Nov. 30, 1965 T. NELSON 3,220,025

TABLE ATTACHMENT MEANS

Filed Nov. 29, 1963 2 Sheets-Sheet 1

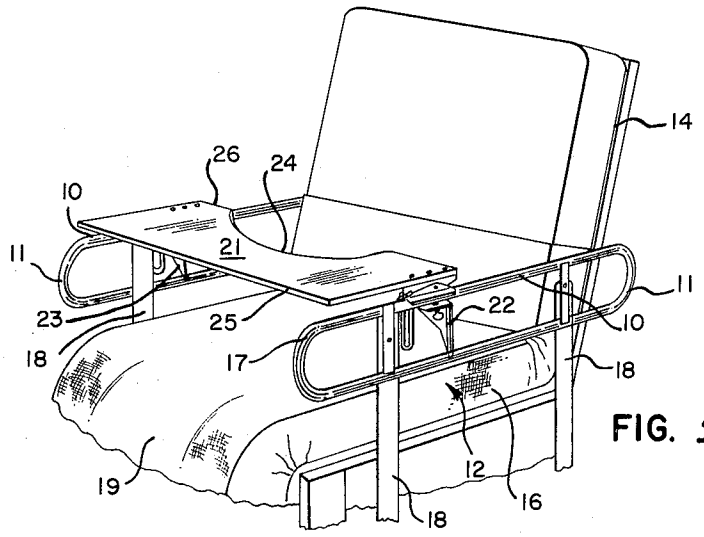


FIG. 1

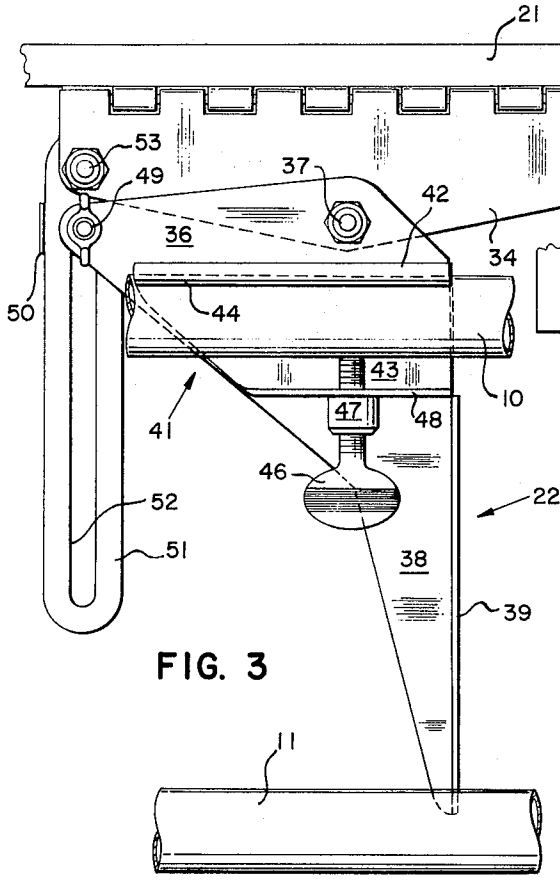


FIG. 3

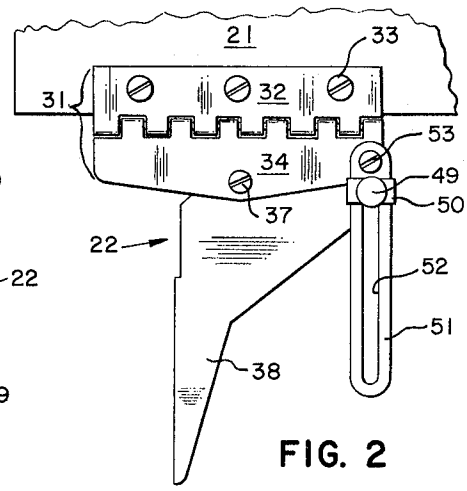


FIG. 2

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Nov. 30, 1965 T. NELSON 3,220,025

TABLE ATTACHMENT MEANS

Filed Nov. 29, 1963 2 Sheets-Sheet 2

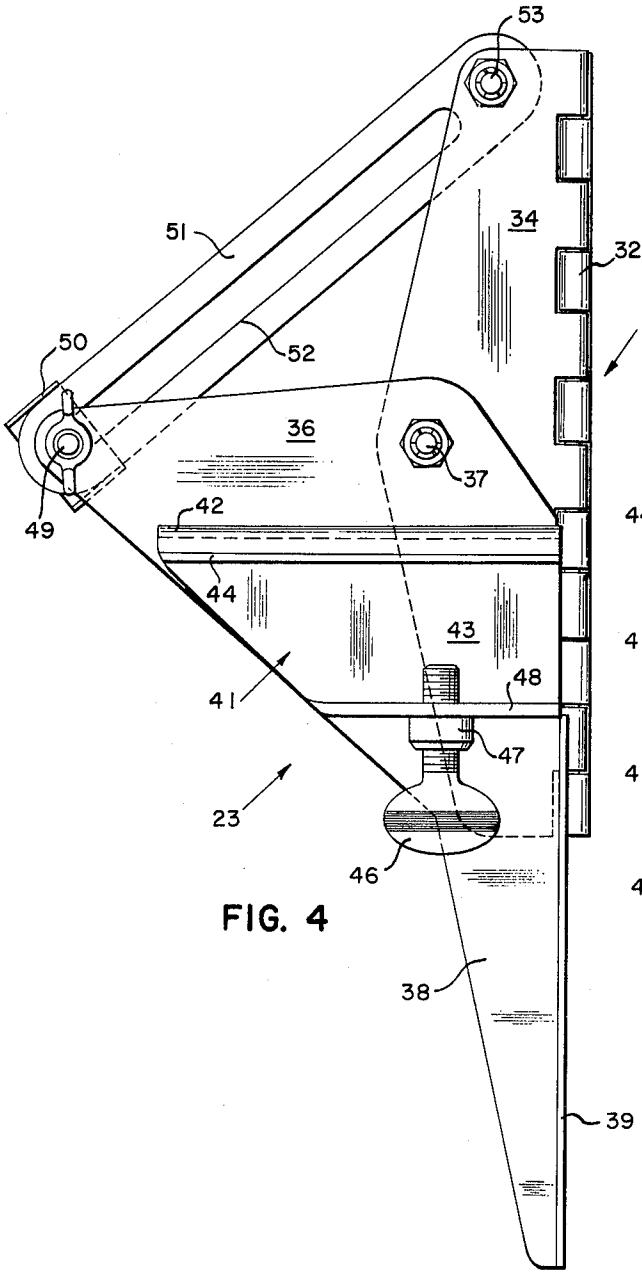


FIG. 4

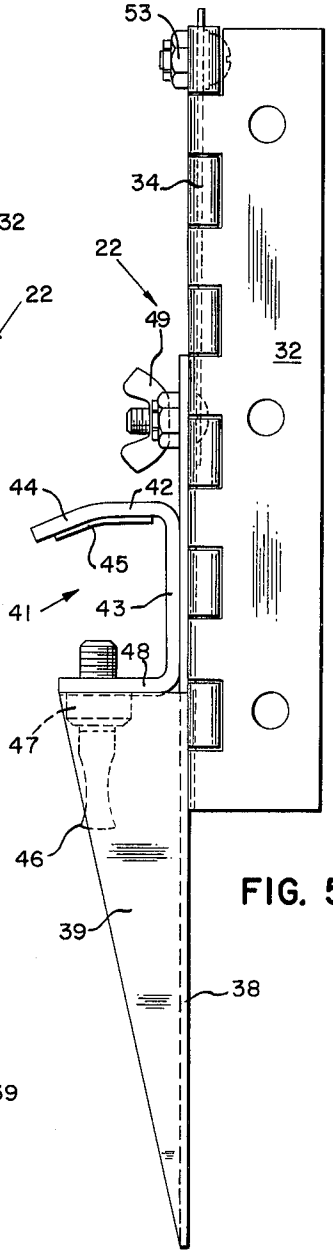


FIG. 5

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TABLE ATTACHMENT MEANS

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4 Claims. (Cl. 5—332)

This invention relates to table attachments for hospital beds and the like, including means for securing a table top or the like, to spaced horizontal members. More particularly, this invention relates to means for tiltably, over an arc of 90°, and removably fastening or securing a table top horizontally between spaced horizontal members. While this invention finds particular usefulness in removably securing a table top between the side guard rails of a hospital bed, the same also finds usefulness in connection with drafing boards, stands, displays shelves and the like.

This invention provides means for adjustably fastening a flat working surface, such as a table top to the spaced top rails of safety side rails on hospital beds when the same are in the raised operative condition. This is accomplished by two duplicate, but reversed, attachment means hinged to each end of the table top. Each attachment means comprises a support plate member to which is attached a holding means for releasably engaging the rail of the safety side guard. Means pivotally mounted on the support plate are provided for supporting the table top at each end. Means are also provided for adjustably restraining the holding means from pivoting on the support plate at any given pivot position.

The feeding, administration to and care of bed-ridden persons pose special problems which increase significantly as the lack of constant individual attention increases. In some instances where the patient is at home, he is obliged to place a tray or book or work on the uneven bedding beside him, or to hold the same above the bed or possibly on an adjacent structure. The result of the effort to maintain the equilibrium of the tray, book, or work, leaves the patient tired, which is most undesirable.

There are a few appliances which have been developed to provide tables for bed-ridden patients. One device consists of a small table having four legs which straddle the patient as he lies or sits in bed. In some models the working surface is hinged for an adjustable tilt at various angles from the horizontal. The device has the disadvantage that the four leg members cannot remain level for long. Likewise, every movement of the patient is transmitted to the table. Spills are inevitable as well as the restriction of the movement of the patient. Another commonly used device consists of an adjustable table member mounted at one end on a vertical support stand which is moved into position along side the bed. The leverage necessarily provided by the long horizontal overhang makes this device easy to tip or pivot. It is completely separate from the bed and even during use has no relation to it.

Accordingly, an object of the invention is to provide means for removably supporting a table member in an adjustable and tiltable position.

A further object of the invention is to provide a table attachment which can be used with hospital beds having side guard rails on each side of the bed which is adjustable along the length thereof in any desired position.

Another object of the invention is to provide a table attachment that can be maintained in any adjusted position from horizontal to 90° from the horizontal with respect to the side guard rails.

Another object of this invention is to provide a table support means which is easily and quickly removable from a hospital bed.

Another object of this invention is to provide a support for feeding and care of bed-ridden hospital patients which may be attached by the patient, if he is able.

It is also an object of the invention to provide a table attachment which is not limited to a fixed position on the bed side guard rails but which may be moved to suit the needs and the comforts of the patient regardless of his size or weight or of his medical condition and regardless of the attitude of the mattress support.

Another object is to provide an adjustable surface for attachment to the guard rails of a hospital bed which will permit a bearing surface for the patient as the attitude of the mattress support is changed toward the vertical.

Further objects are to provide a construction of maximum simplicity, economy and ease of assembly and disassembly, also such further objects, advantages and capabilities as will fully appear and as are inherently possessed by the device and invention described herein.

The invention further resides in the combination, construction and arrangement of parts illustrated in the accompanying drawings, and while there is shown therein a preferred embodiment thereof, it is to be understood that the same is illustrative of the invention and that the invention is capable of modification and change and comprehends other details of construction without departing from the spirit thereof or the scope of the appended claims.

In the drawings:

FIGURE 1 is a perspective view of the table attachment means mounted on the side rails of a hospital bed where the mattress support has been adjusted to a sitting attitude;

FIGURE 2 is a bottom plan view of a left-hand table attachment means secured to a table surface shown in fragment;

FIGURE 3 is a side elevational view of a left-hand table attachment means secured to a portion of the top side rail guard;

FIGURE 4 is a side elevational view of a left-hand table attachment means with the hinge member pivoted to a substantially vertical position but without the table top being attached; and

FIGURE 5 is a front elevational view of the left-hand table attachment means of FIGURE 4.

In the practice of the invention there is provided a pair of side guard rails for a hospital bed to which the table attachment may be secured when the same are raised to the operative position. The guard rails are preferably supported on the mattress support so that they may be operative in any position of the mattress support from the horizontal to substantially vertical and any angle or attitude therebetween. The top guard rails **10** as shown in FIGURE 1, are part of a side guard **11** of a bed generally designated **12**. The bed has a pivotal head section **14** which is pivotally connected to the seat section **16** in a manner forming no part of this invention, so that the head section may be elevated as shown. The guards **11** are suitably secured to the mattress support in the seat section area so that when they are in the operative position and the foot section **19** is lowered and the head section **14** is raised to form a chair attitude, the rails also form arm rests.

It is to be noted that the guards **11** are identical, one being on the left hand side of the bed and the other on the right hand side. Such similarity is ordinarily a requisite of the invention since the table attachment of the invention will usually be attached at the same elevation on each side. The guards **11** as shown are structural loops **17** elongated in the horizontal direction to form the top horizontal rails **10**. They are supported by two posts **18** on each side which are pivotally mounted on the mat-

tress support in the seat section, so they may be raised to the operative position shown or lowered to the inoperative position. In the following description the table attachment is described as attached to the horizontal rails **10** in the operative position, although attachment to other objects is apparent.

Further referring to the drawings in which like parts are indicated by the same identifying numeral, and with particular reference to FIGURE 1, it will be seen that the table attachment comprises a transverse table member **21** of generally rectangular dimensions and two attachment means, one at each end or side, the left one being **22** and the right one being **23**, and so positioned as to span the bed **12** just inside the side guard rails **11**. The table member **21** need not have a particular shape, but it will ordinarily have a semicircular cutout portion **24** along edge **26** similar to a lap board. The two attachment means **22** and **23** are duplicates except that they are made in reverse pairs. Accordingly, in the description of the attachment means hereinafter, it will be understood that there are both left and right hand members, and that the description of one is an accurate description of the other in reverse.

Referring now to FIGURES 2 and 3, there is seen the left hand attachment means **22** secured to a portion of the top horizontal guard rail **10**, on the right hand side of the bed, from the patient's point of view. The attachment means comprises, first, a hinge portion **31** having one leaf fastened to the table **21** by means of wood screws **33** or in any other suitable manner. The other leaf **34** of the hinge **31** serves as a plate to which the remaining portions of the attachment means **22** are pivotally secured.

Triangular plate **36** is attached to leaf **34** by means of pivot pin **37**. Leg **38** of triangular plate **36** is elongated and tapered to serve as a guide between the mattress and the guard rails when the table attachment is to be secured to the guard rails **10**. The leg **38** is turned 90° along one edge to produce an L-shaped tapered leg portion **39**. This is best shown in FIGURES 4 and 5.

On the inward and upper side of plate **36** opposite from the leaf **34** a substantially U-shaped holding means **41** is integrally secured with the bottom **43** abutting the plate **36**. As shown in FIGURES 3 and 4, the holding means **41** is an elongated channel disposed horizontally with the bottom **43** joined to the plate **36**. The upper leg **42** of channel **41** is bent downwardly to form a lip **44** and the lower leg **48** is substantially at right angles to the bottom **43**. On the outer surface of the leg **48** is a boss **47** which is drilled and tapped to receive a thumb screw **46** therethrough. When the opening of the channel **41** is slipped over the top rail **10**, the thumb screw **46** is turned up for firm engagement thereunder and cooperating with lip **44** tends to hold the rail **10**. Padding **45** (see FIGURE 5) is provided on the inside of lip **44** and leg **42** to prevent scatching and marring of rail **10** and to aid in the frictional holding.

As shown in FIGURES 3 and 4, the free corner of the triangular plate **36** mounts a wing nut and screw assembly **49**. Linkage **51** has one end pivotally secured to the outer face of leaf **34** by the pivot pin assembly **53**. The linkage **51** has an interior slot **52** in which the shank of the wing nut and screw assembly **49** rides. The head of the screw **49** is secured to a guide bar **50** which guides along the outer edges of the linkage **51** (see FIGURE 2). It is apparent that the hinge comprising leaves **32** and **34**, can be moved about pivot pin **37** from the horizontal position shown in FIGURE 1 to substantially the vertical position shown in FIGURE 4, or adjusted to any angle therebetween merely by loosening the wing nut assembly **49** and adjusting the angle along the linkage **51**.

In attaching the table **21** to the guard rails **11** of the bed **12**, it is assumed that the guard rails are raised in the operative position shown in FIGURE 1. The table portion **21** is flat and when placed transversely across the bed, the hinge portions **22** and **23** dangle downwardly by gravity. It is a simple matter to slide these on the inside of the guard rails so that the U-shaped channel **41** fits over and around the top rail **10** of the guard rails at either side. Before the thumb screws **46** are tightened into position, the table **21** is moved longitudinally to the position required or desired. Then the thumb screw **46** is tightened to hold the table member in the adjusted position in a horizontal plane. It will be observed that the leg portion **38** is long enough to span the distance between the upper rail **10** and the lower rail **11** of the side guards. This prevents any rotation of the lower hinge plate **36** when in the adjusted and locked position (see lower portion of FIGURE 3). Normally the thumb screw assembly **49** maintain the table **21** in a horizontal plane which is indicated by FIGURES 2 and 3. However, it is apparent that by loosening the thumb screw assembly **49** at either side, any angle of adjustment of the table **21** upwardly with respect to its outer edge **25** about the pivot **37** up to 90°, may be attained. The seat **52** of linkage **51** limits the adjustment to 90°. Interim angular adjustments are indicated for reading and various types of physical therapy.

When patients such as paraplegics or others who do not have complete control of the hands or arms are tilted on the mattress support toward the vertical, they not only require the tie-down support for their body which are conventionally used, but also require some additional support to rest their weight on their arms which are bent at the elbows. Heretofore such additional support could not be provided but is now possible with the present device. To accomplish this support, the table top **21** is moved to the 90° position transversely of the bed, or at right angles with respect to the plane of the mattress support, which is indicated by the position of the attaching means in FIGURES 4 and 5. The thumb screw assemblies **49** are opened to permit the full extension of the slot **52** and then turned to the locked or holding position. It will be observed that as the mattress and its support move toward the substantially vertical position, the plane of the table **21** approaches a horizontal plane which provides not only a retaining of the body of the patient in the region of his elbows, but provides a firm rest for the arms and elbows of the patient to help support himself in the vertical position. The adjustment has many therapeutic uses and adds greatly to the usefulness and meaning of this one attachment which ceases to be a single purpose unit.

It will be seen from the above that not only are the objects attained by the attachment described herein, but that many new uses and objectives will be obtained with more user experience and diversified uses. While this table attachment is intended for use on all hospital beds, it finds its full usefulness only in beds such as those described in pending applications, Serial Nos. 135,075 (now Patent No. 3,149,349), and 276,772.

I claim:

1. Attachable table means for side guard rails of hospital beds and the like, the combination comprising safety side guards at either side of the mattress support secured thereto and movable therewith, having upper and lower rails, a table member spanning transversely the distance between the two upper rails of the side guards, attachment means on said table member for detachably securing said table member to said upper side rails comprising a hinge secured at each end of said table each having one leaf portion secured to said table member and the second leaf portion pivotally mounted on a plate member for limited rotation in a vertical plane, a plate member, holding means in the form of a U-shaped channel attached to said plate member for rigid releasable attachment to a said upper rail, linkage means connecting said second hinge leaf portion and said plate member for limited pivotal movement, and means with a three point

holding for the table member for positioning and locking said linkage means in any permitted angle of adjustment.

2. The attachable table means of claim 1 in which the lower portion of said plate member is an L-shaped leg with a portion thereof bent at right angles to the plane of the plate member and where the bent portion is tapered downwardly to bear against the lower side guard rails.

3. The attachable table means of claim 1 in which said holding means securing the table to the guard rails is a channel member secured to said plate member having a downwardly curved lip on the marginal edge of the upper leg and a thrust means cooperating with said lower leg to hold and retain the support members within said channels.

4. The attachable table means of claim 1 in which said restraining means for angular adjustment is a link having an internal slot to control and limit the angularity of adjustment.

References Cited by the Examiner

UNITED STATES PATENTS

274,162	3/1883	Wilson	108—9
1,605,550	11/1926	Krugly et al.	108—8
3,066,322	12/1962	Derby	5—92 X

FOREIGN PATENTS

836,030	10/1938	France.
160,802	10/1957	Sweden.

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