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TRACK AND BED TABLE CARRIAGE SUPPORTED FROM BED RAIL

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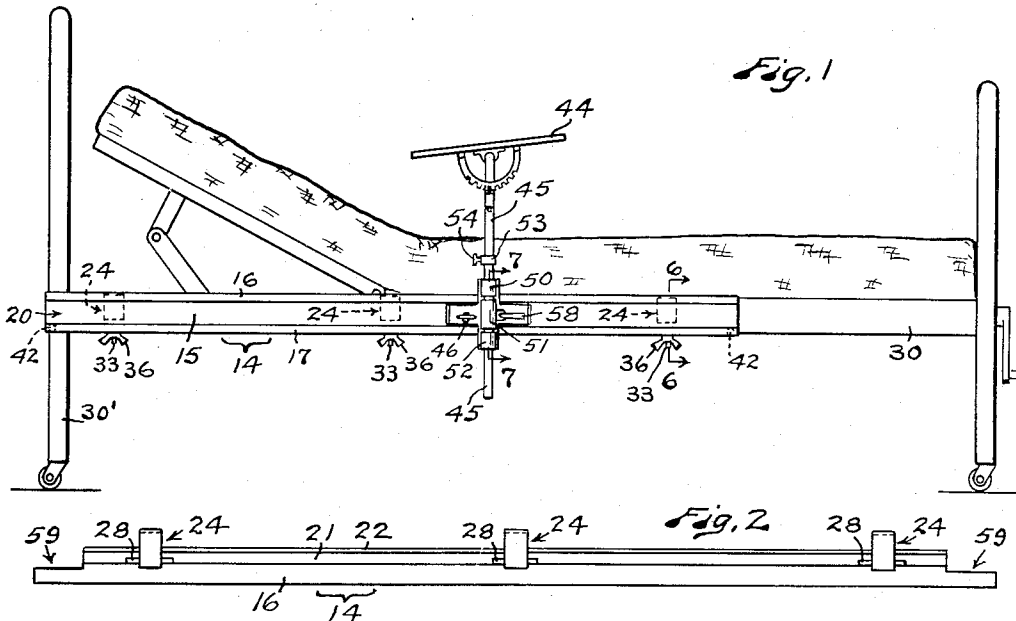
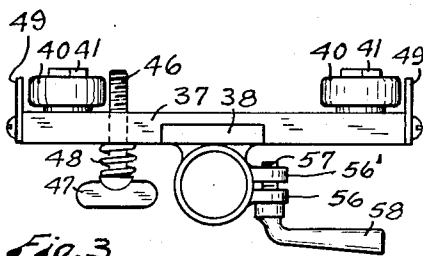


Fig. 3

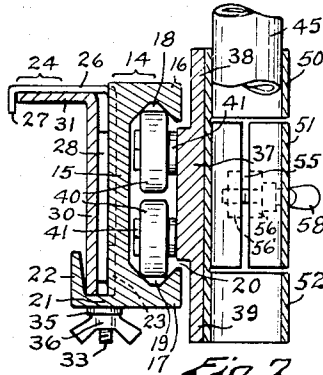


Fig. 7

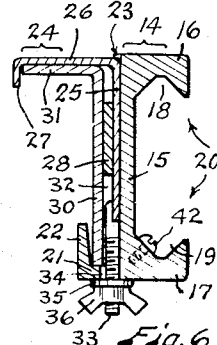


Fig. 6

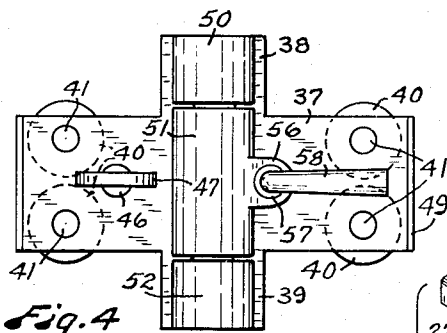


Fig. 4

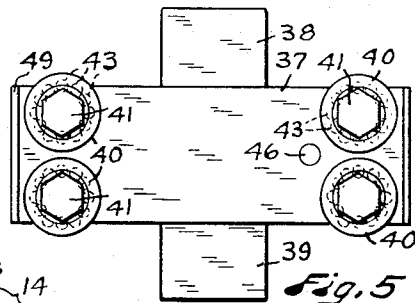


Fig. 5

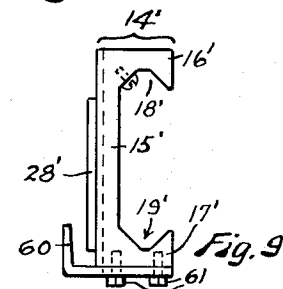
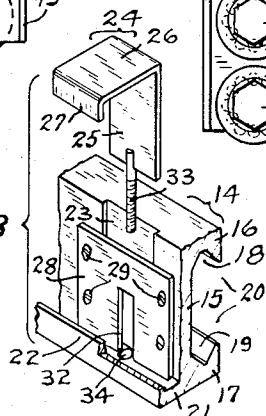


Fig. 9

Fig. 8



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## TRACK AND BED TABLE CARRIAGE SUPPORTED FROM BED RAIL

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3 Claims. (Cl. 311—27)

This invention relates to bed table supporting means and an object of this invention is to provide bed table supporting means of simple, efficient and durable construction which is carried by a bed and can be quickly and easily attached to or detached from a bed, said supporting means being attachable to the side rail of a bed.

Another object is to provide bed table structure which is supported entirely from and by the bed, which does not have any floor supports or pedestals to get in the way of persons working around the bed, which is firmly supported and can not be tipped over and which is interchangeable from one side of a bed to the other.

Other objects are to provide bed table supporting means by which a bed table is very firmly supported so that it can not tilt or sag even when loaded and by which the table is supported in such a manner that it can be very easily and smoothly moved longitudinally of the bed when such movement is desired, the table being readily movable by a patient in a bed.

Still further objects are to provide a bed table and bed table supporting means which is applicable to substantially any hospital bed or ordinary bed, which is not heavy to handle, which is easy to apply to a bed, which is easy to adjust and which is not expensive to manufacture.

Further objects are to improve the construction of and render more efficient and reliable track means and a carriage by which a bed table is supported.

Other objects of the invention will be apparent from the following description taken in connection with the accompanying drawings.

Figure 1 is a side elevation showing an application of this invention to a conventional hospital bed and with the bed table supporting means attached to the side rail of the bed.

Fig. 2 is a detached top plan view of a carriage supporting track member, the carriage and bed table being omitted.

Fig. 3 is a detached plan view, on a larger scale than Figs. 1 and 2, showing a bed table carriage embodied in this invention.

Fig. 4 is a front elevation of the bed table carriage shown in Fig. 3.

Fig. 5 is a rear elevation of said bed table carriage.

Fig. 6 is a cross sectional view, taken substantially on broken line 6—6 of Fig. 1 but on a larger scale than Fig. 1, showing the carriage supporting track and bed rail to which it is secured.

Fig. 7 is a cross sectional view taken substantially on broken line 7—7 of Fig. 1, showing the carriage and track and bed rail to which the track is secured and a fragment of a bed table supporting post carried by the carriage.

Fig. 8 is a fragmentary exploded isometric view showing part of the carriage supporting track and one of the clamping members used to detachably secure said track to a bed rail.

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Fig. 9 is a view in end elevation showing a track of modified form.

Like reference numerals indicate like parts throughout the several views.

This bed table supporting means includes a track bar indicated generally by numeral 14. This track bar comprises a web or back portion 15 having an upper track flange 16 and a lower track flange 17 both extending transversely in the same direction from the upper and lower edges of the back portion 15. Oppositely facing or opposed V-shaped track grooves 18 and 19 are provided in the respective upper and lower track flanges 16 and 17. These track grooves 18 and 19 are spaced apart and are parallel and are positioned in opposed relation and are symmetrically shaped cross sectionally considered. Each track groove is formed by two flat wheel contacting surfaces disposed in intersecting planes. A relatively wide longitudinally extending slot 20 between the overhanging portions of the track flanges 16 and 17 extends from end to end of the track bar and provides clearance for operation of a carriage hereinafter described. The side of the track bar 14 shown at the left in Figs. 6, 7 and 8, and herein referred to as the inner or rear side of said track bar, has an integrally formed L-shaped rail engaging flange composed of a bottom flange portion 21 and an upright flange portion 22. This flange 21, 22 protrudes from the lower edge of the track bar 14 and the upright part 22 of said flange is spaced outwardly from the plane of the adjacent side of the track part 15. The back surface of the track part 15 is further provided with at least two and preferably three transverse shallow grooves 23, each of which is adapted to slidably receive a bed rail engaging clamp 24. Each clamp 24 comprises a normally upright plate part 25, a normally horizontal top part 26 and a downwardly extending bed rail engaging flange 27 on the tip of the part 26.

A retainer plate 28 extends across each groove 23, see Fig. 8, and is secured by countersunk screws 29, or equivalent means, to the track part 15. The retainer plates 28 hold the bed rail engaging clamps 24 in the grooves 23 and also serve as abutment members to engage with and rest against the outer side of the upright flange 30 of an angle bar shaped bed rail which has a horizontal top flange 31. Each retainer plate 28 has a medially positioned notch 32, Fig. 8, extending from its lower edge upwardly for a substantial distance to provide clearance for a clamp bolt 33 which is welded or otherwise rigidly secured to the lower edge portion of the adjacent bed rail engaging clamp 24. Each clamp bolt 32 extends down through a hole 34 in the bottom part 21 of the bed rail engaging flange and has a washer 35 and preferably a wing nut 36 thereon below said bottom part 21.

Each bed rail clamp 24 is slidable in its groove 23 and is held by one of the retainer plates 28. The track bar 14 can be applied to a bed rail by loosening the nuts 36, moving the bed rail clamps 24 upwardly so that their top ends are above the level of the track bar 14, then hooking the bed rail engaging L-shaped flange 21, 22 over the lower edge of the vertical flange 30 of the bed rail and then hooking the clamp parts 26, 27 over top flange 31 of the bed rail and tightening the nuts 36. This securely clamps the track bar 14 to the bed rail with the retainer plates 28 resting against the outer surface of the bed rail flange 30.

A carriage is movably supported by the previously described track 14. This carriage comprises a main carriage plate 37 having substantially midway between its two ends two oppositely projecting tube supporting plates 38 and 39. The tube supporting plates 38 and 39 are

shown to be of less thickness than the main carriage plate 37, see Fig. 7, and are rigid with the main carriage plate 37 and flush with the outer surface of said plate 37. This makes it possible for the main carriage plate 37 to operate in the longitudinal slot 20 of the track 14 while the plates 38 and 39 are clear of the front side of the track 14.

The main carriage plate 37 is shown to be of substantially rectangular shape and four ball bearing rollers 40 are rotatively mounted by bearing pins 41 on the outer or front side of the main carriage plate 37. The bearing pins 41 are rigid with the plate 37 and the axes of these bearing pins are arranged in generally rectangular formation and the rollers are positioned so that the two upper rollers 40 have a snug running fit in the upper track groove 18 and the two lower rollers have a snug running fit in the lower track groove. With two sets of rollers each contacting a different track groove and with the track surfaces inclined or V shape in cross section so that they prevent sidewise movement or tilting of the rollers and carriage it is possible to hold a table 44 steady and to prevent undesirable tilting of the same even when the table is loaded. At the same time friction is reduced to a minimum and there is substantially no danger of the carriage binding and it is very easily moved.

The carriage can be operatively engaged with the track 14 by passing the rollers into the track from either end of said track. Preferably a stop screw 42, Figs. 1 and 6, is provided near each end of the track 14 with the body of the screw threaded into one of the flanges, such as flange 17, and the head of the screw protruding into the path of a part of the carriage. This prevents the carriage from running entirely out of the track 14.

The rollers 40 have ball bearings 43, as shown by dotted lines in Fig. 5. The rollers are thus made free running but they have very little play or lost motion in the bearings. This insures free and easy and smooth movement of the carriage along the track. The corners of the rollers are rounded and these rounded corners maintain close contact with the inclined track surfaces and prevent sidewise tilting of the carriage. This insures proper support of a table 44 which is supported by an upright post 45 from this carriage.

A locking or brake screw 46 having a wing shaped head 47 is threaded through the carriage plate 37 and can be jammed against the back wall 15 of the track bar to hold the carriage in any desired position longitudinally of the track bar. Preferably a compression spring 48 is provided on the screw 46 between the plate 37 and the head 47 to provide friction and prevent the screw 46 from operating too freely. Also preferably a guard plate 49 is secured to each end of the carriage plate 37 and projects inwardly therefrom in overhanging relation to the adjacent rollers 40 to prevent bed sheets and the like from getting into the track at the location of the carriage.

The upright post 45 is of inverted L shape so that it extends transversely over the bed and supports the table above the bed and the table 44 is adjustably mounted on said post. The means for supporting the upright post 45 from the carriage comprises tubular post receiving means formed of three axially aligned tubular sections or members 50, 51 and 52. These three sections 50, 51 and 52 may be formed of a single piece of tubing cut as shown in Figs. 1, 4 and 7 and welded or otherwise secured in an upright position to the carriage plate members 37, 38 and 39 or they may be in the form of three separate axially aligned pieces of cylindrical tubing. The two end members 50 and 52 are post guiding and holding sections and are sized so that the post fits snugly but rotatively and slidably therein. Preferably the fit of these end sections 50 and 52 is snug enough so that the post 45 with a loaded table 44 thereon will not drop if it is otherwise unrestrained but may be lowered by some downward pressure and rotative movement. As a safety

feature to positively limit downward movement of the table 44 a stop collar 53 with thumb screw 54, Fig. 1, may be provided on the post 45 above the uppermost post receiving guide tube 50.

The medial tube section 51 has a longitudinal slot 55 extending from end to end thereof and has two rigidly attached lugs 56 and 56' on opposite sides of said slot and has a clamp screw 57, with integral clamp screw handle 58, cooperating with said lugs whereby the post 45 may be locked and firmly held. The clamp screw 57 has threaded engagement with the innermost lug 56' but is freely rotatable in the outermost lug 56.

The track member 14 has a notch 59 in its inner side adjacent each end, see Fig. 2, to clear the head post 30' of the bed so that the end portion of the track 14 may overlap the head post 30'. This makes possible a more out of the way folding of the table 44 when said table is not in use.

In the track member 14' shown in Fig. 9 the part which fits over and engages with the lower edge of the bed rail is in the form of a separate angle bar 60 secured to the track member 14' by screws 61. The parts 15', 16', 17', 18', 19' and 28' shown in Fig. 9 correspond in every way to the previously described parts 15 to 19 inclusive and 28 respectively.

In some instances it may be desirable to cast or form the track and bed rail in a single piece. When this is done the cross sectional shape of the one piece track and bed rail may be substantially the same as the cross sectional shape of the track member 14' shown in Fig. 9, with the separable parts 28 and 60 and 61 omitted.

The post 45 and the bed table supported thereby may be raised and lowered by loosening the clamp screw 57 and vertically moving the post in the tubular members 50, 51, 52. The members 50 and 52 fit the post 45 snugly and this post will not drop down when the screw 57 is loosened but may be lowered without difficulty by exerting some downward pressure and at the same time rotatively moving the post slightly. The stop collar 53 can be set to preclude lowering the table far enough so that it will contact or rest upon a patient lying in the bed. The tubular members 50 and 51 are spaced a substantial distance apart and, as they fit the post 45 snugly, there is substantially no lost motion or tilting of the post 45 relative to these tubular members. The wheels 40 of the carriage are longitudinally spaced apart a substantial distance and fit the inclined surfaces of the track grooves 18 and 19 snugly so that there is substantially no tilting of the tubular post receiving members 50, 51 and 52 relative to the track 14. The inclined surfaces of the track grooves are particularly efficient in preventing transverse tilting of the carriage, as they engage with the wheels 40 at an angle which precludes such tilting. The carriage and table supported thereby are freely movable lengthwise of the bed when the screw 46 is released and this screw holds the carriage securely when it is tightened against the back portion 15 of the track bar. The angle shaped bed rail receiving flange member 21, 22 of Figs. 1, 6, 7 and 8 and the corresponding part 60 of Fig. 9 receive and firmly engage with the upright flange 30 of the bed rail and when the clamp members 24 are tightened the track bar substantially reinforces and stiffens the bed rail.

The foregoing description and accompanying drawings clearly disclose preferred embodiments of this invention but it will be understood that this disclosure is merely illustrative and that changes may be made within the scope of the following claims.

I claim:

1. In adjustable table supporting means, a track bar having a plane flat back portion and having two spaced apart parallel track flanges extending outwardly from said back portion, said track flanges having opposed track grooves therein and having a longitudinal slot therebe-

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tween extending along the outer side of the track bar; a carriage plate operable longitudinally of the slot between said track flanges; wheels on said carriage plate operable in said track grooves; and a locking screw threaded through said carriage plate and having an inner end portion positioned for selective engagement with or disengagement from said back portion of said track bar by rotation of said screw.

2. In adjustable bed table supporting means for application to a bed having a side rail; a bed table supporting post; a track bar having two opposed spaced apart parallel track grooves each of V shape cross sectionally considered and having on one side a longitudinal slot between said track grooves; bed rail engaging means on the side of said track bar opposite said slot; a carriage plate; two sets of wheels on said carriage plate disposed within the respective track grooves of said track bar; a transverse post carrying tube attached to the side of said carriage plate opposite said wheels and extending crosswise of the carriage plate, said post receiving tube comprising a longitudinally slotted medial post clamping section and two cylindrical post guiding and supporting sections positioned adjacent the respective ends of said post clamping section and in axial alignment therewith; and clamp screw means connected with said post clamping section, whereby said post clamping section is clamped on a post, said post guiding and supporting tubes fitting the post snugly and frictionally engaging the post and firmly supporting said post against tilting movement.

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3. In adjustable bed table supporting means for attachment to an angle bar bed rail, a track bar having a back portion provided with transverse grooves and having two spaced apart parallel track flanges extending outwardly from the side thereof opposite said grooves; a retainer plate secured to said track bar and extending across each groove; a bed rail engaging clamp of inverted L shape movably disposed in each of said grooves; a bed rail receiving angle flange rigid with the lower edge portion of said track member and extending outwardly and upwardly therefrom and having an opening therein adjacent the bottom of each transverse groove; a bolt secured to the lower end of each bed rail engaging clamp and extending downwardly therefrom through the adjacent opening in the bed rail receiving flange; and a nut on each of said bolts, whereby said bed rail receiving flange and said bed rail engaging clamp may be engaged respectively with the lower and upper portions of an angle bar bed rail and clamped to said bed rail.

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