

[54] TRACTION SPLINT

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[22] Filed: Nov. 27, 1970

[21] Appl. No.: 93,030

[52] U.S. Cl. 128/84 C, 128/75

[51] Int. Cl. A61f 5/04

[58] Field of Search. 128/84, 85, 86, 75

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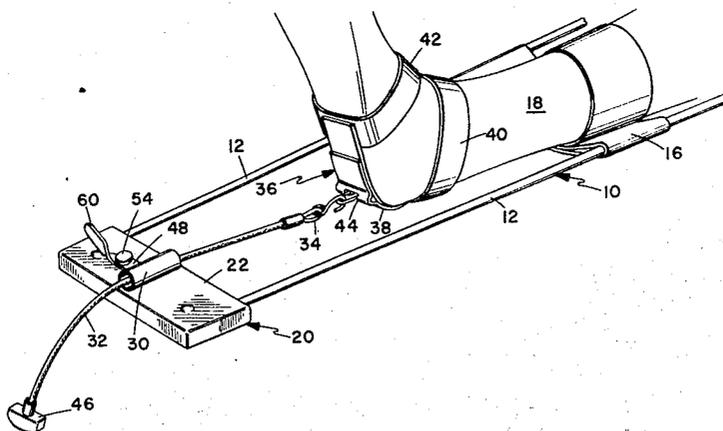
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[57] ABSTRACT

A splint for broken legs, and arms, incorporating simplified means for applying tension to the splinted limb. The splint will be secured to the proximal end portion of the injured leg or arm by conventional means such as that known as the Thomas half ring and straps but improved tensioning means is incorporated with the outer end of the splint for ultimate simplicity in construction as well as operation which is reflected in speedier and more efficient procedural use. End plate structure in the form of a simple casing snaps onto the outer end of the cradle portion of the splint but is easily removed for cleaning. A manually tensioned cable is routed through a cable guide on the casing thus assuring, a straight-line pull in the general plane of the cradle, even though applied manually, and automatic locking of the cable and quick release of tension when necessary is incorporated with the cable guide.

4 Claims, 4 Drawing Figures



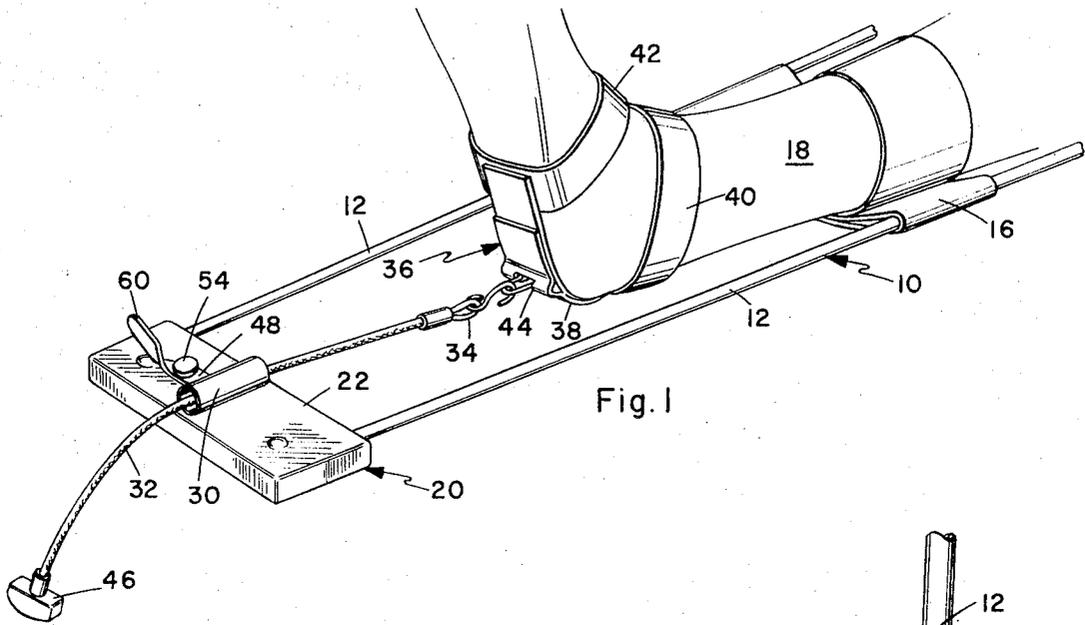


Fig. 1

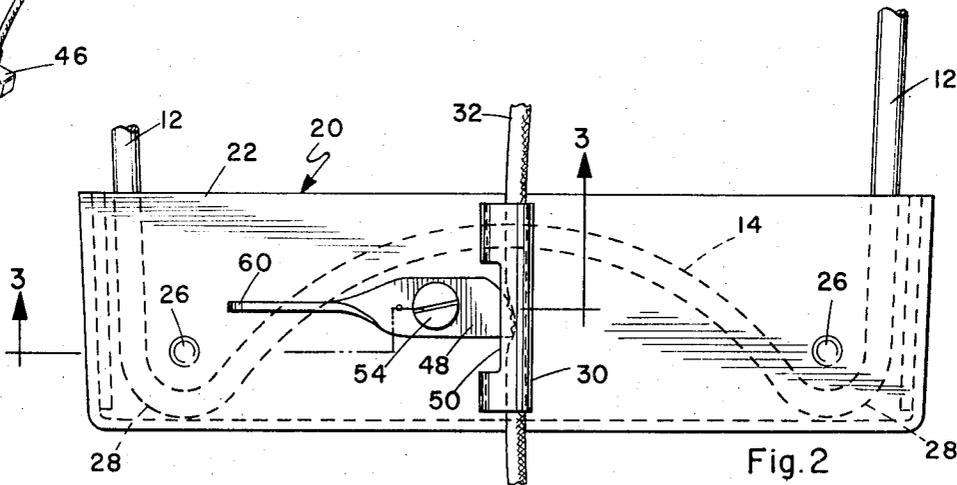


Fig. 2

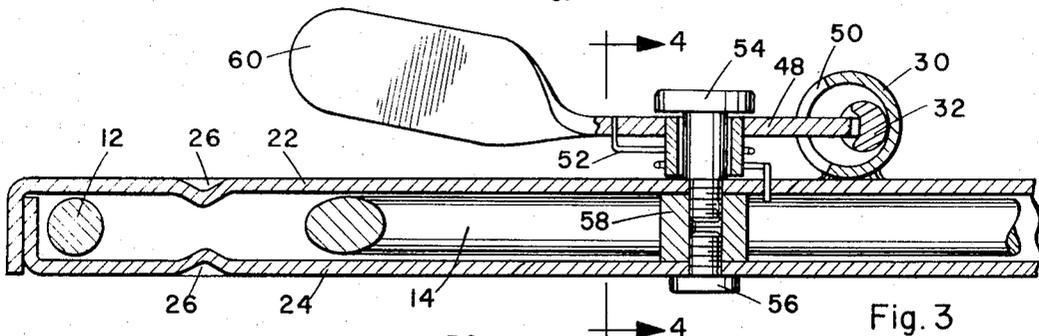


Fig. 3

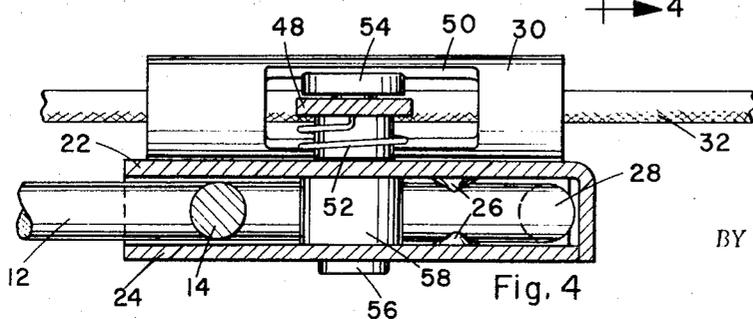


Fig. 4

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TRACTION SPLINT

BACKGROUND OF THE INVENTION

In injuries to the limbs, particularly where there is bone fracture, the pain of the injured person can usually be mitigated considerably by splinting the limb and applying reasonable tension thereto. This helps to prevent the fractured bone from needless further laceration of surrounding tissue, and may relieve unnatural pressure on nerves and the splinting may facilitate effective first aid procedures and movement of the injured person, as for example, into an ambulance. The prior art includes traction splints with ankle hitches and means for tension application including ratchet means and tightenable strap and buckle devices but these prior art devices are either quite costly to construct, space consuming when stored, unnecessarily extended in overall length, unduly time-consuming in operation or very difficult to operate without incurring an unwanted bending movement on the injured limb.

SUMMARY OF THE INVENTION

As claimed, the present invention avoids the foregoing disadvantages and is embodied in the simple end plate or casing which can be snapped on and off the end of the cradle portion, this casing being flat and occupying minimal storage space and the simple cable, cable guide and locking means are reflected in uncomplicated, fast and efficient procedural handling of the traction splint. The casing reinforces the rod structure of the cradle and the parts are arranged to assure that the manual tensioning will not cause twisting or flexing of the limb.

BRIEF DESCRIPTION OF THE DRAWING

FIG. 1 is a perspective view showing what may be regarded as the outer end portion of a traction splint in use with an ankle hitch attached in tension-applying position;

FIG. 2 is a top plan view of the end plate or casing showing how the same is snapped onto the rod structure of the cradle portion;

FIG. 3 is an enlarged sectional view taken on line 3—3 of FIG. 2; and

FIG. 4 is a sectional view taken on line 4—4 of FIG. 2.

DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENT

The novel structure in this invention is concerned with what is termed herein the outer end portion of a traction splint, that is, the end portion where the foot or hand will be placed when the splint is in use. The type of splint here involved will conventionally have a "half ring" and/or straps or the like to secure the splint to the proximal portion of the limb, and the structure is not necessarily changed by this invention and is not depicted in the drawing.

The cradle 10 is constructed from cylindrical metal tubing or rods 10 and 12 joined by transverse rod structure 14 at said outer end of the splint. Hammock straps 16 or the like of conventional form bridge the rods 12 at spaced positions to support the limb 18 and the hammock straps should support the limb so that it is maintained in the same general plane as the outer end of the

splint, it being noted that this will still permit the desirable minor downward deflection of the hammock straps for better cradling action not inconsistent with a proper splinting result.

The end plate or casing 20 is mounted on the outer end of the cradle 10 and is open-ended snugly to receive the adjacent terminal portions of rods 12 and the transverse rod structure 14. The casing has upper and lower plates 22 and 24 which grip the rod structure and these plates are dimpled at 26 to snap behind the corner portions 28 of the rod structure when the casing is forcefully pushed thereonto. In this manner the casing is made semi-permanently fixed on the end of the cradle but is still reasonably easily pulled off for cleaning or replacement purposes.

A tubular cable guide 30 is fixed, ordinarily by welding, to the top of upper plate 22. A cable 32 of nylon or other suitable material is threaded therethrough a swivel connection 34 on the inner end of the cable 32 and permits securement thereof to a sling 36. This sling as illustrated is particularly efficient in avoiding any twisting movement on the limb or any tendency to pull the forward portion of a foot downward from its natural position as illustrated. In other words this sling localizes the pulling action to a plane through the heel of the foot corresponding to the general operational plane of the entire splint. The illustrated sling is H-shaped when laid flat with a heel web 38 as the cross member of the "H" and two parallel spaced bands, the ankle band 40 and the instep band 42, both of the latter being preferably equipped with quick fastening means such as that merchandised under the trademark Velcro. The heel strap 38 is fitted with a cross bar having a central loop, as at 44 to which the swivel connection 34 is attached.

The cable 32 extends in a distal direction from the cable guide 30 and terminates in a bandhold 46. To maintain tension applied by means of pulling cable 32 a locking means is provided. As illustrated, this locking means is a detent 48 spring pressed into wedging contact with the cable 32 within the cable guide 30, the latter being laterally slotted at 50 to admit the detent. The biasing spring is indicated at 52 as arranged coaxially of the pivot pin 54 which, along with cap screw 56, is threaded into a spacer 58, thus aiding in rigidifying the casing. In this regard it should be noted that the casing 20 reinforces the rod structure of the cradle very considerably thus enabling use of lighter stock tubing or rod 12.

The operation of this improved traction splint will be obvious from a consideration of the foregoing description and it need only be added that since the tension once applied may have to be lessened, as in all types of traction splints, and it is important that this can be accomplished simply and very quickly, the detent actuating fingerpiece 60 is made very accessible and positive in action, being simply an extension of the detent 48 beyond the pivotal attachment thereof.

It is understood that minor variation from the form of the invention disclosed herein may be made without departure from the spirit and scope of the invention, and that the specification and drawings are to be considered as merely illustrative rather than limiting. For example, the cable guide can be shortened or altered to accept lateral removal and replacement of a cable, and

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the locking action may also be considerably altered while still being functionally equivalent to that shown.

We claim:

1. In a traction splint for attachment to a proximal portion of an injured limb:

a leg-accommodating cradle including a pair of spaced rods elongated in one general plane for reception of an injured limb; means of said rods for securing said injured limb to said cradle;

a foot-engaging sling for securement to the extremity of said limb;

an end plate mounted on an end of said cradle;

a cable with attachment means connecting said cable to said sling;

an essentially tubular cable guide secured to said end plate and substantially in said general plane;

said cable being threaded through said cable guide and extending distally therebeyond and capable of being grasped manually and pulled to apply tension to an injured limb limited to said general plane by said cable guide; and

locking means to fasten the tensioned cable with reference to said cable guide and end plate said locking means includes a detent spring-pressed

into cable-engaging position and having a manually operated lever shiftable to release the detent from the cable and thus instantly reducing or eliminating the tension when required.

2. A traction splint according to claim 1 wherein said end plate has a snap-on connection with said cradle and is normally firmly attached to said cradle and is easily removed therefrom for cleaning.

3. A traction splint according to claim 1, wherein said cradle includes transverse rod structure at said one end of the longated cradle, and said end plate is in the form of a generally flat, substantially inflexible open-ended casing which occupies minimal storage space and which snaps over and onto said transverse rod structure and stabilizes the cradle against undue flexing so that lighted rod structure can be used in manufacture of the cradle.

4. A traction splint according to claim 1 wherein said cable attaching means in use is in said general plane, and said cradle and sling are above said plane when the splint is generally horizontal and capable of supporting said limb entirely above said general plane, thereby obviating the need for a heel stand.

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