Aug. 11, 1970 M. E. RICKE 3,523,311

HOSPITAL BED FOOTBOARD ASSEMBLY

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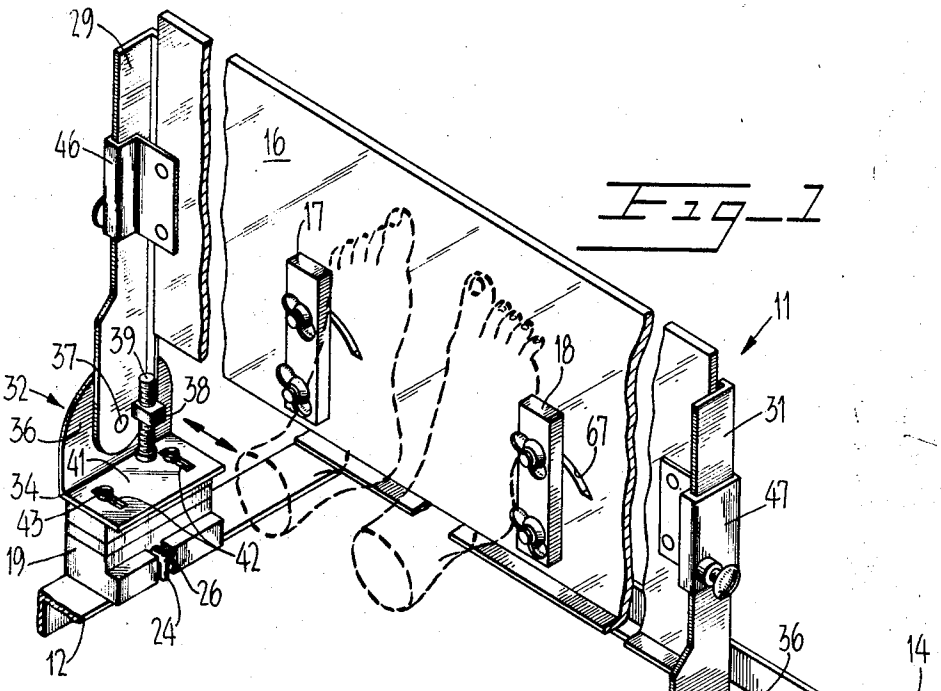


Fig_1

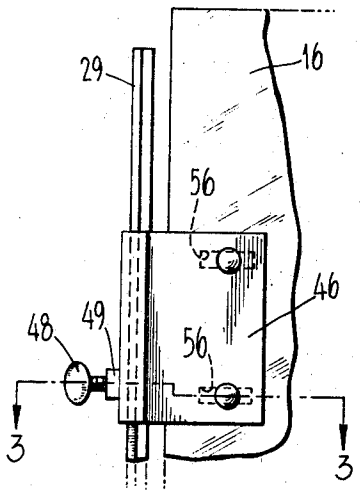


Fig_2

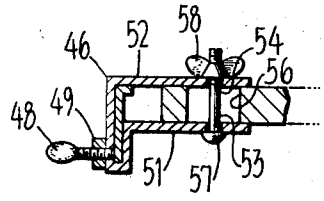


Fig_3

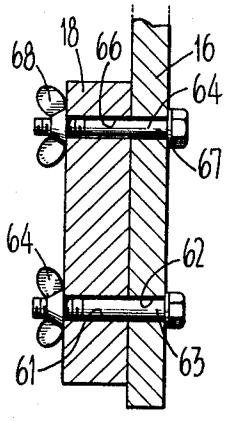


Fig_5

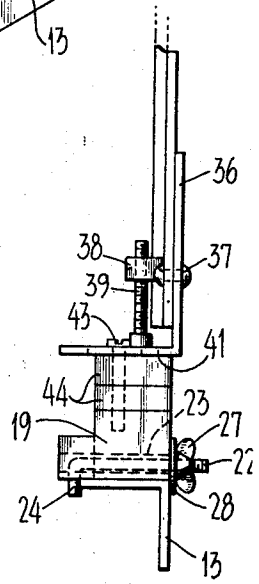


Fig_4

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HOSPITAL BED FOOTBOARD ASSEMBLY

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ABSTRACT OF THE DISCLOSURE

A footboard assembly is described for use with a bed to provide desired positioning and support of a bedridden person's feet. The assembly includes a pair of support bases adapted for mounting on opposite side rails of a bed frame. A pair of elongated support arms project upwardly from the bases to locations at opposite sides of the bed and have a foot supporting panel extending between them over the beds. The support arms are mounted to the bases so as to be adjustable laterally with respect thereto so that beds having different widths can be accommodated. A pair of blocks are removably secured to the foot supporting panel in locations to provide side support for the outer side edge of the feet of a user. These blocks may be angularly adjusted with respect to the vertical so that they can support the user's feet in any one of a plurality of desired angular positions.

BACKGROUND OF THE INVENTION

This invention relates to apparatus for accommodating persons who must remain in bed for prolonged periods of time, and more particularly, to a footboard assembly for use with a bed to provide desired positioning and support of a bedridden person's feet and legs.

The feet of a person lying in bed on his back will normally extend somewhat longitudinally outwardly from his legs, as opposed to extending at a generally right angle to his legs such as when he is standing. It is natural for the foot when relaxed to assume such an extended position. Consequently, those persons who are bedridden over a long period of time do not have occasion to move their feet into the standing right angular position. This failure to orient the feet in the standing position has been found to be generally deleterious to the muscles of both a person's feet and legs. For this reason, apparatus has been designed for use in conjunction with a hospital bed to maintain a person's feet and legs in various positions to assure that the feet and leg muscles are suitably conditioned to make up for their lack of normal exercise.

Footrest apparatus of this type is desirably provided as a bed attachment which can be selectively moved between different beds in a hospital or the like. While some prior foot support assemblies have been in the form of removable attachment, they have not been entirely satisfactory. There are dimensional variations between individual beds, such as in the distance between the bedside rails, mattress and spring widths, etc. Because of this, difficulty has been had in accommodating footrest assemblies to the various beds and yet providing the rigid support of the assembly on the bed frame that is necessary to assure a rigid structure for supporting a user's feet. Moreover, it is desirable that the foot support assembly be movable into an unobstructive position when it is secured to a bed. While assemblies of this nature have been provided which can be moved into inoperative positions, they have not been in general, movable into an inoperative position which is completely unobstructive to access to the bed.

One other major disadvantage of most footboard assemblies now available is that they do not provide lateral

side support for the user's feet. That is, when a person is lying on his back in bed, his feet tend to point outward to the side, as well as project longitudinally from his legs as discussed above. This angled side orientation is also not a usual orientation for the feet when a person is standing and can be deleterious to the leg and feet muscles.

SUMMARY OF THE INVENTION

The instant invention is a foot support assembly for attachment to beds which may be simply and effectively secured to beds of different widths, and which includes means for providing lateral support for the feet of the user. In its basic aspects, the footboard assembly of the invention includes a pair of support bases for selective mounting on opposite side rails of a bed frame. A pair of elongated support arms project upward from the bases to locations at opposite sides of the bed and have a foot support member extending between them over the bed. The support arms are mounted to the bases with an adjustable mechanism which permits the bases to be moved laterally with respect to the arms so that beds having different widths between the side rails can be accommodated. The foot support member extending between the arms is removably secured thereto by mounting means which is also adjustable to enable the accommodation between the arms of mattresses and springs of different widths. A pair of foot side support members in the form of blocks are removably secured to the footboard to provide side or lateral support for the outer side edge of the feet of a user. Besides being removably so that they may or may not be used as desired, the foot side rest members are mounted on the footboard member for angular adjustment with respect to the vertical so that the user's feet can be supported in various angular positions.

BRIEF DESCRIPTION OF THE DRAWING

With reference to the attached sheet of drawing:

FIG. 1 is an isometric view of a preferred footboard assembly of the invention, illustrating same mounted in an operative position on the side rails of a bed;

FIG. 2 is a front elevation of a portion of the assembly shown in FIG. 1 depicting the mounting means for securing the footboard member to one of the support arms;

FIG. 3 is a cross-sectional view of the mounting means shown in FIG. 2 taken on the plane 3—3 of FIG. 2;

FIG. 4 is a front elevation of the support base of the embodiment of FIG. 1 showing it mounting one of the support arms to one of the bedside rails; and

FIG. 5 is a cross-sectional view of the footboard and one of the side support members illustrating the securance of the side support member to the board.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawing, there is shown in FIG. 1 a footboard assembly **11** mounted on spaced, longitudinally extending channel members **12** and **13** of a bed frame **14**. In broad terms, the assembly **11** includes support means on which a generally elongated foot supporting member is removably mounted. Preferably, the foot supporting member comprises an elongated panel **16** as shown which is adapted for disposition overlying the top of a bed in generally transverse relationship therewith. A person lying in bed on his back can then thus have his feet maintained in a generally upwarlly extending position by placing the bottom of his feet against the panel **16**. A pair of foot side support members in the form of blocks **17** and **18** are removably mounted to the footboard to permit selective support for the outer side of the user's feet. As shown, blocks **17** and **18** are desirably

angularly adjustable on the surface of the footboard with respect to the vertical so that the feet may be oriented in the lateral or transverse direction in various desired positions. The support means for the panel **16** is also desirably adjustable in a manner to be set forth below so that the assembly can be accommodated to beds of different lateral dimensions without affecting the rigid support provided by the assembly for the feet of a user.

In more detail, the support means of the present invention preferably comprises a pair of support bases **19** and **21** rigidly securing the assembly to the angle iron side rails **12** and **13**, respectively of the bed frame. Each of the support bases is in the form of a block having a planar lower surface resting upon the upper surface of its associated side rail. A hook bolt **22** is provided within a bore **23** which extends laterally through each of the blocks **19** and **21** adjacent its mid-section. As is best depicted in FIG. 4, the hook **24** of bolt **22** projects downwardly through a slot **26** in the block for engagement with the free edge of the upper flange of its associated angle iron side rail. As is best depicted in FIG. 4, a wing nut **27** on the threaded end of bolt **22** holds a washer **28** in engagement with the root end of the side rail upper flange. With this arrangement, when the wing nut **27** of each support base is tightened, the respective support bases will be rigidly secured to their associated side rails by means of the clamping engagement between the hook **24** and the washer **28**.

The support means for the panel **16** also includes a pair of upwardly extending support arms **29** and **31** secured to the respective support bases **19** and **21** by mounting means **32** and **33** respectively. Each of the mounting means **32** and **33** is made up by an angle plate **34** having an upwardly extending semi-circular flange **36** to which its associated support arm is pivotally secured, such as by means of a rivet **37** for pivotal movement between the upwardly extending positions shown and an inoperative position extending generally parallel to its associated side rail.

Stop means are preferably provided on each of the support arms to enable the adjustment of the angle each of the arms makes with respect to the bed rails when each is in the upwardly extending position so that the angle of the support panel relative to the plane of the bed is changed. More particularly, a block projects laterally inward from the lower end of each of the arms **29** and **31** from a position rearwardly of the pivot rivets **37** and threadably receives a longitudinally extending stop belt **39**. The head of bolt **39** abuts against an inwardly extending plate **41** of the mounting means to limit the rearward pivotal movement of the arm. It will be appreciated that longitudinal adjustment of the position of bolts **39** within blocks **38** will correspondingly change the extent to which the arms **29** and **31** may be pivoted rearwardly with respect to the bed side rails to an upwardly extending position. In this manner, the angle of the panel **16** secured to the arms relative to the plane of the bed can be changed.

In accordance with a particularly salient feature of the invention, the mounting means **34** for each of the support arms is secured to its associated support base for lateral adjustment. More particularly, the flange **41** of each mounting means projects right angularly inwardly from the semi-circular flange **36** and is provided with a pair of transversely extending slots **42**. Each of the slots has associated therewith a bolt **43** which passes through it and is threadably received within the associated support base **19** and **21** to secure the mounting means to such base. In this connection, it will be recognized that by loosening the bolts **43**, the lateral position of the mounting means with respect to the base can be adjusted to the extent of the length of the slots **42**. This enables the distance between the support arms relative to the distance between the support bases to be varied as is necessary to enable the apparatus to accommodate beds having differing widths between the side rails and different widths of mattresses and springs, etc.

The vertical distance between the support arm mounting means and the support bases can also be varied. That is, spacer means in the form of blocks or shims **44** are provided between the flange **41** of each of the mounting means and each of the support bases. The bolts **43** pass through bores in the spacer blocks and sandwiches them between the flange **41** and each of the bases. By simply removing or adding spacer blocks or shims as is necessary, the vertical location of the mounting means with respect to each of the support bases can be varied to enable use of the invention with different beds having mattresses and springs of different thicknesses.

With respect now to the means for securing the panel **16** between the support arms, reference is made particularly to FIGS. 2 and 3. In broad terms, a pair of clamps **46** and **47** are secured to the ends of the panel **16** and are respectively mounted on the support arms **29** and **31**. The clamps **46** and **47** are removable from the support arms, thus enabling the panel to be removed and the arms pivoted into their above described inoperative position parallel to the side rails **12** and **13**.

The clamps **46** and **47** are identical and for simplicities sake only clamp **46** will be described in detail. As shown in FIG. 3, clamp **46** fits around the arm **29** and is slidable thereon. A set screw **48** extends through the threaded bore of a boss portion **49** of the clamp, and serves to rigidly secure the clamp to the arm **29** at a selected position thereon. Two spaced plate portions **51** and **52** form a part of clamp **46** and extend inwardly from the support arm **29**. A pair of longitudinally aligned apertures **53** in the plate portion **51** are respectively in register with a similar pair of apertures **54** in the plate portion **52**. The end portion of the panel **16** is adapted to fit between the plate portions **51** and **52**, and is provided with a pair of longitudinally extending slots **56** that register with the apertures **53** and **54**. Fastening means such as bolt **57** and wing nut **58** pass through the apertures **53** and **54** and the slots **56** to secure the panel tightly in place relative to the clamp **46**. It will be appreciated that because of this slot and bolt arrangement for securing the clamps to the panel **16**, the lateral location of each of the support arms relative to the panel **16** can be varied as may be necessary in view of the previously described base adjustment means.

As can be seen in FIGS. 1 and 5, and as mentioned previously, the foot side rest members **17** and **18** are in the form of elongated blocks mounted to the panel **16**. As shown, each of these blocks has a bore **61** adjacent its lower end in register with a similar bore **62** through the panel **16**. A bolt **63** passing through the aligned bores **61** and **62** associated with each block has a wing nut **64** on its threaded end for removably securing the lower end of each block to the panel. This securance of the lower end of each block to the panel is a pivotal securance, and the upper end of the block is secured to the panel for arcuate movement. That is, a bolt **64** passing through a bore **66** in the upper end of the block passes through an arcuate slot **67** through the panel **16**. A wing nut **68** is provided on the threaded end of each bolt **64** to secure the upper end of its associated block to the panel at the desired angular orientation.

It will be appreciated that the above described bolt and wing nut arrangement for securing the foot side rest members to the panel enables the members to be selectively removed whenever their use is not required. Moreover, the bolt **63** for each acts as a pivot pin and the angular adjustment of each member with respect to the vertical can be changed by loosening wing nut **68** and changing the location of the bolt **64** in the slot **67** before again tightening the wing nut. Thus, the feet of a user can be held at various lateral orientations as desired.

In use of the footboard assembly of the invention, the support bases **19** and **21** are mounted on the side rails of the bed with which it is desired to employ the assembly.

If necessary, the support bases may be adjusted laterally with respect to the support arms to assure proper securance of the support bases onto the bed frame. Moreover, shims 44 may be either inserted or removed between each support base and its associated mounting plate as may be necessary depending upon the thickness of the springs and mattresses of the bed. This lateral and vertical adjustment assures that the support bases may be rigidly secured to the bed frame to provide a rigid structure, irrespective of any variations in the bed size.

In those periods when the footboard is not being used, the support arms may be pivoted into their inoperative positions, noted above, parallel to the bed side rails. In this location the arms are unobstructive and allow ready access to the bed by either the patient or those administering to him. To use the footboard, the arms are moved into upwardly extending positions as determined by adjustment of the stop bolts 39, whereupon the panel 16 can be secured between the arms. To mount the panel, the wing nuts 58 are loosened to allow a degree of longitudinal movement of the clamps 46 and 47 relative to the panel. The clamps are then placed over the ends of the arms and slid down until the panel rests on top of the bed. The set screws 48 and wing nuts 58 are then tightened to secure the panel in place. If the foot side rest members 17 and 18 are to be used, they may be simply secured to the panel by passing bolts 63 and 64 through the apertures 62 and the slot 67 of the panel and through the apertures provided in each of the blocks. The blocks are then pivoted to the desired angular orientation on the panel and the wing nuts 64 and 68 tightened.

The person lying on his back then places the bottom of his feet against the panel 16 with the sides of his feet resting against the blocks 17 and 18, whereupon the assembly maintains the feet in the selected position. This position can then be retained for as long as desirable and can be varied by simply adjusting the stop nut 39 to change the orientation of the panel 16 relative to the bed, and by adjusting the angular orientation of the blocks 17 and 18 relative to the panel. When the period of treatment is over, the panel 16 is removed by loosening the wing nuts 48, and the arms are pivoted back into their inoperative position. Should it be desired to move the footboard assembly to another bed, the support bases 19 and 21 are simply removed and mounted on the new bed with the adjustments being described above being made to assure that the assembly is correctly fitted to the new bed.

I claim:

1. A foot support assembly for beds comprising a pair of support bases for mounting on opposite side rails of a bed frame, a pair of elongated support arms, first mounting means securing each of said support arms to a respective one of said support bases for upward extension therefrom, a foot support member extending between said arms, and second mounting means at each end of said foot support member securing same to said arms, both

said first mounting means and said second mounting means respectively including mechanism for adjusting the lateral location of said support arms with respect to said support bases and with respect to said foot support member to permit securance of said support assembly to beds of different widths and to accommodate between said arms mattresses and springs of different widths.

2. A foot support assembly for beds according to claim 1 wherein said second mounting means removably secures said foot support member to each of said arms, and said arms are pivotal with respect to said support bases between a position extending upwardly therefrom and an inoperative unobstructive position adjacent said bed frame, said pivotal arm movement being about an axis extending laterally of said bed.

3. A foot support assembly for beds according to claim 1 wherein spacer means are provided for insertion between said support bases and said first mounting means for each of said support arms to enable selective variation in the height said support arms extend upwardly from said bedside rails.

4. A foot support assembly for beds according to claim 2 wherein said arms are pivotal in a substantially vertical plane between said upwardly extending position and an inoperative position extending generally parallel to its associated bedside rail, and said first mounting means includes an adjustable stop for selectively varying the angle of said arms with respect to said bedside rails when said arms are in said upwardly extending position to thereby vary the angle of said support member relative to the plane of said bed.

5. A foot support assembly for beds comprising a pair of support basis for mounting on opposite side rails of a bed frame, a pair of elongated support arms, first mounting means securing each of said support arms to a respective one of said support bases for upward extension therefrom, a foot support member extending between said arms, second mounting means at each end of each foot support member securing same to said arm, and a pair of foot side rest members mounted on said footrest support member to provide outward side support for the feet of a user, said support arms being pivotally mounted on said support bases for movement about an axis lying in the plane of said foot support member whereby the latter may be selectively angularly positioned relative to the plane of said bed.

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