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J. DOUGLASS, JR., ET AL
ACCESSORY SUPPORTS FOR SURGICAL
OPERATING TABLES AND THE LIKE

3,046,072

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3 Sheets-Sheet 2

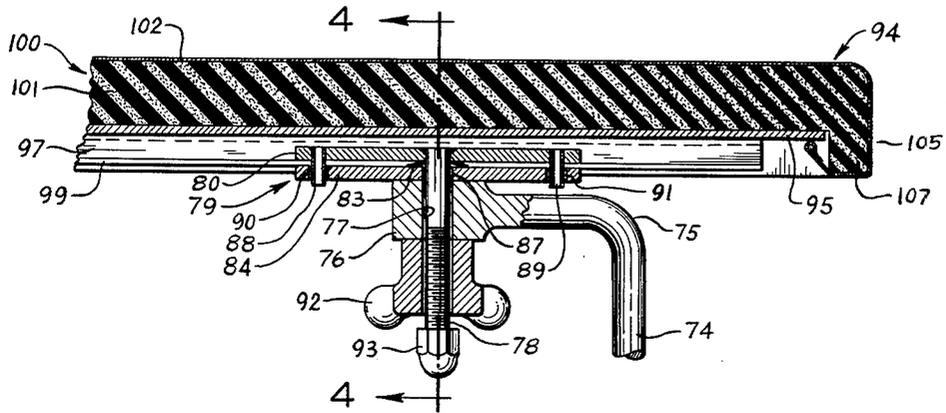


FIG. 3.

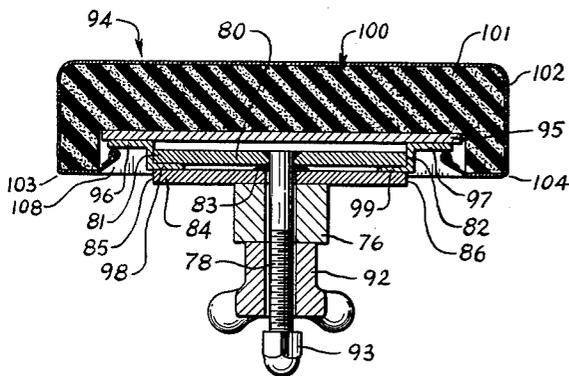


FIG. 4.

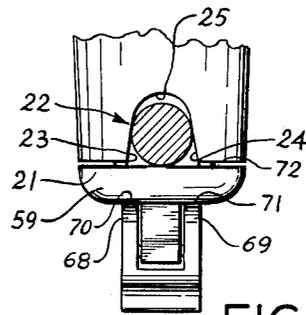


FIG. 5.

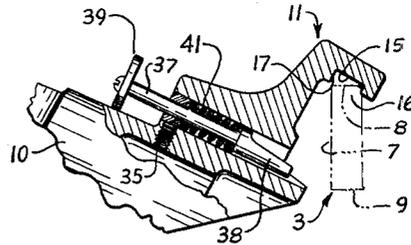


FIG. 6.

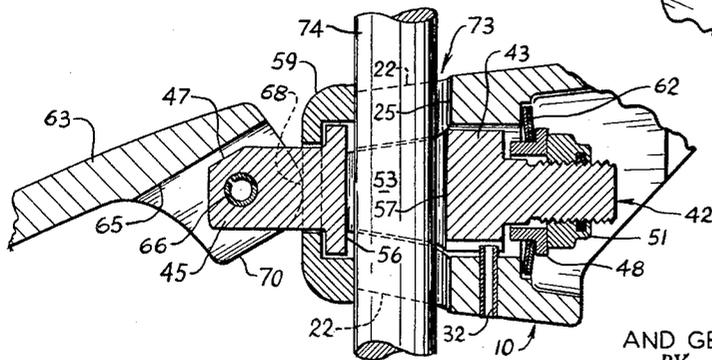


FIG. 7.

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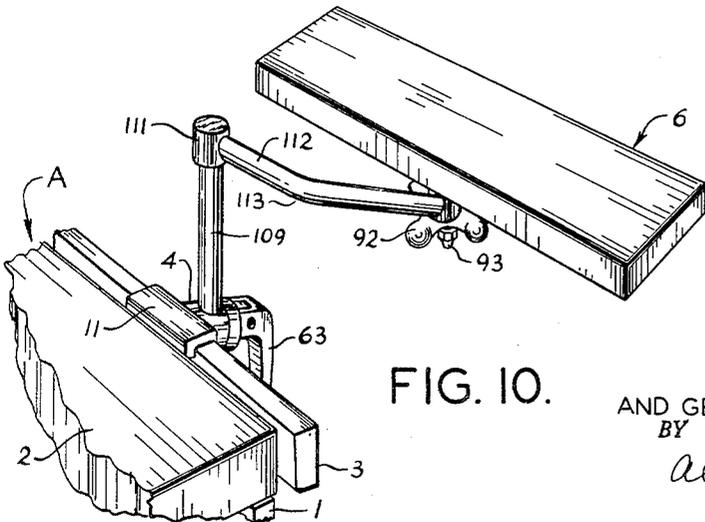
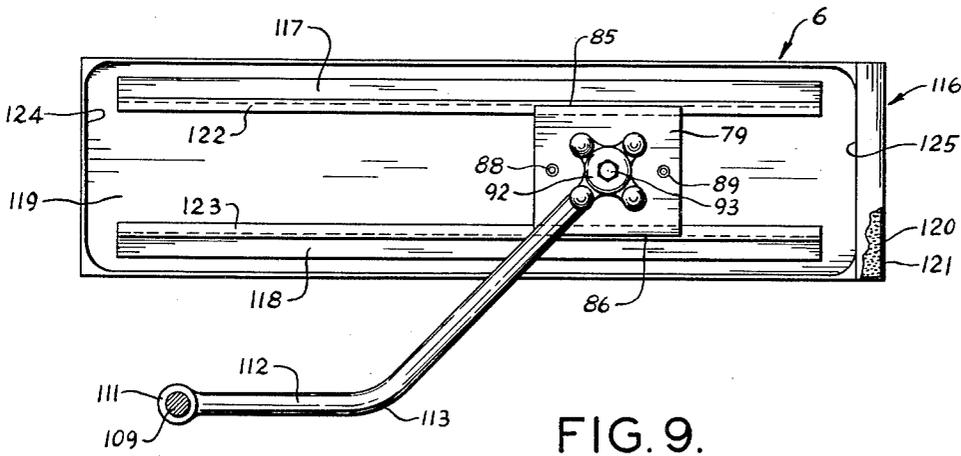
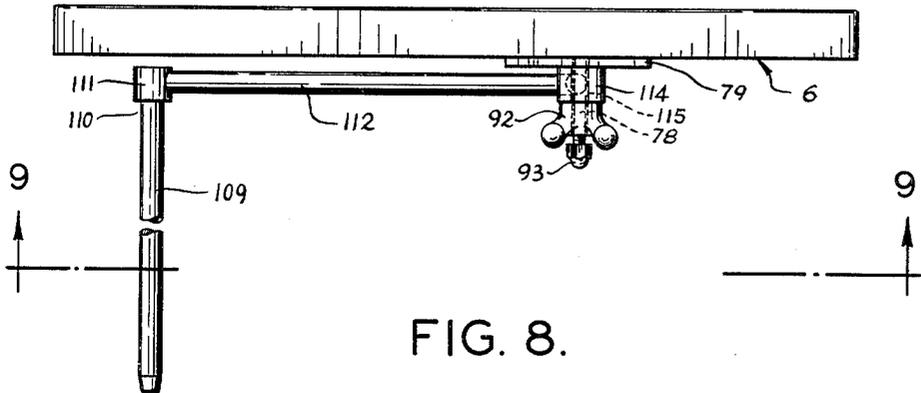
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1

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ACCESSORY SUPPORTS FOR SURGICAL OPERATING TABLES AND THE LIKE

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3 Claims. (Cl. 311-10)

This invention relates to certain new and useful improvements in operating tables and, more particularly, to an accessory device to be attached to an operating table for supporting a patient's limb in laterally out-stretched position.

It is the primary object of the present invention to provide a limb-supporting board for surgical operating tables which may be readily adjusted in elevation, longitudinal position, and angle with respect to the longitudinal axis of the surgical table with a minimum of time and effort, thereby permitting rapid adjustment prior to, or during, surgery as the need may arise.

It is a further object of the present invention to provide an adjustable means for mounting on a surgical table to provide an arm or leg rest which may be readily transferred to a multitude of positions by an individual operator in a minimum of time.

It is another object of the present invention to provide a bracket which is adapted for mounting on a surgical table and readily positionable thereon and is also adapted to accept and support an arm rest or leg rest on the operating table.

It is an additional object of the present invention to provide a bracket in which an arm rest may be readily locked and unlocked by a very rapid and simple manipulation.

With the above and other objects in view, our invention resides in the novel features of form, construction, arrangement, and combination of parts presently described and pointed out in the claims.

In the accompanying drawings (three sheets)—

FIG. 1 is a fragmentary perspective view of a surgical table having an arm board constructed in accordance with and embodying the present invention;

FIG. 2 is a fragmentary sectional view taken along line 2-2 of FIG. 1;

FIG. 3 is a fragmentary sectional view taken along line 3-3 of FIG. 1;

FIG. 4 is a fragmentary sectional view taken along line 4-4 of FIG. 3;

FIG. 5 is a fragmentary sectional view taken along line 5-5 of FIG. 1;

FIG. 6 is a fragmentary sectional view similar to FIG. 2 showing the bracket as it is being installed on a surgical table;

FIG. 7 is a fragmentary sectional view also similar to FIG. 2 showing the bracket in position for accepting an arm rest, a leg rest, or the like;

FIG. 8 is a side elevational view of a leg rest construction for insertion in the bracket;

FIG. 9 is a fragmentary sectional view taken along line 9-9 of FIG. 8; and

FIG. 10 is a fragmentary perspective view of an operating table having a leg board constructed in accordance with and embodying the present invention.

Referring now in more detail and by reference characters to the drawings, which illustrate a practical embodiment of the present invention, A designates a surgical operating table including a framework 1 and an upwardly presented work surface 2, and provided on each of its longitudinal sides with an elongated side rail 3. Slidably mounted on the side rail 3 is a bracket 4 into which an arm board 5 or a leg board 6 may be inserted and locked

2

in a multitude of positions with respect to the operating table A.

The side rail 3 includes an outwardly presented vertical face 7 and upper and lower horizontal edge-faces 8, 9, and is secured in spaced relationship from the framework 1 by conventional means in such manner that it extends longitudinally along the side of the surgical table A with the outwardly presented face 7 and the upper and lower edge-faces 8, 9, unobstructed for receiving a bracket 4. The bracket 4 includes an outwardly extending shell 10 and an upwardly extending slide-forming member 11, the slide-forming member 11 being integrally formed on the shell 10, and including a bore 12 and an upper horizontal flange 13 terminated by an inner lip 14. The flange 13 and the lip 14 respectively include inwardly presented flat intersecting surfaces 15, 16, for purposes presently more fully appearing. The slide-forming member 11 is also provided with a third surface 17, which intersects the surface 15, thereby defining a groove 18 which is integral with the bracket 4 and which is sized for overlapping engagement with the face 7 and the upper edge-face 8 of the side rail 3. The surface 17 is also provided with an elongated recessed groove 19 to reduce friction against the face 7 of the side rail 3 when the slide-forming member 11 is engaged upon the side rail 3.

The arcuate shell 10, at its flat outer end 21, is provided with a vertical groove 22 which comprises two inwardly converging lateral walls 23, 24, which are intersected by an arcuate back wall 25, for purposes presently more fully appearing. The shell 10 is also provided with a horizontal inwardly extending passageway 26, which is formed by a first bore 27 and a rear annular recess 28, the bore 27 and the recess 28 being co-axial and being provided with a counterbored shoulder 29 at their intersection 30 for purposes presently more fully appearing. The shell 10 is also provided with a vertical bore 31 which extends from the lower margin of the shell 10 into the rear portion of the bore 27 and is sized for insertion of a conventional spring pin 32 which extends partially into the passageway 26 for purposes presently more fully appearing.

A sleeve 33 is held in place in the outer end 34 of the bore 12 by a locking screw 35 which is inserted in a threaded hole 36, the threaded hole 36 intersecting the recess 28 and thereby affording access to the locking screw 35. Inserted in the hollow portion of the sleeve 33 is a rod 37, which has a substantially enlarged tapered end 38 and which is provided at its other end with a cap-forming plate 39 threadedly mounted thereon, as depicted in FIG. 2. The tapered end 38 includes an inwardly presented flat surface 40, which forms an annular shoulder about the rod 37 and serves to abut a conventional spring 41 which is placed about the rod 37 between the tapered end 38 and the sleeve 33 for purposes presently more fully appearing.

Sized for insertion within the passageway 26 is an elongated pull-rod 42 including an elongated cylindrical body 43, a substantially smaller threaded end 44, and an outwardly extending rectangular neck 45, the neck 45 being provided with an aperture 46 and being cut off obliquely at its upper end 47. Loosely inserted over the threaded end 44 of the pull-rod 42 is a washer 48 including an annular wall 49 and a shoulder 50, the washer 48 being loosely held in place about the end 44 by a lock nut 51 including an integral resilient locking sleeve 52. The pull-rod 42 is sized substantially smaller than the passageway 26, and the body 43 is provided with a vertical passageway 53 including a pair of spaced converging lateral walls 55, 54, intersected by a flat forward wall 56 and a rear arcuate wall 57, the walls 54, 55, 57, being congruent to the walls 23, 24, 25. The pull-rod 42 is also provided with a lower recessed groove 58 which extends from the inner end of the body 43 to the passageway 53 and is

positioned to provide sliding clearance for the spring pin 32 for purposes presently more fully appearing.

Provided for disposition upon the neck 45 and for abutting the flat end 21 of the shell 10 is an annular clamping plate 59 including an aperture 60, sized to permit slidable movement of the neck 45, and an annular counterbore 61, which is sized to permit movement of the outer end of the body 43 in the plate 59. In assembling the pull-rod 42 within the shell 10, a spring 62, preferably though not necessarily of the dished-washer type, is placed over the end 44 of the pull-rod 42 and the washer 48 and the lock nut 51 are then placed upon the end 44, whereupon the pull-rod is transposed through the passageway 26 and the spring pin 32 is urged through the bore 31, thereby securing the pull-rod 42 to the shell 10. The cap 59 is then placed over the neck 45, and a conventional lever handle 63, provided with a recessed groove 64 including a flat bight 65, is secured to the neck 45 by a pin 66 inserted in the aperture 46, the obliqueness of the upper end 47 of the neck 45 providing clearance for the bight 65 of the handle 63 as it is rotated about the pin 66. The handle 63 is bifurcated and includes spaced parallel cams 67 through which the pin 66 is inserted. These cams 67 include high points 68 which are approximately midway along camming surfaces 69, the camming surfaces 69 placing the converging and arcuate surfaces of the groove 22 and the passageway 53 into alignment when the handle is in the up position.

The camming surfaces 69 also include a flat surface 70 for holding the pull-rod 42 against the force of the spring 62 when the handle 63 is in the down position, and an upper flat surface 71 which enables the spring 62 to shift the passageway 53 and the groove 22 into alignment when the handle 63 is in the fully raised position, whereby to define a passageway 73 formed of the groove 22 and the passageway 53 in alignment for purposes presently more fully appearing.

Sized for insertion in the passageway 73 is an elongated rod 74, which includes an arcuate bend 75 and terminates in a collar 76 provided with a bore 77. Provided for pivotal attachment to the collar 76, by means of a securely attached threaded rod 78 inserted in the aperture 77, is a brace-mounting 79 having a flat upper plate 80 which is substantially rectangular in cross-section and is provided with parallel sides 81, 82. Interposed between the plate 80 and the collar 76, and held in spaced relationship from the plate 80 by means of a spring 83, is a complementary under-plate 84 which includes a pair of parallel sides 85, 86, and which is provided with a centrally located aperture 87 for slidable movement on the rod 78. The plates 80, 84, are held in aligned relationship by a pair of spaced guide pins 88, 89, which are secured to the upper plate 80 and extend through apertures 90, 91, in the lower plate 84, whereby, when the lower plate 84 moves on the rod 78, the sides 81, 82, 85, 86, are retained in parallel relationship one to the other. The rod 78 is inserted through the aperture 87 in the collar 76 and is provided, at its other end, with a knob 92 and an acorn nut 93, the acorn nut 93 being provided to prevent the knob 92 from inadvertently being removed from the rod 78. Provided for slidable engagement with the brace-mounting 79 is an arm rest 94 comprising a base plate 95, to the under side of which is attached a pair of complementary parallel angle members 96, 97, each provided with an inwardly extending flange 98, 99, the flanges 98, 99, being spaced by a distance substantially equal to the width of plates 80, 84, and being interposed between said plates between the sides 81, 85, and 82, 86, respectively. Also attached to the base plate 95 is a resilient pad 100 comprising a cushion-like lining 101, preferably, though not necessarily, made of foam rubber, and a cover 102, the cover 102 being attached along its side margins 103, 104, to the angle members 96, 97, and at its ends

105, 106, to the base plate 95. It should be noted that the ends 107, 108, of the pad 100 extend downwardly into the trackway defined by the angle members 96, 97, whereby to function as end stops thereof, thus retaining the base plate 95 between the angle members 96, 97.

The leg board 6, which is adapted for insertion in the aligned passageways 53, 73, of the bracket 4, comprises an elongated rod 109 which is provided at its upper end 110 with a fitting 111 to which is rigidly attached a second rod 112 which includes an arcuate bend 113 and terminates in a collar 114, the collar 114 being substantially identical to the collar 76 and including an aperture 115 sized for acceptance of the threaded rod 78, whereby the brace-mounting 79 may be attached thereto. Sized for slidable mounting on the brace-mounting 79 is a leg pad 116 which includes a pair of longitudinally extending parallel angle members 117, 118, which are attached to a base plate 119 and which are substantially identical to the angle members 96, 97, in the arm brace 5. The leg pad 116 includes a resilient inner pad 120 and a durable cover 121. It should be noted that the angle members 117, 118, are each provided with a flange 122, 123, sized for insertion between the plates 80, 84, along the sides 81, 82, 85, 86, thereof. The ends 124, 125, of the pad 116 extend downwardly beneath the lower limit of the angle members 117, 118, whereby to function as a stop for the trackway defined thereby, thus acting as a means for retaining the pad 116 on the brace-mounting 79.

In use, the bracket 4 is attached to the operating table by urging the plate 39 outwardly and placing the surfaces 15, 16, 17, of the slide-forming member 11 over the face 7 and the edge-face 8 of the side rail 3, whereupon the bracket 4 is moved downwardly thereby bringing the surface 15 in direct contact with the upwardly presented surface of the edge-face 8 and the surface 17 in direct contact with the outwardly presented surface of the face 7. The plate 39 may then be released, whereupon the spring 41 urges the tapered end 38 inwardly into locking contact with the downwardly presented surface of the edge-face 9, as shown in FIG. 2, thereby locking the bracket 4 to the side rail 3 and resultingly to the operating table. To change the position of the bracket 4 on the side rail 3, it is merely necessary to urge the plate 39 slightly outwardly, thereby releasing the side rail 3 for longitudinal movement.

Upon raising the handle 63, the pull-rod 42 is urged outwardly until the handle passes over the high point 68 on the camming surface 69 and then the rod 42 is urged inwardly by the spring 62 allowing passageways 22, 53, to become aligned whereby the elongated rod 74 may be slid therein to any desired position. When the rod 74 is in the desired position, the handle 63 is lowered thereby clamping the rod 74 between the back surface 72 of clamping plate 59 and inwardly converging lateral walls 23, 24 of shell 10. Since the spring 62 is compressed between counterbored shoulder 29 and shouldered washer 48 when handle 63 is lowered, the spring 62 will provide substantial and highly effective clamping forces to hold the rod securely in clamped position. The lateral walls 23, 24, of shell 10 function to prevent rotation of the rod either about its longitudinal axis or about the axis of the rod 42.

The position of the arm rest 94 of the arm board 5 may be adjusted with respect to the collar 76 by rotating the knob 92 downwardly, whereupon the plates 80, 84, became separated and the base plate 95 may be slidably moved with respect thereto along the angle members 96, 97. When the padded portion 100 of the arm rest 94 is in the desired position, the knob 92 is tightened, thereby bringing the plates 80, 84, substantially close together, whereupon the flanges 98, 99, of the angle members 96, 97, are clamped securely between the plates 80, 84, thereby preventing the padded portion of the arm board 5 from thereafter sliding with respect to the brace-mount-

5

6

ing 79. It should be noted that, upon the release of the plates 80, 84, by the rotation of the knob 92, the arm rest 94 may also be freely rotated about the collar 76.

Should the leg board 6 be desired to be used, it is merely necessary to cause the bracket 4 to slide along the side rail 3 by moving the plate 39 outwardly in the manner previously described and substituting the leg board 6 for the arm board 5. The adjustment of the pad 116 with respect to the collar 114 may be made by releasing the knob 92 in the manner previously described for the arm board 5 and sliding the leg board 6 between the spaced plates 80, 84, along the angle members 117, 118, whereupon the leg board 6 may be locked by retightening the knob 92 on the collar 114.

It should be understood that changes and modifications in the form, construction, arrangement, and combination of the several parts of the accessory supports for surgical operating tables and the like may be made and substituted for those herein shown and described without departing from the nature and principle of our invention.

Having thus described our invention, what we claim and desire to secure by Letters Patent is:

1. An adjustable arm brace assembly comprising a rod having an elongated axially extending portion and an elongated outwardly extending portion, said axial and outwardly extending portions being connected by an arcuate bend of substantial radius, said outwardly extending portion terminating in a collar provided with an aperture, a rod inserted loosely in said aperture, a first plate rigidly attached to said rod, a second plate loosely mounted on said rod between said collar and first plate, means for retaining said first and second plates in alignment, said first and second plates each being provided with a pair of parallel opposing sides which are aligned when said plates are aligned one to the other, spring means for biasing said first and second plates into spaced relationship, an arm rest base plate, a pair of complementary angle members rigidly secured to said base plate in spaced parallel relationship, said angle members each being provided with an inwardly extending flange in spaced relationship from said base plate whereby to define a trackway, said flange being spaced at a distance equal to the width of the plate, a padded arm rest secured to said base plate, said arm rest being provided with a pair of downwardly extending ends whereby to provide end stops for the slide trackway defined by the parallel angle members on the base plate, and means for drawing said first and second plates together and to said collar when said flanges are placed between the aligned parallel sides of said first and second plates, whereby to lock said arm rest with respect to said plates and to said collar.

2. An adjustable arm brace assembly comprising a rod having an elongated axially extending portion and an elongated outwardly extending portion, said axial and outwardly extending portions being connected by an arcuate bend of substantial radius, said outwardly extending portion terminating in a collar provided with an aperture, a rod inserted loosely in said aperture, a first plate rigidly attached to said rod, a second plate loosely mounted on said rod between said collar and first plate, a plurality of spaced guide pins secured to the underside of said first plate and extending through apertures in said second plate for retaining said first and second plates in alignment, said first and second plates each being provided with a pair of parallel opposing sides which are

aligned when said plates are aligned one to the other, spring means for biasing said first and second plates into spaced relationship, an arm rest base plate, a pair of complementary angle members rigidly secured to said base plate in spaced parallel relationship, said angle members each being provided with an inwardly extending flange in spaced relationship from said base plate whereby to define a trackway, a padded arm rest secured to said base plate, said arm rest being provided with a pair of downwardly extending ends whereby to provide end stops for the slide trackway defined by the parallel angle members on the base plate, and means for drawing said first and second plates together and to said collar when said flanges are placed between the aligned parallel sides of said first and second plates, whereby to lock said arm rest with respect to said plates and to said collar.

3. An adjustable arm brace assembly comprising a rod having an elongated axially extending portion and an elongated outwardly extending portion, said axial and outwardly extending portions being connected by an arcuate bend of substantial radius, said outwardly extending portion terminating in a collar provided with an aperture, a rod inserted loosely in said aperture, a first plate rigidly attached to said rod, a second plate loosely mounted on said rod between said collar and first plate, means for retaining said first and second plates in alignment, said first and second plates each being provided with a pair of parallel opposing sides which are aligned when said plates are aligned one to the other, spring means for biasing said first and second plates into spaced relationship, an arm rest base plate, a pair of complementary angle members rigidly secured to said base plate in spaced parallel relationship, said angle members each being provided with an inwardly extending flange in spaced relationship from said base plate whereby to define a trackway, a padded arm rest secured to said base plate, said arm rest being provided with a pair of downwardly extending ends whereby to provide end stops for the slide trackway defined by the parallel angle members on the base plate, said rod having a knob threadedly attached at its lower end for drawing said first and second plates together and to said collar when said flanges are placed between the aligned parallel sides of said first and second plates, whereby to lock said arm rest with respect to said plates and to said collar, and an acorn nut secured to said rod immediately below said knob to prevent the knob from being removed from the rod.

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