

March 24, 1959

N. DELIA
THERAPEUTIC DEVICE

2,878,493

Filed Nov. 21, 1957

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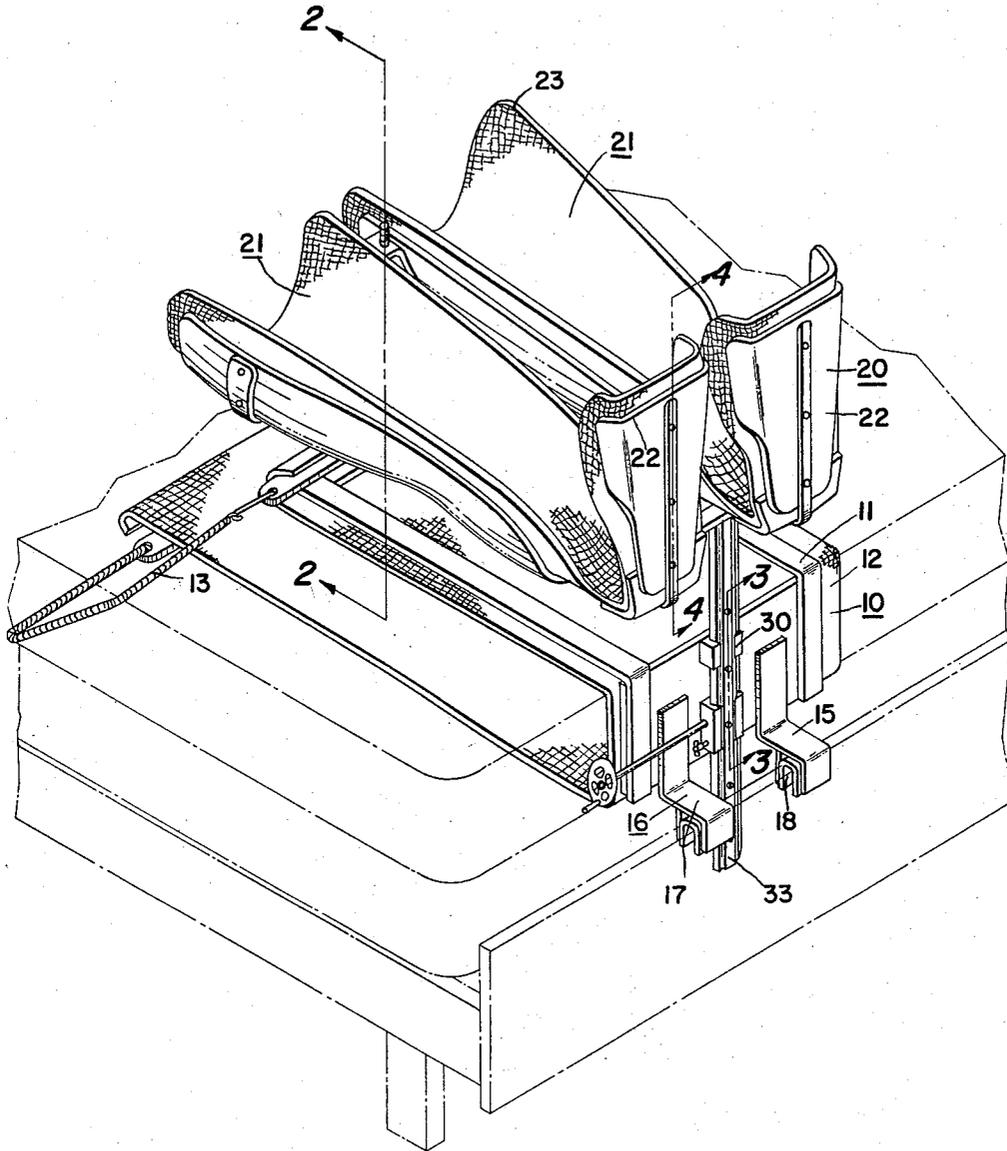


Fig. 1

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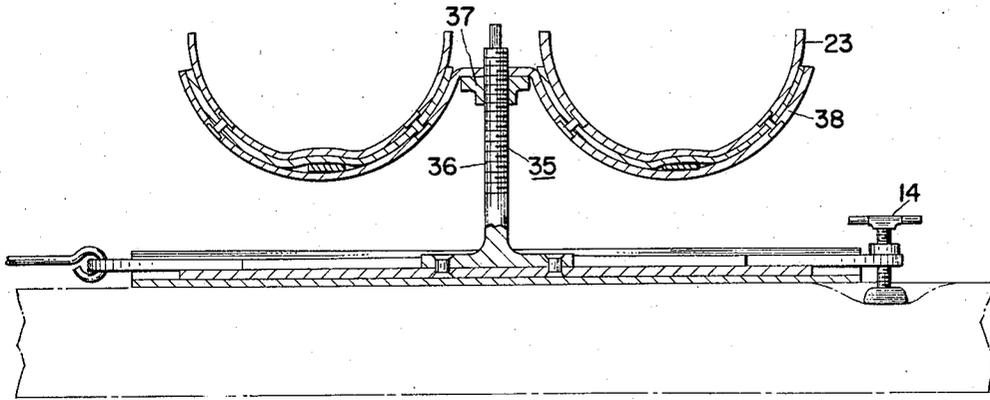


Fig. 2

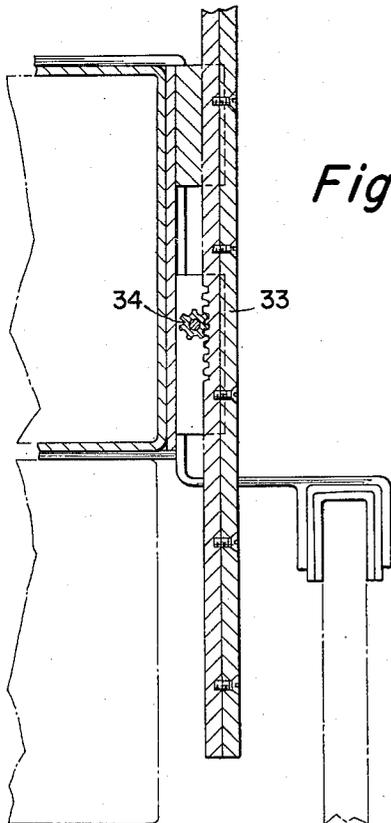


Fig. 3

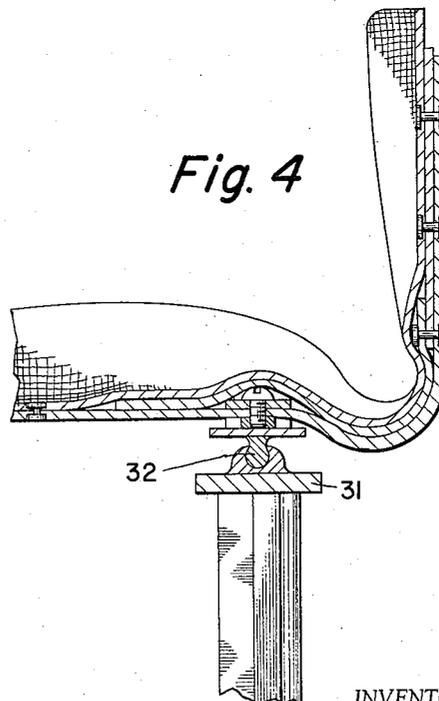


Fig. 4

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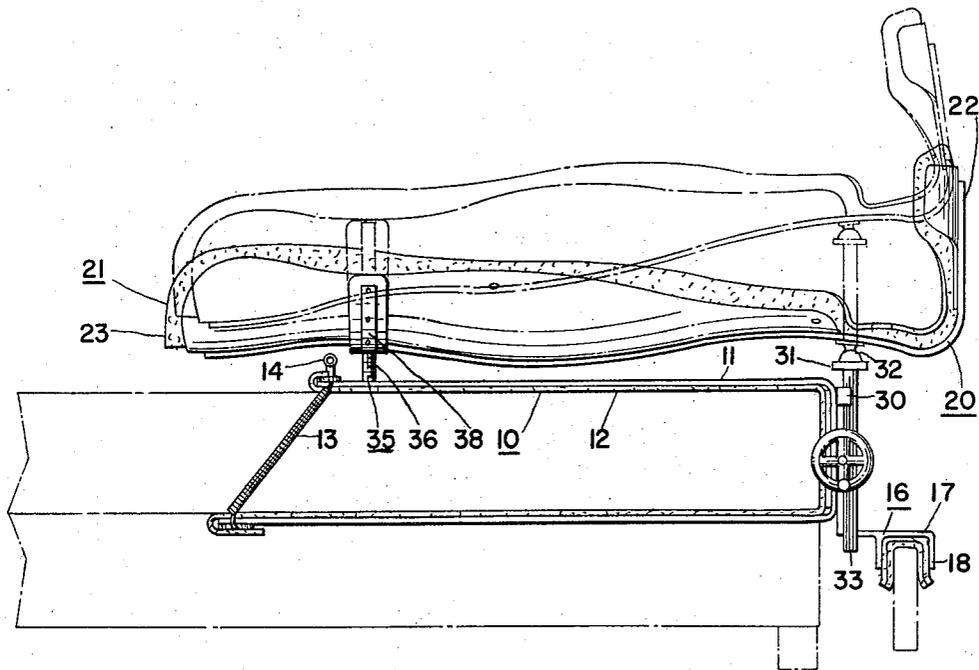


Fig. 5

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4 Claims. (Cl. 5—327)

This invention relates in general to physical therapy devices, and relates more specifically to a support device adapted to be selectively adjusted for positioning the limbs at the most favorable height and angle with respect to a mattress surface for rest therapy.

It is well known that mere rest in a sitting or prone position is often unsatisfactory to relieve the muscular tension and fatigue, or to rest the heart. Rest and relaxation with the lower limbs elevated is often recommended for general health tone, relaxation, and for the relief of blood pressure from exhausted limb muscles.

However, proper rest and the full value of elevating the limbs are not readily possible by the use of makeshift padding, or the practice of lying on the floor with the limbs on a piece of furniture. The angle and height thus obtained are not proper, and quite often blood circulation is hampered. The results thus obtained are often worse than valueless; often the condition is aggravated.

Therefore, the principal object of this invention is to provide a leg support device having a means to cradle each leg at a selected height and angle above a mattress.

Another object of this invention is to provide a base support attachable to a mattress, with two leg supporting cradles angularly and elevationally mounted thereabove.

And another object of this invention is to provide a pivoted support of each leg cradle in the area of the ankle.

Other objects and a fuller understanding of the invention may be had by referring to the following description and claims, taken in conjunction with the accompanying drawing, in which:

Figure 1 is a perspective view of the preferred embodiment of this invention with a bed and mattress indicated in phantom outline;

Figure 2 is a section taken along line 2—2 of Figure 1 to indicate the elevational adjustment characteristics of one pivotal support;

Figure 3 is a section taken along line 3—3 of Figure 1;

Figure 4 is a section taken along line 4—4 of Figure 1; and,

Figure 5 is a side view of the apparatus, one position shown in full outline and another selected position of elevation shown in phantom outline.

Reference is made to the figures of the drawings to illustrate what applicant believes to be a practical and preferred embodiment of the invention. Others may likely change details but will find that the provisions of both elevation and angular tilting control are a novel and useful improvement in this type of therapeutic device. This control will provide unusual relief from fatigue and other types of lower limb ailments.

This apparatus embodies an attachment anchor portion which is indicated generally by the reference character 10. A superstructure 20 is held in an elevated and tilted position above the anchor portion 10 in the novel manner of this invention, which will be more fully explained hereinafter.

Generally, the superstructure 20 is elevated by means of an elevator rack device 30 about an adjustable height pivot 35.

More specifically, the attachment anchor portion 10 embodies a U-shaped framework of strap members 11 and a liner 12. This U-shaped portion, as best illustrated in the Figures 1 and 5, is designed to fit upon a conventional bed mattress. Quite obviously, an exact fit between the mattress and the U-shaped member is not essential, as it is desirable that this anchor portion 10 remain as stable in its position upon the mattress as practical. In order to aid in the positioning and maintenance of stability, a resilient member 13, preferably a spring, is provided to loop from the top wall portion of the U-shaped clip to the bottom wall portion thereof around the edge of the mattress as illustrated in Figure 1. Furthermore, as best shown in Figure 2, a threaded screw clamp 14 is carried by the top wall of the U-shaped member in order to provide a tight clamp to grip upon the top surface of an associated mattress.

For further stability, a first and second footboard engagement member 15 and 16 is carried by the end wall of the U-shaped member. These footboard engagement members each have an arm 17 extending from the end wall in a direction to reach a footboard of a bed carrying the mattress to which the anchor member is engaged. Each arm 17 has a downwardly opening clip portion 18 to engage upon a bed footboard in order to provide stability for the anchor member.

The superstructure consists of two leg-cast shaped shields 21 with footed bottom ends 22 and interior padding to engage and support the human limbs.

It is quite important to the proper functioning and support of this invention to support the shields 21 properly upon the elevator rack device 30 and to be able to adjust the entire apparatus to a proper height. However, height alone is not sufficient. Infinite angular adjustment within the range of the apparatus has been found to be exceedingly desirable. To this end a threaded stud 36 is carried by the top wall of the attachment anchor portion 10 and is provided with a threaded wing nut 37. The wing nut is thereby vertically adjustable on the stud to any vertical position within the range of the threads provided on the stud. A yoke 38 is provided with a central opening as best illustrated in Figure 2 to seat down over the stud 36 upon the wing nut 37 and therefore be supported at any selected elevator height. The opening in the yoke 38 is sufficiently large to allow a locking adjustment of this yoke and the supported superstructure shields 21.

In order to provide readily adjustable height support to the ankle area of the superstructure, the elevator rack device 30 is provided with a cross arm 31 which extends directly under the ankle area of the shields 21. This location is quite essential to the proper support of the superstructure. Proper tilting adjustment cannot be obtained if this support is placed otherwise.

In order to pivotally connect the arm 31 under the superstructure shields 21, ball and socket joint 32 is provided substantially as shown in Figure 4. A rack 33 is vertically adjustable by means of a manually operated pinion 34 as best suggested in Figure 3 of the drawings.

From the foregoing description it will be observed that the invention resides in an improved device for supporting the lower limbs in a selected position of elevation and angular relationship with respect to a bed mattress, and comprises generally an attachment anchor portion for attachment to a bed mattress for establishing a foundation support with respect to a bed and mattress, with a leg supporting superstructure held above the attachment anchor portion by means of a position control device

essentially supporting the leg supporting superstructure upon the anchor portion.

Although the invention has been described in its preferred form with a certain degree of particularity it is understood that the present disclosure of the preferred form has been made only by way of example and that numerous changes in the details of construction and the combination and arrangement of parts may be resorted to without departing from the spirit and the scope of the invention as hereinafter claimed.

I claim:

1. An improved device for supporting the lower limbs in a selected position of elevation and angular relationship with respect to a bed mattress, comprising an attachment anchor portion for attachment to a bed mattress for establishing a foundation support with respect to a bed and mattress, a leg supporting superstructure, and position control means adjustably supporting said leg supporting superstructure upon said anchor portion, said attachment anchor portion being a U-shaped clip having a bottom wall to fit under a bed mattress, a top wall to fit over the bed mattress, and a connecting end wall, a resilient strap extending from said top to bottom wall to extend around the side edge of a mattress engaged into said anchor, a threaded screw clamp carried by said top wall to tighten upon the bed mattress to further stabilize the anchor portion, a first and second footboard engagement member carried by said end wall, said footboard engagement members each having an arm extending from the end wall in a direction to reach a footboard of a bed carrying the mattress to which the anchor member is engaged, each said arm having a downwardly opening clip portion to engage upon a bed footboard for anchor member stability, said leg supporting superstructure consisting of two leg-cast shaped shields with footed bottom ends and internal padding to engage and support the human limbs, said position control means consisting of a vertically adjustable calf-area support having a vertical threaded stud, a threaded nut vertically adjustable on said stud, a yoke having a first and second hooked portion supporting the two shields in side-by-side relationship, said yoke having a central portion with an opening therein to fit over said stud above said nut, a rack, rack guide, bearings carried by said end wall of the anchor portion mounting said rack to slide in a vertical direction, pinion means in driving relationship with said rack, a hand wheel adjustment to drive said pinion and hence said rack, a cross bar carried by said rack, a first ball and socket swivel joint supporting one of said leg shields at the ankle area thereof upon said cross bar, a second ball and socket swivel joint supporting the other of said leg shields at the ankle area thereof upon said cross bar, whereby said leg supporting superstructure may be elevated and tilted to any infinite degree within the limits of adjustment of the said stud and rack.

2. A therapeutic device comprising, first and second spaced parallel leg supports, each of said leg supports having inter-connected calf, ankle, and foot portions, a foundation support including first and second leg support carriers, said calf portions being pivotally connected to said first leg support carrier, said angle portions being pivotally connected to the second leg support carrier, said leg supports being longitudinally positioned by one of said support carrier connections, said first leg support

carrier including screw means to adjust the first leg support connection along a path longitudinal with respect to said first leg support carrier and transverse to the leg supports, said second leg support carrier including screw means to adjust the second leg support connection along a path transverse to the leg supports and longitudinal of the second leg support carrier, whereby to provide a device in which spaced ankle and calf connections may be independently adjusted to provide a desired elevation and in which longitudinal movement of the leg supports is prevented.

3. A therapeutic device comprising, first and second spaced parallel leg supports, each of said leg supports having inter-connected calf, ankle, and foot portions, a foundation support, first and second leg support carriers fixed to said foundation in a substantially parallel position, said calf portions being pivotally connected to said first leg support carrier to form a first connection, said leg supports being longitudinally positioned by said first support carrier connection, said first leg support carrier including adjustable screw means to adjust said first connection longitudinally along said first leg support carrier and transverse to said leg supports, said second leg support carrier being connected to the leg support ankle portions to form a second connection, said second leg support carrier including adjustable screw means to adjust said second connection along a path transverse to the leg supports and longitudinal with respect to said leg support carrier, the second leg support including swivel joint means to permit raising and lowering of the second connection and attached leg supports about said pivotal first connection when the second leg support carrier screw means is adjusted longitudinally.

4. A therapeutic device comprising, a support member having first and second spaced parallel leg supporting areas, said member leg support areas each having inter-connected calf, ankle, and foot portions, a foundation support including first and second support member carriers, said member being pivotally connected to said first leg support carrier adjacent the calf portions, said member being pivotally connected to the second leg support carrier adjacent said ankle portions, at least one of said support carriers being transversely rigid, said member being longitudinally positioned by the connection of said one support carrier connection, said first leg support carrier including means to adjust the first leg support connection along a path longitudinal with respect to said first leg support carrier and transverse to the leg support portions, said second leg support carrier including means to adjust the second leg support connection along a path transverse to the leg support portions and longitudinal of the second leg support carrier, whereby to provide a device in which spaced ankle and calf connections may be independently adjusted to provide a desired elevation and in which longitudinal movement of the leg supports is prevented.

References Cited in the file of this patent

UNITED STATES PATENTS

1,171,712	Gibson	Feb. 15, 1916
2,250,026	Laukhuff	July 22, 1941
2,522,173	Herbert	Sept. 12, 1950
2,581,110	Kenworthy	Jan. 1, 1952