

Aug. 29, 1933.

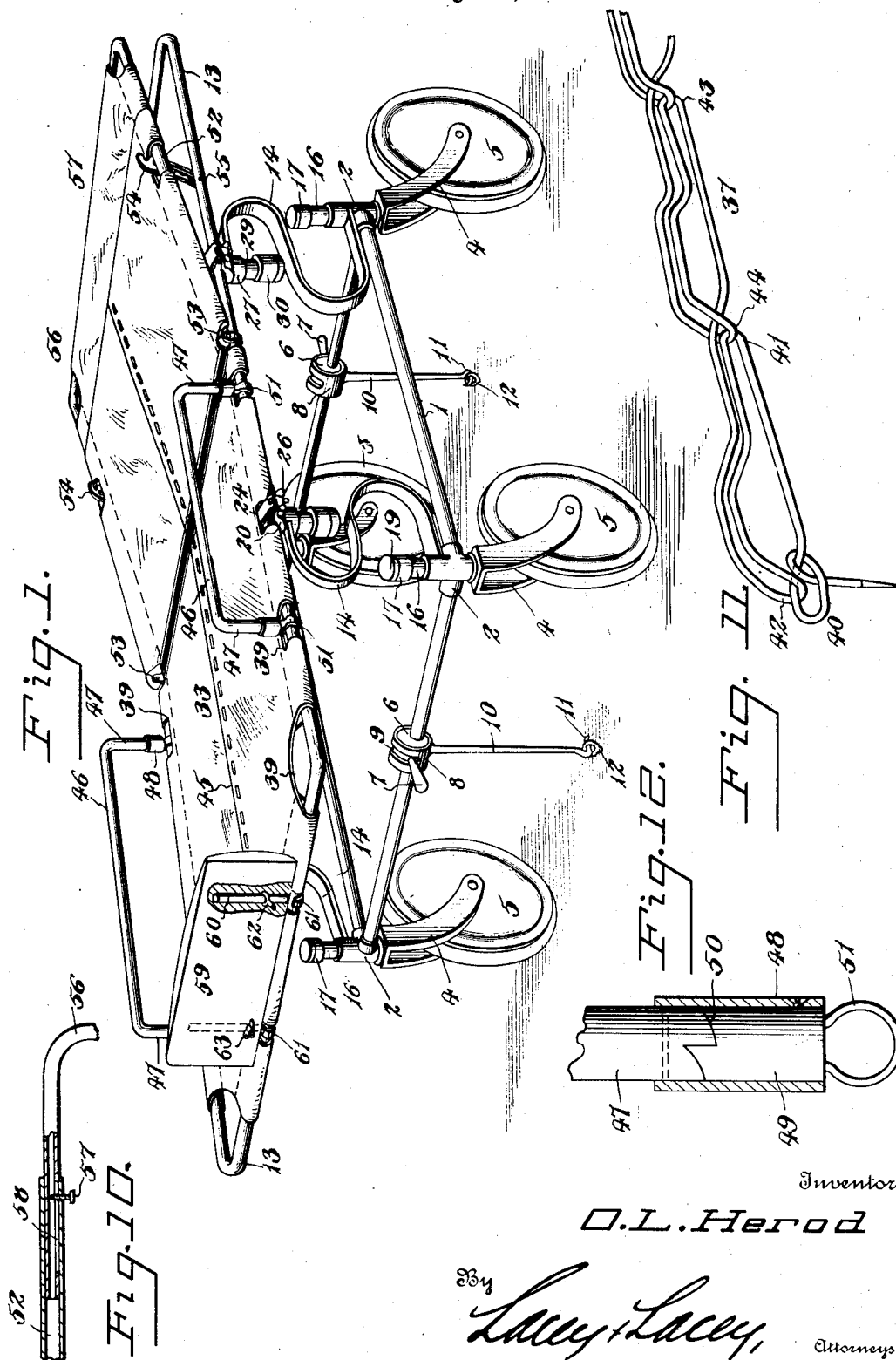
O. L. HEROD

1,924,496

STRETCHER

Filed Aug. 17, 1931

3 Sheets-Sheet 1



Aug. 29, 1933.

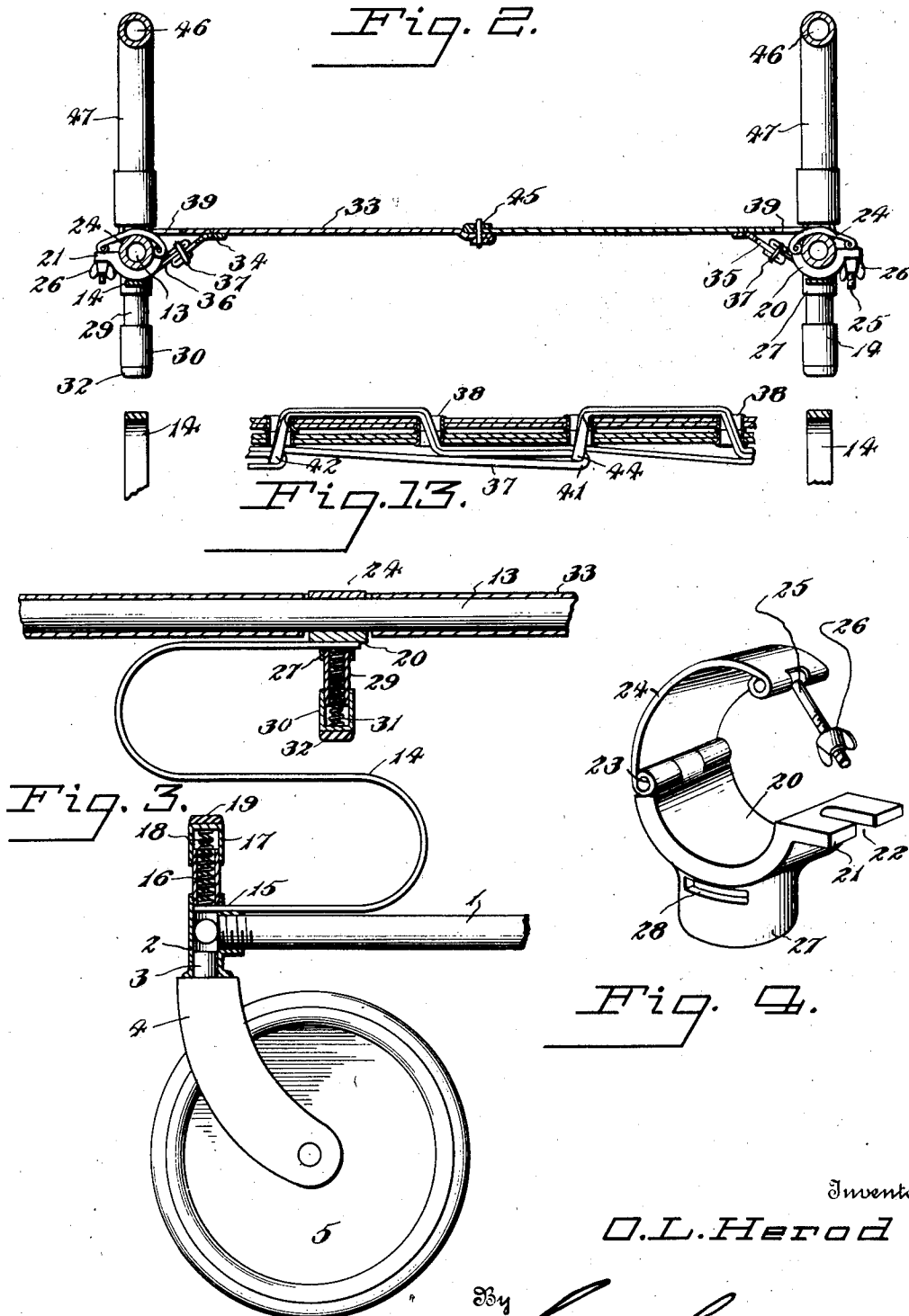
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3 Sheets-Sheet 2



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3 Sheets-Sheet 3

Fig. 5.

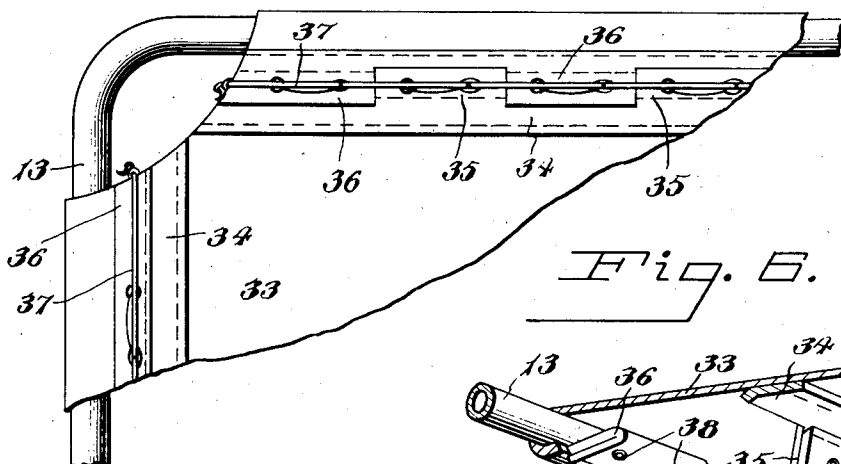


Fig. 6.

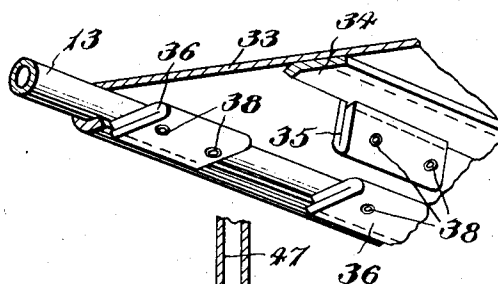


Fig. 9.

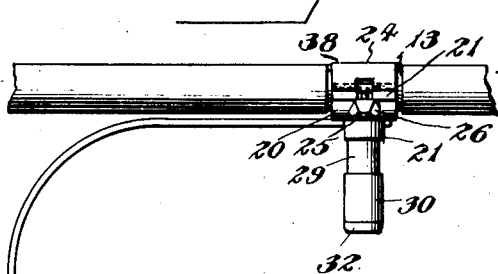


Fig. 7.

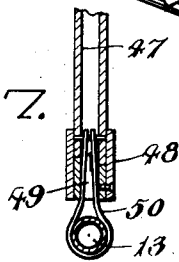
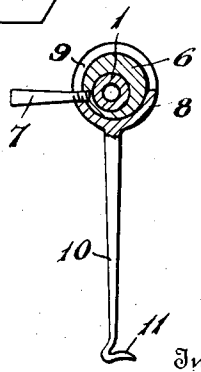
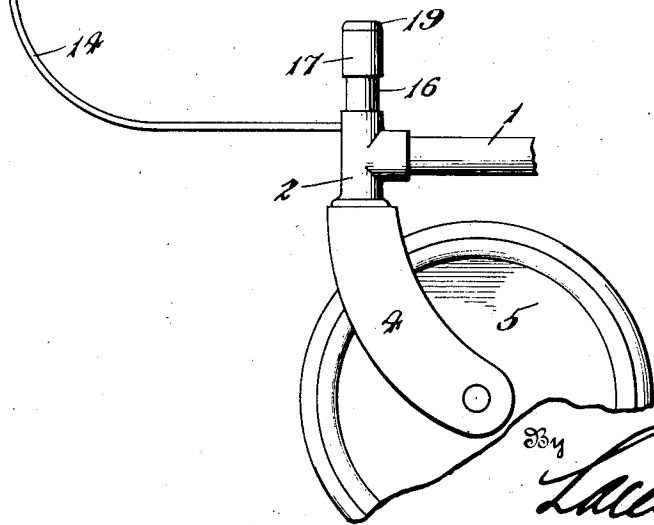


Fig. 8.



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UNITED STATES PATENT OFFICE

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STRETCHER

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Application August 17, 1931. Serial No. 557,667

6 Claims. (Cl. 296—20)

The object of this invention is to provide an apparatus for use in moving corpses or moving patients to or from hospitals whereby a patient may be easily carried through narrow halls or other places where ordinarily it is difficult to effect passage. The invention also has for its object the provision of a carriage for moving a cot or litter and means for holding the carriage against movement within a conveyance, and a further object of the invention is to provide means whereby, when a patient is lying upon the cot or litter, all shocks and vibrations due to movement over a rough surface will be effectually absorbed and discomfort to the patient avoided. The invention also has for its object the provision of means whereby the cot or litter may be firmly held upon a carriage but may be easily removed therefrom when its use is desired in places where the use of the carriage is difficult or impossible. Other objects will appear incidentally in the course of the following description, and the invention resides in certain novel features illustrated in the accompanying drawings and particularly defined in the appended claims.

In the drawings,

Figure 1 is a perspective view of a stretcher embodying the present invention,

Fig. 2 is a view in transverse section on a larger scale, more particularly illustrating the manner of attaching the bed to the stretcher frame,

Fig. 3 is an enlarged side elevation, with parts in section, of one of the wheels of the carriage and the parts immediately adjacent thereto and cooperating therewith,

Fig. 4 is a detail perspective view of a clamp whereby the upper end of a supporting spring is attached to a side bar of the stretcher frame,

Fig. 5 is an enlarged detail bottom plan view showing the manner of attaching the bed to the stretcher frame,

Fig. 6 is an enlarged detail perspective view showing more clearly the loops upon the bed provided for the attachment of the same to the frame,

Fig. 7 is a detail vertical section of the means for fastening the side rails in position,

Fig. 8 is a detail sectional elevation of part of the means for locking the carriage against movement,

Fig. 9 is a side elevation similar to Fig. 3 but showing a slight variation,

Fig. 10 is a detail of part of the head-rest,

Fig. 11 is a detail perspective of a lacing,

Fig. 12 is a side elevation of parts shown in

Fig. 13 is an enlarged section longitudinally of the seam in the sheet.

The apparatus comprises a carriage consisting of a rectangular frame 1 preferably composed of rods or tubes connected at their ends by fittings 2 whereby they are arranged in right angular relation, and in the lower edge of each fitting is journaled a stud 3 on the upper end of a yoke 4 carrying a caster 5 whereby the carriage may be easily moved from place to place. On each end bar of the frame there is rotatably mounted an eccentric 6 having a handle 7 projecting therefrom. The eccentric is housed within a sleeve 8 having a circumferential slot 9 therein to accommodate the handle 7, and carried by said sleeve is an arm 10 terminating in a hook 11 which may be engaged in an eye 12 set in the floor of the ambulance or other vehicle. The eyes 12 are disposed apart a distance approximately equal to the length of the frame so that when the hooks 11 are engaged therewith, as shown in Fig. 1, movement of the carriage in either direction will be effectually prevented. The arms 10 will preferably be of some flexible material so that when the hooks 11 are free, the carriage may be moved over the floor of a room or hall without rugs or other objects being caught and dragged by the hooks.

The stretcher frame may consist of a rod or tube 13 bent into substantially rectangular outline, as will be understood upon reference to Figs. 1 and 5, and is supported upon the carriage by springs 14 which may be of the S-shape shown in Fig. 3, or may be bent to U-form, as shown in Fig. 9. The ends of the springs are clamped to the carriage and to the stretcher frame respectively, and buffers are provided at the clamps so that a patient upon the stretcher will not be subjected to discomfort during travel of the carriage. The fittings 2 project above the members of the carriage frame 1 and are provided near their upper extremities with circumferentially extending slots whereby the lower end of the respective springs 14 may be inserted into the fitting, as shown at 15 in Fig. 3. A short sleeve 16 is threaded into the upper end of the fitting and rises therefrom to fit telescopically within a thimble 17, an expansion spring 18 being housed within the sleeve and the thimble and resting at its lower end upon the end of the spring 14. The closed end of the thimble bears upon the upper end of the spring, and, upon its outer side, it may be equipped with a pad 19 of rubber or other shock-absorbing material. The side members of the stretcher frame 13 rest in saddles or seats 20

Fig. 7, and

which are shaped to receive the frame and are provided at one side with an outstanding flange 21 having a notch or open-ended slot 22 therein. At its opposite side, the saddle is provided with a pintle 23 about which is fitted one end of a strap 24 which carries a clamping bolt 25 and wing nut 26 at its free end, the bolt being T-shaped, as shown in Fig. 4, and the free end of the strap being secured around the head of the T. When the stretcher frame has been placed upon the several seats 20, the respective straps 24 are swung over the frame, as shown in Fig. 2, and the bolt 25 is engaged through the notch 22 after which the nut 26 is turned home against the under side of the flange 21 whereby the frame will be effectually clamped within the seat, as will be understood. On the under side of each seat is a short depending tube 27 having an annularly extending slot 28 in one side to receive the upper end of the spring 14, as shown in Fig. 3. A sleeve 29 has its upper end threaded into the tube 27, and a thimble 30 is slidably mounted upon the lower end of said sleeve, an expansion spring 31 being housed within the sleeve and bearing at its opposite ends against the spring 14 and the end of the thimble, as clearly shown in Fig. 3. The sleeve 29, when turned home in the tube 27, will clamp the end of the spring 14 against the bottom of the seat 20, and the thimble may be held against dropping from the sleeve in any preferred manner. On the lower end of the thimble is a pad 32 of rubber or similar material and similar in all respects to the pad 19. Should the weight imposed upon the stretcher be heavy, or the carriage be moving over a very rough surface, the downward movement of the stretcher frame will cause the spring 14 to compress, and its intermediate portion will be engaged by the respective pads 19 and 32 and will thereby effect compression of the springs 18 and 31 so that the movement and shock will be absorbed.

The bed or litter consists of a sheet of canvas or similar material 33 stretched over and carried by the frame 13. On the under side of the sheet, adjacent the edges thereof, are secured strips 34 which are preferably of the same material as the sheet, and these strips have marginal tongues 35 at intervals, similar tongues 36 being formed at intervals along the edges of the sheet and arranged to alternate with the tongues 35, as shown in Fig. 5. The edges of the sheet with the tongues 36 thereon are folded around the frame 13 so that the tongues will project under the main portion of the sheet at the inner side of the frame, whereupon lacing 37 is threaded through eyeletted openings 38 provided therefor in the tongues, as will be understood upon reference to Figs. 2 and 5, so that the bed or sheet of canvas or like material will be firmly secured on the frame. The sheet is constructed at intervals in its margins with notches, as indicated at 39, whereby to accommodate the corners of the frame and also accommodate the side rails and other elements to be mentioned. Should it be found difficult or impossible, for any reason, to transfer a patient from the cot or stretcher to a bed, the lacing 37 may be withdrawn, whereupon the marginal tongues of the sheet may be grasped and utilized as handles to lift the patient and transfer him to a bed easily and without discomfort. The tongues, it will be noted, are doubled on themselves so as to be reinforced to withstand the strain thereon.

The lacing is preferably arranged as shown in Figs. 11 and 13. One end of the lacing strand

is loosely knotted, as at 40, at the end of the sheet and the strand is then carried under the sheet to the second opening 38 from the end, then doubled on itself to form a bight 41, and then brought back under the sheet to the opening next to the end of the sheet and passed upward through the opening. It then is carried over the sheet to and through one of the loops of the knot and doubled on itself to form a bight 42. From the bight 42, the strand is carried back over the described course, parallel with the previously drawn line to the bight 41. From the opening at which the bight 41 is formed the strand is carried under the sheet to a fourth opening and upward therethrough to form a bight 43 similar to the bight 41. From the bight 43 the strand is brought back under the sheet, to the third opening 38, upward through said opening and over the sheet to the second opening, then down through said opening and formed into a bight 44 which passes through the bight 41, and is then carried back to and through the third opening from which the described threading of the strand is repeated to the opposite end of the sheet when a second knot is formed. It will be understood, upon reference to Fig. 11, that if the knot 40 be untied and the end of the strand released from the bight 42, a pull on the end of the strand will then draw the successive lengths of the lacing from the several successive openings and free the sheet, the strand being held against loss by the knot at the second end of the sheet. While the lacing strand may thus be very easily withdrawn to release the sheet, it will be drawn taut and will firmly hold the sheet until the knot at one end is untied. As indicated at 45, the sheet is preferably divided longitudinally at its center and the two halves are fastened by lacing which is a duplicate of that described. A patient may thus be transferred to a bed from the litter without being lifted from the litter, the withdrawal of the central lacing permitting the sheet to open at its center whereupon it may be easily withdrawn from under the patient.

The stretcher is provided with side rails to guard against the patient rolling therefrom, and these side rails each consist of a tubular member 46 having its ends 47 turned at right angles to its main portion and fitted within collars 48 which are rotatable about said ends. Within the collars 48 are secured rings 49 upon the upper edges of which the end members 47 rest, and the opposed engaging edge surfaces of the end members and the rings are formed into cams as indicated at 50 in Fig. 12. Pinned or otherwise securely fastened in the lower extremity of each end member 47 is a strap 51 which depends through the ring and passes around the frame bar 13, as clearly shown in Fig. 7. If the collar 48 be turned to the left in Fig. 12, the engaged cam surfaces 50 will cause the members 47 and 49 to move apart endwise and, as downward movement of the ring and collar is prevented by the bar 13, the member 47 is caused to move upwardly so that the strap 51 will bind around the bar 13 and the side rail will be held in the position in which it may be set.

Tubular bars 52 are hinged to the sides of the frame at 53 and the sheet 33 is fitted on said bars to form a headrest, as shown in Fig. 1. Racks 54 are pivoted at their upper ends to the bars 52 and engage pins or studs 55 on the bars 13 so that the headrest may be easily adjusted to best suit the comfort of the patient and held in the

adjusted position. A U-shaped frame 56 has its ends fitted telescopically in the bars 52, as shown in Fig. 10, and a sheet 57 is secured over said frame thereby constituting an extension of the head rest to accommodate a tall patient. Bolts 57 are mounted in the bars 52 and pass through slots 53 in the frame 56 as shown in Fig. 10. When turned fully home, these bolts secure the frame 56 and they may be utilized as pivots for the racks 54. A pillow may be placed upon the headrest or the extension.

I also provide a foot rest which is preferably a board or plate 59 mounted upon arms 60 projecting from eyes or loops 61 secured upon the end member of the stretcher frame. Collars 62 are fixed within the board 59, slidably encircling the arms 60 and having stems projecting through the rear side of the board and fitted with nuts 63 whereby the foot rest may be adjusted vertically in an obvious manner to relieve an injured foot or leg of the weight of the covers.

From the foregoing description taken in connection with the accompanying drawings it will be seen that I have provided an exceedingly convenient stretcher which is easily manipulated and efficient for the purposes for which it is designed.

Having thus described the invention, I claim:

1. In apparatus for the purpose set forth, a carriage, a stretcher frame, saddles receiving the stretcher frame and provided with depending threaded tubes having transverse slots formed therein, clamps attached to the saddles and extending over the stretcher frame to retain the frame in the saddles, resilient supports attached to and rising from the carriage and having their upper ends fitting within the slots of the tubes, and sleeves threaded in said tubes and engaging the resilient supports for clamping said supports on the saddles.

2. In apparatus for the purposes set forth, a carriage, a stretcher frame, a fitting on the carriage having a transverse slot therein, a resilient support having one end fitted in said slot, a saddle seating the stretcher frame and having the opposite end of the resilient support secured therein a sleeve threaded in the fitting and bearing against the adjacent end of the resilient support, and buffers secured to the saddle and the sleeve respectively and adapted to engage the intermediate portion of the resilient support.

3. In an apparatus for the purpose set forth, a carriage, a stretcher frame, a fitting on the carriage having a transverse slot therein, a resilient support having one end thereof fitting in the slot,

a saddle seating the stretcher frame and to which the opposite end of the resilient support is attached, a sleeve threaded in the fitting and bearing against the adjacent end of the support, a thimble fitting over the sleeve and having its upper end closed, and a spring arranged within the sleeve and having one end thereof bearing against the adjacent end of the resilient support and its other end bearing against the closed end of the thimble.

4. In an apparatus for the purpose set forth, a carriage, a stretcher frame, a fitting on the carriage having a transverse slot therein, a main spring having one end thereof fitted within the slot, a saddle for the stretcher frame having a depending tube provided with a transverse slot receiving the other end of the spring, sleeves threaded in the fitting and tube respectively and bearing against the adjacent ends of the spring, thimbles fitting over the sleeves and having their outer ends closed, and coiled springs fitting within the sleeves and thimbles and bearing against the adjacent ends of the main spring.

5. In an apparatus for the purpose set forth, a carriage, a stretcher frame, a fitting on the carriage having a transverse slot therein, a main spring having one end thereof fitted in the slot, a saddle receiving the stretcher frame and provided with a depending tube having a transverse slot therein in which the other end of the spring is fitted, sleeves threaded in the tube and fitting respectively and bearing against the adjacent ends of the spring, thimbles fitting over the sleeves and having their outer ends closed, buffers carried by the closed ends of the thimbles, and coil springs fitting in the sleeves and thimbles and bearing against the adjacent ends of the main spring and closed ends of the thimbles.

6. In an apparatus for the purpose set forth, a carriage, a stretcher frame, a fitting on the carriage having a transverse slot therein, a detachable saddle receiving the stretcher frame and adjustable longitudinally with respect to said frame, said saddle being provided with a depending tube having a transverse slot therein, a substantially S-shaped spring having one end thereof extended within the slot in the fitting and its other end extended within the slot in the tube, sleeves having threaded engagement with the fitting and tube respectively and bearing against the adjacent ends of the spring, buffers fitting over the sleeves, and coil springs disposed within the sleeves and bearing against the buffers and the adjacent ends of the S-shaped spring.

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