

Jan. 9, 1945.

C. C. CARPENTER

2,367,167

STRETCHER

Filed Nov. 12, 1942

3 Sheets-Sheet 1

Fig. 1.

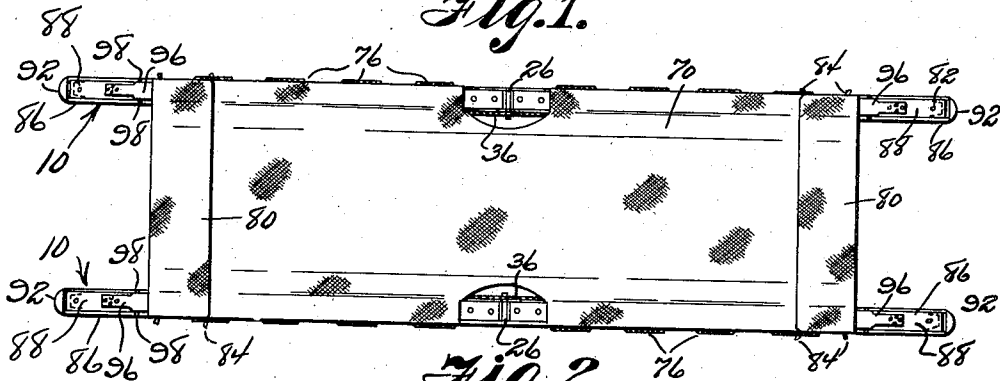


Fig. 2.

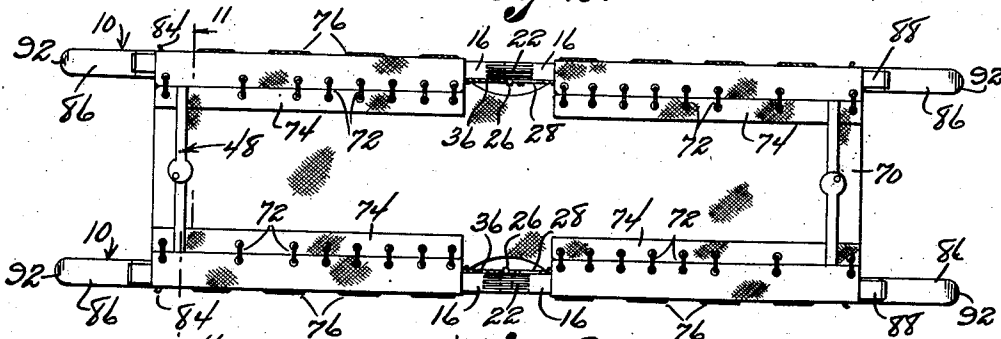


Fig. 3.

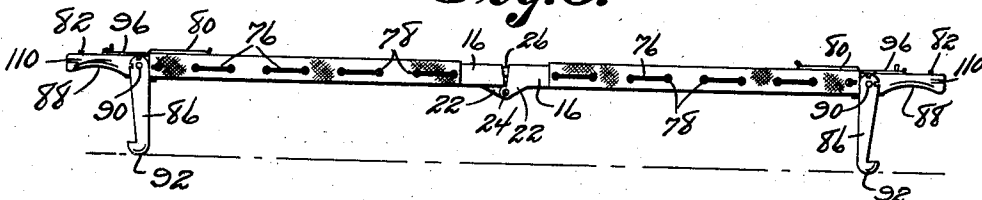
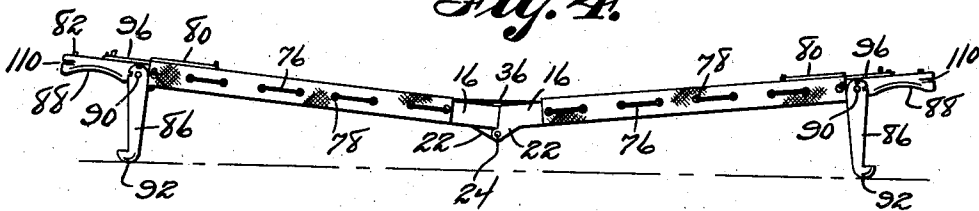


Fig. 4.



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Fig. 5.

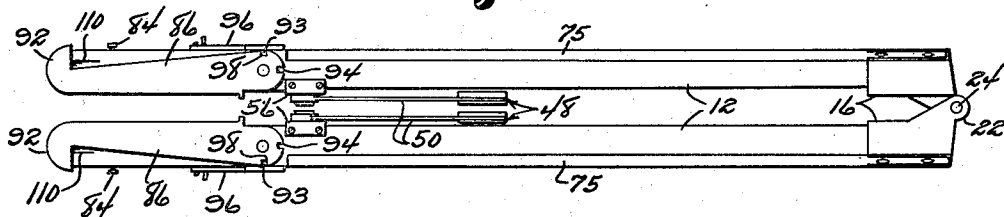


Fig. 6.

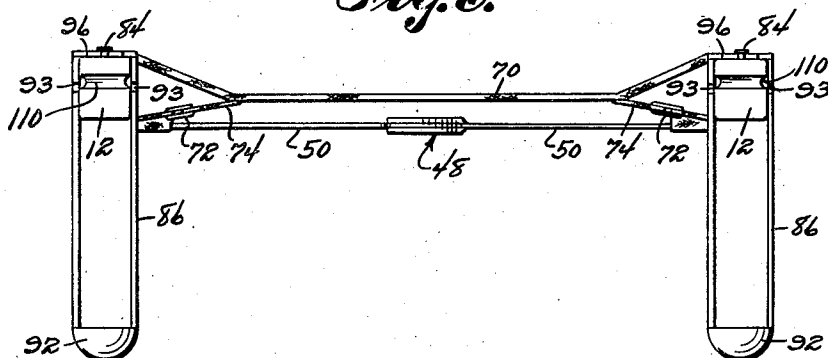


Fig. 7.

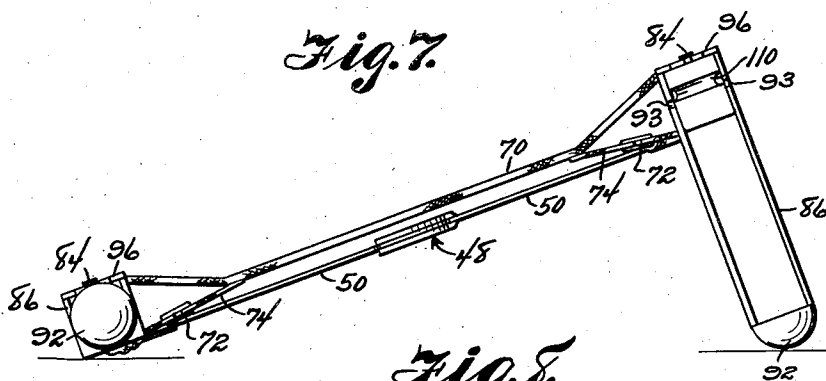
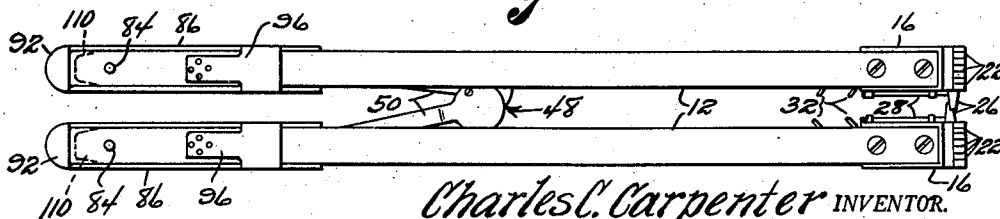


Fig. 8.



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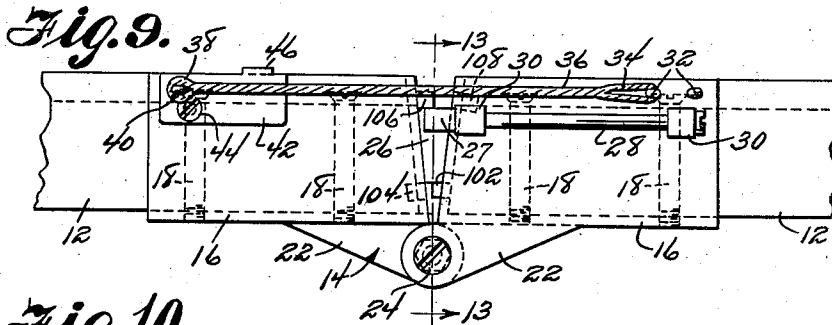
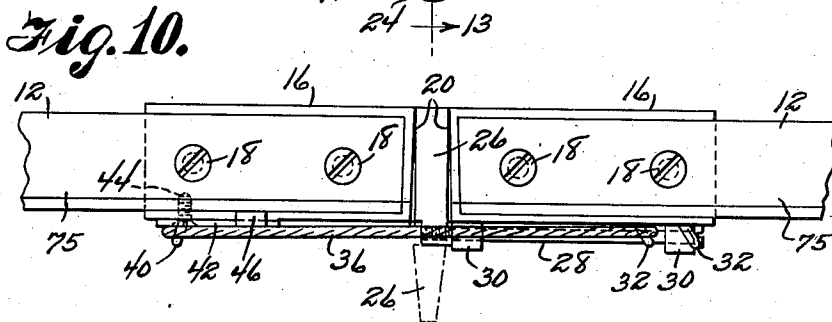
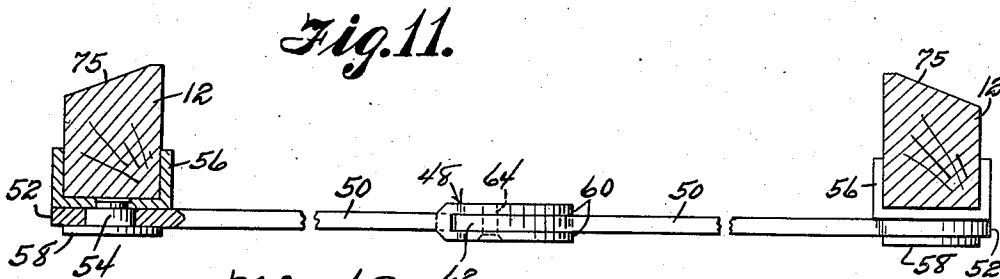
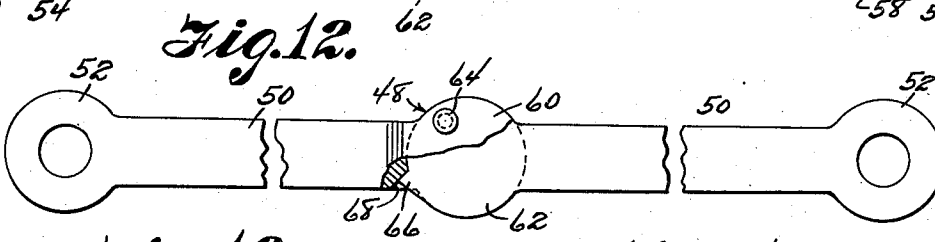
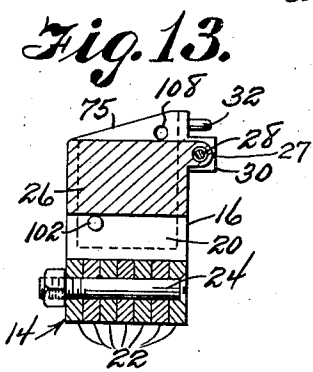
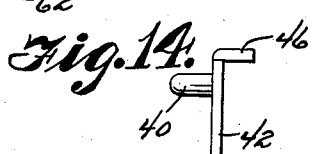
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3 Sheets-Sheet 3



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UNITED STATES PATENT OFFICE

2,367,167

STRETCHER

Charles C. Carpenter, Grand Forks, N. Dak.

Application November 12, 1942, Serial No. 465,356

3 Claims. (Cl. 5—82)

My invention relates to stretchers, and has among its objects and advantages the provision of an improved collapsible structure embodying novel means facilitating loading of a patient onto the stretcher and strapping the patient thereto, together with means for adjusting the stretcher to a straight or angular position.

In the accompanying drawings:

Figure 1 is a top plan view.

Figure 2 is a bottom view.

Figure 3 is a side view with the stretcher in a straight condition.

Figure 4 is a similar view with the stretcher dropped about a transverse axis intermediate the ends of the stretcher.

Figure 5 is a side view of the folded stretcher.

Figure 6 is an end view with the stretcher set up on its supporting legs.

Figure 7 is a view illustrating one side of the stretcher set up on the two supporting legs on that side.

Figure 8 is a top view of the folded stretcher.

Figure 9 is a side view of the pivot structure about which the sections of the stretcher fold.

Figure 10 is a top view of the structure of Figure 9.

Figure 11 is an enlarged transverse sectional view taken on line 11—11 of Figure 2.

Figure 12 is a face view of the spreader bar with a portion broken away.

Figure 13 is a sectional view along the line 13—13 of Figure 9, and

Figure 14 is an end view of a tensioning member.

In the embodiment of the invention selected for illustration, I make use of two side rails 10, each comprising two sections 12. The sections in each rail are pivotally connected by means of a pivot structure 14. Figures 9 and 10 illustrate one of the pivot structures 14, the two being identical so that the description of one will apply to both. The sections 12 comprise wooden bars. To one end of each bar is connected a channel 16, as by bolts 18 extending through the section and threaded into the bight of the channel. Each channel includes an end wall 20 abutting the end of its section 12, the end walls 20 defining an acute angle when the two sections 12 lie in the straight plane of Figure 9.

Each channel 16 is provided with a plurality of spaced flanges 22, these flanges being arranged in alternate frictional engagement and pivotally connected together by a bolt 24. The bolt lies beneath the bights of the channels so that the sections 12 may be folded back upon each other.

In cases where it is desired to set up the stretcher with a drop as in Figure 4 the end walls 20 lie in abutting relationship such a position is desirable in transporting injured persons with some types of injuries where it is uncomfortable or difficult to lie flat. When the stretcher is to be set up straight, as in Figure 3, a wedge 26 is pivoted into a position between the end walls to constitute a filler.

The wedge 26 is of elongated rectangular contour in longitudinal section, as shown at Figure 13, and has a diminishing taper from its top to its bottom edge as illustrated at Figure 9. As will be noted from Figure 10, the wedge member is of elongated rectangular formation in horizontal section and is formed with an inwardly projecting apertured ear 27 fixed to a shaft 28 rotatably supported in bearings 30 attached to one of the channels 16. Thus the wedge 26 may be pivoted about the axis of the shaft 28 to its operative and inoperative positions.

In Figures 9 and 10 one of the channels 16 is provided with two pins 32 arranged at acute angles to the side face of the channel for selective connection with a loop 34 at one end of a rope or cable tie 36. The other end of the tie 36 is provided with a loop 38 insertable over a pin 40 attached to a plate 42 lying face to face with the other channel 16. This plate is pivotally connected with the channel, as at 44, with the axis of the pivot lying beneath the pin 40 when the plate 42 is in the position of Figure 9. A lug 46 is attached to the plate and overlies the upper edge of the channel to prevent the plate from clockwise rotation beyond the position shown. However, the plate may be pivoted in a counter-clockwise rotation through imparting a slight stretch to the tie 36, although the tie is maintained taut when the plate is positioned as shown. With the wedge 26 in the position of Figure 9, the loop 34 is engaged over the pin 32 nearest the pin 40. When the pivot structure is to be conditioned accordingly to Figure 4, the loop 34 is engaged over the other pin 32.

The two rails 12 are connected by two spreader bars 48. Figure 11 illustrates one of the spreader bars. One section 50 of the spreader bar is provided with an eye 52 pivotally mounted on a pin 54 attached to a channel mount 56 attached to one section 12. This eye is restrained from axial movement on the pin 54 through its engagement with the mount 56 and a flange 58 on the pin. Spaced plates 60 are formed on the end of the section 50 opposite the eye 52 between which plates is located a third plate 62 on one end of

the second section 50 of the spreader bar. The plates 60 and 62 are pivotally connected by a pin 64 located to one side of a straight line passing through the axes of the eyes 52 of the sections 50. A lug 66 is formed on the plate 62 for engagement with a shoulder 68 between the plates 60. The lug and the shoulder are located on the opposite sides of the straight line passing through the axes of the eyes 52, so that the sections 50 latch firmly in the position of Figures 11 and 12 when the two rails 10 are spread to the position of Figures 1 and 2.

To the rails 12 is attached a canvas 70. This canvas is folded about the two rails and has its two side margins laced at 72 to flaps 74 sewed to the canvas 70. Both rails 12 have their upper edges angled as at 75 in Figure 11. These angles taper the rails downwardly to facilitate rolling of the patient onto the canvas. In connecting the side margins of the canvas 70 with the flaps 74, the canvas 70 takes a trough shaped contour when viewed from the end, which contour more effectively holds the patient on the stretcher.

The width of the canvas 70 is such as to place the canvas under stretch when the spreader bars 48 are moved to the positions of Figure 2, with the pins 64 and the lugs and shoulders 66 and 68 respectively, so arranged as to latch the sections 50 of the stretcher bars in end to end alignment.

Ropes 76 are passed alternately under and over the canvas 70 along the outside vertical faces of the rails 12, as through eyes 78, to provide loops to which ties may be connected when it is necessary to strap the patient in the stretcher.

Each end of the canvas 70 includes a flap 80 normally folded back upon the canvas, which flaps may be unfolded to increase the length of the canvas when handling patients of exceptional height. The flaps 80 may be attached to pins 82 to secure the flaps in their extended positions.

Legs 86 are pivotally connected with the four sections 12 short distances inwardly of their outer ends. All the sections are contoured to provide handles 88 adjacent the legs 86. These legs comprise straps pivotally connected at 90 with their respective sections 12 and provided with interconnecting head formations 92 constituting foot pads. Each leg is provided with notches 93 and 94. Coacting with each set of notches is a resilient plate 96 attached at one end to one of the sections 12 and provided with lugs 98 selectively receivable in the notches 93 and 94 for latching the leg in its supporting or folded position.

A pin 102 is attached to one end wall 20 in each channel 16 for reception in a bore 104 in the companion wall 20. A pin 106 is carried by each channel wall 20 for reception in a bore 108 in the wall 20 carrying the pin 102. These pins project into their respective recesses when the rails are dropped to the position of Figure 4. The upper pins 106 project across the wedges 26 when the rails are in the straight position of Figure 3 so as to prevent the wedges from being accidentally pivoted to their inoperative positions.

The handles 88 are provided with grooves 110

which coact with pins 84 and traction ropes which might be required in handling certain patients.

Without further elaboration, the foregoing will so fully explain my invention, that others may, by applying current knowledge, readily adapt the same for use under various conditions of service.

I claim:

1. In a stretcher having longitudinal rails, each of said rails being transversely divided medially of its ends to provide a pair of complementary sections, the inner end face of each section being cut at an angle to the vertical and diverging upwardly when the sections are longitudinally aligned, pivotally connected channel members, one on the end of each section and each channel member having an end wall conforming in shape to the shape of the end of the section, said end walls of the channels diverging upwardly from the pivot connection to form a V-shaped recess when the complementary sections are in aligned positions, and a member adapted to be removably fitted in said recess for holding the sections in alignment.

2. In a stretcher having longitudinal rails, each of said rails being transversely divided medially of its ends to provide a pair of complementary sections, the inner end face of each section being cut at an angle to the vertical and diverging upwardly at an acute angle when the sections are longitudinally aligned, channel members pivotally connecting the inner ends of said sections and having end faces conforming in shape to the ends of the sections so that the end faces of the channels diverge upwardly from the pivot connection to form a V-shaped recess when the complementary sections are in aligned positions, and a wedge member pivotally connected to one of said sections shaped to conform to said recess and adapted to be fitted therein when the sections are to be disposed in alignment and movable to a laterally arranged position exteriorly of the recess when it is desired to dispose the sections in positions inclined downwardly from their outer to their inner ends.

3. In a stretcher having longitudinal rails, each of said rails being transversely divided medially of its ends to provide a pair of complementary sections, the inner end face of each section being cut at an angle to the vertical and diverging upwardly at an acute angle when the sections are longitudinally aligned, pivotally connected channel members having end faces conforming in shape to the shape of the ends of the sections and attached to the end members for connecting the inner ends of said sections so that the end faces of the channels diverge upwardly from the pivot connection to form a V-shaped recess when the complementary sections are in aligned positions, a member adapted to be removably fitted in said recess for holding the sections in alignment, and a cable element engaging pins at the inner ends of the sections for releasably holding said member in wedging position in the recess.

CHARLES C. CARPENTER.