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EXERCISE BAR FOR BED

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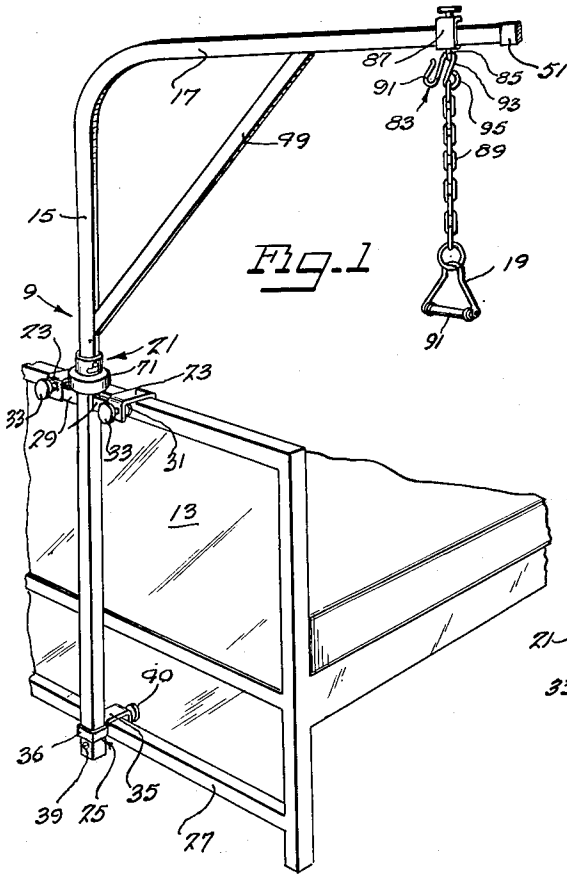


Fig. 1

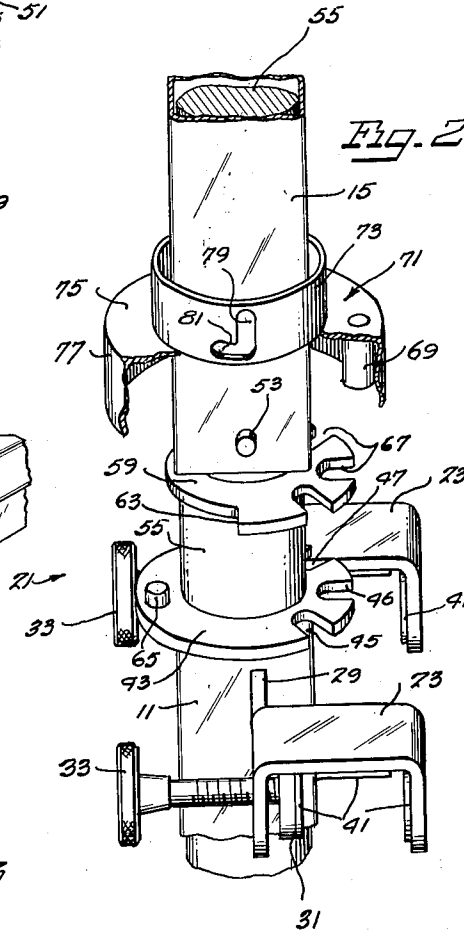


Fig. 2

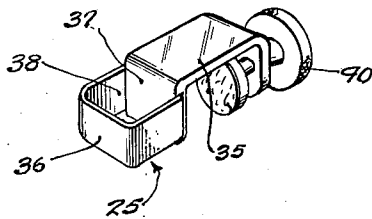


Fig. 3

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EXERCISE BAR FOR BED

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This invention relates generally to exercise bars for hospital beds. More specifically, this invention is directed to, and has for its principal object the provision of, a new and improved exercise bar which is readily securable to a bed frame and includes a swiveling boom and sturdy lock for clamping the boom in any one of a predetermined number of positions.

Other objects and advantages of the invention will become clear from the following description and accompanying drawings in which:

FIGURE 1 is a perspective view of an exercise bar in accordance with the invention, shown secured to the headframe of a hospital bed and having a trapeze suspended therefrom within grasp of a patient of the bed;

FIGURE 2 is an enlarged fragmentary view of the exercise bar of FIGURE 1 showing the component parts of the swivel and lock in "exploded" relation and partially broken away for clearer illustration; and

FIGURE 3 is an enlarged perspective view of the clamp used to secure the exercise bar to the lower portion of the headframe.

As seen in FIGURE 1, an exercise bar 9 in accordance with the invention comprises a lower post member 11 which is clamped to the end frame 13 of a hospital bed, and an upper swiveling post 15 which may be bent to provide an overhead boom 17 for suspending or supporting various medical or therapeutic devices, such as the illustrated trapeze bar 19. Selective positioning of the supported trapeze bar relative to a patient is provided by a swivel bearing 21 at the junction of the two posts 11 and 15, the bearing 21 carrying the weight of the swivel post, boom and any sustained loads. The bearing 21, as will be explained in detail, also limits the swinging movement of the boom 17 to a half-circular arc over the bed surface and includes a lock for securing the boom 17 in any one of several intermediate positions within the arc.

Considering the structure in greater detail, the lower post 11 is a metal tube of generally square cross section which is clamped, in an upright position, to the outside of the head end frame 13 of a bed by a pair of laterally spaced C clamps 23 which engage the upper end of the end frame, and by a clamp 25 which secures the lower end of the post to a cross bar 27 of the end frame.

More particularly, each upper clamp 23 is sidewardly offset from the lower post member 11 by a spacer bar 29 which is welded to a side of the lower post member at its upper end. The C clamps 23 are disposed with their open sides down and with their movable pressure plates 31 situated to engage the back of the end frame, thereby also locating the hand knobs 33 of the screws on the back of the end frame.

The lower clamp 25, by which the lower end of the post member 11 is fixed to the end frame, is slidable along the length of the lower post member 11 to facilitate mounting of the exercise bar 9 on end frames of various heights. Specifically, the clamp 25 comprises a C clamp 35 and a U shaped member or strap 36 which is welded to the sides of the end leg 37 of the C clamp 35 to form a sleeve 38 through which the post 11 is slidable. When the clamp 25 is assembled to the post member 11, the open side of the C clamp faces downwardly and the hand knob 40 extends inwardly under the bed. At its lower end, the post 11 is provided with a removable projection 39, such as a cap or screw head, to prevent the clamp 25 from sliding off the end of the post.

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Each engaging face of the various clamps 23 and 25 is preferably provided with a pad 41 of linoleum or other similar material which prevents scratching or other damage to the finish of the engaged surface.

At its upper end, the lower post member 11 has welded thereon a flange 43 which carries the weight of and the load on the upper structure. In addition, the front edge of the flange is provided with three notches 45, 46, and 47, which form part of the swivel lock, cooperating with components of the upper post 15, as will be explained.

The swivel post 15 is also formed of metal tubing having a generally square cross section, the boom 17 being reinforced by a diagonal brace 49 which is welded, at its ends to the post 15 and to the boom 17. The outer end of the boom is preferably capped, as indicated at 51, to provide a finished appearance.

Secured within the swivel post 15 at its lower end by means of a cross pin 53, is a pivot bar or trunnion 55 of circular cross section which is slidably insertable into the open top of the lower post 11. Approximately midway of its length the pivot bar 55 carries a bearing flange 59 which bears on its lower surface against the flange 43 to support the swivel post and the load supported thereby.

In addition to the thrust bearing action of the flanges 43 and 59, these components also cooperate to limit swinging movement of the swivel post 15. As shown in FIGURE 2, the flange 59 is cut away along a portion of its circumference to provide a pair of opposed shoulders 63 which limit the angular movement of the swivel post by engagement respectively with an upstanding post or stud 65 fixed in the flange 43. While the extent of travel of the swivel post 15 can be varied as desired, the shoulders 63 are preferably positioned, with respect to the stop post 65, to limit the swivel arc to about 180 degrees to permit the boom 17 to swing in either direction into the plane of the end frame 13. A series of notches 67 corresponding to the notches 45 to 47 of the lower flange 43, are cut in the front of the upper flange 59. Of these, the central notch forms part of the swivel lock, the flanking notches being unessential and resulting merely from use of the same die to cut the notches of both flanges.

Between the limiting positions determined by the shoulders 63 and stop post 65, the boom 17 may be locked in any of three positions spaced equi-angularly from one another and from the shoulders 63, i.e., at about 45 degrees apart.

Fixing of the swivel bar in any one of these positions is accomplished by the insertion of a locking pin 69 through the central notch 67 of the upper flange 59 and into one of three notches 45, 46, or 47, provided in the flange 43 on the side opposite the stop post 65. The pin 69 is secured in a bell or cap 71 which, in turn, surrounds the lower end of the swivel post 15 and is mounted thereon for limited axial and rotational movement.

As illustrated, the cap 71 includes a sleeve 73 which is slidably fitted over the swivel post 15 and loosely secured thereto by the outer ends of the cross pin 53 which secures the pivot bar 55 within the swivel post. From the sleeve 73, the cap flares outwardly in a ring portion 75 to the undersurface of which the locking pin 69 is fixed, and then extends downwardly in a depending skirt portion 77 which conceals the flanges 43 and 59.

Upward disengagement of the locking pin 69 from the flanges 43 and 59 is permitted by a pair of diametrically opposed L-shaped bayonet slots 79 in the sleeve 73, each of which receives one end of the cross pin 53 to permit the aforementioned limited cap movement, both around and axially of the swivel post 15.

More specifically, when the cross pin 53 is located adjacent the upper end of the bayonet slots 79, the pin 69 is in its lower locking position extending through the

central notch 67 in the flange 59 and into clamping engagement with one of the notches 45 to 47 in the flange 43. Movement of the cap 71 to its upper position with the cross pin 53 engaged with the lower edge of the bayonet slots 79 will withdraw the locking pin 69 from the notch in the flange 43 as well as from the central notch 67 in the plate. Counterclockwise rotation of the cap 71, when in its upper position, seats the cross pin 57 in the horizontal leg 81 of the bayonet slots 79 to retain the cap in elevated position, thereby preventing interference with the swinging movement of the swivel post and boom within the arc determined by the shoulder stops 63.

The exercise bar 9 disclosed herein can be readily attached to the end frame of a hospital bed and, after attachment, can be swung through an arc of 180 degrees between either of two storage positions in the plane of the supporting end frame. The boom can be moved to and locked in any one of three positions by lifting the locking cap 71 to disengage the locking pin 69 from the associated notch in the lower flange 43, and moving the boom to the new position. When the locking pin 69 becomes aligned with another notch in the lower flange 43, it falls in by gravity to lock the boom in the new position. If desired, the cap 71 can be secured in its raised position by rotating it counterclockwise, as seen in FIGURE 2, thereby preventing unintended slipping of the stop pin 69 into one of the notches 45, 46, or 47 when the boom is swung between the limit positions.

A further feature of the invention resides in the formation of the clip 83 by means of which the trapeze 19 is suspended from the boom 17 so as to afford adjustment of the height of the trapeze over the bed surface. As shown in FIGURE 1, the clip 83 is supported by engagement with the depending eye 85 of a C clamp 87 which can be positioned anywhere along the length of the boom. In turn, the clip 83 has fixed thereto a chain 89 which supports the trapeze bar 91.

Focusing on the clip 83 in greater detail, it is generally of S shape having at the end of the base leg 93 a closed loop 95 to which the upper end of the chain 89 is fixed. The clip 83 is positioned with the rearwardly facing C formation extending through the eye 85 so that the weight of the trapeze acts to position the upper leg 97 of the S formation with its free end pointing upwardly. Adjustment of the height of the trapeze bar 91 can be readily accomplished by slipping any desired one of the loops which constitute the chain over the leg 97 to effectively shorten the chain length.

Various features of the invention are set forth in the appended claims.

I claim:

1. An exercise bar for hospital beds or the like comprising a hollow post member having clamping means for detachably securing the same in upright position to the end frame of a hospital bed, a bearing flange fixed at the upper end of said post member, a swivel post extending axially upwardly from said hollow post member and having a boom for extending over the surface of such bed, the lower end of said swivel post being received in the upper end of said hollow post member to journal said swivel post therein for swinging said boom through a horizontal arc, a bearing flange fixed on said swivel post engaged in face contact with the bearing flange on said hollow post member to transfer the load between the two post members, interengageable stops on said bearing flanges for limiting the arc of rotation of the boom, one of said bearing flanges having therein a series of openings and the other having therein an opening alignable suc-

cessively with those of said series by swinging said boom, and a pin carried by one of said post member and said swivel post, said pin being normally aligned with said one opening and biased for insertion through the openings in both flanges whenever the latter are aligned.

2. An exercise bar for hospital beds or the like comprising a lower tubular post member having clamping means for detachably securing the same in upright position to the end frame of a hospital bed, a bearing flange fixed at the upper end of said post member, a swivel post extending axially upwardly from said lower post member and having a boom for extending over the surface of such bed, the lower end of said swivel post being received within the upper end of said lower post member to journal said swivel post to swing the boom through a horizontal arc, a bearing flange fixed on said swivel post engaged in face contact with the bearing flange on said lower post member to transfer the load between the two post members, interengageable stops on said bearing flanges for limiting the arc of rotation of the boom, the lower bearing flange having therein a series of openings and the upper flange having therein an opening alignable successively with said series of openings in the lower flange by the swinging of said boom, a sleeve slidable on said swivel post and having a downwardly open bell normally enclosing said engaged flanges, said bell having therein a downwardly extending locking pin insertable through the openings in both flanges when the latter are aligned, thereby to lock the boom.

3. An exercise bar for hospital beds or the like comprising a lower tubular post member having clamping means for detachably securing the same in upright position to the end frame of a hospital bed, a bearing flange fixed at the upper end of said post member, a swivel post extending axially upwardly from said lower post member and having a boom for extending over the surface of such bed, the lower end of said swivel post being received within the upper end of said lower post member to journal said swivel post to swing the boom through a horizontal arc, a bearing flange fixed on said swivel post engaged in face contact with the bearing flange on said lower post member to transfer the load between the two post members, interengageable stops on said bearing flanges for limiting the arc of rotation of the boom, the lower bearing flange having therein a series of openings and the upper flange having therein an opening alignable successively with said series of openings in the lower flange by the swinging of said boom, a sleeve slidable on said swivel post and having a downwardly open bell normally enclosing said engaged flanges, said bell having therein a downwardly extending locking pin insertable through the openings in both flanges when the latter are aligned, thereby to lock the boom, said sleeve having therein a bayonet slot encompassing a sidewardly projecting pin on said swivel post whereby said sleeve may be lifted to withdraw said locking pin from said openings and rotated to maintain said locking pin out of alignment with the opening in the upper flange.

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