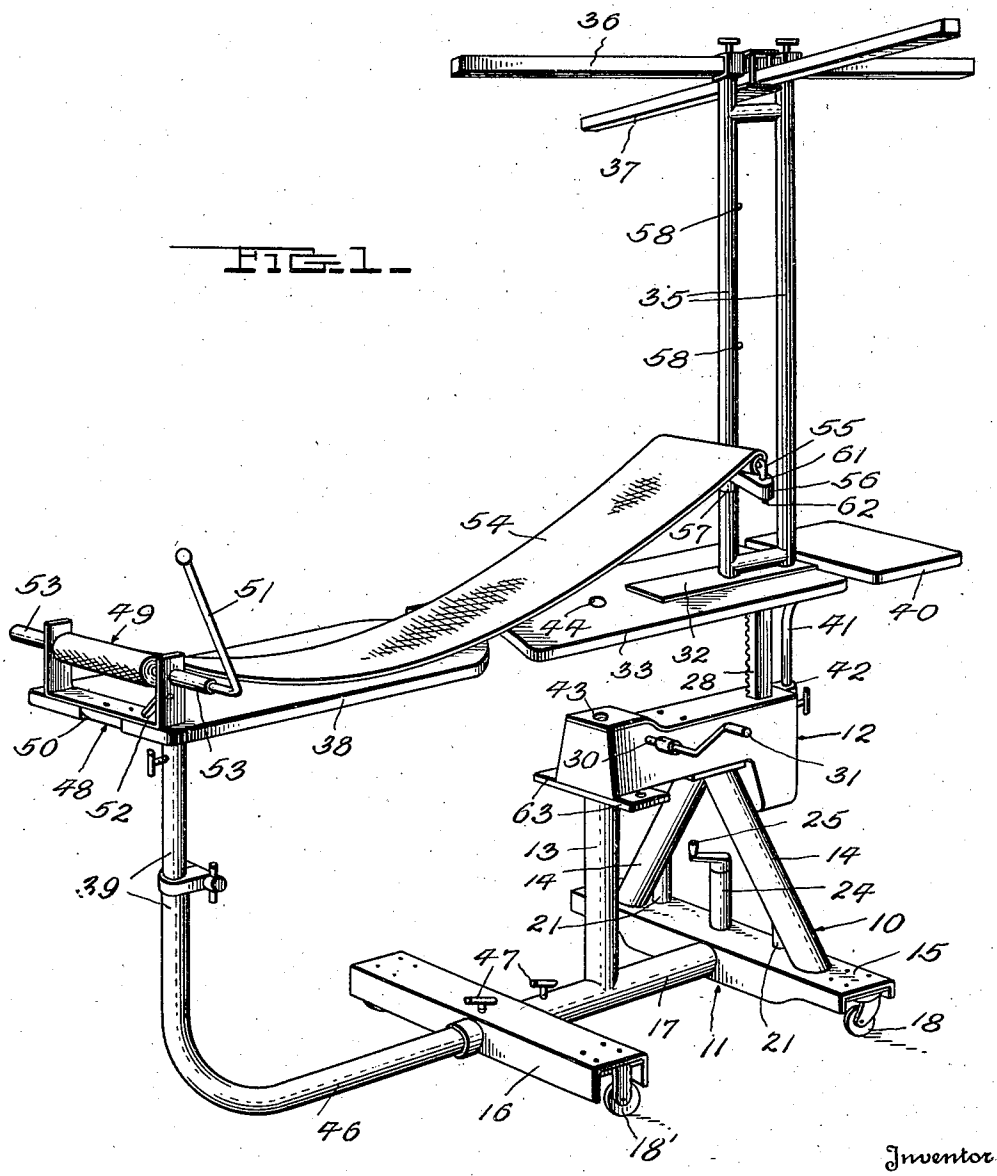
March 19, 1946. A. COMPER 2,396,640

FRACTURE TABLE OR SIMILAR STRUCTURE

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Fig. 1.



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FRACTURE TABLE OR SIMILAR STRUCTURE

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FIG. 2.

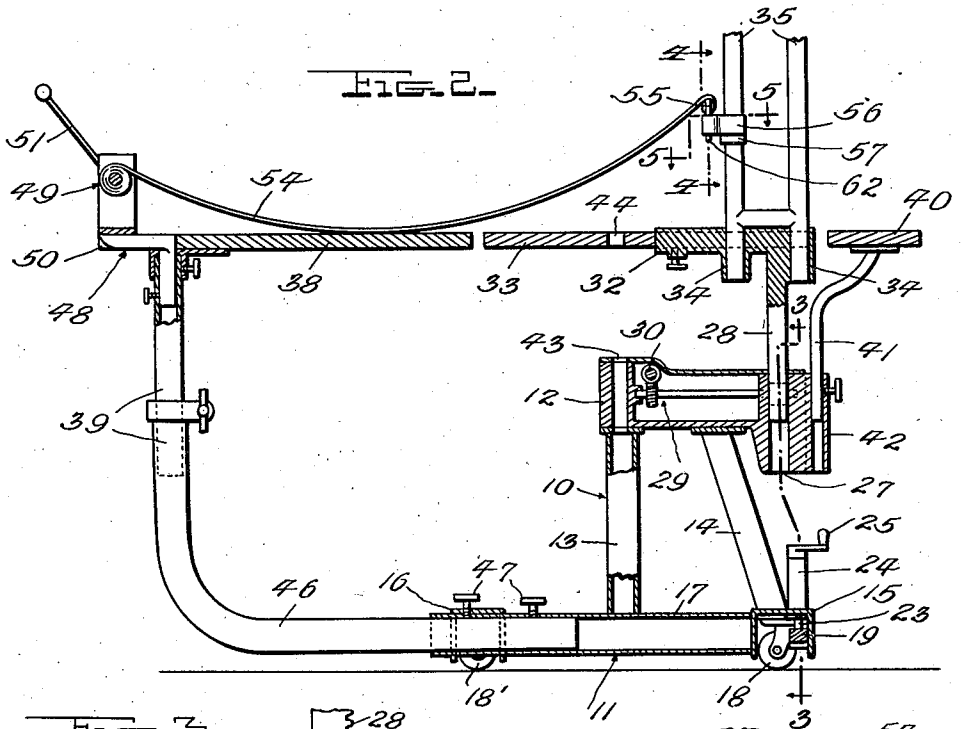


FIG. 3.

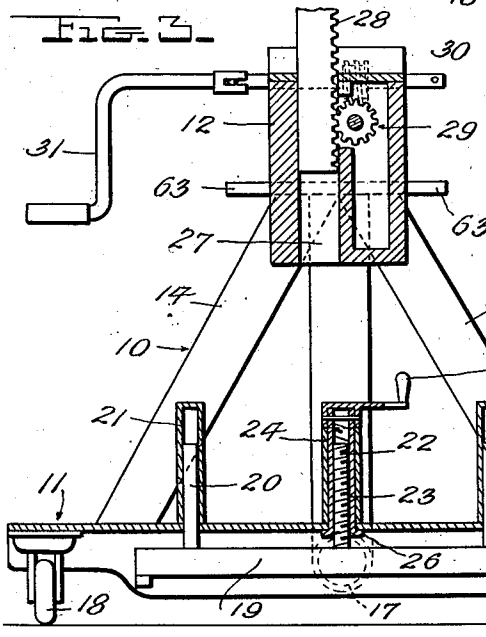


FIG. 4.

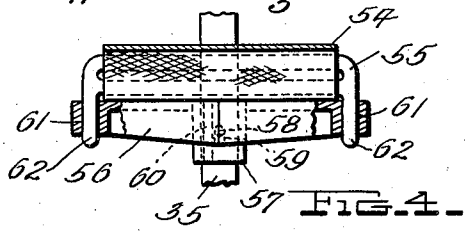


FIG. 5.

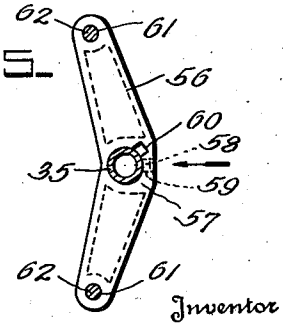
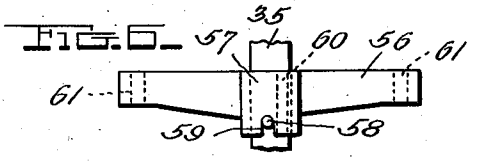


FIG. 6.



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FRACTURE TABLE OR SIMILAR STRUCTURE

Filed Dec. 16, 1942 3 Sheets-Sheet 3

FIG. 1.

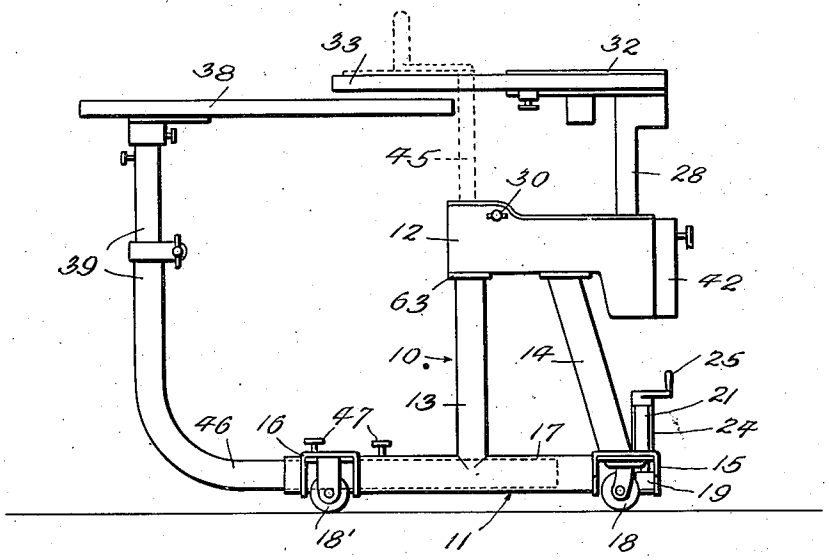
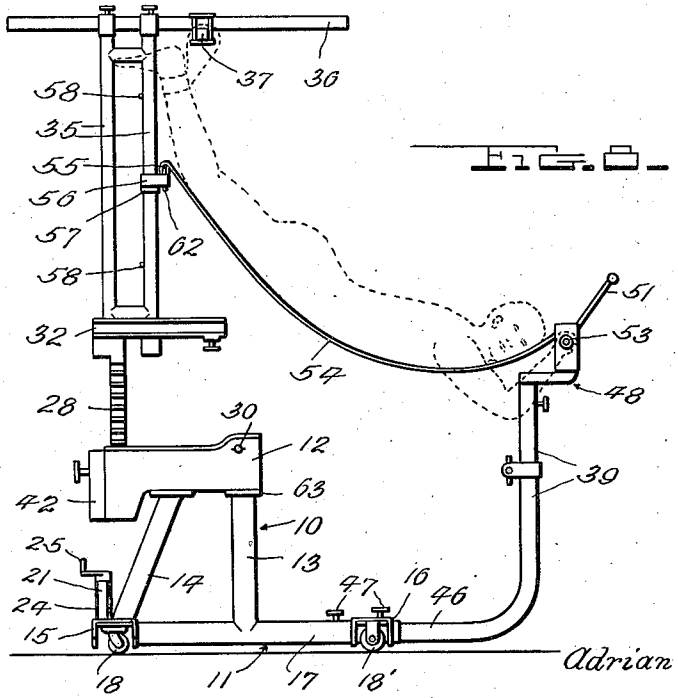


FIG. 2.



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UNITED STATES PATENT OFFICE

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FRACTURE TABLE OR SIMILAR STRUCTURE

Adrian Comper, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa., a corporation of Pennsylvania

Application December 16, 1942, Serial No. 469,258

7 Claims. (Cl. 128—84)

The invention relates to a new and improved fracture table or the like for use in fracture location and setting, fluoroscopic examination and X-ray photography, cast application, spinal or other manipulations, etc.

One of the foremost objects of the invention is to provide a greatly simplified construction which may be easily adjusted as to length, according to the patient's height, and may be readily retracted to unusually compact form, for shipment, for movement say from the X-ray room of a hospital to the plaster room, for the occupation of minimum space when not in use, etc.

The table includes a sling to support the patient for spinal examination, manipulation or other treatment, to facilitate cast application, etc., and a further object is to make novel provision for anchoring the foot end of said sling, at any of a plurality of elevations, according to requirements.

As customary, the stand of the table or the like is provided with supporting casters, and a still further object is to provide a single novel structure operable both as a "floor lock" to prevent rolling of the stand when in use, and as tilting means for said stand when advisable, for example, to place the patient in the so-called Trendelenberg position.

With the foregoing and minor objects in view, the invention resides in the novel subject matter hereinafter described and claimed, description being accomplished by reference to the accompanying drawings.

Figure 1 is a perspective view.

Figure 2 is a vertical longitudinal section partly in elevation through the lower portion of the structure shown in Fig. 1.

Figure 3 is a vertical transverse section on line 3—3 of Fig. 2, on an enlarged scale.

Figures 4 and 5 are detail sectional views on lines 4—4 and 5—5 of Fig. 2, on an enlarged scale.

Figure 6 is a detail elevation looking in the direction indicated by the arrow in Fig. 5.

Figure 7 is a side elevation showing the structure retracted into compact form, a number of the parts being removed.

Figure 8 is a side elevation showing one of the many positions in which a patient may be supported upon the sling.

The general structure shown and described, may be considered as preferred, but within the scope of the invention as claimed, numerous variations may of course be made.

A stand 10 is shown comprising a base 11, a casing 12 above said base, and legs 13 and 14 rigidly connecting said casing with said base. The base 11 comprises two downwardly open channel bars 15 and 16, and a rigid tube 17 extending between and welded or otherwise secured to said channel bars, said tube preferably extending through the bar 16 as shown. Suitable swiveled casters 18 are provided in the ends of the bar 15 and non-swiveled casters 18' are employed in the ends of the bar 16, permitting rolling of the stand 10 in any desired direction. The non-swiveled casters 18' also prevent any lateral movement of one end of the base 11 when the other end of said base is held against movement with respect to the floor by means described below.

A horizontal bar 19 is disposed longitudinally within the channel bar 15 between the casters 18 (see Figs. 2 and 3). Near its ends, this bar 19 is provided with two upstanding rods 20 rigidly secured to said bar, said rods projecting upwardly through the top of the channel bar 15 and being slidably received in vertical guide tubes 21 which are welded or otherwise secured to said bar 15. A central screw 22 is also secured to the bar 19 and projects upwardly through the top of the bar 15, said screw being received in a tubular nut 23 which is mounted for rotation in a third tube 24 secured to the top of the bar 15. The nut 23 is equipped with a crank or the like 25 on its upper end, and rotation of said nut by means of said crank operates the screw 22 and the bar 19. Thus, this bar may be forced tightly down against the floor to constitute a "floor lock" to prevent shifting of the stand 10 upon the floor while in use. Moreover, by further operation of the crank 25, one end of the stand may be elevated from the floor to tilt the entire table or the like when required, for instance, to place the patient in the so-called Trendelenberg position. It will be noted on reference to Fig. 3 that the bar 19 has a length substantially half that of the channel bar so that there will be no tendency of the stand to tilt or rock when the bar is elevated to give the so-called Trendelenberg position and that the use of only one elevating screw is necessary to accomplish that result. In the construction herein disclosed, the hub of the crank 25 abuts the upper end of the guide tube 24, and a flange 26 on the lower end of the nut 23 underlies the top of the channel bar 15, said nut being thus held against any vertical movement with respect to said bar 15.

The casing 12 is of horizontally elongated form and includes a vertical guideway 27 for a vertical rack 28, and said casing contains suitable operating means 29 for elevating and lowering said

rack 28, said operating means having an actuating shaft 30, the ends of which project beyond the sides of the casing 12 so that either end of said shaft may be engaged by an appropriate operating crank 31.

The upper end of the rack 28 is equipped with a horizontally elongated head 32 to which a table section 33 is detachably secured in a known manner. The head 32 is formed with two sockets 34 to removably receive the lower ends of two connected standards 35 constituting parts of an overhead frame for traction purposes, suspension purposes, or the like. In the present disclosure, this overhead frame includes one longitudinal bar 36 adjustably connected with the upper ends of the standards 35, and a transverse bar 37 adjustably connected to said bar 36 and movable to any desired position along the length of said bar 36.

Another table section 38 is shown at one end of the table section 33, said section 38 being detachably mounted upon the upper end of a vertically adjustable standard 39. In Figs. 1 and 2, I also disclose a third table section 40 having a supporting standard 41 adjustably supported by a guide portion 42 of the casing 12. The inner end of this casing, and the table section 33 are shown as having openings 43 and 44 respectively, through which an offset perineal post 45 may be passed when desired, said post being shown in dotted lines in Fig. 7.

The standard 39 is rigidly suported by the outer end of a horizontal bar 46 which is slidably telescoped with the tubular bar 17 above described, the lower section of said standard 39 being preferably integral with said bar 46. The above mentioned vertical adjustment of the standard 39 is shown in Fig. 2, the upper section of 39 telescoping into the lower section as shown by the dotted lines in said view. A known form of fastening means for the sections of 39 is shown in said view and in Fig. 1. Set screws 47 are shown for locking bar 46 against further movement with respect to bar 17 after the former has been projected or retracted as required, with respect to the base 11.

A bracket 48 carrying a sling reel 49 is detachably connectable with the upper end of the standard 39 whether the table section 38 be attached to or detached from said standard, and in the present disclosure, said table section is formed with a notch 50 which may receive said bracket 48. The reel shaft is provided with an appropriate operating handle 51 and with a dog and ratchet mechanism, a portion of the latter being shown at 52 in Fig. 1. The reel shaft also preferably carries two hand-grips 53 useable by a patient, as illustrated in Fig. 8, for example. The head end of a sling 54 of canvas or the like, is wound upon the reel 49, and the foot end of said sling is secured to a suitable anchor 55 for which a novel support 56 has been devised, said support 56 being vertically adjustable upon the innermost of the standards 35, to any selected position.

As the length of the patient-supporting means 33, 38 and the length of the patient-supporting means 54 must be changeable according to the height of the patient or the operation to be performed, whether said two supporting means be employed jointly (Figs. 1 and 2) or one without the other (Fig. 8), it will be seen that the longitudinal adjustability of the bar 46 with respect to the stand 10 affords a convenient means for changing the length of said patient-supporting means as required. Also, when the entire structure is not in use, the bar 46 may be retracted with respect to the stand 10 as seen for example in Fig. 7, to materially decrease the overall length of the apparatus, permitting it to then occupy relatively little space. It will be noted on reference to Figs. 2 and 7, that table section 33 has its outer end supported by the vertically movable rack bar 28 which is positioned above one end of base 11 and that said table section extends inwardly over the center of the stand through substantially the length of base 11, while the other table section 38 has its outer end secured to the top of the standard and extends inwardly over the major portion of the length of the horizontal bar 46. Hence, when the two table sections are adjusted to different horizontal planes and bar 46 is adjusted to the limit of its inward movement into the guideway 17, the inner ends of the table sections overlap to such extent that the length of the device may be greatly reduced during the time it is not in use.

The support 56 which carries the sling anchor 55, is in the form of a cross arm having a central hub 57 slidable upon the innermost of the standards 35, said standard having a plurality of vertically spaced lateral lugs 58 for supporting said cross arm at any selected elevation, any of these lugs being receivable in a downwardly open notch 59 in the lower end of the hub 57. This hub is formed with an internal vertical groove 60 spaced circumferentially to a suitable extent from the notch 59, said groove being of a size to receive any of the lugs 58. When the cross arm 56 is to be downwardly adjusted, it is raised to disengage its notch 59 from the lug 58 previously supporting it, and said cross arm is then turned to aline its groove 60 with said lug 58, whereupon said cross arm may be moved downwardly to a lower position. The groove 60 also of course comes into play when the cross arm must pass any of the lugs 58 when setting said cross arm at a higher or lower position, as required. In the present disclosure, the end portions of the cross arm 56 diverge widely with respect to each other as seen in Fig. 5, and the extremities of said cross arm are formed with openings 61 to receive downwardly projecting studs 62 on the sling anchor 55.

At 63, I have shown laterally projecting ears at the inner end of the casing 12, for the attachment of traction devices or similar devices for a patient's legs, but as their structure forms no part of the present invention, they have not been illustrated. The ears 63 may well be formed by the ends of a plate welded or otherwise secured to the upper end of the stand leg 13 and suitably secured under one end of the casing 12.

From the foregoing taken in connection with the accompanying drawings, it will be seen that novel and advantageous provision has been made for carrying out the objects of the invention, and it will be understood that variations may be made within the scope of the invention as claimed.

I claim:

1. A fracture table or similar structure comprising a floor-supported stand, a horizontal bar horizontally projectable and retractable with respect to said stand, means slidably connecting said bar with said stand, means for securing said bar to said stand after longitudinal adjustment of said bar, a standard rigidly secured to and rising from the outer end of said bar, elevating means carried by said stand and including vertically movable means projecting upwardly from said stand, and patient-supporting means supported by said vertically movable means and said standard; said patient-supporting means com-

prising a sling, means connecting one end of said sling with said vertically movable means, and means connecting the other end of said sling with said standard, one of said connecting means including a reel upon which the sling is wound.

2. In a fracture table or similar structure, a base including a horizontal channel bar having its channel open downwardly, the ends of said channel bar having floor-engaging casters, a horizontal floor-engaging bar disposed longitudinally in said channel and normally spaced above the floor level, two guide rods secured to the end portions of said floor-engaging bar and projecting upwardly through the top of said channel bar, two guide tubes secured to said top of said channel bar and slidably receiving said guide rods, a screw secured to the central portion of said floor-engaging bar and projecting upwardly through the top of said channel bar, a tubular nut threaded upon said screw, a third tube in which said tubular nut is rotatably mounted, said third tube being secured to and projecting upwardly from said top of said channel bar, and a crank secured to the upper end of said tubular nut and disposed at the upper end of said third tube.

3. In a fracture table or similar structure, a standard having vertically spaced laterally projecting lugs, a cross arm having a central hub surrounding said standard, said hub having an internal groove from end to end and of a size to receive any of said lugs as said hub is slid vertically on said standard, said hub having a downwardly open notch to seat upon any of said lugs to hold said hub at any selected elevation, said notch being spaced circumferentially of the hub from said groove, a patient-supporting sling, and means connecting one end of said sling with said cross arm.

4. In a fracture table or similar structure, a standard having vertically spaced laterally projecting lugs, a cross arm having a central hub surrounding said standard, said hub having an internal groove from end to end and of a size to receive any of said lugs as said hub is slid vertically on said standard, said hub having a downwardly open notch to seat upon any of said lugs to hold said hub at any selected elevation, said notch being spaced circumferentially of the hub from said groove, a patient-supporting sling, an anchor to which one end of said sling is connected, said anchor being disposed at one side of said standard and having spaced downwardly projecting studs, the two halves of said cross arm being in widely diverging relation with each other and having openings in their ends receiving said studs.

5. In a fracture table or similar structure, a base comprising two spaced parallel transverse base bars close to the floor, and a central horizontal rigid longitudinal tube close to the floor, said tube extending between and being permanently secured to central portions of said transverse base bars; a casing above said base, two downwardly diverging inclined legs rigidly connecting said casing with one of said transverse base bars, and a third leg rigidly connecting said casing with an intermediate portion of said central longitudinal tube; elevating means comprising vertically movable means projecting upwardly from said casing and operating means for said vertically movable means mounted in said casing, a horizontal bar close to the floor and having one end slidably telescoped with the aforesaid tube to permit projection and retraction of said bar with respect to said base, and a standard rigidly secured to and rising from the outer end of said bar in outwardly spaced relation with said casing; means for securing said bar against sliding in said tube after longitudinal adjustment of said bar; and patient-supporting means carried by said standard and said vertically movable means.

6. A fracture table or similar structure comprising a stand having a relatively short floor-supported base, said base being rigid and including a central longitudinal elongated guideway positioned horizontally close to the floor and forming an integral part of said rigid base, elevating means carried by said stand and including vertically movable means projecting upwardly from said stand and positioned above one end of said base, a vertically adjustable standard spaced from the other end of said base and projecting upwardly in spaced parallel relation to said vertically movable means, a horizontal bar formed integral with the lower portion of said standard and slidably telescoped into said guideway, the latter serving as the sole supporting means for said horizontal bar and said standard, releasable means for securing said horizontal bar in said guideway after adjustment of said bar, a horizontal table section rigidly secured at its outer end to said vertically movable means and projecting over the central portion of said stand throughout substantially the length of said base, and a second horizontal table section rigidly secured at its outer end to the top of said vertically adjustable standard, said second table section extending over approximately the length of said horizontal bar and toward said first table section, whereby when said table sections are disposed in different horizontal planes and said horizontal bar is telescoped into said guideway to the limit of its inward movement said table sections will have their free ends in overlapping relation to reduce the overall length of the fracture table or similar structure when it is not in use.

7. In a fracture table or similar structure, a base having one end formed by a horizontal channel bar having its channel facing downwardly, floor-engaging casters within said bar at its ends, a horizontal floor-engaging bar having a length substantially half of the length of said channel bar and positioned normally within it between said casters, coacting guide means on said channel bar and the end portions of said floor-engaging bar to guide the latter vertically, an upright screw having its lower end fixed to the center of said floor-engaging bar and extending through the top of said channel bar, a nut rotatably mounted at the center of said channel bar and engaged with said screw, and an operating handle fixed to the top of said screw for rotating the latter to force said floor-engaging bar downwardly against the floor and to then elevate said channel bar from the floor to tilt said base.

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