

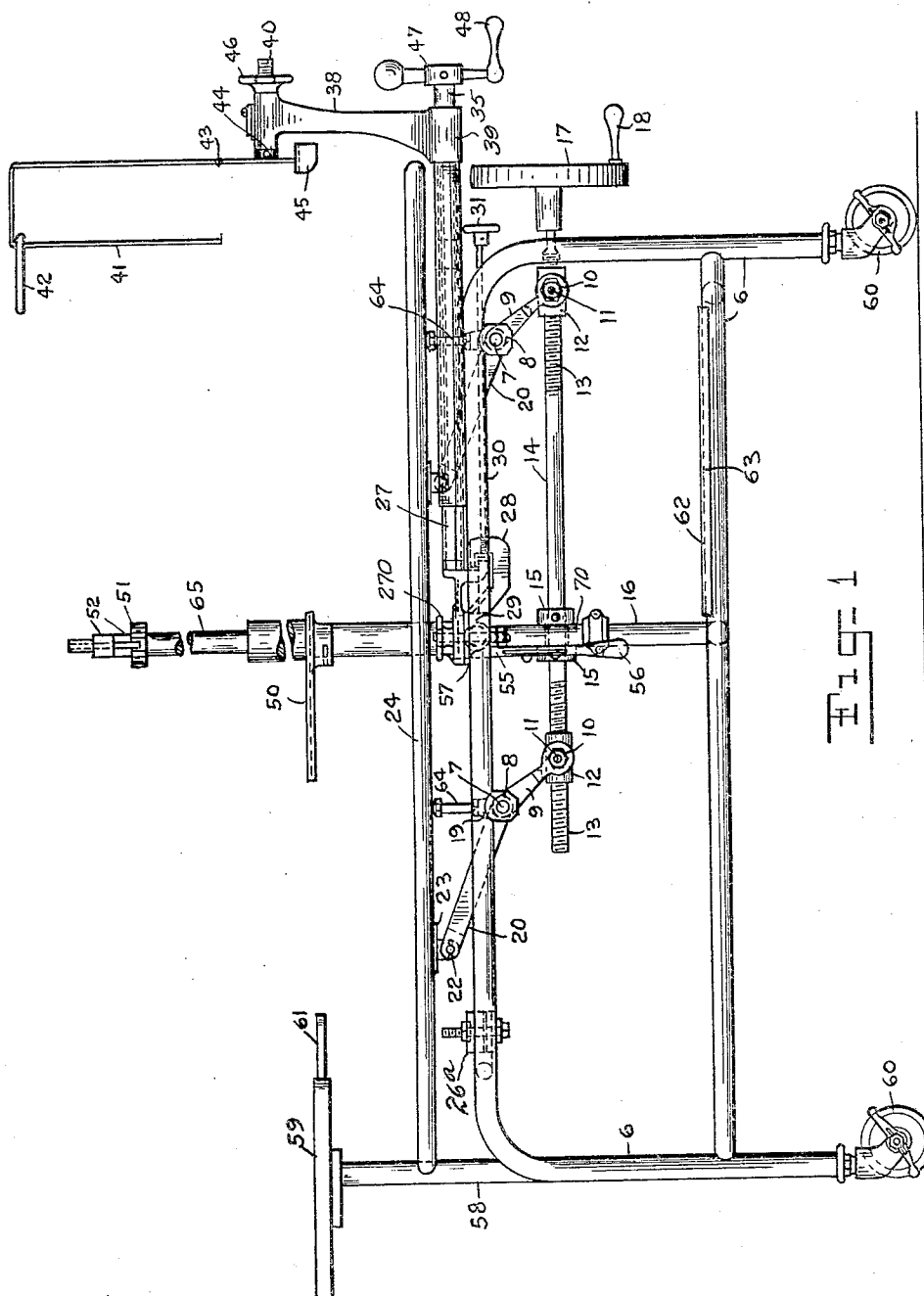
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G. W. HAWLEY
FRACTURE OPERATING TABLE

1,892,304

Filed Oct. 18, 1930

4 Sheets-Sheet 1



Inventor
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Dec. 27, 1932.

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4 Sheets-Sheet 2

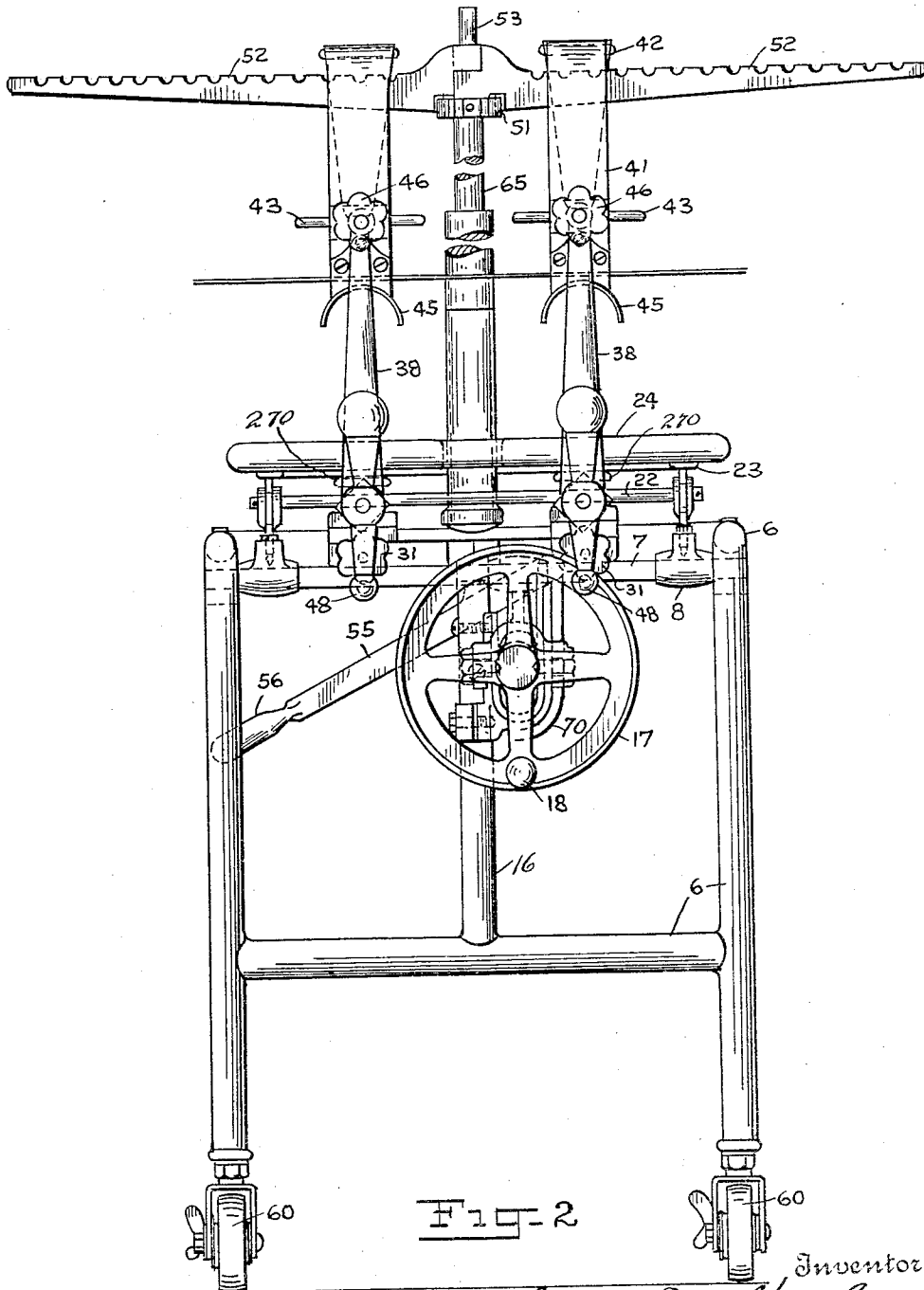


Fig. 2

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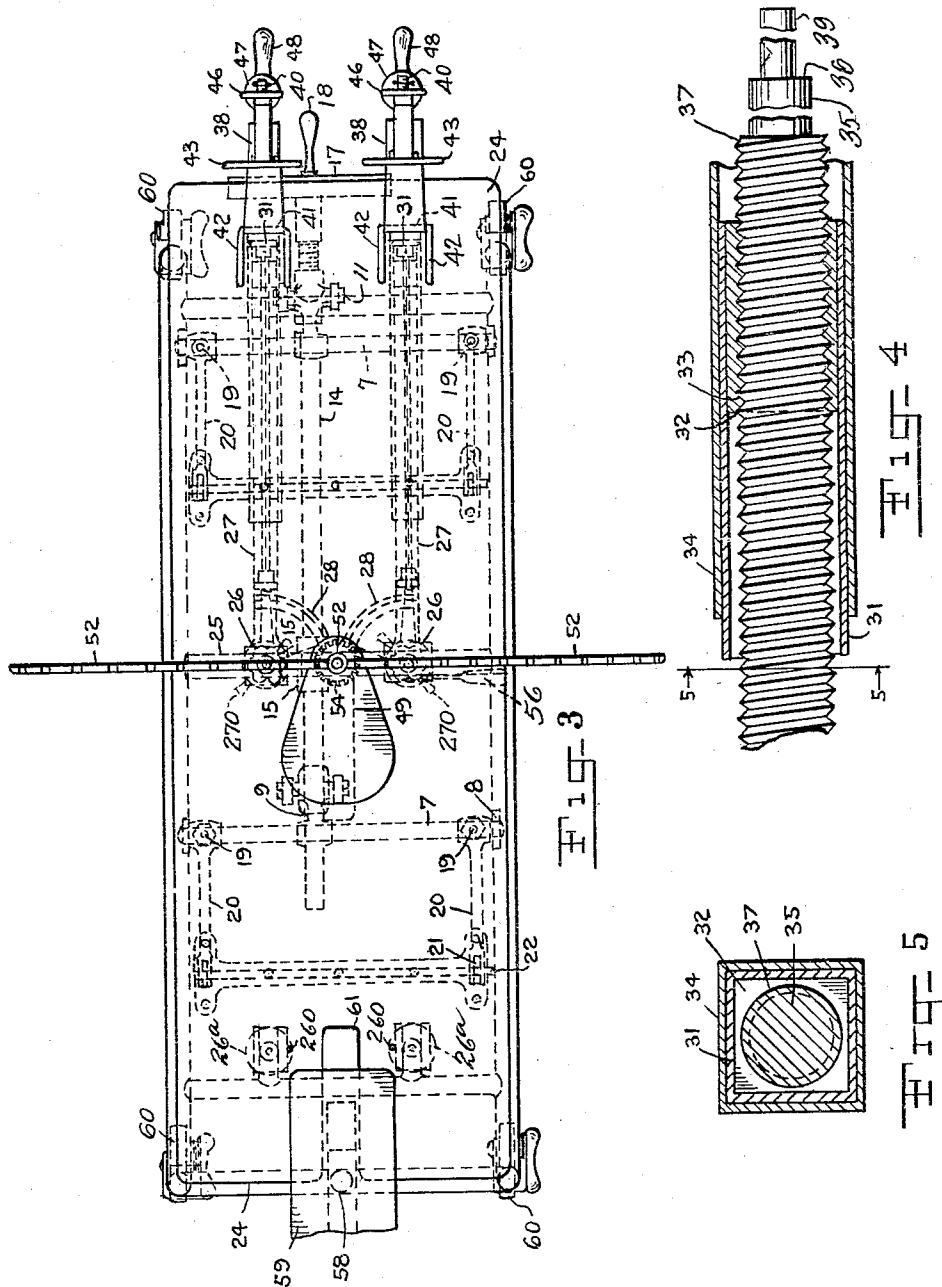
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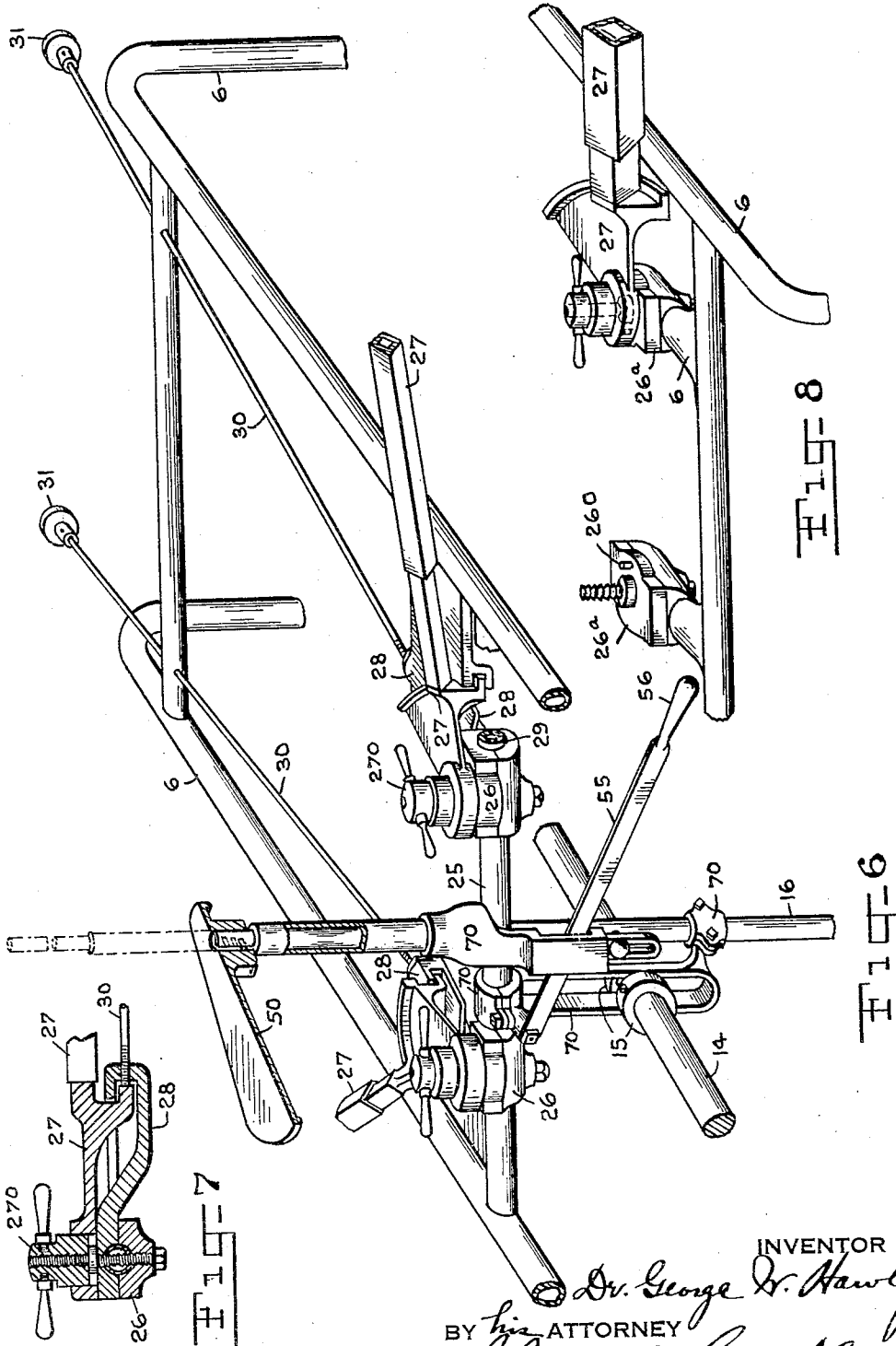
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FRACTURE OPERATING TABLE

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4 Sheets-Sheet 4



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FRACTURE OPERATING TABLE

Application filed October 18, 1920. Serial No. 489,505.

My invention relates to an improvement in a fracture operating table and the novelty consists in the adaptation and arrangement of parts as will be more fully hereinafter pointed out.

In an operating table especially adapted to handle bone fractures it is essential that the operator be able to manipulate all of the operative parts of the operating table from the foot of the table as this is the position that is ideal for the surgeon in handling a bone fracture case relating to the legs or feet.

My table is adapted to meet this essential of successful bone fracture operations and enables the surgeon to remain at the foot of the operating table throughout the entire operation and make the various adjustments of the table top, the change of the horizontal positions of the leg and foot supporting elements as well as the longitudinal positions of the same, and secure these all in the desired fixed positions while standing at the foot of the operating table and having the patient under perfect control.

The table shown and described herein, although peculiarly adapted for leg and foot operations, is also equipped in the usual well known manner to carry out fracture operations on any other part of the body.

Referring to the drawings, Figure 1 is a side elevation of my table showing certain portions broken away for convenience in illustration.

Figure 2 is an elevation of the table looking at the same from the foot end.

Figure 3 is a top plan view of my table with the operating parts of the same covered by the top and shown in dotted outline.

Figure 4 is a sectional view showing the interior construction of the traction mechanism of the leg and foot supports and with portions broken away for convenience in illustration.

Figure 5 is a cross sectional view of Figure 4 on the line 5-5.

Figure 6 is a perspective of Figure 1 looking toward the foot end with the top 24 removed and with portions broken away for convenience in illustration.

Figure 7 is a vertical cross section of the locking means for the leg supports.

Figure 8 is a perspective of the fastening means when using the leg supports as arm supports.

In the drawings 6 is a table frame preferably of tubular or pipe material secured together in the usual well known manner and mounted on castors 60 and cross shafts 7 are mounted at 8 in suitable bearings on the frame 6 so as to rotate freely therein. Bell crank lever members 9 are rigidly secured at the upper end to the shaft 7 and at the lower end by means of a fork member 10 they are mounted over a pin 11 projecting from the collars 12 so as to rotate freely on said pin 11. The collars 12 are internally threaded so as to engage externally threaded portions 13 of shaft 14 which is mounted in the frame 6 and passes through slotted casing 70 which is mounted over upright 16 and has two guide collars 15 rigidly secured to the shaft 14 on either side of upright 16 of the frame 6 so as to maintain the shaft 14 in the fixed longitudinal position but permitting said shaft 14 and its connections to ride up and down vertically. A wheel 17 having a handle 18 is rigidly secured to the outer end of the shaft 14 in the usual well known manner. Near the outer end of the shafts 7 are rigidly secured at 19 to the shafts 7 levers 20 which at their opposite ends are mounted at 21 over rod 22 so as to rotate freely thereon which is secured by means of plate 23 underneath top member 24.

On cross frame member 25 is pivotally secured at 26 two leg support members 27 and these two members 27 by means of fastening elements 270 being pivoted at 26 are adapted to be swung horizontally over arcuate guide members 28 to the desired position, said arcuate members 28 being rigidly secured at 29 to the cross bar 25 and locking rods 30 having handles 31 rigidly secured to their outer ends are threaded through the arcuate members 28 and are adapted to bear on the leg support members 27 and lock them in the desired position in the arcuate members 28 as clearly shown in Figure 6.

The leg support members 27 have an inner

casing 31 which is rigidly secured at its inner end to the oscillating part of the pivot 26 and a nut 32 which is internally threaded at 33 is rigidly secured inside of the inner casing 31. An outer casing 34 is mounted over the inner casing 31 being rigidly secured at its outer end to shaft 35 at shoulder 36, and said shaft 35 has a threaded portion 37 which is adapted to thread into the internal threading 33 of the nut 32. Cranks 47 having handles 48 are rigidly secured to the outer ends of the shafts 35 at 39 and the turning of said handles 48 and cranks 47 operates to rotate the shafts 35. As the cranks 47 are rotated clockwise the shafts 35 so rotate and the threaded portions 37 engaging the internal threadings 33 of nuts 32 draw the external casing 34 and shaft 35 and the foot support member 38 carried thereon inwardly. The opposite result is secured by rotating the cranks 47 counter clockwise. This is clearly shown in Figures 1 and 4.

Foot support members 38 are adapted to be mounted over the outer end of the shafts 35 at 39 to the casing 34 so as to move therewith and independently of shafts 35 and threaded pins 40 are mounted in the head of the foot support members 38 and foot supports 41 having toe retainers 42 integral therewith are rigidly secured to the inner end of the threaded pins 40 and these carry binding posts 43 and are adapted to be secured in two positions by means of pin and slot 44. In the reverse position to that shown in Figure 1, heel member 45 will be in the upright position so that the heel of the foot may be secured therein in certain given positions. Wheels 46 are mounted on the threaded pins 40 for securing them rigidly in a fixed position being threaded thereon.

In the upright 16 is mounted a perineal post 65 in the usual well known manner passing through a slot 49 in the top 24 and a sacral rest 50 of usual and well known construction will be mounted on the perineal post 65. Near the head of the perineal post 65 is a toothed slotted rest member 51 and swinging bracket members 52 are adapted to be mounted over the upper end 53 of the perineal post 65 so as to rest on and engage the teeth 54 of the toothed slotted rest member 51. These members are all members of usual construction and the engagement of the swinging bracket members 52 in the slots 54 of the supporting member 51 permits the adjustment of the same to any desired horizontal position.

A releasing lever 55 having a handle 56 is pivotally mounted on the upright 16 so that by pulling upwardly on the handle 56 the lever 55 will press upwardly against the flange 57 of the perineal post 65 and sacral post 50 and free both from their tightly engaged position in the upright 16 after they have been in use.

An upright post 58 is rigidly secured in position at the head of the table to the frame 6 in the usual well known manner and carries on its upper end a head and shoulder rest 59 in which is mounted a slidable member 61 so mounted in the member 59 that it may be readily slid in and out to the desired position. A shelf 62 having curved edges 63 is adapted to hook over the frame 6 and rest in the lower part of the frame 6 as shown in Figure 1 and being readily removable.

In operating my device the surgeon will stand at the foot of the table and by the turning of the cranks 47 will adjust the foot rests 41 to the position desired for the particular patient about to be operated on. The table top 24 will be in the upper position so that the patient may rest thereon and by loosening the locking members 30 by means of the handles 31, the leg members 27 may be swung horizontally to the desired positions through the arcs 28 and when these have been attained they will be locked securely in the desired positions by the turning down of the locking bars 30 by means of the handles 31.

The patient's feet and legs will then be secured in the desired position in the usual manner to the foot rest 41 and the desired traction may be placed on these by the turning of the cranks 47 by means of handles 48 in the counter clockwise direction until the desired traction is secured, the patient of course being held on the sacral rest 50 against the traction by means of the perineal post 65. The table top 24 may then be lowered to the position shown in Figure 1 by turning the handle 18 and wheel 17 in the clockwise direction whereby the threaded portions 13 will pass through the internally threaded collars 12 thereby drawing them back on the threaded portions 13 and at the same time through the bell crank levers 9 turning the shafts 7 and the levers 20 which are rigidly secured at 19 to the shafts 7 so as to lower the top 24 through the pulling down of the outer ends of the levers 20 on the cross rods 22.

This leaves the patient supported on the head and shoulder rests 59 and 61, the sacral rest 50 and the feet and legs supported as described on foot rests 41 and makes accessible to the operator the entire space around the limbs so that a fracture may be encased quickly and easily and the top 24 again returned to position after such a casing is completed and the perineal post 65 being removed by means of the lever 55 and handle 56 being pulled up whereby the lever operates to release the perineal post 65 so that the sacral rest 50 being swung around may be removed with the perineal post 65 without disturbing the patient. The feet may be then released from the foot supports 41 and the patient can be quickly and easily removed from the table without disturbing the parts operated on or the patient.

It will be understood that upon the releasing of the wheels 46 on the threaded pins 40 by turning the wheels 46 in a counter clockwise direction, that the pins 44 may be released from the slot 44 thereby permitting the foot rests 41 to be swung around to the position whereby the heel rests 45 will be in the upper position, the pins 44 having again engaged in the slots 44 in this position and the wheels 46 turned up in a counter clockwise direction to the locking position. In this manner the heel rests 45 are placed in position for use the same as the foot rests 41 are shown in position in Figure 1.

The upper ends of the fastening means 19 for the levers 20 on the shafts 7 terminate in supporting rods 64 which are adapted to support the table top 24 in its lowered position.

Near the head of the table are two additional fastening elements 26a similar to 26 but having positioning pins 260 whereby upon the removal of fastening elements 270 from 26 the leg support members 27 may be placed on fastening elements 26a so that pins 260 register in holes in leg support members 27 adapted for that purpose and whereby leg support members 27 can be locked in rigid position on fastening elements 26a by means of locking elements 270 which are adapted to screw down thereon. In this way leg support members 27 may be transferred to the head of the table and be secured rigidly in the necessary position for use as arm members.

I claim:

1. In a fracture operating table a frame, a top vertically and longitudinally movably mounted on said frame, means for operating said top entirely from the foot of said table comprising a pair of links pivotally mounted on said frame and each connected at their upper ends to said top and at their lower ends to a collar internally threaded and mounted over a threaded section on a shaft rotatably secured in a fixed longitudinal and vertically adjustable position in said frame and having a wheel and handle secured to the foot end of the same.

2. In a fracture operating table a frame, a pair of leg and foot supporting means radially and longitudinally adjustable and means for operating each of the same entirely from the foot of said table comprising leg and foot supporting elements pivotally supported at their inner ends on said frame and turning horizontally through arcuate guide elements in each of which is mounted a locking rod operated from the foot end of the table for locking said leg and foot supporting elements in the desired position in said arcuate elements.

3. In a fracture operating table a frame, a top vertically and longitudinally movably mounted on said frame, means for operating said top entirely from the foot of said table

comprising a pair of links pivotally mounted on said frame and each connected at their upper ends to said top and at their lower ends to a collar internally threaded and mounted over a threaded section on a shaft rotatably secured in a fixed longitudinal position in said frame and having a wheel and handle secured to the foot end of the same, and a pair of leg and foot supporting elements pivotally supported at their inner ends on said frame and turning horizontally through arcuate guide elements in each of which is mounted a locking rod operated from the foot end of the table for locking said leg and foot supporting elements in the desired position in said arcuate elements.

4. In a fracture operating table a frame, a pair of leg and foot supporting means longitudinally adjustable and means for operating each of the same entirely from the foot of said table comprising an inside tubular member rigidly secured at its inner end to the table frame and having an internally threaded nut rigidly secured therein, a shaft externally threaded to engage said internally threaded nut and carrying an external tubular housing secured at its outer end to the outer end of said shaft and moving simultaneously therewith but outside of said inside tubular member and a crank secured to the outer end of said shaft at the foot of said table.

5. In a fracture operating table a frame, a pair of leg supporting means pivotally supported at their inner ends on said frame and means at the head of said frame for detachably securing the inner ends of said pair of leg supporting means in a fixed position thereon for arm supports comprising a pair of fastening elements having positioning pins adapted to register in holes in the inner ends of said leg supporting means and locking elements to secure said leg supports in position thereon for arm supports.

6. In a fracture operating table a frame, a pair of leg and foot supporting means radially and longitudinally adjustable and means for operating each of the same entirely from the foot of said table comprising leg and foot supporting elements pivotally supported at their inner ends on said frame and turning horizontally through arcuate guide elements in each of which is mounted a locking rod operated from the foot end of the table for locking said leg and foot supporting elements in the desired position in said arcuate elements and means at the head of said frame for detachably securing the inner ends of said pair of leg supporting means in fixed position thereon for arm supports.

7. In a fracture operating table a frame, a pair of leg and foot supporting means radially and longitudinally adjustable and means for operating each of the same entirely from the foot of said table comprising leg

and foot supporting elements pivotally supported at their inner ends on said frame and turning horizontally through arcuate guide elements in each of which is mounted a locking rod operated from the foot end of the table for locking said leg and foot supporting elements in the desired position in said arcuate elements and means at the head of said frame for detachably securing the inner ends of said pair of leg supporting means in fixed position thereon for arm supports comprising a pair of fastening elements having positioning pins adapted to register in holes in the inner ends of said leg supporting means and locking elements to secure said leg supports in position thereon for arm supports.

8. In a fracture operating table a frame, a pair of leg and foot supporting means longitudinally adjustable and means for operating each of the same entirely from the foot of said table comprising an inside tubular member rigidly secured at its inner end to the table frame and having an internally threaded nut rigidly secured therein, a shaft externally threaded to engage said internally threaded nut and carrying an external tubular housing secured to the outer end thereof and travelling therewith over said inside tubular member and a crank secured to the outer end of said shaft at the foot of said table and means at the head of said frame for detachably securing the inner ends of said pair of leg supporting means in fixed position thereon for arm supports.

9. In a fracture operating table a frame, a pair of leg and foot supporting means longitudinally adjustable and means for operating each of the same entirely from the foot of said table comprising an inside tubular member rigidly secured at its inner end to the table frame and having an internally threaded nut rigidly secured therein, a shaft externally threaded to engage said internally threaded nut and carrying an external tubular housing secured to the outer end thereof and travelling therewith over said inside tubular member and a crank secured to the outer end of said shaft at the foot of said table and means at the head of said frame for detachably securing the inner ends of said pair of leg supporting means in fixed position thereon for arm supports comprising a pair of fastening elements having positioning pins adapted to register in holes in the inner ends of said leg supporting means and locking elements to secure said leg supports in position thereon for arm supports.

In testimony whereof I affix my signature.
GEORGE W. HAWLEY.