This invention relates to an articulated leg brace. One of the objects of this invention is to provide an articulated leg brace for use by persons suffering from injuries caused by polio and other illnesses in which the leg has been crippled by disease or by birth.

Another object of this invention is to provide a leg support provided with a pivotally mounted saddle member which is adapted to support and extend from the hip to the knee of the person and to snugly engage and support the person’s thigh as well as the knee cap and which thereby distributes the support uniformly over a large area and which supports the thigh and leg for both walking and sitting positions.

Another object of this invention is to provide a brace of the foregoing character in which the saddle member is positioned and locked at an inclined angle to support the leg when same is used as a walking support and which is adapted to automatically position the saddle member in a horizontal position when said support is unlocked and moved to a sitting position.

Other objects will become apparent as this description progresses.

In the drawings:
Fig. 1 is a side elevational view of the leg support attached to a leg and showing same in walking or upright supporting position.
Fig. 2 is a rear elevational view taken on lines 2—2 of Fig. 1.
Fig. 3 is a side view showing the parts and leg when in sitting position.
Fig. 4 is a front elevational view taken on lines 4—4 of Fig. 3.
Fig. 5 is a cross-sectional view taken on lines 5—5 of Fig. 3.
Fig. 6 is a detailed sectional view taken on lines 6—6 of Fig. 3.
Fig. 7 is a detailed sectional view taken on lines 7—7 of Fig. 2, showing particularly the latching means with the parts locked against pivotal movement as in standing position.
Fig. 8 is a plan view similar to Fig. 7 but showing the part in unatched position as in sitting position.

The unit comprises a tubular supporting post or leg 10 having a fork or yoke shaped end 12 with the arms 14 thereof curved outwardly and upwardly. The arms 14 are hollow and are flattened to form an oval shape in transverse cross-section and are open at their upper ends to receive a lug or ear 16 which is permanently secured to the arms 14 by means of cross pins 18. One of the lugs 16 has a radial slot 20 for engagement with the sliding latch member as will be subsequently described.

Pivotedly secured to said lugs or ears 16 are a pair of struts generally indicated at 22 which pivotally support at their upper ends a saddle member generally indicated at 24.

The struts 22 are hollow members substantially oval shaped in cross section similar to the arms 14 of the yoke. The lower ends of the struts have each secured therein a lug or ear 26 which is permanently secured by suitable cross pins. The lugs 26 of the struts are pivotally secured to the lugs 16 by cross pins 30 so that the struts 22 are pivoted with respect to the yoke. The strut adjacent the radial slot 20 supports a reciprocable latching member generally indicated at 32 best shown in Figs. 7 and 8 which comprises a flat plate 34 having a centrally positioned extension 36 at the lower end. The plate 34 is provided with an inverted L-shaped cutout or slot 38 which is engaged by an actuating member 40 supported in said slot on a rotatable cross pin 42. The cross pin 42 is supported on the strut and extends outwardly thereof and on which is rigidly secured a finger engaging member 44.

A pair of pins 48 are secured to the strut on the opposite sides of the extension 36 of the latching member 32. Rigidly secured in the upper end of each of the struts by a pin 50 is an ear or lug 52. A coil spring 54 is supported in the strut which supports the reciprocable latching member 32 with the upper end of the spring engaging the lug 52 and the lower end bearing against the upper end of the latching plate 34 to normally urge it downwardly so that the extension 36 is in engagement with the radial notch 20 on the lug 16. By manually rotating the finger engaging member 44 the actuating member 40 raises the reciprocable plate 34 against the tension of the spring 54 and withdraws the extension 36 from the lug 16 to permit the strut members to be pivoted with respect to the supporting post 10. When the finger engaging member 44 is released and the slot 20 is in alignment with the extension 36 the extension will be urged to engage the radial slot 20 to lock the struts 22 and supporting post against pivotal movement. Normally the supporting post and struts are locked against pivotal movement as shown in Figs. 1 and 2.

The saddle member generally indicated at 24 comprises an elongated saddle plate member 54 formed preferably of aluminum which is substantially U shaped in transverse section and of a shape and size to receive the hip and thigh of a person to the knee. It may be perforated and is covered with a soft flannel or like material.

The saddle plate 54 has bosses 56 secured to the opposite sides thereof which are pivotally secured as at 58 to the lugs 52 in the struts 22 to permit pivoting of the saddle member with respect to said struts.

The saddle plate 54 has an extension 60 at the lower end thereof to which is pivotally secured as at 62 a link 63 whose opposite end is pivotally secured to a slideable rod 64.

The rod 64 telescopes into the hollow supporting post 10 and its lower end is supported in a guide block 66 in said tubular post (Fig. 6). A coil spring 68 surrounds the rod with the bottom of the coil spring resting against the guide block and the upper end of the spring resting against a washer 69 fixed to the rod to normally urge the rod upwardly. The upper end of rod 64 has a clevis 70 to which is pivotally secured by a cross pin 72 the lower end of the link 63 previously described. Each of the struts 22 has a rear extension 74 to which is pivotally
secured as at 75 a link 76. The links 76 are turned inwardly and are pivotally secured at their lower ends to the clevis 70 by the cross pin 72.

When the strut members 22 are latched to the arms 14 of the yoke of the post 10 so that they are rigid with the post 10 as shown in Figs. 1 and 2, the telescoping rod 64 is in its uppermost position and the spring 68 is not compressed. The saddle member will be positioned on an inclined plane as shown in Fig. 1 which is the person's standing position with the use of this unit. When the latch member 52 is disengaged from the slot 20 and the strut member 22 is turned rearwardly about pivot 30 the rod 64 will be urged downwardly in the post 10 and the saddle member 52 will be pivoted on pivots 58 and the front end of the saddle member will be elevated through the link 65 so that the saddle member assumed a substantially horizontal position as shown in Fig. 3, which is the person's sitting position.

Extending from the lower end of the saddle plate 54 are a pair of extensions 78 to each of which is pivotally secured as at 79 a brace member 80 which brace members are positioned on the opposite sides of the person's leg. The brace members 80 arc inclined as shown in Figs. 2, 4 and 6 so that the lower ends of same are positioned adjacent the side of the post 10. A transverse rod 81 is secured to the lower end of the brace member 80 and said rod pivotally supports an ankle joint stirrup plate 82 which has a flexible band 83 to receive therebetween a person's foot. The transverse rod 81 is secured to a ring 84 which is slidingly on the post 10. The brace member 80 as well as the stirrup 82 move with the pivoting of the saddle member 54. The lower end of the post 10 has secured to it a cushioning member 85 made of rubber or like material.

Secured to the saddle plate 54 is a flexible covering member 86 having strap 87 for engagement with the buckles 88 secured to the saddle plate 54. The lower end of the covering member 86 is shaped to form a knee cap covering 89 which likewise has a strap 90 engaging a buckle 91 secured to the saddle plate 54.

The flexible covering member 86 and knee cap covering 89 may be formed of the same flexible material and may be a continuation of the material used to cover the outside of the saddle plate 54. The inside of the saddle plate 54 may be padded as desired.

It will be understood that various changes and modifications may be made from the foregoing without departing from the spirit and scope of the appended claims.

I claim:

1. In a leg brace of the character described comprising a post, struts pivotally secured to said post, a saddle member pivotally secured to said struts, said saddle member formed of a rigid material and shaped to conform to the thigh and extending substantially from the hip to the knee, a rod telescopically secured to said post and pivotally connected to said struts and to said saddle, and a pair of brace members pivotally secured to said saddle member.

2. In a leg brace of the character described comprising a post, struts pivotally secured to said post, a saddle member pivotally secured to said struts, said saddle member formed of a rigid material and shaped to conform to the thigh and extending substantially from the hip to the knee, a rod telescopically secured to said post and pivotally connected to said saddle, a pair of brace members pivotally secured to said saddle member, and an ankle joint support pivotally secured to said brace members.

3. In a leg brace of the character described comprising a post, struts pivotally secured to said post, a saddle member pivotally secured to said struts, said saddle member formed of a rigid material and shaped to conform to the thigh and extending substantially from the hip to the knee, a rod telescopically secured to said post and pivotally connected to said saddle, a pair of brace members pivotally secured to said saddle, and locking means for preventing movement between said struts and said post.

4. In a leg brace of the character described comprising a post, struts pivotally secured to said post, locking means for preventing pivotal movement of said struts with respect to said post, a saddle member pivotally secured to said struts, a rod telescopically secured to said post and pivotally connected to said saddle member, and a pair of brace members pivotally secured to said saddle member.

5. In a leg brace of the character described comprising a post having a fork-shaped end, a pair of struts pivotally secured to said forked end, manually operated locking means for locking said struts against pivotal movement with respect to said forked end, a saddle member pivotally secured to said struts, said saddle member being formed of a rigid material and substantially U-shaped in transverse section and of a length to extend from the hip to the knee of the person, and brace members pivotally secured to said saddle member.

6. In a leg brace of the character described comprising a hollow post, a pair of struts pivotally secured to said post, locking means for immovably locking said struts with respect to said post, a saddle member pivotally secured to said struts, a rod telescopically secured in said hollow post and pivotally connected to said saddle member, a pair of brace members pivotally secured to said saddle member, a covering member secured to said saddle member and adapted to cover and embrace the knee cap of the person.

7. In a leg brace of the character described comprising a hollow post, a pair of struts pivotally secured to said post, locking means for locking said struts against pivotal movement with respect to said post, a saddle member pivotally secured to said struts, a rod telescopically secured in said hollow post and pivotally connected to said saddle member, a pair of brace members pivotally secured to said saddle member, a covering member secured to said saddle member and adapted to cover and embrace the knee cap of the person, and an ankle joint support pivotally secured to the lower end of said brace members.

8. In a leg brace of the character described comprising a post, struts pivotally secured to said post, a reciprocable locking member supported on said struts and engaging said post to prevent a pivotal movement between said struts and said post, a saddle member pivotally secured to said struts, a rod telescopically secured to said post and having a pivotal connection with the lower end of said saddle member, the said saddle member being elevated said struts to a substantially horizontal position whereby said struts are pivoted rearwardly with respect to said post.

9. In a leg brace of the character described comprising a hollow post having a pair of upwardly extending arms, a strut pivotally secured to each of said arms, one of said struts having means for locking said struts against pivotal movement, a saddle member pivotally secured to said struts, a telescopic rod secured to said post, spring means engaging said rod for normally urging said rod upwardly, a link member pivotally securing said rod to said saddle member and so constructed and arranged that when said struts are pivoted rearwardly said saddle member will be elevated to a substantially horizontal position.

10. In a leg brace of the character described comprising a hollow post having a pair of upwardly extending arms, a strut pivotally secured to each of said arms, one of said struts having means for locking said struts against pivotal movement, a saddle member pivotally secured to said struts, a telescopic member secured to said post, spring means engaging said telescopic member for normally urging said telescopic member upwardly, a link pivotally securing said saddle member and so constructed and arranged that when said struts are pivoted rearwardly said saddle member will be elevated to a substantially horizontal position.
and a pair of brace members pivotally secured to said saddle member.

11. In a leg brace of the character described comprising a hollow post having a pair of upwardly extending arms, a strut pivotally secured to each of said arms, one of said struts having means for locking said struts against pivotal movement, a saddle member pivotally secured to said struts, a slideable rod secured to said post, spring means engaging said rod for normally urging said rod upwardly, a link member pivotally securing said rod to said saddle member and so constructed and arranged that when said struts are pivoted rearwardly said saddle member will be elevated to a substantially horizontal position, a pair of brace members pivotally secured to said saddle member, and an ankle joint support pivotally secured to said brace members.

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