Aug. 31, 1943. H. T. ANDERSON ET AL 2,328,047

STRETCHER

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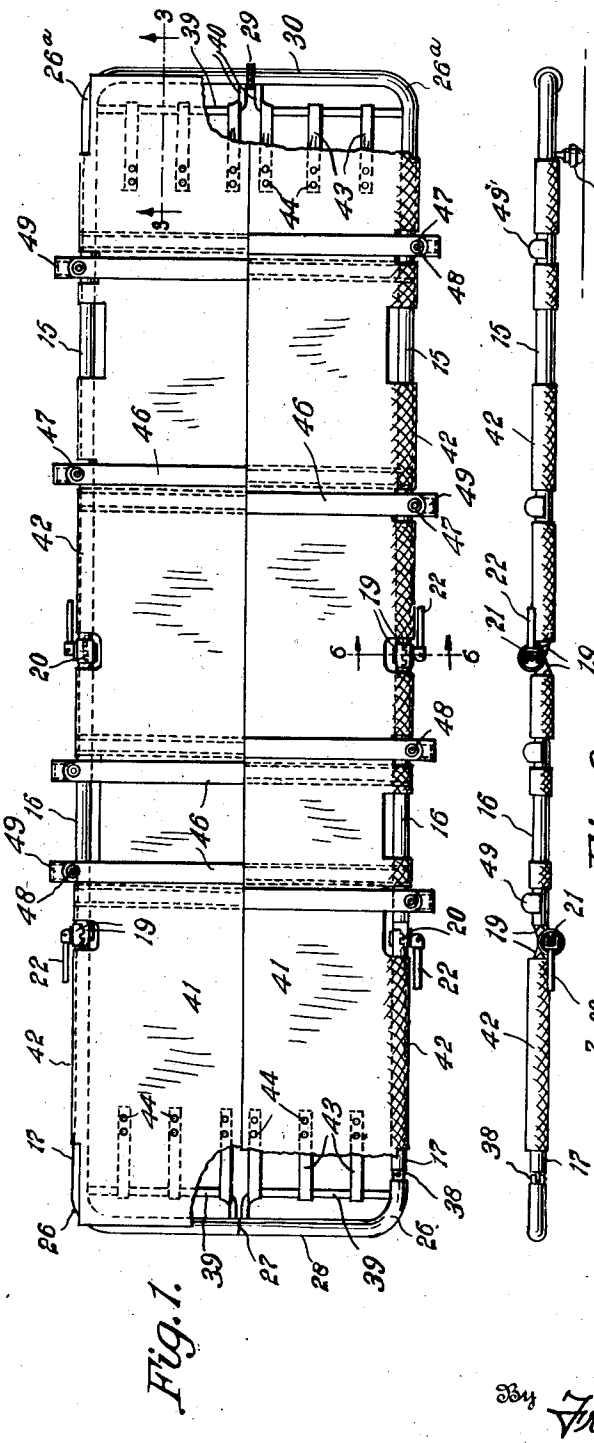


Fig. 1.

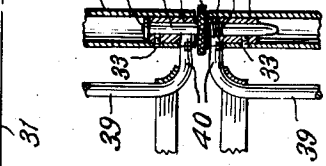


Fig. 5.

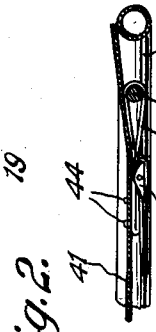


Fig. 3.

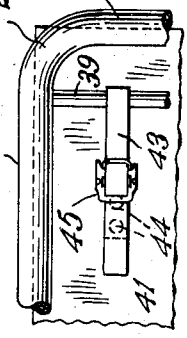


Fig. 4.

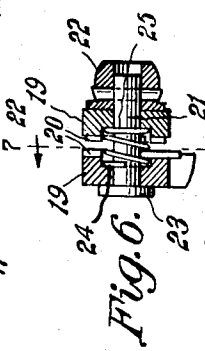


Fig. 6.

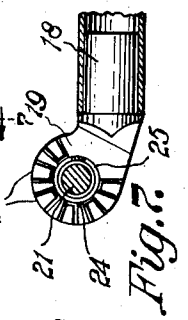


Fig. 7.

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STRETCHER

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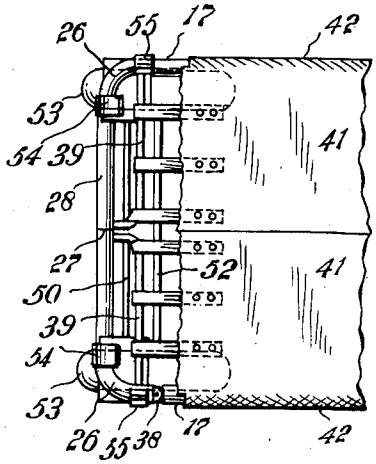


Fig. 9.

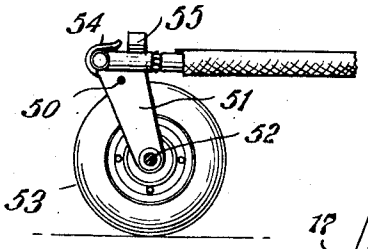


Fig. 10.

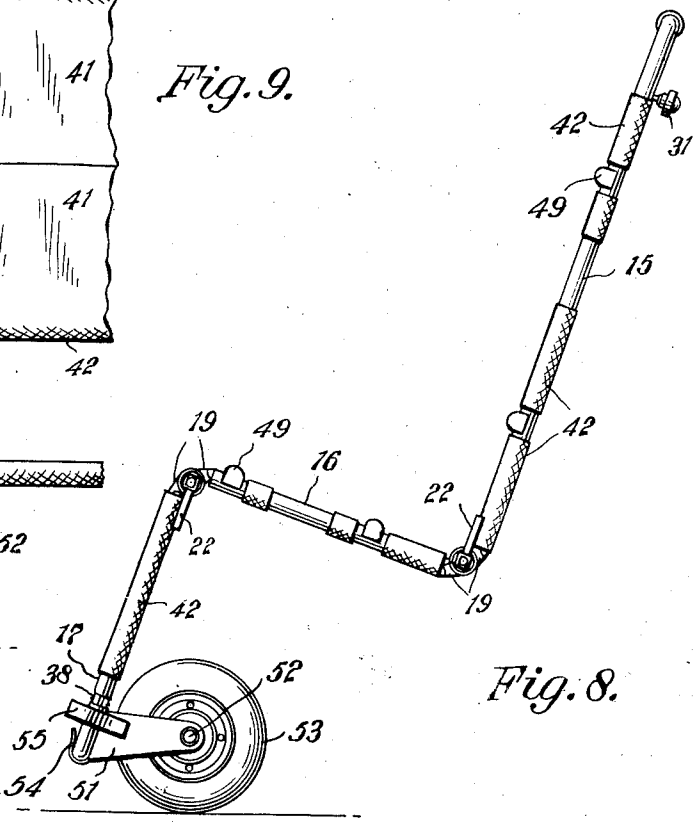


Fig. 8.

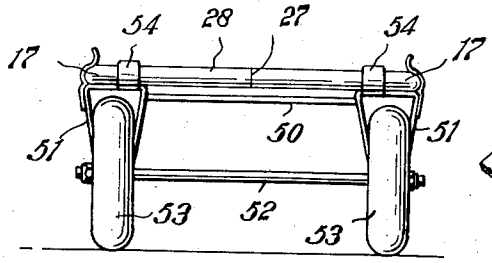


Fig. 11.

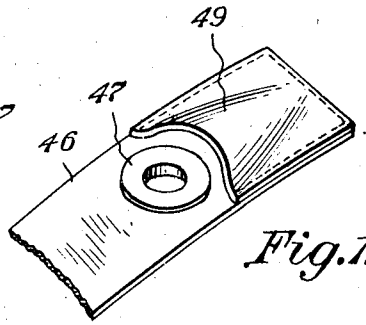


Fig. 12.

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UNITED STATES PATENT OFFICE

2,328,047

STRETCHER

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Application March 21, 1942, Serial No. 435,706

7 Claims. (Cl. 5—82)

The invention relates to stretchers for handling disabled, injured or sick persons and more particularly to certain improvements upon the type of stretcher disclosed in our Patent No. 1,983,889, dated December 11, 1934.

This type of stretcher comprises generally a frame upon which are supported two panels or lengths of canvas or similar fabric for supporting the patient, said panels being separable from each other and independently movable transversely of the frame.

It is an object of the invention to provide a stretcher of this character in which the supporting frame is hinged near one end and separable at the other end, whereby the frame may be opened and placed around a patient lying upon the ground, or other horizontal support, the frame being then closed and the supporting fabrics inserted beneath the patient so that when the stretcher is raised the patient will be supported thereon.

Another object of the invention is to provide a sectional frame, the sections of which may be adjusted with relation to each other whereby opposite end portions of the frame may be swung or adjusted to positions at angles with relation to the intermediate portion of the frame, so that the patient may assume a natural sitting position with the back supported at the desired angle and the legs flexed at the knee joints and hanging downward in any desired position.

A further object is the provision of a novel form of pivotal joint between sections of the frame provided with means for quickly locking the sections in any desired adjustment and for instantly opening the joint by a single movement of the locking lever.

A still further object of the invention is the provision of adjustable straps at each end of each fabric panel or section of the stretcher for placing the fabric panels under the desired tension.

Another object is the provision of finger pockets upon the ends of the transverse straps by means of which the fabric panels are stretched and supported laterally.

A still further object of the improvement is the provision of ball casters upon the head end of the stretcher for convenience in placing a patient in or removing him from an ambulance or the like.

Another object is the provision of rounded corners upon the rectangular frame of the stretcher in place of the protruding handles disclosed in our prior patent.

A still further object of the invention is the provision of a detachable, wheeled truck with spring clamping means for connection to the foot end of the stretcher whereby a patient may be easily wheeled about by one person in either a prone, sitting or reclining position.

Another object of the invention is the provision of a pivotal joint between sections of the frame in which each member of the joint is provided with squared teeth only a portion of the distance around the member and in which spring means is provided for separating the members of the joint and a cam locking lever provided for locking or unlocking the joint in a single movement.

The above objects together with others which will be apparent from the drawings and following description, or which may be later referred to, may be attained by constructing the improved stretcher in the manner illustrated in the accompanying drawings in which—

Figure 1 is a top plan view of the stretcher opened up in position to support a patient lying full length;

Fig. 2, a side elevation of the stretcher in the position shown in Fig. 1;

Fig. 3, a fragmentary section on a larger scale showing one of the adjustable straps at the end of the stretcher, taken as on the line 3—3, Fig. 1;

Fig. 4, a fragmentary bottom plan view of one corner of the stretcher showing one of the adjustable end straps;

Fig. 5, a fragmentary plan section on an enlarged scale showing the separable joint at the head end of the stretcher frame and the latch for holding the joint normally in closed position;

Fig. 6, a section on an enlarged scale through one of the pivotal joints of the stretcher frame taken as on the line 6—6, Fig. 1;

Fig. 7, a section taken as on the line 7—7, Fig. 6;

Fig. 8, a side elevation of the stretcher showing the same in position for holding a patient in a sitting position and showing the detachable wheeled truck mounted thereon, transforming the stretcher into a wheel chair;

Fig. 9, a fragmentary top plan view of the foot end of the stretcher showing the detachable wheeled truck attached thereto;

Fig. 10, a side elevation of the foot end portion of the stretcher and wheeled truck shown in Fig. 9;

Fig. 11, a front elevation of the detachable wheeled truck; and

Fig. 12, an enlarged perspective view of the end portion of one of the transverse straps showing the finger pocket thereon.

Similar numerals refer to similar parts throughout the drawings.

In the embodiment of the invention illustrated, the stretcher includes a rectangular frame made of tubular metal members, each side of the frame being formed of three sections comprising a head section 15, extending from the head end of the frame to the middle thereof, an intermediate section 16 extending from the middle of the frame to a point substantially halfway between the middle and foot end of the frame and a foot section 17, the contiguous ends of these several sections having novel pivotal joints formed thereon with means for locking or clamping them in any desired adjusted position.

The contiguous ends of the tubular sections 15, 16, and 17 have inserts 18 fixed therein and provided with flattened ears 19 provided with interengaging, squared teeth 20, adapted to be engaged and locked in various adjusted positions to hold the frame sections in the desired relative positions to support a patient in prone, reclining or sitting position.

A pivot bolt 21 extends through the interengaging ears 19 of the joint and a cam lever 22 is provided upon one end of the bolt and cooperates with the head 23 upon the opposite end thereof for locking the joint in adjusted position as shown in Figs. 1, 2, and 8.

For the purpose of separating the ears 19 to permit adjustment of the joint, when the cam lever 22 is released, the opposed faces of the ears 19 are recessed as at 24 to house a coil spring 25 located around the bolt 21 and arranged to separate the ears 19, as shown in Fig. 6, when the cam lever is released.

Although the teeth 20 extend only a portion of the distance around each ear 19 it will be seen that there are sufficient teeth upon each ear so that one or more teeth are engaged with teeth of the cooperating ear in any desired adjusted position of the frame, and since these teeth are squared and of substantial dimensions a rigid joint is provided in any possible adjusted position.

Each foot section 17 is curved as at 26, at the foot end of the frame, and terminating opposed ends thereof are rigidly joined together as at 27 forming a foot rail 28. In like manner each head section 15 is curved as at 26a and the terminating opposed ends are detachably connected together as at 29 providing a separable joint in the head rail 30 thus formed.

It will be seen that with this construction the handles at the corners of the frame in our prior patent are dispensed with and the curved corners 26 and 26a of the frame form adequate hand grips for manually carrying the stretcher.

For the purpose of sliding the stretcher into or out of an ambulance or the like casters may be provided, preferably in the form of the ball casters 31 located on the underside of the frame near the head end thereof and adapted to roll upon the floor of the ambulance.

The latch 29 for normally locking the contiguous ends of the head rail 30 together to close the separable joint may be of any suitable and well known design. The form of latch shown is illustrated in detail in Fig. 5 and consists of hollow cylindric inserts 31 and 32, located within the opposed ends of the tubular frame sections and rigidly secured therein as by the set screws 33.

The latch includes a serrated disc 29 fixed upon a rotatable spindle 34 journaled within the insert 31 and provided with a head 35 to prevent longitudinal movement thereof, the other end portion of the spindle being screw threaded as 36 to engage the internal screw threads 37 in the insert 32. By giving the disc 29 a few turns in the proper direction the sections of the head rail 30 may be quickly unlocked or locked as desired.

A hinge joint 38 is formed at the opposite end of the frame, preferably in one of the tubular foot sections 17 adjacent to the foot rail 28. When the latch 29 is operated to unlock the sections of the head rail 30 the frame may be opened by means of the hinge joint 38 in a manner and for a purpose to be later described.

A pair of aligned rods 39 may be connected to the frame near the head end thereof, the outer ends of said rods being rigidly connected to the side portions of the sections 15 while inner ends of the rods are outturned as at 40 and rigidly connected to the head rail 30 on opposite sides of the center joint thereof. Similar rods 39 are connected to the foot end of the frame.

A pair of similar rectangular panels 41, formed of canvas or other suitable material, are attached to the frame and form a support for the patient. Each of these panels is substantially one-half the width of the frame and of a length substantially the same as the frame and has its outer edge connected to the adjacent side of the frame as by the spaced tubular portions 42 formed at the edge of the panel and located around the adjacent side portion of the frame.

These panels are separable from each other transversely of the frame and are provided with means for connecting their end portions to the opposite ends of the frame. This means is preferably in the form of adjustable straps 43, connected to opposite ends of the panels 41 as by rivets 44 and looped over the rods 39, buckles 45 being provided upon the straps for adjusting the tension upon the same.

These looped straps are slidable upon the rods 39 as the panels 41 are moved laterally of the frame when a patient is placed upon the stretcher. For the purpose of supporting the inner edge portions of the panels 41 transverse straps 46 are riveted or otherwise connected to the undersurface of each panel, each strap extending across the other panel and provided at its end with a grommet or similar apertured device 47 adapted to be detachably engaged with pins 48 upon the side portions of the frame.

When these straps are connected as shown at Fig. 1 they serve to hold the panels in the position shown and prevent them from separating from each other through the longitudinal center of the stretcher.

For the purpose of easily threading the transverse straps 46 beneath the body of the patient and attaching them to the pins 48, a finger pocket 49, formed of leather, fabric or other suitable material, may be attached to the outer end of each strap 46 so that the same may be guided beneath the body of the patient by inserting a finger in the pocket.

With the stretcher in the extended position as shown in Figs. 1 and 2, the patient may be carried in prone position. However, if desired either one or both of the hinged joints 19 on either side of the frame may be operated to adjust the sections 15, 16, and 17 of the frame relative to each other to carry the patient in a reclining or sitting position.

In Fig. 8, the frame is shown adjusted so that a patient may be carried in a sitting position

with the back and legs supported by the sections 15 and 17, respectively.

In order that a single attendant may transport a patient upon the stretcher a detachable wheeled truck shown in Figs. 8 to 11, inclusive, may be attached to the foot end of the stretcher. As shown in Fig. 8 this truck is attached to the stretcher when adjusted for carrying the patient in a sitting position thus converting the stretcher into a wheel chair.

This truck comprises a frame 50 having depending U-shape brackets 51 at opposite ends supporting an axel 52 upon which are journaled the rubber tired wheels 53.

The truck is provided with two spring clamps 54 for engaging over the foot rail 28 and two spring clamps 55 for engaging over the sides of the frame sections 17 thus frictionally attaching the truck to the stretcher frame and providing for easily and readily attaching or detaching the truck as desired.

When it is necessary to use the stretcher to pick up a patient lying prone upon the ground, or other horizontal surface, the straps 46 are disconnected from the pins 48, the latch 29 is released and the opposite sides of the frame are swung open upon the hinge joint 38. The end straps 43 are slidably moved outward upon the rods 39 permitting the panels 41 to be moved laterally of the frame.

The frame is then placed on the ground around the patient and moved back to closed position and locked by means of the latch 29. The straps 46 are then threaded beneath the patient's body and engaged with the studs 48 and the patient will be supported entirely upon the panels 41 permitting the stretcher to be picked up by means of the frame and the patient carried thereon.

We claim:

1. A stretcher comprising a rectangular frame, supporting panels elongated longitudinally of the frame and separable one from the other at the center of the frame, means connected to the ends of the panels and slidably supported upon the ends of the frame, means for connecting the sides of the panels to the sides of the frame, a hinge joint at one end of the frame said hinge joint forming a means for laterally pivoting one side of the frame away from the other side of the frame, a separable joint at the other end of the frame and latch means for normally closing the separable joint.

2. A stretcher comprising a rectangular frame, supporting panels elongated longitudinally of the frame and separable one from the other at the center of the frame, means connected to the ends of the panels and slidably supported upon the ends of the frame, means for connecting the sides of the panels to the sides of the frame, a hinge joint in one side of the frame near one end thereof said hinge joint forming a means for laterally pivoting that side of the frame away from the other side of the frame, a separable joint in the other end of the frame and latch means for normally closing the separable joint.

3. A stretcher comprising a rectangular frame, rods connected to the frame near each end thereof, supporting panels extending longitudinally of the frame and terminating near each end thereof, members connected to said panels near their ends and slidably engaging said rods whereby the panels may be moved laterally in opposite directions, means attaching the outer end of each panel to the adjacent side of the frame, transverse straps connected to the inner edge of each panel, means for connecting the ends of the transverse straps to the opposite side of the frame, and a finger cup upon the end portion of each transverse strap.

4. In a stretcher, a frame comprising a head section extending from the head end to approximately the middle of the frame, an intermediate section and a foot section, means for pivotally connecting the contiguous ends of the sections together, means for adjustably holding the sections at different positions of adjustment and patient supporting panels carried by the frame, and a detachable wheeled truck connected to the foot end of the frame and curved clamping springs upon the truck for frictionally engaging over the foot end of the frame for detachably connecting the truck to the foot end of the frame.

5. In a stretcher, a frame comprising a head section extending from the head end to approximately the middle of the frame, an intermediate section and a foot section, means for pivotally connecting the contiguous ends of the sections together, means for adjustably holding the sections at different positions of adjustment and patient supporting panels carried by the frame, a wheeled truck, and spring clamping means for detachably connecting the truck to the foot end of the frame.

6. In a stretcher, a frame comprising a head section extending from the head end to approximately the middle of the frame, an intermediate section and a foot section, means for pivotally connecting the contiguous ends of the sections together, means for adjustably holding the sections at different positions of adjustment and patient supporting panels carried by the frame, and casters upon the underside of the head section of the frame, a wheeled truck, and spring clamping means for detachably connecting the truck to the foot end of the frame.

7. A stretcher comprising a rectangular frame, supporting panels elongated longitudinally of the frame and connected thereto, a wheeled truck and spring clamping means upon the truck for detachably connecting the truck to one end of the frame.

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