures.

[0010] Until now, the majority of patients have to cope with the disadvantages of normal crutches or walkers; if they cannot, their only alternative is to use a wheel chair.

[0011] What is lacking is an easy-to-use, off-the-shelf walking aid, preferably with crutch-like handling properties. The present invention provides such a device which can be mounted on a conventional forearm or elbow crutch after a minor modification. It is easy to manufacture and uses a

normal light-weight bicycle saddle, a standard crutch handle and other readily available items, so that production costs can be kept comparatively low.

BRIEF SUMMARY OF THE INVENTION

[0012] The present invention relates to a support which allows a complete weight protection of the whole leg, from the hip joint to the toes. The invention uses a bicycle saddle, or a cushioned support of similar shape, on which the user sits much in the manner he would sit on a bicycle seat. The body weight is transferred to the saddle via the sciatic tuberosities and the buttocks. Down from the hip, the leg is left unloaded.

[0013] The saddle or seating cushion is mounted on top of a standard forearm or elbow crutch where the handle has been removed. A few inches below the seat, a strut is fixed at the crutch tubing (in a preferred embodiment, the strut contains a fixation clamp) and the crutch handle is mounted on a pole or short tube which extends from the other end of the strut.

[0014] In order to increase wearing comfort, a foot rest may be attached to the lower end of the crutch, close to the tip.

[0015] To use the invention properly, some basic skill is required. The user must be able to maintain a certain degree of balance, but the same applies to a pair of crutches. Learning how to ride a bicycle is certainly more difficult than learning how to handle the invention. Compared to crutches, far less arm strength is required and the wrist does not have to be stressed by more than a few pounds, just enough to lift the device off the ground during forward displacement. For a safe walk, the use of an additional, conventional crutch is recommended. However, if the user wants to cover just a short distance and feels sufficiently skilled, the device can be used alone and allows to use both arms freely in the stationary standing position.

BRIEF DESCRIPTION OF THE DRAWING

[0016] The drawing shows a perspective view of a preferred embodiment of the invention as described above in the brief summary section. The individual components are identified by 1-5. They are described below in the detailed description section.

DETAILED DESCRIPTION OF THE INVENTION

[0017] The objective of the present invention is to allow a non-weightbearing ambulation which protects the arms from excessive load and which leaves the user as mobile as he would be when using a conventional pair of crutches.

[0018] Depending on the region of the leg which must be protected from weight bearing, several support points at which the load is transferred from the leg to the walking aid can be chosen.

[0019] For a protection of the foot or lower leg, the knee is a well suited support point and several crutch or walking aid modifications have been described which fit the requirements.

[0020] For a protection of the knee or upper leg, the situation is different. The only aid available is a leg brace with a support for the sciatic tuberosity, the Thomas Splint.

[0021] This brace requires a shoe elevation on the other side and is fairly expensive, because it has to be made to measure. Apart from that, the tuberosity support is no comfortable rest area. The additional use of a conventional pair of crutches is required for a safe ambulation. The user has to plan his moves well in advance. When he wants to get up, he has to put on the other side of his trousers first, then the shoe on the other side, then put on the brace, then the remaining trousers, and then, finally, reach for his crutches, get up and walk.

[0022] The present invention cannot avoid using the buttock or the backside of the thigh (the hamstring area) as support point. However, it makes use of well established methods to support the body at this area and combines them with other components to produce a crutch-like device which is simple, effective and very easy to put on and off.

[0023] The preferred embodiment of the invention consists of five essential components. They are depicted in the drawing and are numbered 1-5:

[0024] 1. A lightweight, bicycle type saddle which is preferably well padded and sufficiently narrow (1). A broad, gel cushioned saddle is fairly heavy and tends to slip away to the back when a forward step is made. Therefore, a narrower sports model is recommended.

[0025] 2. A standard elbow crutch where the handle piece has been removed. The saddle 1 is mounted on top of the remaining crutch tube (2).

[0026] 3. A strut (3) which contains a clamp element on one end and provisions to mount an elbow or forearm crutch handle on the other end. This strut has to be made strong enough to bear the whole body weight of the user in any direction; yet, it should be as lightweight as possible. Aluminum alloys as used in aircraft (e.g. Dural) or composite materials (glass or carbon fibre) are the preferred solution. The strut is fastened at the crutch tube 2, below the saddle, by tightening its clamp element.

[0027] 4. A standard elbow or forearm crutch handle (4). This handle may have been taken from the crutch tube 2. It is fixed on the other end of the strut 3, at the provided fixation point, e.g. by making use of a second clamp element.

[0028] 5. A detachable foot rest (5). This rest makes the use of the invention more convenient. It allows the user to control the movement of the crutch tip with both the handle 4 and the foot. In addition, it provides a means to adopt a more comfortable position, because the leg is not left hanging down when sitting on the saddle 1. In cases where absolute weight protection is required, the foot rest can either be removed or be placed a little higher, so that the user can lean the back of his foot or the front of his ankle against it. This way, he can still control the movement of the crutch tip with his foot, but he is unable to put any weight onto his leg.

[0029] The most common alternative to using the present invention would be a pair of crutches. However, in axillary crutches, a non-weightbearing gait easily leads to discomfort and pain in the armpits, while forearm and elbow crutches require sufficient strength in the arms and the capability to exert a firm grip.

[0030] When the user is seated on the support 1, the unaffected leg is held in extension similar to the posture on a standing bicycle, where one foot stays on the ground while the other foot remains on the pedal. The diseased leg is slightly flexed at the knee; the foot may be rested on the foot step 5.

[0031] The invention allows both a firm stand and a safe gait when a second crutch is used on the healthy side. The affected leg remains non-weightbearing at all times. The main advantage of the invention is that nearly no force is required in the arms and that a non-weightbearing gait can be achieved with much less effort than in a three-point gait with two conventional crutches.

[0032] Besides, the user can use his arm freely when he is at rest in the stationary standing position. The handle 4 is only needed to move the tip of the crutch forward, and this can be accomplished with little effort when the user has shifted his weight onto the unaffected leg. Actually, he pulls the crutch tube 2 outward and forward, but the weight of the relieved leg tends to push the crutch tip inward, so that the overall motion is in forward direction. The angle between saddle tip, crutch tube and strut 3 is not confined to 90° but can be adjusted to the needs of the user. A smaller angle, e.g. 60°, creates a larger forward pull and a smaller outward pull. However, a right angle will usually provide the most comfortable compromise.

What I claim as my invention is:

1. A walking aid with the following two essential features:
 - a cushioned support for the buttock or the sciatic tuberosity or the hamstring area (back side) of the thigh which is mounted on top of an upright member
 - at least one handle mounted laterally to said cushioned support in an appropriate position to allow control of motion of said upright member of the walking aid by the user.
2. A walking aid as specified in claim 1 where said cushioned support consists of a bicycle saddle.
3. A walking aid as specified in claim 1 where said upright member consists of the upright member of a conventional elbow or forearm crutch.
4. A walking aid as specified in claim 1 where a foot rest or an ankle support is attached to the lower portion of said upright member.
5. A walking aid as specified in claim 1 where said handle is mounted on a strut extending from below said cushioned support.
6. A walking aid as specified in claim 5 where said strut is fixed to the upper portion of said upright member.

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