

Feb. 1, 1938.

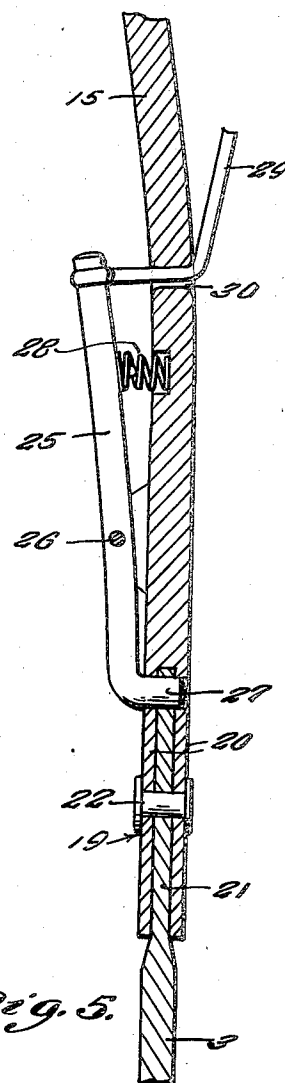
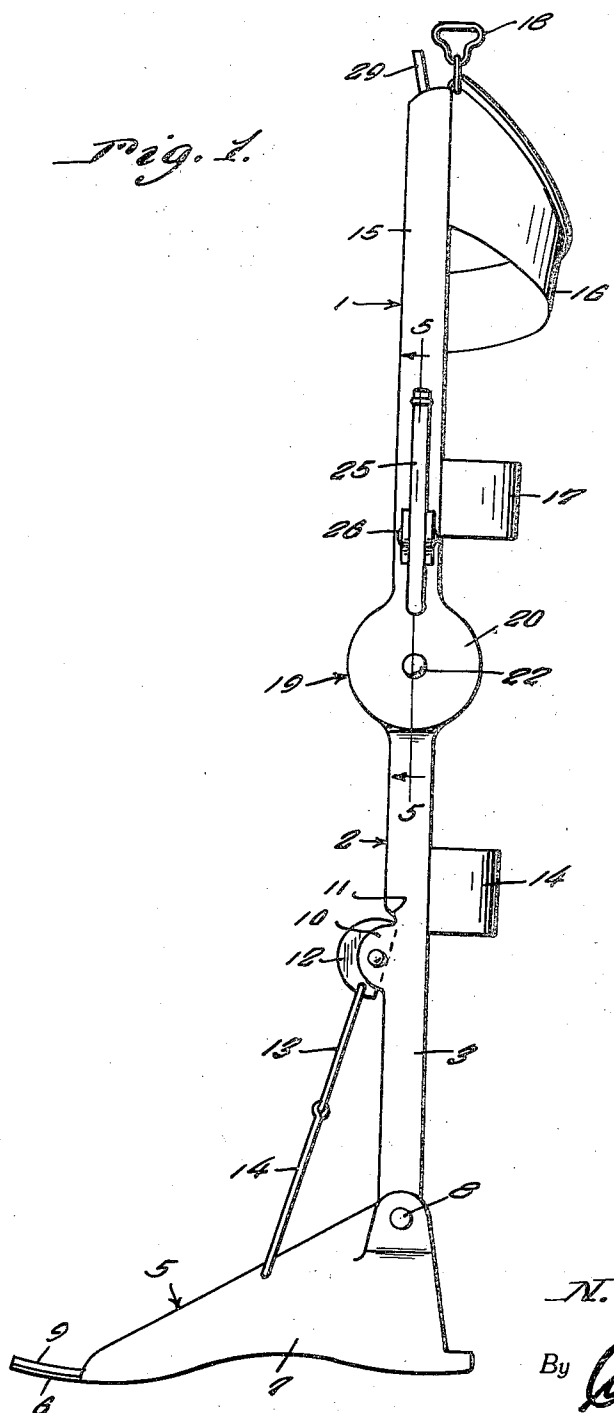
N. R. WAGNER

2,107,095

LEG BRACE

Filed July 14, 1936

3 Sheets-Sheet 1



Inventor

*N. R. Wagner*

By

*Clarence A. O'Brien*  
*Hyman Berman*

Attorneys

Feb. 1, 1938.

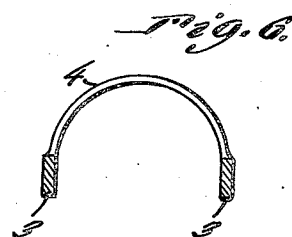
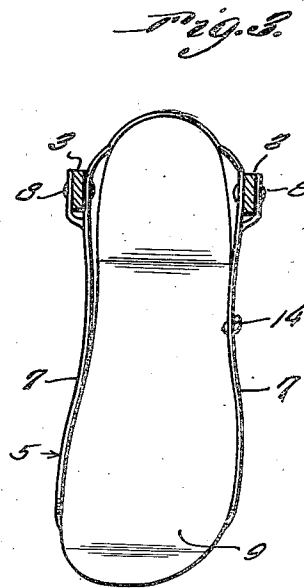
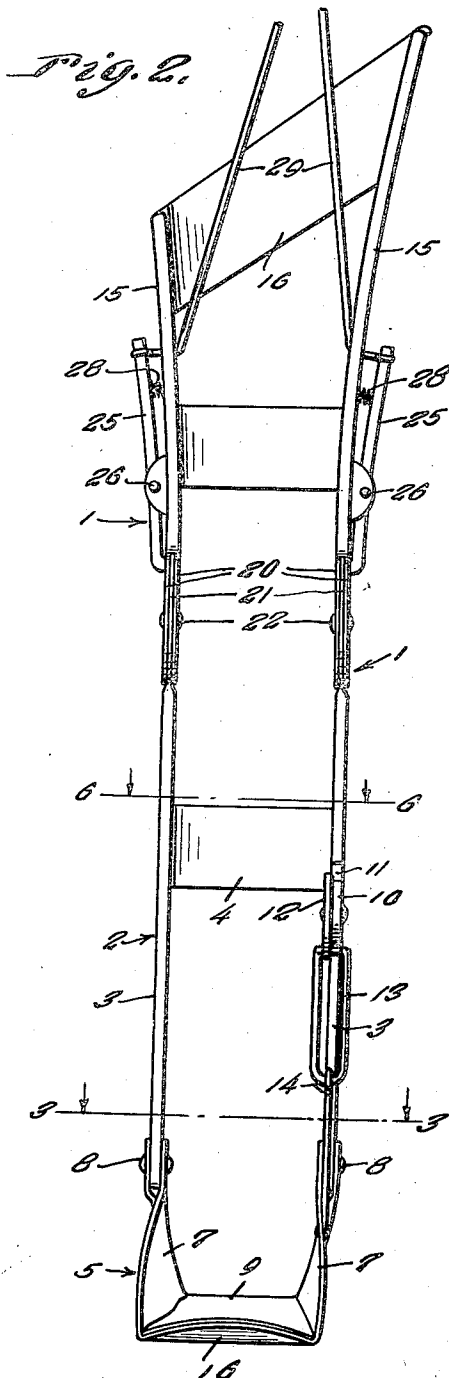
N. R. WAGNER

2,107,095

LEG BRACE

Filed July 14, 1936

3 Sheets-Sheet 2



Inventor

*N. R. Wagner*

By

*Alvin A. O'Brien*  
*Hyman Berman*

Attorneys

Feb. 1, 1938.

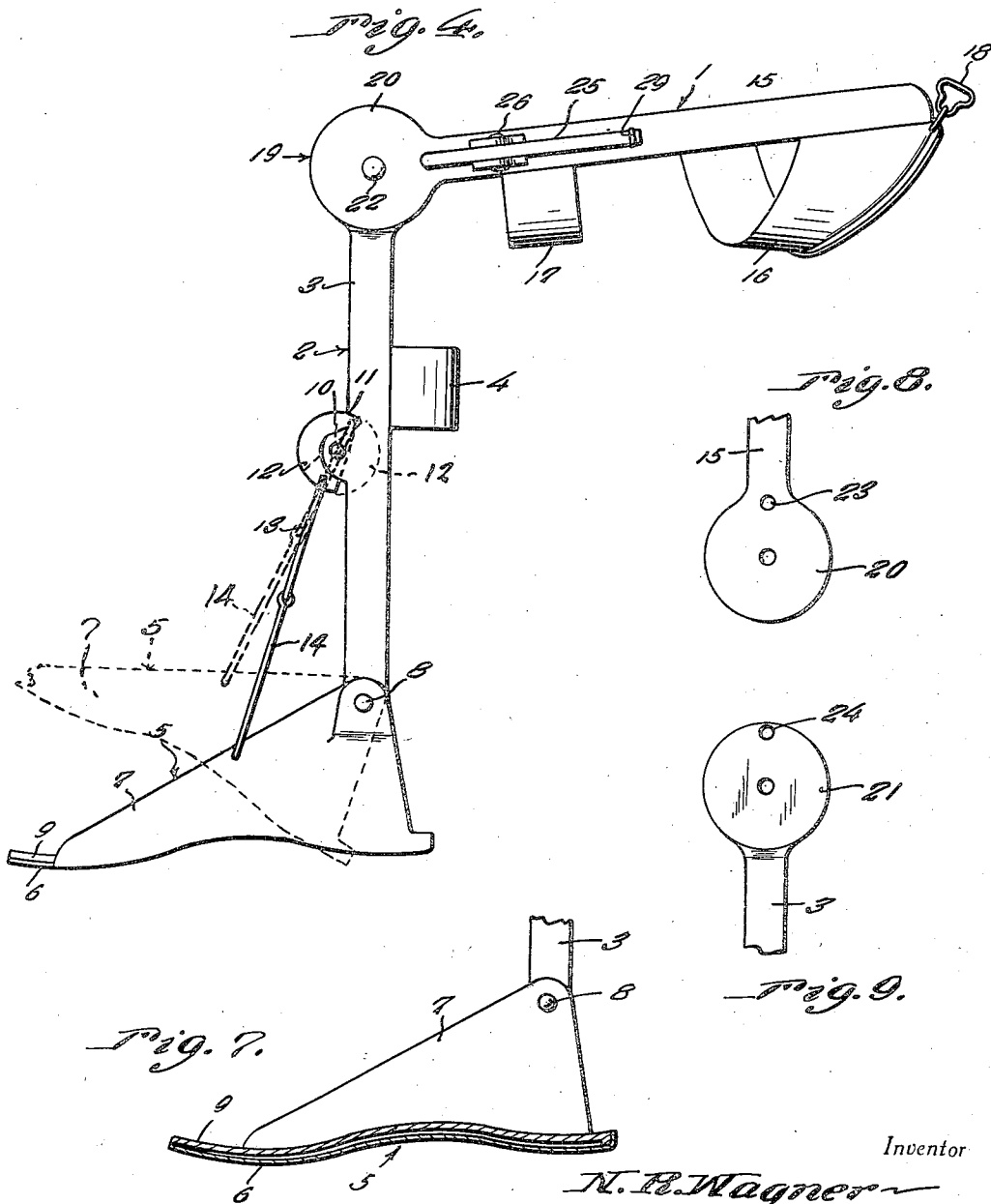
N. R. WAGNER

2,107,095

LEG BRACE

Filed July 14, 1936

3 Sheets-Sheet 3



Inventor

N. R. Wagner

By *Clarence A. O'Brien*  
*Hyman Berman*

Attorneys

## UNITED STATES PATENT OFFICE

2,107,095

## LEG BRACE

Norbert R. Wagner, Cleveland, Wis.

Application July 14, 1936, Serial No. 90,587

3 Claims. (Cl. 128—80)

The present invention relates to new and useful improvements in leg braces of the type including a knee joint and has for one of its important objects to provide, in a manner hereinafter set forth, novel means for locking and releasing the knee joint for permitting the wearer to sit down at any time and bend his leg at the knee.

Another very important object of the invention is to provide a leg brace of the aforementioned character embodying a novel construction and arrangement of pivotally mounted foot saddle or member.

Other objects of the invention are to provide a leg brace of the character described which will be comparatively simple in construction, strong, durable, highly efficient and reliable in use, compact, light in weight and which may be manufactured at low cost.

All of the foregoing and still further objects and advantages of the invention will become apparent from a study of the following specification, taken in connection with the accompanying drawings wherein like characters of reference designate corresponding parts throughout the several views, and wherein:

Figure 1 is a view in the side elevation of a leg brace constructed in accordance with the present invention.

Figure 2 is a view in front elevation thereof.

Figure 3 is a horizontal sectional view, taken substantially on the line 3—3 of Figure 2.

Figure 4 is a view in side elevation, showing the device broken at the knee.

Figure 5 is a fragmentary view in vertical section through one side portion of the device, taken substantially on the line 5—5 of Figure 1.

Figure 6 is a view in horizontal section, taken substantially on the line 6—6 of Figure 2.

Figure 7 is a detailed view in vertical longitudinal section through the foot saddle or member.

Figure 8 is a detail view in side elevation of the upper portion of one of the knee hinges or joints.

Figure 9 is a detail view in side elevation of the complementary portion of the knee hinge or joint to that shown in Figure 8.

Referring now to the drawings in detail, it will be seen that the embodiment of the invention which has been illustrated comprises upper and lower sections which are designated generally by the reference numerals 1 and 2, respectively. The lower section 2 comprises a pair of vertical side bars 3 which are connected, at an intermediate point, by an arcuate metallic back band 4.

Hingedly mounted on the lower end of the sec-

tion 2 is a foot saddle which is designated generally by the reference numeral 5. The foot saddle 5 comprises a metallic bottom plate 6 from the longitudinal edges of which integral sides 7 rise, said sides 7 being pivotally connected to the lower end portions of the bars 3, as at 8. As best seen in Figure 7 of the drawings, the bottom plate 6 is formed to provide an arch support. Mounted on the plate 6 is an insole 9 of suitable material, preferably of thin wood.

Projecting forwardly from the outer side bar 3 is an integral ear 10 and above said ear 10 said outer bar 3 has formed therein a notch 11. Mounted for swinging movement on the ear 10 is a segmental plate 12. The reference numeral 13 designates a link which is pivotally mounted off center on the segmental plate 12. A flexible rod or the like 14 connects the link 13 to the outer side plate 7 of the foot saddle 5. The notch 11 is for the reception of the link 13.

The upper section 1 comprises a pair of side bars 15 which are connected, at spaced points, by upper and lower arcuate back bands 16 and 17, respectively, of metal. The bars 15 curve outwardly toward their upper ends and, as illustrated to advantage in Figure 2 of the drawings, the outermost bar 15 is considerably longer than the innermost of said bars 15. The upper back band 16 extends spirally between the upper end portions of the bars 15. Suitable means, as at 18, is provided on the upper end portion of the section 1, at the outer side thereof, for connecting shoulder straps (not shown) thereto.

The upper and lower sections 1 and 2, respectively, are hingedly connected by a knee joint which is designated generally by the reference numeral 19. The knee joint 19 comprises pairs of spaced disks 20 on the lower ends of the bars 15 which receive therebetween single disks 21 on the upper ends of the bars 3. Suitable pins 22 extend between the disks 20 and are journaled in the disks 21. The disks 20 and 21 are provided with openings 23 and 24, respectively, which register when the upper and lower bars 15 and 3 are aligned for the reception of latches 25 which are pivotally mounted at an intermediate point, as at 26, on the outer sides of said bars 15. At their lower ends, the latches 25 terminate in inwardly projecting pins 27 which are engageable in the openings 23 and 24 for releasably locking the sections 1 and 2 against relative swinging movement. Coil springs 28 are engaged with the other end portions of the latches 25 for yieldingly urging said latches toward operative or locking position. Flexible straps 29 pass

slidably through openings 30 which are provided therefor in the bars 15 and said straps are connected to the upper end portions of the latches 25 for actuating said latches to disengaged or inoperative position against the tension of the springs 28. The straps or the like 29 are adapted to be pulled from within the pocket of the wearer.

It is thought that the operation of the device will be readily apparent upon a consideration of the foregoing. When walking, the pivotally mounted spring actuated latches 25 rigidly secure the upper and lower sections 1 and 2, respectively, against relative swinging movement with the bars 15 and 3 in alignment, as shown to advantage in Figure 1 of the drawings. However, when it is desired to bend the leg at the knee, as when sitting down, the wearer has only to pull upwardly on the straps 29 in a manner to disengage the latches 25 against the tension of the springs 28. It may be well to here state that the straps 29 are connected at their upper ends to facilitate pulling said straps in unison for disengaging the latches 25 simultaneously. When the sections 1 and 2 are again aligned, as when standing up, the latches 25 automatically engage in the openings 24 of the lower bars 3 when said openings 24 come into registry with the openings 23. The side plates 7 of the foot saddle or member 5 function as supports for the ankle. When the segmental plate 12 is rotated to the limit of its movement from left to right as viewed in Figure 4 of the drawings, the link 13 engages in the notch 11 and the saddle 5 is supported in raised, or walking, position as suggested in dotted lines in said Figure 4. In this position of the saddle 5, and under weight placed on the heel, alone, pivoting of the saddle 5 on the bars 3 is yieldingly opposed by the flexible element 14, and when the saddle 5 is fully engaged with the ground said flexible element 14 permits relative pivoting of the same and the bars 3, or, in other words ankle motion. When the segmental disk 12 is swung to the full line position shown in Figure 4 of the drawings, the foot saddle 5 is lowered to permit the foot to assume a restful position when the wearer is sitting down. The disk 12 is flipped, or, pushed manually past dead center position from its limit of right hand or clockwise movement. When the disk 12 is rotated from left to right, as first described, the upper end of the link 13 travels past the center of the pivot of said disk 12 and engages in the notch 11 for supporting the foot saddle 5 in raised position.

It is believed that the many advantages of a leg brace constructed in accordance with the present invention will be readily understood, and

although a preferred embodiment of the device is as illustrated and described, it is to be understood that changes in the details of construction and in the combination and arrangement of parts may be resorted to which will fall within the scope of the invention as claimed.

What is claimed is:—

1. A leg brace comprising upper and lower sections, each section including a pair of side bars, a foot saddle pivotally mounted on the lower section, a knee joint hingedly connecting said sections together, said joint comprising single disks on one end of the bars of one of the sections, said disks having openings therein, pairs of spaced disks on one end of the bars of the other section engaged on opposite sides of the first named disks and journaled thereon, the second named disks having openings therein for registering with the first named openings, latches pivotally mounted, at an intermediate point, on the side bars of the upper section, said latches being engageable in the first and second named openings, when said first and second named openings are in registration, for releasably locking the sections together against relative swinging movement, springs engaged with the latches for yieldingly urging the latches toward operative position, the side bars of the upper section having openings therein, and flexible elements extending slidably through the last named openings and connected to the latches for disengaging said latches from the first and second named openings.

2. A leg brace of the class described comprising hingedly connected upper and lower sections, the upper section including side bars having openings therein, latches movable laterally of said side bars on the outer sides thereof for releasably locking the sections against relative swinging movement, and flexible pull elements extending from said latches inwardly through the openings to the inner sides of said bars for actuating said latches to inoperative position.

3. A leg brace comprising a pair of side bars, a foot saddle pivotally mounted on the lower ends of said side bars, an ear projecting forwardly from one of the side bars at an intermediate point, a segmental plate rotatably mounted on said ear, a link pivotally connected off center to said segmental plate, and an element connecting said link to the foot saddle, said one side bar having a notch therein adjacent the ear for the reception of the link, said plate, link and element constituting means for supporting the foot saddle in raised or lowered position.

NORBERT R. WAGNER.