

Jan. 1, 1946.

F. A. SEIB

2,391,928

STRETCHERS

Filed March 22, 1943

2 Sheets-Sheet 1

Fig. 1

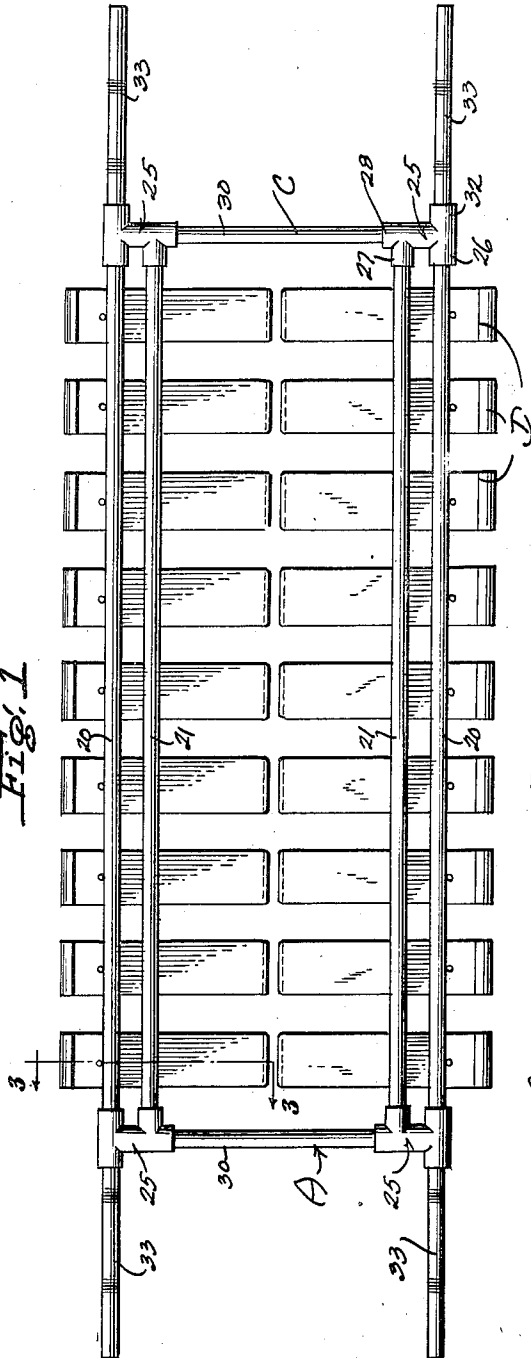


Fig. 2



Fig. 3

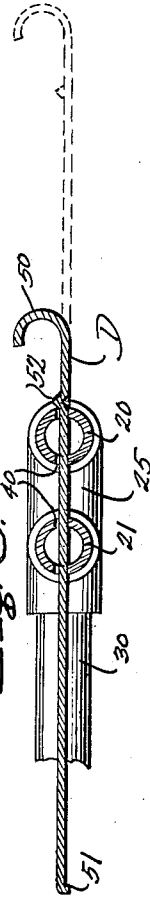
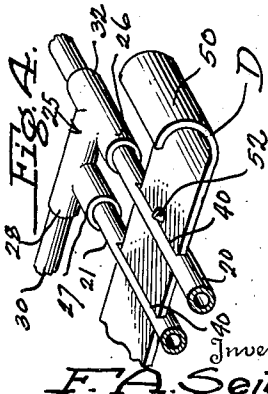


Fig. A



Inventor
F. A. Seib.

By *Lancaster, Allmaras and Rommel*
Attorneys

Jan. 1, 1946.

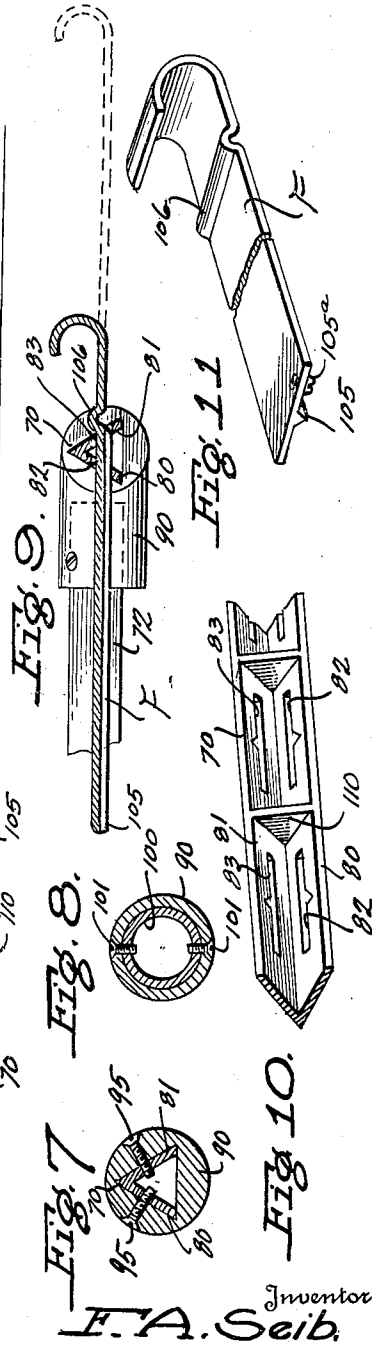
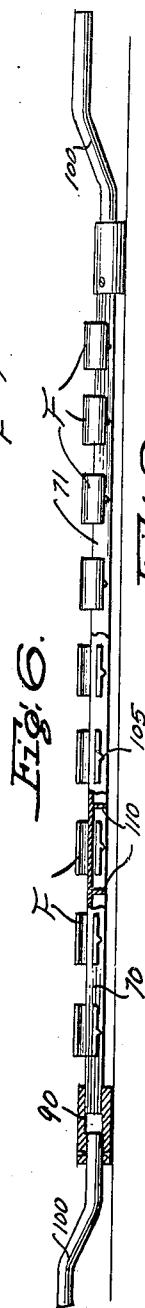
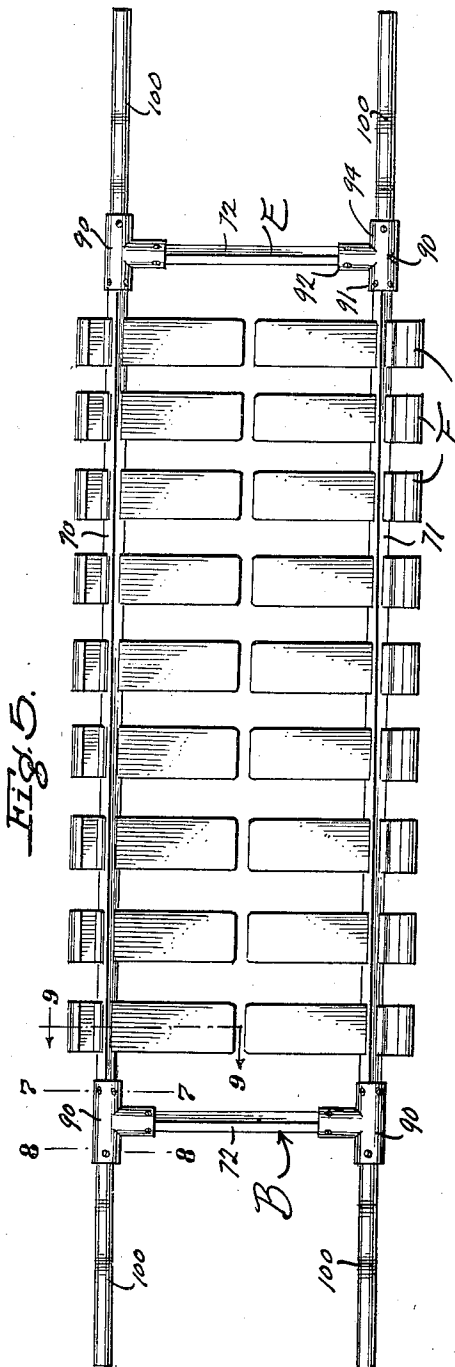
F. A. SEIB

2,391,928

STRETCHERS

Filed March 22, 1943

2 Sheets-Sheet 2



Inventor
F. A. Seib

334 *Lawrence, Allison and Pommel*
Attorneys

UNITED STATES PATENT OFFICE

2,391,928

STRETCHER

Frederick A. Seib, Manasquan, N. J.

Application March 22, 1943, Serial No. 480,072

7 Claims. (Cl. 5—82)

This invention relates to improvements in stretchers or litters.

The primary object of this invention is the provision of a stretcher adapted for general use in the lifting and transportation of injured persons which enables the individual to be lifted by the litter without the necessity of the patient being touched or initially moved directly with the hands of the operators or stretcher bearers, so that there is no liability of aggravating the injuries of the individual.

A further object of this invention is the provision of an improved stretcher which can be placed beneath the body of the individual for the purpose of lifting the individual without initially moving the body of the individual and which can be removed from the body of the individual after being placed upon a table or bed without the necessity of moving the individual after the body has been placed, together with the stretcher, upon the table or bed.

A further object of this invention is the provision of an improved stretcher which includes body supporting means which can be laterally slipped beneath the body of the individual to be lifted upon the stretcher, without the necessity of individually moving the body of the individual nor contacting the body directly with the hands of the stretcher bearers or operators.

Other objects and advantages of this invention will be apparent during the course of the following detailed description.

In the accompanying drawings, forming a part of this specification, and wherein similar reference characters designate corresponding parts throughout the several views,

Figure 1 is a plan view of the preferred form of stretcher.

Figure 2 is a side elevation, showing certain parts removed, for clearly designating the operating features of the stretcher.

Figure 3 is a cross sectional view of one of the body supporting arms of the stretcher.

Figure 4 is a fragmentary perspective view showing the means for supporting the body supporting arms of the stretcher.

Figure 5 is a plan view of a modified form of stretcher.

Figure 6 is a fragmentary side elevation of the stretcher of Figure 5.

Figures 7, 8 and 9 are cross sectional views taken substantially on the respective lines in Figure 5 of the drawings.

Figure 10 is a fragmentary perspective view of one of the supporting rails of the stretcher.

Figure 11 is a fragmentary perspective view of one of the patient supporting arms of the modified stretcher.

In the drawings, wherein for the purpose of illustration are shown preferred and modified forms of the invention, the letters A and B may designate the preferred and modified forms of the invention.

The form of invention B comprises a rigid framework C having patient supporting arms D movably carried thereby.

In the modified form of invention B, patient supporting arms F are movably carried by a frame E.

Referring to the details of the frame C, the same preferably comprises longitudinally disposed pairs of side rails or members 20 and 21 at each side of the stretcher. These sets of side rails are disposed about two and one-half feet apart, but the individual rails 20 and 21 of each set are spaced approximately three inches apart. This arrangement is for the purpose of stably supporting the patient body supporting arms D, as will more fully appear hereinafter.

Couplings 25 are provided at each corner of the stretcher frame C. They have extensions 26 and 27 for the detachable reception of the ends of the rails 20 and 21, as shown in Figure 1 of the drawings. The connection pieces or couplings 25 are also provided with extensions 28 for receiving the ends of end rails or members 30. These end rails or members 30, in connection with the sets of side rails or members, provide a rectangular rigid framework. The couplings 25 are furthermore provided with extensions 32 for the reception of the tubular handles 33 which extend in parallelism beyond the end rails 30 at each end of the stretcher frame C, as clearly illustrated in Figure 1 of the drawings.

The rails 20, 21 and 30 and the handles 33 may be of tubular formation, altho the construction of these parts may vary. The extensions 26—27—28—32 of couplings 25 may securely receive the ends of the rails and handles which are respectively socketed therein, by means of set screws, screw threading or welding.

It will be readily apparent that the opening in the rigid framework C between the side rails and the end rails measures approximately seven feet in length by two and one-half feet in width and the nature of the patient supporting arms D, in association with the sets of side rails, is such that the stretcher frame may be placed directly over the body of the patient, without the necessity of moving the body of the patient and

the patient supporting arms D slid beneath the body of the patient.

It will be noted that the patient supporting arms D are flat and elongated. They are preferably made of strong material and any desired number of them may be provided along each set of side rails. The side rails 20 and 21 at each side of the supporting framework C are horizontally slotted, as shown at 40, to provide passageways for slidably receiving the patient supporting paddles or arms D. The latter may be of any desired width and the length, just sufficient to comfortably support the body of the patient. The thickness of these paddles or arms D must be such that they can be conveniently slid beneath the body of the patient without injuring the patient's body, or causing unnecessary discomfort to the patient. They are provided with upwardly curved finger engaging handle portions 50 at the outer ends thereof. The inner ends may be slightly downturned at 51 to provide a flange which limits the extent to which the paddles may be withdrawn from the arms 20 and 21. The extent to which the paddles or arms D may be inserted beneath the body of the patient is limited by means of an extension 52, shown in Figures 3 and 4 of the drawings, which abuts against the outer surface of the side rail 20. It will be noted that the paddles D of the two sets of side rails are complementary and the ends of complementary paddles at opposite sides of the stretcher do not meet, because of the movement limiting extensions 52.

The use of the stretcher will be apparent from the foregoing. The paddles or members D are withdrawn to their maximum extent when the body of the patient is reached. The framework is then lowered over the body of the patient and the paddles or patient supporting members D are eased beneath the body of the patient. When they have been extended into position beneath the body, the operators can slip their hands beneath the upturned ends of the handles 33, as can readily be seen from Figure 2 of the drawings, and the patient can be lifted. This entire operation can be carried out by two stretcher bearers, because additional operators are not needed for moving the body of the patient. It is not necessary to laterally roll or move the body of the patient whatsoever and the only time that the body is moved is when the stretcher is lifted and the body of the patient is carried to the desired location. When that location has been reached, the paddles are withdrawn and the frame is lifted from the body of the patient. Thus, the body of the patient has not been moved or contacted by the hands of the operators. It is quite obvious that there can be no aggravation of injuries nor the causing of pain to the individual, such as is the case with use of conventional stretchers which require the initial moving of the body of the patient at the time of lifting the patient upon the stretcher, and the moving of the body of the patient after the location to which the patient has been removed is reached.

With reference to the modified form of invention B, the framework E preferably consists of longitudinally extending side rails 70 and 71 and end rails 72. These rails 70, 71 and 72 are arranged in a rectangular arrangement to provide an opening in the framework having the characteristics of the opening set forth for the preferred form of invention A. In contradistinction to tubular arrangement of the framework,

as in the case of the preferred form A, the rails 70 and 71, and preferably also the end rails 72 are formed of angle iron. The side rails 70 and 71 have the legs 80 and 81 thereof slotted at 82 and 83 respectively, in aligning relation, to slidably receive the patient supporting paddles or members F in the same general arrangement as for the similar supporting members for the form of invention A.

At the corners of the framework E the rails 70, 71 and 72 are connected in a rigid relation by T-shaped couplings 90. These couplings 90 are provided with triangularly socketed extensions 91 and 92 for receiving the ends of the rails 70, 71 and 72, wherein they are connected by means of bolts or set screws 95, as shown in Figure 7 of the drawings. The other coupling extension 94 of each coupling 90 is circular in form for detachably receiving the end of a tubular supporting handle 100, which is secured to the coupling 90 by means of bolts or set screws 101, shown in Figure 8 of the drawings. The handles 100 are preferably tubular and upturned so that a portion is lifted above the earth or surface upon which the body of the patient lies when the stretcher is placed upon the said surface for body lifting purposes.

The paddles F are flat and relatively thin, in accordance with such characteristics as have been above designated for the form of paddles D. Due to the fact that the legs of the angles 70 and 71 are spaced apart, the said paddles are slidably supported in a stable horizontal position upon the framework. The body supporting members or paddles F are provided with a longitudinally extending integrally positioned V-shaped stiffening rib 105 which extends from the free end of each paddle to a crimp 106 disposed transversely of the paddle on the upper surface thereof. This crimp is close to the outer end of the paddle and limits the insertive movement of the member F so that the ends of complementary members F on opposite side rails will not meet, as is designated in Figure 5 of the drawings. This avoids body pinching when the paddles are applied in position for patient lifting purposes. It is to be noted from Figure 10 of the drawings that the slot 82 is provided with a lateral V-shaped extension to accommodate the stiffening rib 105. As noted in Figure 11 of the drawings, a set screw 105^a may be placed at the outer end on the lower surface of each paddle F to prevent accidental withdrawal of the member F from its supporting side rail.

As a reinforcing expedient the legs of each of the angles 70 and 71 may be braced by means of transverse webs 110, as designated in Figure 10 of the drawings.

Any or all of the parts of the stretcher may be made of metal, plastic, wood or any other appropriate material.

Various changes in the shape, size, and arrangement of parts may be made to the forms of invention herein shown and described, without departing from the spirit of the invention or the scope of the claims.

I claim:

1. In a stretcher the combination of a rigid framework defining a patient receiving opening therein and including angularly formed side rails each provided with legs disposed in a V-shaped relation, said legs being provided with aligning passages transversely therethru, and patient supporting members slidably carried in said passages

in a stable relation for linear movement whereby they may be extended into the opening of the framework beneath the body of a patient, or retracted therefrom to permit the framework to be released from the body of the patient.

2. In a portable stretcher the combination of a pair of rigid side rails, means connecting the side rails in definitely spaced rigid relation so that an opening is provided in the stretcher between said side rails which will admit of receiving the body of a patient, said side rails having transverse slots therein, and a plurality of body supporting members slidably mounted in said slots on each of the side rails whereby the same may be slid beneath the body of a patient without the necessity of lifting the body of the patient.

3. In a portable stretcher the combination of a pair of rigid side rails, means connecting the side rails in definitely spaced rigid relation so that an opening is provided in the stretcher between said side rails which will admit of receiving the body of a patient, said side rails having transverse slots therein, and a plurality of body supporting members slidably mounted in said slots on each of the side rails whereby the same may be slid beneath the body of a patient without the necessity of lifting the body of the patient, said side rails having a circular cross section.

4. In a stretcher the combination of a pair of rigid elongated side rails, rigid transverse end rails connecting the side rails spaced from the ends thereof whereby the side rails at their ends are provided with hand grasping extensions for carrying said frame, said frame between the end rails and side rails providing an opening which can receive the entire body of a patient, and body supporting members, said side rails being provided with means engaging said body supporting members slidably and in rigid supporting relation thereto for movement of the body supporting members transversely of the side rails into the opening beneath the body of the patient without the necessity of moving the body of the patient, said body supporting members due to such mounting when extended into the opening being capable of supporting the body of a patient when the frame is lifted.

5. In a stretcher the combination of a pair of elongated rigid side rails, means connecting the said rails at the ends of the stretcher in rigidly supported spaced relation, so as to provide an opening between said side rails, a series of elongated rigid body supporting members, said rails being provided with means engaging said body supporting members slidably and in rigid supporting relation thereto for movement of the body supporting members transversely of the side rails into the opening between the side rails for disposition beneath the body of a patient, said members being movable to substantially entirely ex-

pose the opening between the side rails in unobstructed relation whereby when the said members are extended the stretcher may be lowered over the body of a patient from above the patient and the body disposed in said opening and the members then slid transversely beneath the body of the patient so as to support the body of the patient when the said stretcher is lifted.

6. In a stretcher the combination of a pair of elongated rigid side rails, means connecting the said rails at the ends of the stretcher in rigidly supported spaced relation so as to provide an opening between said side rails, a series of elongated rigid body supporting members, said rails being provided with means engaging said body supporting members slidably and in rigid supporting relation thereto for movement of the body supporting members transversely of the side rails into the opening between the side rails for disposition beneath the body of a patient, said members being movable to substantially entirely expose the opening between the side rails in unobstructed relation whereby when the said members are extended the stretcher may be lowered over the body of a patient from above the patient and the body disposed in said opening and the members then slid transversely beneath the body of the patient so as to support the body of the patient when the said stretcher is lifted, said members being individually slidable upon their respective side rails for individual transverse extension into and retracted movement with respect to said opening.

7. In a stretcher the combination of a pair of elongated rigid side rails, means connecting the said rails at the ends of the stretcher in rigidly supported spaced relation, so as to provide an opening between said side rails, a series of elongated rigid body supporting members, said rails being provided with means engaging said body supporting members slidably and in rigid supporting relation thereto for movement of the body supporting members transversely of the side rails into the opening between the side rails for disposition beneath the body of a patient, said members being movable to substantially entirely expose the opening between the side rails in unobstructed relation whereby when the said members are extended the stretcher may be lowered over the body of a patient from above the patient and the body disposed in said opening and the members then slid transversely beneath the body of the patient so as to support the body of the patient when the said stretcher is lifted, and means upon said members limiting the inserting movement of the said members into the opening so that the ends of the said members on opposite side rails will not contact each other.

FREDERICK A. SEIB.