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D. R. TELSON

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FOOT SUPPORT

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Fig. 1.

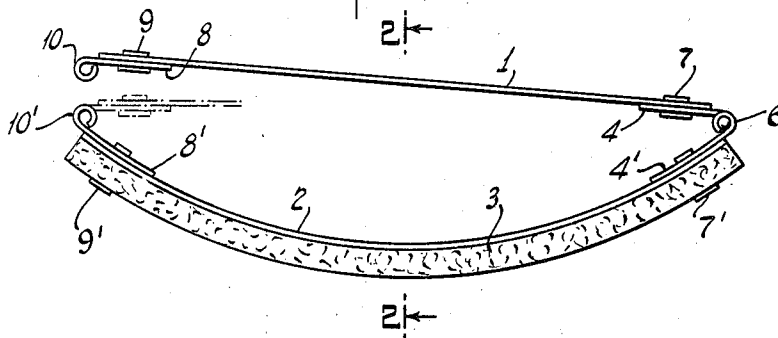


Fig. 2.

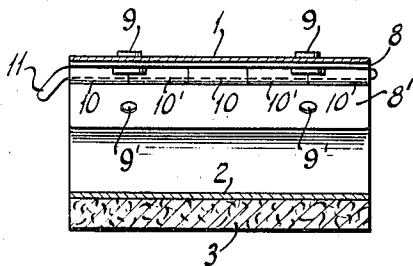


Fig. 3.

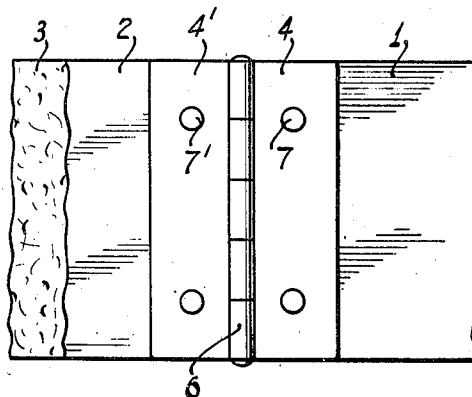
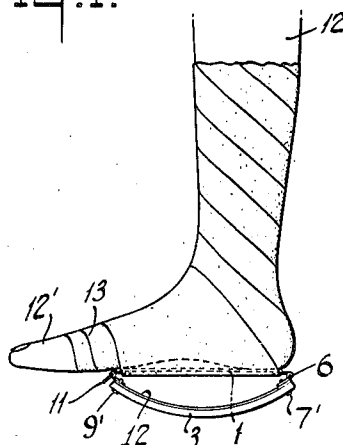


Fig. 4.



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FOOT SUPPORT

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3 Claims. (Cl. 128—80)

My present invention relates generally to a device for the ambulatory treatment of the lower extremity, and more particularly to a simplified and highly improved rocker support adapted to replace the well known iron stirrup, or walking iron.

In the past there has been employed a method of ambulatory treatment of fractures of the lower extremity. In this method there is used an unpadded plaster cast accompanied by the earliest possible assumption of weight-bearing. The same method is employed for post-operative treatment of foot cases where early ambulation is essential. Similarly, the same treatment is applicable to arthritic cases. In general, the method is applicable in all situations where early weight bearing is desired without motion of the joints. The cast is applied in the form of plaster-impregnated bandages. The conventional iron stirrup has been used to permit ambulation and protect the bottom of the cast. However, actual clinical experience with the stirrup has revealed certain disadvantages and difficulties. If the stirrup be not precisely placed in the weight-bearing axis of the lower extremity, the patient tends to tilt either forward or backward. Hence, ambulation is found difficult, and the patient must actually be taught to walk.

Even if the stirrup is perfectly positioned, only a single point of weight support is provided. The patient's step is necessarily short and halting. Considerable practice is required before the patient acquires security in gait.

Now, I have invented and fully developed a simplified and highly practical method of, and means for, simulating the normal rocking motion of the ankle in all cases where the lower extremity is embedded in a cast and the earliest assumption of weight-bearing is desirable, but without motion of the joints.

An important object of my invention is to provide a rocker device, adapted to be worn in the manner of a sandal, providing a curved sole surface whereby the wearer can mimic the normal rocking motion of the ankle despite immobilization of the latter.

Another important object of my invention is to provide a simple and highly practical device for facilitating earliest possible assumption of weight-bearing for a fractured lower extremity encased in an unpadded cast; the device essentially consisting of a rocker support of two components, one of the components being a rigid support plate, the second being a rigid convex member hinged at one end to the support plate

thereby permitting ready attachment of plaster bandage to the support plate, and a common closure member being employed to lock the two components in operative relation.

Another object of my invention is to provide a rocker support for a lower extremity encased in a plaster bandage cast whereby the patient's weight is transferred cyclically from the rear of the support to its frontal end thereby permitting the gait to become approximately normal, instead of short and mincing as is the case with the stirrup.

Still other objects are to improve generally the simplicity, durability and efficiency of weight-bearing supports for the lower extremity, and more especially to provide a rocker support which is economically manufactured and easily assembled or dis-assembled.

The invention will be best understood from the following detailed specification taken in connection with the following drawing, it being understood, however, that the invention is not limited by the specific illustration and description, but that the latter constitute a preferred embodiment of the invention.

In the drawing:

Fig. 1 shows a view in side elevation of the rocker support,

Fig. 2 is a sectional view taken along line 2—2 of Fig. 1, looking in the direction of the arrows,

Fig. 3 is a plan view of the support with the closure plate entirely opened, certain portions being broken away,

Fig. 4 is a view in side elevation of a lower extremity with the rocker support in operative position.

Referring now to the accompanying drawing, wherein like reference numerals in the different figures designate similar structural elements, my novel rocker device consists essentially of two component members. One of these is a rigid support plate 1 whose width is substantially equal to the sole of the foot. Its length, as will be seen from Fig. 4, is such that when positioned under the sole of the foot in the manner depicted, the median axis of the leg passes through the center of the support plate. The plate 1 may be fabricated of relatively thick sheet steel so as to retain its planar form when in use. The second component member is a rigid sheet of steel of the same width as plate 1, and of preferably equal thickness. The second member is indicated by numeral 2, and has a substantially convex configuration.

Accordingly, member 2 is the rocker member

which makes direct contact with the ground as the wearer ambulates. The arcuate plate 2 is preferably given a reasonable curvature. It should be sufficient to provide a curved surface enabling a simulation of the normal rocking of the ankle. The convexity of rocker member 2 should be such as to permit the wearer's weight to be transferred cyclically from the hinged end to its frontal end. In order to insure steady gait and sure step the under face of the member 2 is provided with a frictional facing 3.

The facing 3 may be a relatively thick layer of leather. In other words, a leather sole 3 is provided on the external face of rocker member 2. Any other non-slippage material may be employed in place of leather. For example, rubberized fiber, synthetic plastics, hard rubber or any other well known composition capable of developing a frictional grip on the ground may be employed. The friction facing 3 covers the entire external face of rocker member 2. It may be secured to the latter in any desired manner, as by rivets 9 and 7'. It is to be clearly understood that the members 1 and 2 need not be steel. Indeed, any rigid material such as hard wood, synthetic plastic or other rigid material may be used. Many moldable synthetic plastics are known today which have sufficient strength to be employed for members 1 and 2. In such case there would be no need to use a separate facing 3. Instead the rocker member 2 could be made thick enough to provide a frictional facing.

In order to permit ease of application of the device to the foot, the members 1 and 2 are constructed to be relatively adjustable. The hinge 6 is secured to the common rear ends of members 1 and 2. The hinge 6 is of conventional structure, and is shown in detail in Fig. 3. The two halves 4 and 4' of the hinge are fixedly secured to the respective ends of members 1 and 2 by respective rivets 7 and 7'. The spaced rivets 7' positively lock the hinge section 4' rocker member 2 and leather facing 3 together.

The opposite ends of the members 1 and 2 may be locked together by a simple means similar in construction to hinge 6. Thus, two hinge sections 8 and 8' are riveted by respective rivets 9 and 9' to respective ends of members 1 and 2. In Fig. 2 there is shown the appearance of the interleaved hinge sections 10 and 10' when in closure condition. In place of the permanent pintle of hinge 6, there is employed a removable locking pintle, or nail, 11. By withdrawing the latching element 11 it is possible to open the support plate 1 to permit attachment to the plaster bandage. Of course, any other form of closure device may be used to lock the two components of the rocker in operative condition.

In Fig. 4 there is shown the method of utilizing the rocker support. The leg 12 is assumed to be encased, or embedded, in a plaster cast. Specifically, the numeral 13 designates a plaster-impregnated bandage of a well known type. The ankle joint is completely prevented from moving. Whether the leg is fractured, or whether the rocker is used for post-operative ambulatory treatment, the rocker support is positioned in the manner illustrated in Fig. 4. After the foot has been thoroughly encased in the cast, 70

the plate 1 is securely positioned under the sole of the foot by further turns (about 15) of plaster bandage. The plate 1 is located so that the central axis line (dotted), or weight-bearing axis, is at the median point of the plate. The frontal hinge elements are brought together, and pintle 11 is inserted to lock the rocker member 2 in position.

If desired, the support plate 1 may be shaped to conform to the normal arch of the foot. Again, a leather toe cap may be slipped over the toes 12' for warmth and protection of the toes during the period when rocker is worn. If desired, fixation of plate 1 to the cast could be improved by providing flexible metallic ribbons, or projections, on the long edges of the plate. These ribbons could be made of tin, and each long edge might be provided with two or more spaced ribbons of sufficient length to overlie the cast prior to applying the auxiliary plaster bandage turns over the foot and plate 1.

The rocker support of my present invention has these advantages over the conventional stirrup:

1. The normal rocking motion of the ankle is simulated.
2. The gait is approximately normal; the length of stride is materially increased over the stirrup.
3. The average patient can get about quite comfortably on the day of application, and needs no special practice or instruction.
4. The application to the cast is simple, speedy and of little annoyance to the patient.
5. The rocker support is highly economical of components.

While I have indicated and described a device for carrying my invention into effect, it will be apparent to one skilled in the art that my invention is by no means limited to the particular organization shown and described, but that many modifications may be made without departing from the scope of my invention, as set forth in the appended claims.

What I claim is:

1. A rocker support, for a lower extremity embedded in a cast, comprising a rigid convex rocker member, a support plate pivotally secured to the rocker member at common ends thereof, and means for positively locking the opposite ends together.

2. In a device of the class described, a rigid plate, a convex rigid plate, means for pivotally securing adjacent ends of said plates, removable means common to the opposite ends of the plate to provide a locking device, and on the outer surface the convex plate being provided with a layer of non-metallic frictional material.

3. A support adapted for a fractured leg which is encased in an unpadded plaster bandage, comprising a sole-contacting rigid plate adapted to be immobilized in position by one or more turns of the plaster bandage, and a convex plate depending from the first plate and provided on its ground-contacting face with a layer of slippage-preventing material, one pair of adjacent ends of said plates being hinged together, and the opposite pair of ends having a removable latching device.

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