April 6, 1954

C. R. MYRE

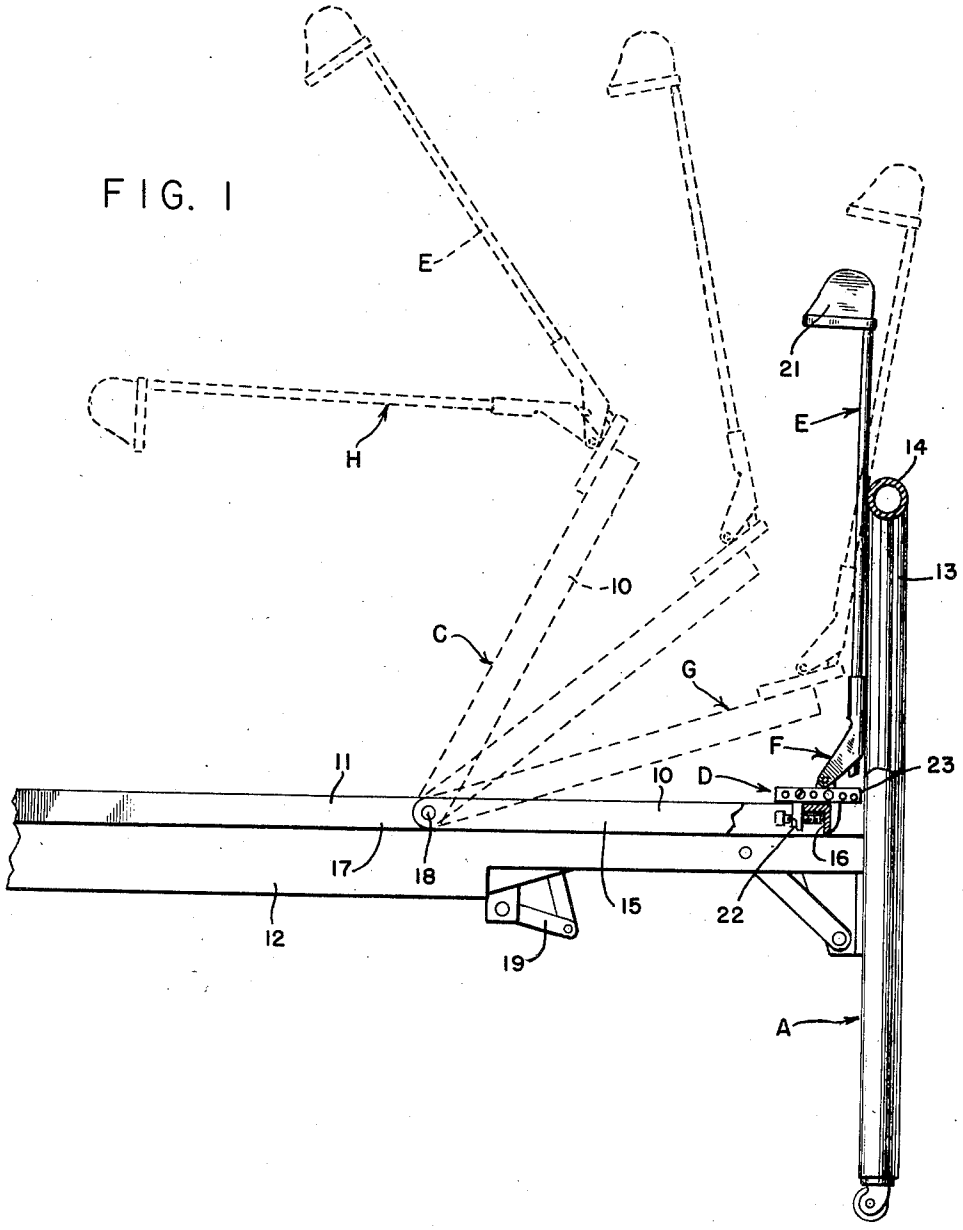
2,673,988

TILTABLE BED LAMP

Filed July 24, 1950

2 Sheets-Sheet 1

FIG. 1



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2 Sheets-Sheet 2

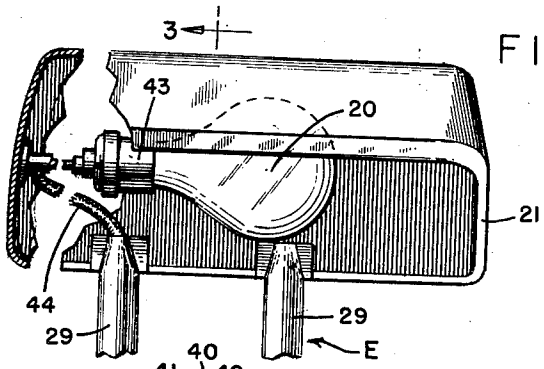


FIG. 2

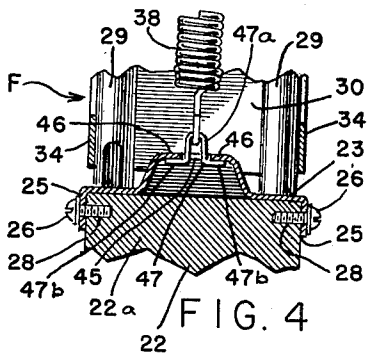


FIG. 4

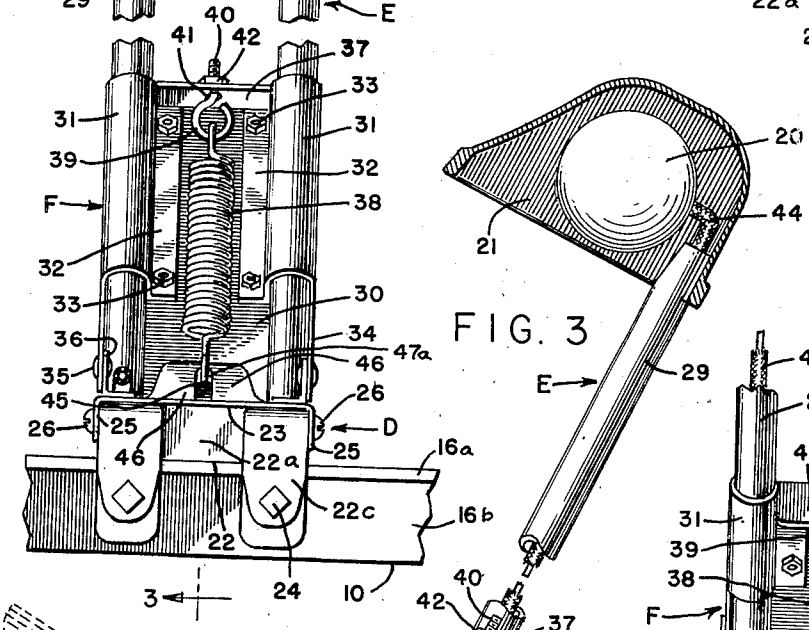
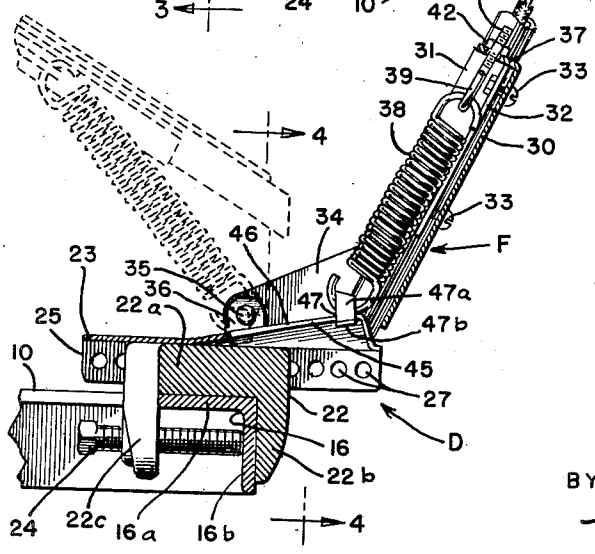


FIG. 3



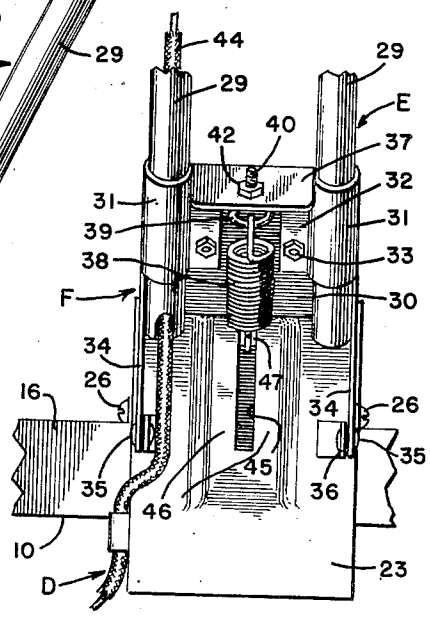


FIG. 5

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UNITED STATES PATENT OFFICE

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TILTABLE BED LAMP

Clifford R. Myre, Paynesville, Minn.

Application July 24, 1950, Serial No. 175,560

6 Claims. (Cl. 5—92)

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My invention relates to improvements in bed lamps for beds of the type used in hospitals.

The conventional hospital-type bed includes a back-rest which supports the head portion of the mattress, said back-rest having an end-rail at the head thereof and being tiltably adjustable whereby the occupant of the bed may be propped up from a fully prone position into various positions more or less approximating an upright sitting posture. And further included in such a bed is an end-frame at the head thereof having a frame-rail above the level of the mattress.

An object of my invention is to provide for a hospital-type bed a simple, durable and relative inexpensive lamp structure that is adapted automatically to adjust itself upon the raising and lowering of the tiltably adjustable back-rest, whereby the lamp in said lamp structure is so shifted relative to said backrest that light from the lamp is kept from shining directly into the eyes of the person occupying the bed.

The present invention contemplates a bed lamp structure adjustably mounted on the adjustable back-rest of the bed and adapted to cooperate with the adjacent end-frame of the bed for self-adjustment of the lamp structure to suit the reading comfort of the occupant of the bed in he various positions into which he may be shifted upon adjustment of said back-rest.

Briefly, the herein disclosed embodiment of my invention includes a clamp for attachment to the end-rail of the back-rest of a bed and a bed-plate mounted on said clamp for adjustment toward and from the end-frame of the bed at the head thereof. A pivot-element pivoted on the bed-plate provides a tilting footing for a standard carrying at its upper end an electric lamp and shade therefor. A tension spring interposed between said pivot element and bed-plate tends to tilt the standard from a first position substantially at right angles to said back-rest to a second position biased headwards of the back-rest. Said standard is lengthwise adjustable relative to the pivot-element and is adapted to abut at the lower end thereof against said bed-plate to establish said second biased position of the standard. Said standard is adapted intermediately thereof to bear slidably against the elevated frame-rail of the end-frame at the head of the bed during the final stage in the lowering of the back-rest into its flatwise position and during the corresponding initial stage in the raising of said back-rest. Thus bearing slidably against the frame-rail during the final stage in the lowering of the back-rest, the standard is

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tilted by said frame-rail against the action of said spring progressively footwards from its said second position relative to the back-rest to its said first position substantially at right angles thereto. And thus bearing slidably against said frame-rail in the initial stage in the raising of the back-rest, said standard is tilted progressively headwards by the action of said spring, under restraint set up by said frame-rail, from said first position thereof relative to the back-rest toward its said second position relative thereto. At the last of the initial stage in the raising of the back-rest, the standard reaches its said second position relative to the back-rest and upon the further raising of said back-rest said standard is freed from engagement with the elevated frame-rail and remains freed therefrom in its said second position relative to the back-rest until re-engaged with said frame-rail at the beginning of said final stage in the lowering of said back-rest. Said standard being thus swung into said tilted positions thereof relative to the back-rest in various tilted positions of said back-rest, the lamp carried by said standard is normally positioned headwards of the occupant of the bed so that the direct rays of light from the lamp do not strike his eyes. Said standard may be tilted footwards from said first or second positions thereof relative to the back-rest or from any position therebetween for temporarily supplying light along the body of the occupant of the bed for the convenience of an attendant. And said standard may be so tilted accidentally or capriciously by the occupant of the bed or other person. In either case, and to neutralize the action of the spring tending to swing the standard into its said second position tilted headwards relative to the back-rest, said spring is provided with a slidable connection with the bed-plate which moves footwards as the standard is tilted footwards from its said first position at right angles to said back-rest. Said slidable connection in such footwards movement thereof travels from a point removed headwards from the pivotal axis of the pivot-element to a point substantially coincident with said axis and said connection retraces its said footwards travel when the standard is swung back headwards into its said first position relative to the back-rest again to render the spring active in tending to tilt the standard headwards from said first position toward said second position thereof.

In the drawings:

Fig. 1 is a side elevational view showing a lamp structure constructed in embodiment of my in-

vention and applied to a bed of the type conventionally used in hospitals.

Fig. 2 is a front elevational view in detail of the lamp structure shown in Fig. 1.

Fig. 3 is a sectional view taken as on the line 3—3 of Fig. 2.

Fig. 4 is a detail sectional view taken as on the line 4—4 of Fig. 3.

Fig. 5 is a plan view in detail showing the bed-plate and the lower portion of the standard pivoted thereto.

Referring to the drawing, it will be seen that I have shown fragmentarily in Fig. 1 a bed A of conventional form commonly used in hospitals, the same having at the head thereof a tiltable back-rest 10 constituting a part of the usual mattress-supporting element 11 which is carried on rails 12 supported by end-frames at the head and foot of the bed. Fig. 1 shows end-frame 13 at the head of the bed A, said end-frame having the usual elevated head-piece in the form of a top-rail 14. Conventionally, the back-rest 10 includes side-rails 15 and an end-rail 16 of angle iron, said side rails being hinged to the main part 17 of the mattress-supporting element 11 by means of pivot pins 18. The back-rests in hospital-type beds are tilted in different ways to adjust the same and they are secured in their various tilted positions of adjustment in various manners, all well known to those familiar with the art. In the present drawings, I have shown more or less diagrammatically a linkage system 19 of a kind commonly operated by a crank (not shown) located at the foot of the bed for adjustably tilting the back-rest 10 more or less to raise or lower the same as may be desired. Fig. 1 shows the back-rest 10 in solid lines positioned flatwise at the lower limit of its movement. In dotted lines, said Fig. 1 shows said back-rest 10 at position C approximating its upper limit of movement, said back-rest 10 being additionally shown in dotted lines at two of its intermediate positions between its flatwise position and said position C thereof.

The illustrated embodiment of my invention in lamp structures for beds of the type mentioned includes a mounting D adapted to be attached to the end-rail 16 of the back-rest 10 and an elongated support or standard E hinged at its lower end to said mounting D and carrying at its upper end an electric lamp 20 and shade 21 therefor.

The mounting D consists of a clamp-block 22 and a bed-plate 23 carried thereby, said clamp-block 22 preferably being a casting including a body portion 22^a adapted to rest on the top flange 16^a of the end-rail 16 of the back-rest 10. A jaw member 22^b depending from the body portion 22^a of said clamp-block 22 bears against the outer face of the depending flange 16^b of said end-rail 16, and in opposition to said jaw member 22^b are a pair of lugs 22^c also depending from said body portion 22^a of said clamp-block 22. Threaded in these lugs 22^c are screws 24 which extend beneath the top flange 16^a of the end-rail 16 and bear against the inner face of said depending flange 16^b of said end-rail. These screws 24 and said jaw member 22^b of the clamp-block 22 grip said flange 16^b from opposite sides thereof and firmly secure said clamp-block 22 to said end rail 16.

The bed-plate 23 is desirably of sheet metal and it is formed with downturned side flanges 25 which overlie the ends of the body portion 22^a of the clamp-block 22. Screws 26 extend through apertures 27 selected from series thereof formed in said flanges 25 of the bed-plate 23 and these screws 26 are screwed into threaded bores 28 in the ends of the body portion 22^a of said clamp-block 22 to secure the bed-plate 23 to the clamp-block. The feature involving the application of the screws 26 to selected apertures 27 in the series thereof employed provides for adjustment of the bed-plate 23 on the clamp-block 22 toward or away from the end-frame 12.

The standard E includes two tubular posts 29 which have their footings in a pivot-element F provided for hinging said posts 29 to the bed-plate 23. Said pivot-element F is desirably formed of sheet metal, the main or body portion of which comprises a back-plate 30. Along each side of said back-plate 30 at the upper portion thereof material of the pivot-element F is rolled forwardly of said back-plate to form socket 31, the marginal extremity of said material being turned inwardly into parallelism with the back-plate 30 to form a flange 32 spaced from said back-plate. Each sleeve or socket 31 receives the lower portion of one of the posts 29 for longitudinally slidable adjustment of the same in such sleeve. Clamp-bolts 33 extending through each of said flanges 32 and through the back-plate 30 serve to tighten their respective sleeves 31 about their respective posts 29 in selected positions of adjustment of said posts in said sleeves. Along each side of this back-plate 30 at its lower portion material of the pivot-element F is bent forwardly to provide a hinge-arm 34 which is pivoted at its forward extremity on a pivot pin 35 extending through such hinge-arm 34 and a lug 36 upstanding from the bed-plate 23 of the mounting D. At the upper portion of the back-plate 30 of the pivot-element F, between the sleeves or sockets 31, is a forwardly turned flange 37 to which the upper end of a helical tension spring 38 is attached through the intermediary of an eye-bolt 39, the shank 40 whereof extends upwardly and freely through an aperture 41 in said flange. A nut 42 threaded on said shank 41 of the eye-bolt 39 bears against the top of the flange 37 and provides for adjustably tensioning the spring 38 which is fastened at its lower end to the bed-plate 23 in a peculiar manner hereinafter to be described.

The lamp shade 21 is welded or otherwise suitably secured to the upper ends of the posts 29 and supports a lamp socket 43 which receives the electric lamp 20. An electric cord 44, leading from said socket 43, extends through one of the tubular posts 29 and to any convenient electrical outlet for the supply of current to said lamp 20.

Upon installation of the lamp structure on a bed as at A, the mounting D is first applied to the back-rest 10 by clamping the clamp-block 22 to the end-rail 16 of said back-rest. The spring 38 acts to tilt or bias the standard E relative to the back-rest 10 headwards of the bed A and in the flatwise position of said back-rest 10, as seen in solid lines in Fig. 1 yieldingly holds said standard E against the frame-rail 14 of the end-frame 13. In said flatwise position of the back-rest 10, the standard E will be set to occupy an upright position substantially at right angles to said back-rest, this setting of said standard E being accomplished by adjustment of the bed-plate 23 headwards or footwards on the clamp-block 22 as may be required in the particular bed upon which the installation of the

lamp structure is made. In said position of the standard E approximately at right angles to the back-rest 10 hereinafter referred to as the "first" position of said standard, the lamp 20 is positioned to the rear of the head of an occupant lying prone on the bed, thereby shielding the occupant's eyes from the direct rays of light from said lamp. Owing to the action of spring 38, the standard E is held in sliding engagement with the frame-rail 14 of the end-frame 13 as the back-rest 10 is raised from its flatwise position. Thus, in the initial stage in the raising of said back-rest 10, the standard E is progressively tilted relative thereto headwards thereof under restraint set up by the frame-rail 14. Earlier or later in the raising of the back-rest 10, the headwards tilting of the standard E thereon is arrested, its extreme biased position relative to the back-rest, hereinafter referred to as its "second" position being thereby established. This arresting of the headwards tilting of the standard E on the back-rest 10 earlier or later in the raising of said back-rest is accomplished by longitudinal adjustment of the posts 29 in the sleeves 31 of the pivot-element F, the lower ends of said posts 29 being adapted to engage the bed-plate 23 and to act as stops limiting the headwards tilting of the standard E relative to said back-rest 10 according to the existing longitudinal adjustment of said posts 29 in said sleeves 31. Biasing relative to the back-rest 10 from its first position to its said second position, upon the raising of said back-rest from its flatwise position, the standard E shifts the lamp 20 progressively headwards of the back-rest 10 as the occupant of the bed is raised, thereby locating said lamp 20 progressively farther to the rear of the occupant's head for his eye-comfort as his position changes.

In Fig. 1 of the drawing, the dotted-line position G of the back-rest 10 shows the same at the end of its initial stage in the raising thereof at which point the standard E has reached its second position fully biased headwards relative to the back-rest. This fully biased or second position of the standard E relative to the back-rest 10 normally remains unchanged during the further raising of said back-rest and also during the return lowering thereof into its said position G. Returning to said position G, the standard E re-engages the frame-rail 14 which serves, against the action of the spring 38, to tilt said standard from its said biased second position into its said first position approximately at right angles to the back-rest 10, upon the lowering of said back-rest from said position G thereof to its flatwise position.

While the springs 38 acts at all times to tilt the standard E from its first position at approximately right angles to the back-rest 10 into its second position biased headwards relative thereto, it is desirable that this action of the spring 38 be neutralized in the event that the standard E is manually tilted footwards beyond said first position thereof relative to the back-rest 10 into a position relative thereto such as that shown at H in Fig. 1 and as may be done to throw light from the lamp 20 along the body of the occupant of the bed, or as may be done capriciously or otherwise to no good purpose. This desirability of so neutralizing the action of the spring 38 will be appreciated when it is remembered that, without it, upon the tilting of the standard E footwards beyond its said first position approximately at right angles to the back-rest 10, the spring 38 would be increasingly tensioned and so disposed relative to the bed-plate 23 and pivot-element F that said standard, if released, would be violently whipped back toward its said second position biased headwards of the back-rest 10. Such whipping of said standard E could, of course, injure the occupant of the bed or other nearby person or damage the lamp structure or frame-rail 14 of the bed A. In order to neutralize the action of the spring 38, in such case, a portion of the bed-plate 23 is upstruck and medially formed with a slot 45 to provide track members 46 at either side of said slot which slope upwardly from a point substantially coincident with the axis of the pivot pins 35 to a point removed headwards relative to said axis. A follower 47 consisting of an eye-member 47a slidably received in the slot 45 and formed with wing-like shoes 47b underriding the lower faces of the track members 46 constitutes a slidable connection between the lower end of the spring 38 and the bed-plate 23, said end of said spring being hooked into the eye-member 47a of said follower 47. Fig. 3 of the drawing shows the follower 47 in its normal position in the track-slot 45 removed headwards from the axis of the pivot-pins 35. Said follower 47 remains in this normal position thereof in all positions of the standard E at and between its said first position substantially at right angles to the back-rest 10 and its said second position biased headwards of said back-rest, the spring 38 in such positions of said standard acting yieldingly to hold it in said second position or, without undue force, to tilt it into said second position. When the standard E is manually tilted footwards beyond its said first position relative to the back-rest, the spring 38 is slightly additionally tensioned, but thereupon the follower 47 is immediately pulled along the track members 46 to the footwards end of the slot 45 into substantial coincidence with the pivotal axis of the pivot element F. In this position of the follower 47, the tensioning of the spring 38 remains unchanged and its action in tending to tilt the standard is substantially neutralized. Thus, said standard E may be tilted through all of its various positions relative to the back-rest 10 footwards of said first position thereof as though no spring were present between the pivot-element F and bed-plate 23. However, upon returning the standard E to its said first position approximately at right angles to the back-rest 10, the follower 47 will snap back into its normal position at the headwards end of the track-slot 45 again rendering the spring 38 normally effective in tilting the standard E headwards of the back-rest 10 at and between the said first and second positions of said standard. To overcome any undue friction between the shoes 47b of the follower 47 and the track members 46 that might tend to prevent the return of the follower 47 to the headwards end of the slot 45 when the standard E is tilted headwards into its said first position, I slope the track members 46 upwardly, as aforesaid, to facilitate such return of said follower.

From the foregoing, it will be readily comprehended that my invention fully satisfies the various objects and purposes herein attributed to it and meets effectively the need for such a structure.

Changes in the specific form of my invention, as herein described, may be made within the scope of what is claimed without departing from the spirit of my invention.

Having described my invention, what I claim as new and desire to protect by Letters Patent is:

1. A self-adjustable lamp structure for a hospital-type bed including an end frame at the head thereof having an elevated frame-rail and further including a tiltably adjustable back-rest having an end-rail at the head thereof and adapted to be raised from and lowered into flatwise position, said lamp structure comprising a mounting consisting of a bed-plate and means for securing the same to said end-rail, a pivot-element pivoted to the bed-plate, a standard mounted on said pivot-element, a track on the bed-plate extending from a point substantially coincident with the pivotal axis of said pivot-element to a point removed headwards of the bed-plate from said axis, said track sloping upward from said first point to said second point, a follower adapted to travel along said track, a tension spring attached at its upper end to said pivot-element and attached at its lower end to said follower, said spring acting to tilt said standard relative to said back-rest from a first position substantially at right angles to said back-rest to a second position biased headwards of said back-rest, said standard being adapted intermediately thereof to bear slidably against said frame-rail and to be tilted by said frame-rail against the action of said spring progressively footwards toward its said first position upon the lowering of the back-rest, said standard being adapted to tilt progressively headwards under the action of said spring toward its said second position and under restraint of said frame-rail upon the raising of the back-rest, said standard being tiltable footwards from said first position thereof, said follower being adapted to travel footwards along said track from said point thereof removed headwards of the pivotal axis of said pivot-element to said point thereof substantially coincident with said axis upon the tilting of said standard footwards from said first position thereof, said follower being adapted to travel back to said point of said track removed from said axis upon the return tilting of said standard headwards to said first position thereof, and a lamp carried by said standard at the upper end thereof.

2. A self-adjustable lamp structure for a hospital-type bed including an end frame at the head thereof having an elevated frame-rail and further including a tiltably adjustable back-rest having an end-rail at the head thereof and adapted to be raised from and lowered into flatwise position, said lamp structure comprising a mounting consisting of a bed-plate and means for securing the same to said end-rail, a pivot-element pivoted to the bed-plate, a standard mounted on said pivot-element, a track on the bed-plate extending from a point substantially coincident with the pivotal axis of said pivot-element to a point removed headwards of the bed-plate from said axis, a follower adapted to travel along said track, a tension spring attached at its upper end to said pivot-element and attached to its lower end to said follower, said spring acting to tilt said standard relative to said back-rest from a first position substantially at right angles to said back-rest to a second position biased headwards of said back-rest, said standard being adapted intermediately thereof to bear slidably against said frame-rail and to be tilted by said frame-rail against the action of said spring progressively footwards toward its said first position upon the lowering of the back-rest, said standard being adapted to tilt progressively headwards under the action of said spring toward its said second position under restraint of said frame-rail upon the raising of the back-rest, said standard being tiltable footwards from said first position thereof, said follower being adapted to travel footwards along said track from said point thereof removed headwards of the pivotal axis of said pivot-element to said point thereof substantially coincident with said axis upon the tilting of said standard footwards from said first position thereof, said follower being adapted to travel back to said point of said track removed from said axis upon the return tilting of said standard headwards to said first position thereof, and a lamp carried by said standard at the upper end thereof.

3. A self-adjustable lamp structure for a hospital-type bed including an elevated head-piece and a tiltably adjustable back-rest having an end-rail at the head thereof and adapted to be raised from and lowered into flatwise position, said lamp structure comprising a mounting adapted to be attached to said end-rail, an elongated support hinged at its lower end on said mounting and tiltable relative to the back-rest between a first position substantially at right angles to said back-rest and a second position biased headwards of said back-rest, said support being adapted intermediately thereof to bear slidably against said head-piece and to be tilted by said head-piece progressively footwards toward its said first position upon the lowering of the back-rest, a tension spring attached at its upper end to said support, a connection attaching the lower end of said spring to said mounting at a point removed headwards from the pivotal axis of said support, said spring tending to tilt the support from its said first position toward its said second position and progressively acting so to do under restraint of said head-piece upon the raising of said back-rest, said support being tiltable footwards from its said first position relative to the back-rest, said spring connection being slidable footwards on said mounting from said point removed headwards from the pivotal axis of said support to a point substantially coincident with said axis upon the tilting of said support footwards from said first position, said connection being returnably slidable headwards back to said point removed from said axis upon the return tilting of said support headwards to said first position thereof, and a lamp carried by said support at the upper end thereof.

4. A self-adjustable lamp structure for a hospital-type bed including an elevated head-piece and a tiltably adjustable back-rest having an end-rail at the head thereof and adapted to be raised from and lowered into flatwise position, said lamp structure comprising a mounting adapted to be attached to said end-rail, an elongated support hinged at its lower end on said mounting and tiltable relative to the back-rest between a first position substantially at right angles to said back-rest and a second position biased headwards of said back-rest, said support being adapted intermediately thereof to bear slidably against said head-piece and to be tilted by said head-piece progressively footwards toward its said first position upon the lowering of the back-rest, a tension spring attached at one end to said support and at its other end to said mounting at a point removed headwards from the pivotal axis of said support, said spring tending to tilt the support toward its said second posi-

tion and progressively acting so to do under restraint of said head-piece upon the raising of said back-rest, and a lamp carried by said support at the upper end thereof.

5. A self-adjustable lamp structure for attachment to a hospital-type bed including an end-frame at the head thereof having an elevated frame-rail and further including a tiltably adjustable back-rest having an end-rail at the head thereof and adapted to be raised from and lowered into flatwise position, said lamp structure including a bed-plate, fastening means on the bed-plate adapted to secure the same to said end-rail, a pivot-element pivoted to the bed-plate and having a body member offset headwards of the back-rest in relation to the pivotal axis of said element, a standard longitudinally adjustably mounted near its lower end on said body member of said pivot-element, said bed-plate having a portion thereof underlying the lower end of said standard and constituting an abutment therefor, said standard being adapted, in the flatwise position of said back-rest, to occupy a first position bearing intermediately thereof against said frame-rail of the bed substantially at right angles to the back-rest, said standard being adapted, upon the raising of the back-rest, to slide upwardly therealong against the frame-rail and tilt progressively under restraint of said frame-rail toward a second position relative to the back-rest biased headwards thereof, said standard being adapted to abut at its said lower end against said abutment portion of said bed-plate and limit the headwards biasing of the standard, thereby to establish said second position thereof, said standard being adapted, upon the lowering of the back-rest, to slide downwardly therealong against said frame-rail and to be tilted thereby

progressively footwards from its said second position to its said first position, and a lamp carried by said standard at the upper end thereof.

6. A self-adjustable lamp structure for attachment to a hospital-type bed including an elevated head-piece and a tiltably adjustable back-rest adapted to be raised from and lowered into flatwise position, said lamp structure including a mounting adapted to be attached to the back-rest at the head thereof, an elongated support hinged at its lower end to said mounting, yielding support-tilting means carried solely by the lamp-structure and cooperating with said support and mounting to cause the support constantly to tend to tilt headwards of the back-rest, said support being adapted, in the flatwise position of said back-rest, to occupy a first position bearing intermediately thereof against said head-piece of the bed substantially at right angles to the back-rest, said support being adapted upon the raising of the back-rest, to slide upwardly therealong against the head-piece and tilt progressively headwards of the back-rest under restraint of said head-piece, said support being adapted, upon the lowering of the back-rest, to slide downwardly therealong against said head-piece and to be tiltably returned thereby progressively footwards of said back-rest toward the said first position of said support, and a lamp carried by said support at the upper end thereof.

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