

July 30, 1968

L. J. HINDLE

3,394,701

LIMB TRACTION DEVICE

Filed Aug. 24, 1964

3 Sheets-Sheet 1

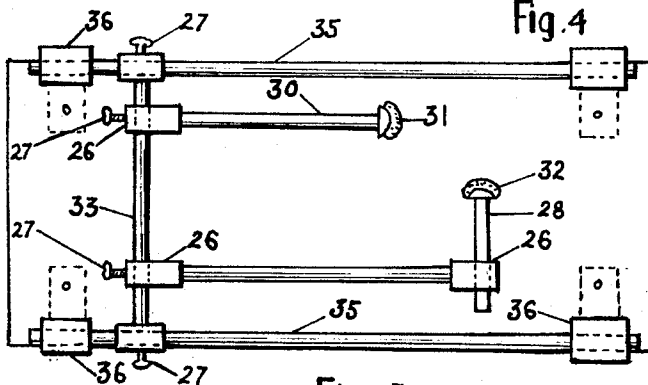
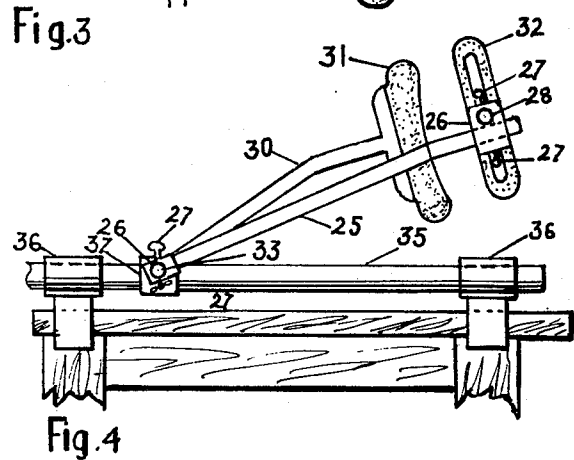
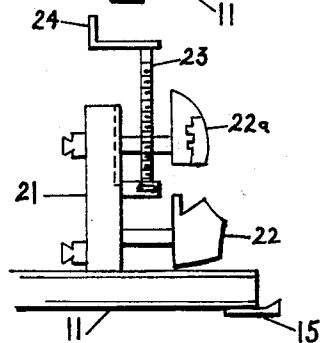
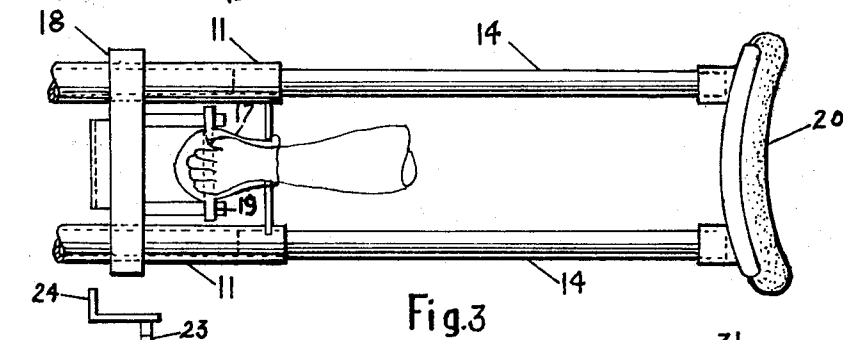
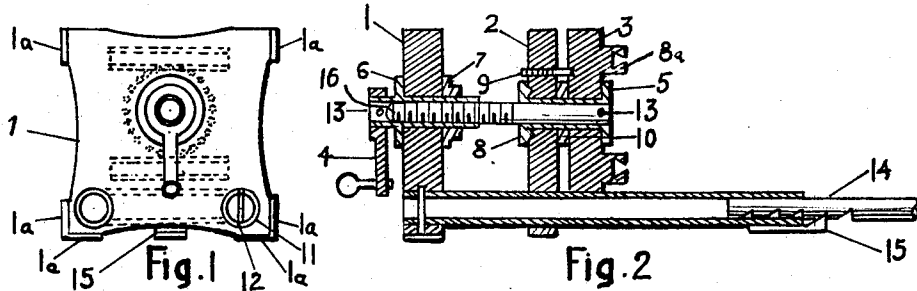


Fig. 5

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Fig 6

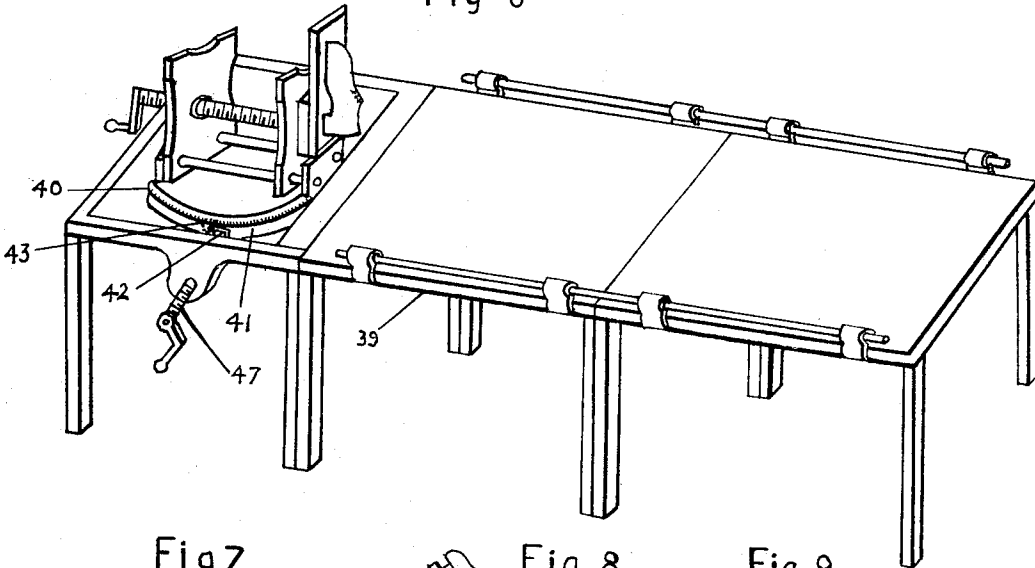


Fig 7

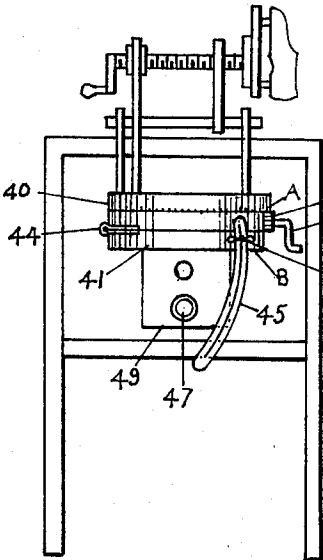


Fig 8

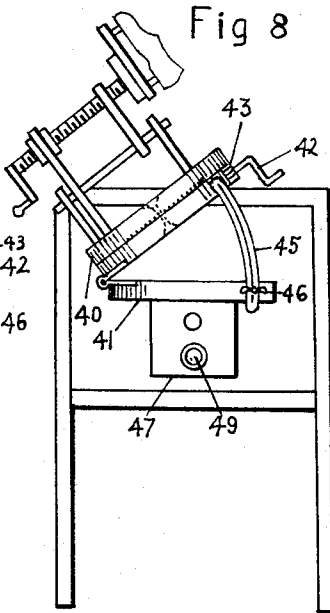
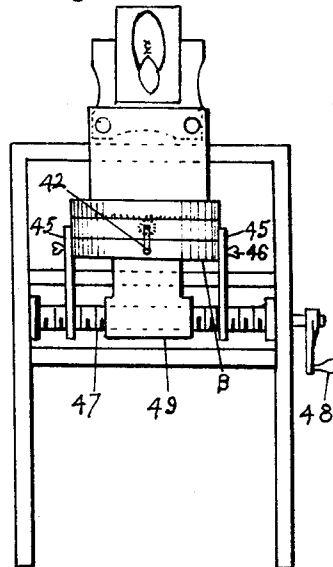


Fig 9



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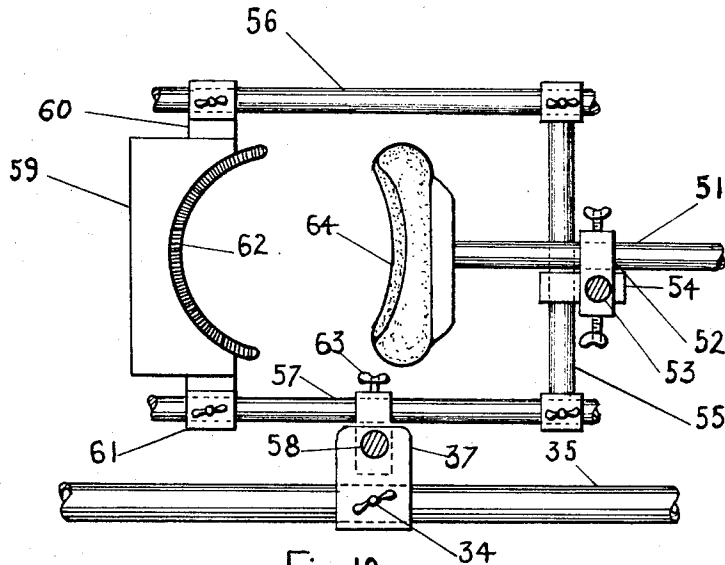


Fig.10

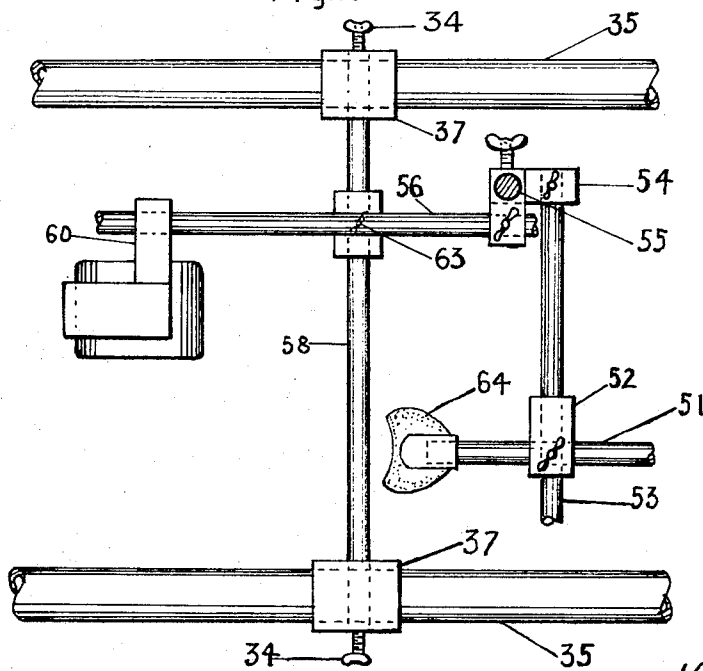


Fig.11

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LIMB TRACTION DEVICE

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5 Claims. (Cl. 128-84)

A similar invention was originally disclosed in another patent application Ser. No. 268,282 filed Jan. 25, 1952 wherein division of claims was necessary because two different devices were claimed in the single application. A claim for one of the devices was made at that time and Patent No. 2,760,489 was issued.

This invention relates to an improved limb traction device to be used in the treatment of fractured arms and legs and the primary object is to provide a simplified and easily manipulated apparatus which is applied before setting the fracture and is entirely independent of any style apparatus used; it also provides motionless positions while the fractures are being set.

Other important objects and advantages will be apparent from reading the following description and drawings in which:

FIG. 1 is an end elevation view of the traction device.

FIG. 2 is a side view of the device which is attached to either the arm support section or the leg support section.

FIG. 3 is a top plan view of the arm support section of the device.

FIG. 4 is an elevated side view of the foot and leg support mechanism.

FIG. 5 is a top plan view of the leg mechanism.

FIG. 6 is a perspective view of the device mounted on a sectional table with the foot mechanism mounted in position on the table.

FIGS. 7, 8 and 9 show the traction device mounted on an end section of the table in several positions, 7 and 8 are side views and 9 is an end view, all showing the manipulative ability to secure any desired position.

FIG. 10 is a side plan view of the arm and shoulder device which allows a special position for forearm fractures.

FIG. 11 is a top plan view of the arm and shoulder device.

Referring more specifically to the drawings 1 indicates the retaining support plate. The elements 1a are retaining support plate cushions which grip to the surface of a table top, the device being operable in three positions, vertical, right or left side. Element 2 is a movable sliding plate that slides on the jack bolt 16 and on the receiving tubes 11, said receiving tubes being secured to the retaining support plate 1 by dowel pins 12. Element 3 is the receiving plate with free circular movement on the bushing 8 and has notches arranged in a circle, the said notches being in alignment with the notch on plate 2 and can be locked in any desired position by the insertion of pin 9, and the said plate 3 has dovetail slots 8a to receive the limb receiving plates 18 for a hand and 21 for a foot. Element 6 is the outer jack bushing threaded on the inside and 7 the retaining ring and the handle 4 being secured to the jack bushing provides activation. Element 8 is a bushing that extends through plates 2 and 3 with the jack bolt on the inside and plate 3 fitted with free motion on the outside of the said bushing. Element 10 is a retaining washer and the said retaining washer is secured to the jack bolt by a pin 13. Element 14 is the extension with ratchet stops for adjustment to the length of the arm or leg and 15 is the locking device. Element 18 is the hand assembly plate with dovetail slots to attach to the receiving plate 3, 17 being the glove that provides a hand grip on the rod 19. 20 is the arm support cushion attached to rods 14. 21 is the foot assembly plate with

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dovetail slots to attach to the receiving plate 3. 22 and 22a are the foot adjusting shoe and 23 and 24 the adjusting means. 25 through 27 represent the hip support that holds the body stationary when traction is applied to the leg. 25, 28, and 30 are adjusting rods. 31 is the crotch support secured to the end of rod 30 and 32 is the hip support cushion adjustable with rod 28. Elements 26 are adjusting brackets and 27 wing bolts. Bars 35 are attached to a table 39 by brackets 36 for adjustment to leg length.

A modification of the device is shown in FIGURES 6 through 9. In this modification the plates 1 and 2 and 3 are shown mounted on a turntable 40. The turntable 40 may be turned on the base 41 by the handle 42 and suitable gears 43.

In FIG. 6 we see a stationary table assembly, in three sections. The front section contains the complete hand and foot traction device, the second section for setting arm fractures and all sections being required for leg fractures.

FIGS. 7, 8 and 9 show the detail mechanism of the table with the base 41 shown having an upper part A and a lower part B with a connecting hinge 44. The upper part can be tilted on the lower part by a slide 45 with a set bolt 46. Parts 47, 48 and 49 show the threaded means for moving the table laterally.

In operation it is possible to tilt, turn and adjust to right or left the foot receiving means. In the table assembly it is noted that the receiver tube 11 and the rod 14 are not required, the upper leg section and the upper arm sections are extended and attached to side rods 35 attached to the table 39 with brackets 36. Another advantage of the three section table is its adaptability to position patients with the most difficult fractures. Example: the upper arm above the elbow, I use the front section only, this allows close unity between patient and device and with the forearm at right angle to the upper arm, the forearm can be secured to a plate similar to 18 and short extensions 14 and the armpit support cushion 20. This confines the arm contraction to the upper arm only. In cases of multiple arm fractures the front two sections of the table would be used with the arm at full length. A special feature of the combined three sections of the table is the position attained for the setting and pinning of hip fractures. To attain this position in the case of a right hip fracture the patient is moved to the extreme right side of the table, the crotch and hip support sections placed in position, and the foot secured to the receiving plate 21. In this position the foot, the leg and the hip are in natural alignment. The foot and turntable are drawn to the extreme left, the foot, the leg and the hip remain in natural alignment and this position allows the surgeon to work at right angles from the hip down. Another special feature is the tilting shown in FIG. 7 for lower leg fractures; the leg can be bent at the knee with an upper leg brace similar to the upper arm brace, this will allow the upper leg muscles to remain relaxed when traction is applied to the lower leg, and the foot and the leg remain in natural position. Referring to FIGS. 10 and 11 the upper arm support 62 is shown. 64 is the shoulder brace. 51 is the adjusting rod for shoulder brace. 53 is an adjusting rod. 55, 56 and 57 are rods that hold the arm support and the shoulder brace in position. 58 is the rod connecting to the side rods 35 on the table. 59 is the frame that holds the upper arm support. 60 and 61 are shoulders attached to 59 and slide on rods 56 and 57. This arm and shoulder unit allows the forearm to be in traction while the upper arm muscles are in their normal relaxed position.

Although I have described and shown the exact construction of my invention, I do not wish to limit the application of the invention thereto other than as may be required by the subjoined claims.

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I claim:

1. A traction splint comprising a limb engaging means attached to a receiver plate through cooperating dovetail slots, a retaining support plate, a movable sliding plate, said plates being arranged in sequence on an axial tightening means, the movable sliding plate and receiver plate being fixedly secured together in position and movable together towards said retaining support plate upon activation of said axial tightening means, said receiver plate having aperture means arranged in a circle for cooperation with a pin means, on said movable sliding plate to fix said receiver plate in rotative position relative to said movable sliding plate, receiver tubes connected to said retaining support plate, extension rods adjustably engaged in said tubes by ratchet means, said extension rods having means to engage the body of a patient whereby activation of the axial tightening means will cause the patient's limb to be put in traction.

2. In combination with claim 1, wherein said limb engaging means comprises a hand assembly plate having dovetail slots to fit the receiver plate, said assembly plate having extensions to receive a hand enclosed in a glove.

3. In combination with claim 1, wherein said limb en-

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gaging means comprises a leg assembly plate having dovetail slots to fit the receiver plate, said assembly plate having extensions holding toe and heel sections mechanically movable towards each other by the activation of a handle on a threaded rod.

4. In combination with claim 1, wherein said retaining support plate is mounted on a turntable with sections relatively movable through cooperating circular ratchet faces, the lower section having means to engage a table.

5. In combination with claim 1, wherein said means to engage the body comprises an upper arm support, a shoulder brace and mechanical means to hold the upper arm in a fixed position at a right angle to the forearm.

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