

March 3, 1970

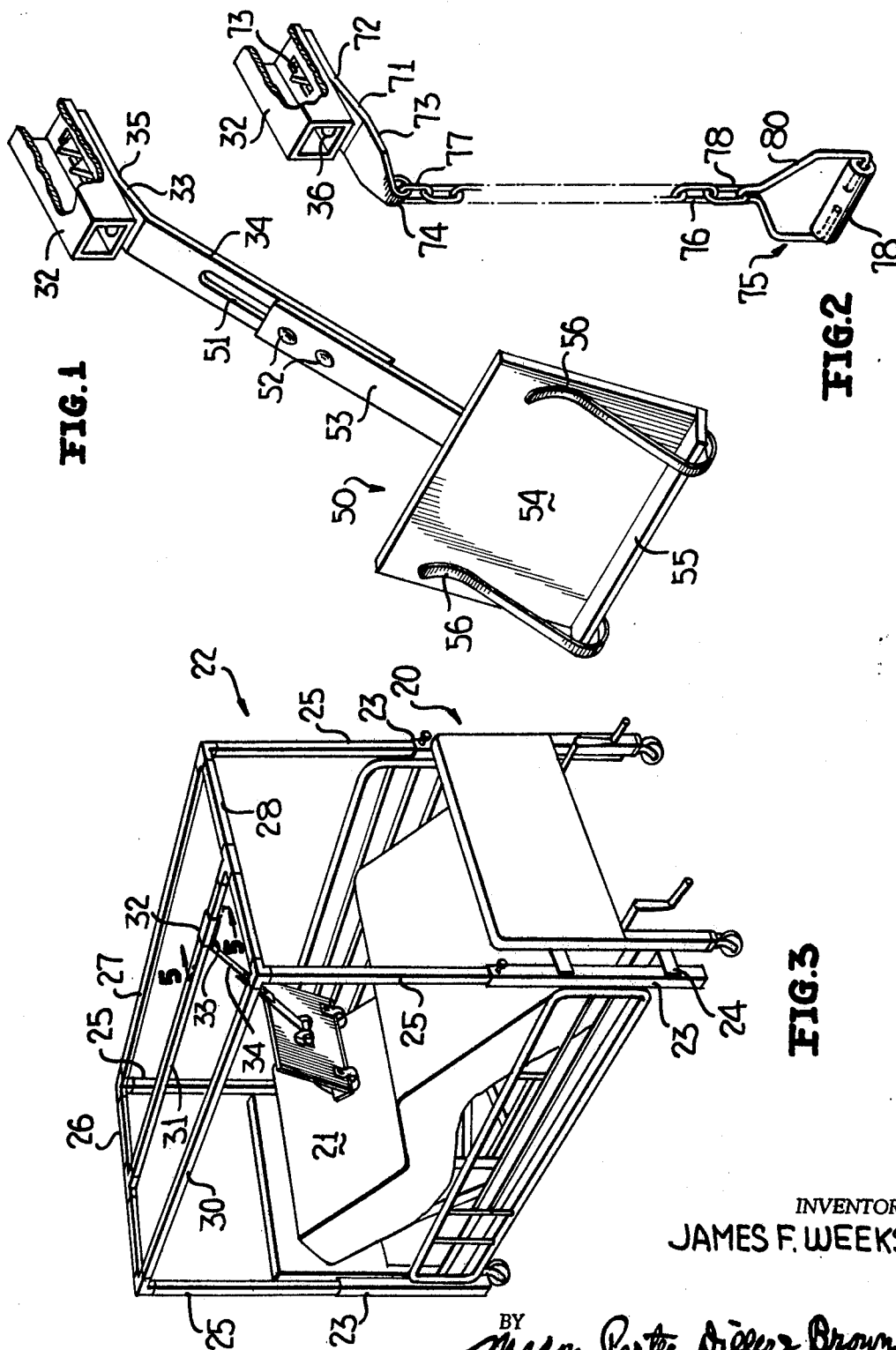
J. F. WEEKS

3,497,882

SUPPORT MECHANISM FOR SUPPORTING VARIOUS DEVICES TO BE
EMPLOYED IN COOPERATION WITH A HOSPITAL BED

Filed Aug 23, 1967

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FIG. 4

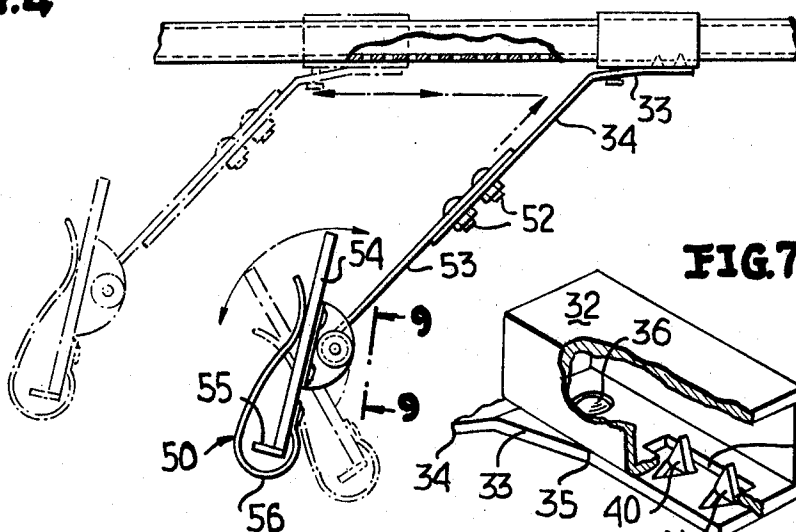


FIG. 7

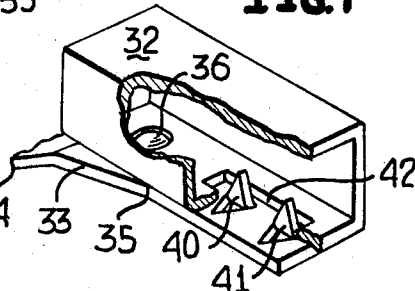


FIG. 5

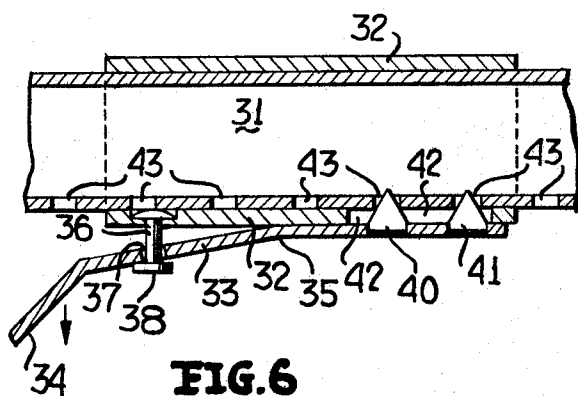


FIG. 9

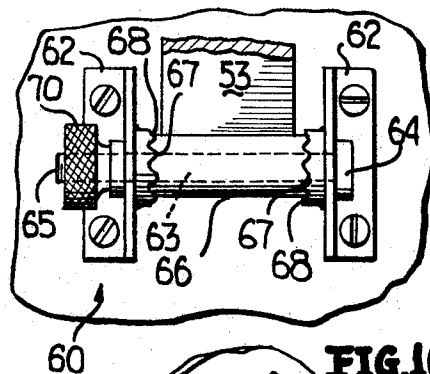


FIG. 6

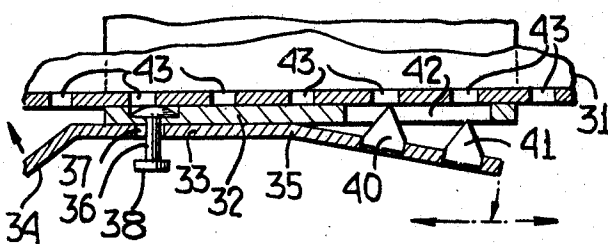


FIG. 10

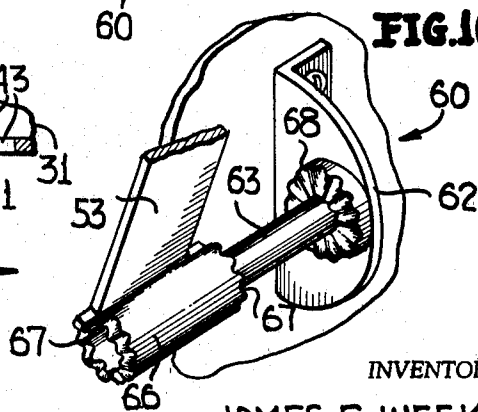
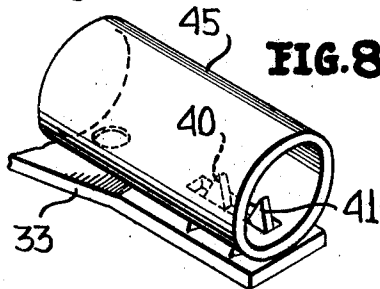


FIG. 8



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SUPPORT MECHANISM FOR SUPPORTING VARIOUS DEVICES TO BE EMPLOYED IN COOPERATION WITH A HOSPITAL BED

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14 Claims

ABSTRACT OF THE DISCLOSURE

Disclosed herein is a support mechanism to be attached to a bed including a frame and a support member disposed above the bed. A slidable sleeve is disposed upon the support member, an arm is pivotally mounted upon the sleeve and such arm includes locking provisions for locking the sleeve and arm at a fixed position along the member.

The supporting device is disclosed as including either a pivotal reading table or a handgrip.

This invention relates generally to adjustable support apparatus for use in association with a bed to support varying devices conveniently with respect to a person occupying such bed, and more particularly to the combination of an elongate mounting bar to be supported above a bed and support apparatus slidable along the mounting bar for supporting any of a number of various devices including reading tables, handgrips and the like.

In the past, various adjustable supports have been provided in association with hospital beds for supporting various pieces of equipment in relation to such beds and the patients occupying such beds. It is, however, desirable that the provisions for supporting various devices in correct relation to a patient occupying a hospital bed be easily adjusted and locked into a desired position with a minimum of effort on the part of the patient or other person effecting the correct positioning of the supported device. In providing a reading table for use by a patient it is desirable that such table be adjustable to maximize the comfort of the patient and that such reading table be positively maintained in such correct disposition.

Similarly, when a handgrip is to be supported for use by the patient in altering his position upon the hospital bed or in providing physical exercise for the patient, it is important that the means by which such handgrip is supported is free from the possibility of slipping out of its preselected position.

In accordance with the foregoing it is an object of this invention to provide support apparatus for use in association with a bed, particularly a hospital bed, wherein the positioning of such apparatus is adjustable and relatively free from the possibility of accidental movement from its adjusted position.

Another object of this invention is to provide adjustable support apparatus of the aforementioned type wherein an elongate mounting member is employed in combination with a sleeve slidably supported on the mounting member and an arm pivotally attached to the sleeve for connection with a device to be supported and for locking the sleeve at a predetermined position along the length of the elongate member.

A further object of this invention is to provide an adjustable support of the type set forth immediately hereinbefore and including cooperating locking provisions on the pivotally mounted arm and the elongate member.

A still further object of this invention is to provide adjustable support apparatus including an elongate support member, a sleeve slidably mounted on the support member, an arm pivotally attached to the sleeve and in-

cluding locking provisions for locking the sleeve and arm with respect to the elongate member and an adjustable table connected to the arm for adjustable movement therewith.

Yet another object of this invention is to provide an adjustable support device including an elongate mounting member, a slidable sleeve, an arm pivotally connected to the sleeve and a handgrip supported by the pivotal arm for adjustable movement therewith.

With the above and other objects in view that will hereinafter appear, the nature of the invention will be more clearly understood by reference to the following detailed description, the appended claims, and the several views illustrated in the accompanying drawings.

In the drawings:

FIGURE 1 is a perspective view with parts broken away for clarity, and shows a sleeve for attachment to an elongate mounting member, an arm pivotally connected to the sleeve, locking provisions on the arm and an adjustable reading table supported by the arm.

FIGURE 2 is a perspective view with parts broken away for clarity, and shows a sleeve and pivotally connected arm similar to the sleeve and arm of FIGURE 1, and a handgrip supported upon the arm.

FIGURE 3 is a perspective view of the support apparatus and reading table of FIGURE 1 and shows such apparatus and table in association with an elongate mounting member and a hospital bed.

FIGURE 4 is a fragmentary front elevational view of the adjustable support apparatus with parts broken away for clarity, and shows alternate positions of the reading table supported upon the pivotally mounted arm and the slidable sleeve in association with the elongate mounting member.

FIGURE 5 is an enlarged fragmentary sectional view taken along the line 5—5 of FIGURE 3 and shows the association of the locking provisions on the pivotally supported arm with the elongate mounting member.

FIGURE 6 is an enlarged fragmentary sectional view of the apparatus shown in FIGURE 5, and shows the pivotally mounted arm, the locking provisions thereon and the elongate mounting member and their interrelationships in the unlocked position thereof.

FIGURE 7 is an enlarged fragmentary perspective view with parts broken away for clarity, and shows the interrelationship of the locking provisions on the pivotally mounted arm with an aperture provided in the sleeve.

FIGURE 8 is an enlarged fragmentary perspective view of an alternate embodiment of the aforementioned sleeve and pivotally mounted arm, and shows the provision of a tubular sleeve of circular cross-section.

FIGURE 9 is an enlarged fragmentary plan view taken along the line 9—9 of FIGURE 4, and shows adjustable pivotal mounting provisions for the pivotal connection of the reading table to the pivotal arm.

FIGURE 10 is an enlarged, exploded fragmentary perspective view, and shows the interrelationship of the relatively pivotable parts of FIGURE 9 and corrugated surfaces provided upon relatively rotatable parts for maintaining the reading table at a predetermined angular disposition.

Referring to the drawings in detail, indicated generally at 20 is a bed which may be any of a number of suitable beds and, as shown, which preferably is a hospital bed of the type including a mattress 21 the position of which is adjustable to effect an adjustment of the position of a patient disposed thereon.

A "Balkan frame" or frame structure, generally indicated by the numeral 22, is affixed to the bed 20 as by the provision of a number of tubular receiving members 23 which may be provided on the bed 20 as by any of

a number of suitable mounting means 24. The frame 22 has upwardly extending support beams 25 slidably received in the receiving members 23 and the uppermost ends of the upstanding support beams 25 are interconnected by generally horizontally disposed upper beams 26, 27, 28 and 30. An elongated tubular mounting member 31 bridges the upper beams 26 and 28 to extend generally horizontally above the mattress 21 and along the entire length of the bed 20.

A sleeve 32 encircles the elongate mounting member 31 and is slidable therealong to any of a number of positions along the length thereof. An arm 33, best seen in FIGURE 1, is pivotally connected to the movable sleeve 32 for movement therewith along the length of the elongate mounting member 31. The arm 33 is provided with a depending extension portion 34 to which may be connected a device to be supported in a predetermined relationship to a patient occupying the bed 20. The arm 33 is provided with a transverse bend 35 about which the arm 33 may be pivoted with respect to the sleeve 32.

As best seen in FIGURES 5 and 6, a fastening pin 36 is supported by the sleeve 32 and extends outwardly therefrom to pass loosely through an aperture 37 provided in the arm 33. An enlarged head portion 38 is provided upon the lowermost portion of the pin 36 to maintain the arm 33 in association with the movable sleeve 32.

A pair of projections 40 and 41 are provided on the arm 33 on the opposite side of the transverse bend 35 from the fastening pin 36 and aperture 37. An elongate slot or aperture 42, best seen in FIGURE 7, is provided in the sleeve 32 to facilitate the passage of the projections 40 and 41 therethrough. A plurality of registration apertures 43 are disposed along the length of the mounting member 31 to receive the uppermost portions of the arm mounted projections 40 and 41 in registry therewith when the arm 33 is pivoted into its locking position as indicated by the unnumbered arrow in FIGURE 5. Normally, the weight of the arm extension 34 and/or any device supported thereon will be sufficient to maintain the projections 40 and 41 received in the apertures 43 to maintain the sleeve 32 and the arm 33 locked at a particular position along the length of the mounting member 31.

The application of a force generally upwardly upon the arm extension 34 rocks or pivots the arm 33 into the unlocked position as indicated by the unnumbered arrows in FIGURE 6 to allow the sleeve 32 and arm 33 to be moved along the mounting member 31 as desired.

In a further embodiment of the movable sleeve and pivotable arm combination as shown in FIGURE 8, a sleeve 45 of generally circular cross-section is provided for cooperation with a circularly cross-sectioned elongate mounting member similar to the rectangularly cross-sectioned mounting member 31. As shown, the arm 33 and the projections 40 and 41 may be fashioned as described hereinbefore or the arm 33 may be generally arcuate in cross-section to partially encircle the sleeve 45.

A reading table, generally indicated by the numeral 50 in FIGURES 1 and 4, is mounted upon the generally downwardly projecting extension 34 by the provision of suitable connection means such as, for example, a slot 51 defined in the extension 34 for accommodating bolts 52 or the like. The employment of the slot 51 in the arm extension 34 allows vertical adjustment of the reading table 50 to any desired position by the mere sliding of a table support beam 53 along a surface of the arm extension 34 and the tightening of the bolts 52 at a desirable position.

The reading table device 50 includes a reading board 54 which pivotally mounts the table support beam 53 as will be described more fully hereinafter. A support ledge 55 is provided at the lowermost end of the reading board 54 to support reading matter in its proper position

upon the board. Similarly, clamping means are provided in association with the board 54 to maintain the reading material thereon and, as shown, the clamping means provided include a pair of S-shaped clamps 56 each fixedly attached to the back surface of the reading board 54.

The reading table support beam 53 is pivotally mounted upon the reading board 54 by the pivotal connecting provisions generally indicated by the numeral 60 in FIGURES 9 and 10. A pair of brackets 62, 62 are fixedly attached to the reading board 54 and support therebetween a generally horizontally disposed shaft 63 upon which may conveniently be provided an enlarged head portion 64 and a threaded end portion 65 at the opposite end of the shaft from the head portion 64. The shaft 63 is journaled in a journal portion 66 provided upon the generally upwardly extending table support beam 53. A pair of corrugated faces 67 are disposed at the two axially spaced ends of the journal portion 66 for cooperation with a similar pair of corrugated faces 68 provided upon the brackets 62. A knurled nut 70 may be provided upon the threaded end 65 of the shaft 63 such that the tightening of the nut 70 draws the corrugated faces 68 of the brackets 62 toward each other and into firm engagement with the corrugated faces 67 of the journal portion 66 to maintain the reading board 54 in a desired angular disposition.

Loosening of the nut 70 allows the brackets 62 to move resiliently away from each other during angular adjustment of the board 54. The depth of the corrugations upon the faces 67 and 68 may, however, be made sufficient to maintain the board 54 in its desired angular disposition without the use of the nut 70 provided corrugated faces 67 and 68 are normally in firm inter-engagement.

In a further embodiment, best seen in FIGURE 2, the slidable sleeve 32 has pivotally connected thereto an arm 71 similar to the arm 33 described hereinbefore in that the arm 71 includes a transverse bend 72 and a projection 73 to be received in apertures spaced along the length of the elongate mounting member 31 as well as an aperture (not shown) for receiving the fastening pins 36. The arm 71 further includes an extension 73 having connecting means provided thereon in the form of an extension terminating eye 74. A handgrip, generally indicated by the numeral 75 is connected to the eye 74 of the arm 73 as by the extension therebetween of a chain 76 having end links 77 and 78 connected to the eye 74 and the handgrip 75, respectively.

The handgrip 75 includes a hand bar 78 which is supported generally horizontally by a grip support member 80. The bar 78 may be of sufficient width to facilitate the handling thereof by the patient with a single hand in aiding the patient to alter his position upon the mattress 21 or the grip 78 may be of sufficient width to facilitate the utilization of two hands in various physical exercises.

Again, it will be noted that the employment of the sleeve 32 and pivotable arm 73 in cooperation with the handgrip 75 allows the locking and unlocking of the sleeve 32 and arm 73 with respect to the elongate mounting member 31 through the pivotal movement of the arm 73 and, again it will be noted that the weight of the arm extension 73 and the handgrip 75 will be sufficient to move the locking projection 73 into a suitable projection receiving registration aperture 43 in the elongate mounting member 31 to prevent the movement of the sleeve and arm with respect to the elongate mounting member during the utilization of the handgrip 75.

It is to be understood that any number of elongate mounting members 31 may be mounted in parallel spaced relation between the frame members 26 and 28 such that a number of devices might be supported for employment in cooperation with the bed 20.

The structures shown and described above represent preferred forms of the invention, however, it will be readily apparent that many variations may be made in the

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structure set forth without departure from the scope and spirit of the invention as defined by the appended claims.

I claim:

1. Adjustable support apparatus for use in supporting an associated device movably with respect to a bed and comprising an elongate mounting member, a sleeve slidably supported on said mounting member and an arm pivotally attached to said sleeve, said arm including connection means for connecting said support apparatus to the associated device, said mounting member having registration means disposed along the length thereof and said arm having locking means movable into and out of registry with said registration means upon pivoting of said arm for locking said sleeve and arm at any of a number of positions along the length of said mounting member.

2. Supporting apparatus according to claim 1 wherein said locking means comprises at least one inwardly directed projection on said arm and said registration means comprises means for receiving said projection.

3. Support apparatus according to claim 1 wherein said sleeve is tubular and of generally rectangular cross-section and said mounting member is tubular, of generally rectangular cross-section and extends axially through said sleeve, said registration means being a plurality of apertures in said mounting member and said locking means comprising at least one projection pivotable into a selected one of said apertures upon pivoting of said arm.

4. Support apparatus according to claim 1 wherein said sleeve is tubular and of generally circular cross-section and said mounting member is tubular, of generally circular cross-section and extends axially through said sleeve, said registration means being a plurality of apertures in said mounting member and said locking means comprising at least one projection pivotable into a selected one of said apertures upon pivoting of said arm.

5. Support apparatus according to claim 1 wherein said means for connecting includes an extension portion on said arm, extending away from said sleeve and a table connected to said extension portion for movement with said sleeve and arm.

6. Support apparatus according to claim 1 further comprising a handgrip and means interconnecting said handgrip to said connection means on said arm.

7. Support apparatus according to claim 1 wherein said elongate mounting member extends longitudinally of said bed.

8. Support apparatus according to claim 2 wherein said arm further comprises a transverse bend about which

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said arm is pivotable and an aperture therein, said aperture and said projection being disposed on opposite sides of said transverse bend and said sleeve having affixed thereto an outwardly extending fastening pin, said fastening pin being loosely received in said aperture and having a head thereon for preventing the removal of said arm.

9. Support apparatus according to claim 2 wherein said sleeve has an aperture therethrough in alignment with said projection for allowing the passage of said projection therethrough into registry with said means for receiving said projection.

10. Support apparatus according to claim 5 further comprising a table mounting beam pivotally connected to said table and slidably attached to said extension portion of said arm.

11. Support apparatus according to claim 5 including pivotal connecting means pivotally connecting said arm extension portion and said table.

12. Support apparatus according to claim 10 wherein a pair of mounting brackets are provided on said table in mounting relation to a shaft, said table mounting beam terminating in a journal portion disposed between said brackets and encircling said shaft in pivotal supporting relation to said table.

13. Support apparatus according to claim 12 wherein said table has clamping means affixed thereto, said journal portion having corrugated end faces thereon and said brackets having corrugations thereon in contact with said corrugated end faces for maintaining said table in any of a number of angular positions.

14. Support apparatus according to claim 6 wherein said means interconnecting comprises a chain having one end thereof connected to said connection means and the other end thereof connected to a handgrip support member of said handgrip.

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