Aug. 2, 1960 J. L. OADES 2,947,007

PORTABLE COLLAPSIBLE STRETCHER

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FIG. 1

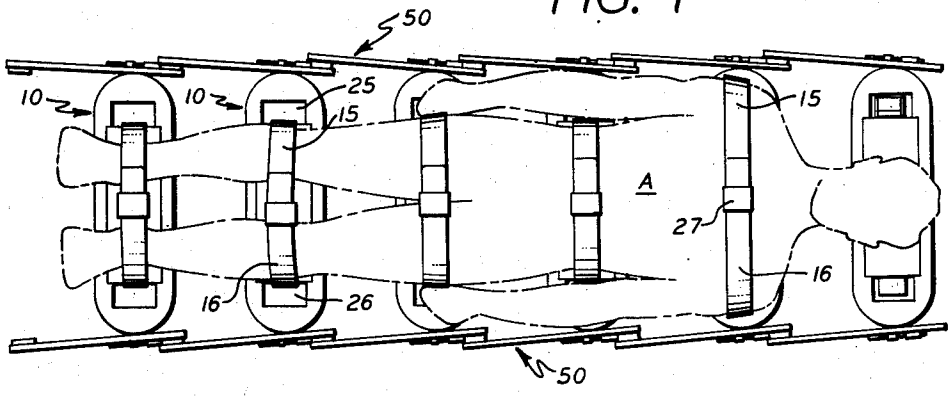


FIG. 2

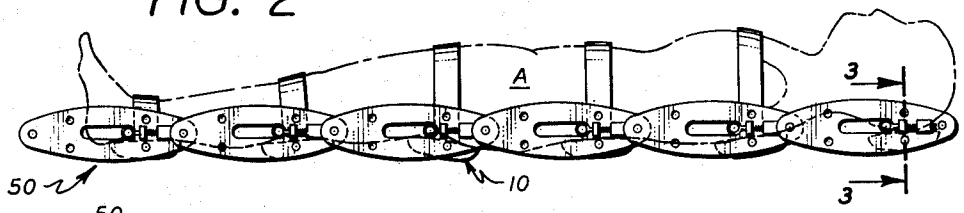


FIG. 3

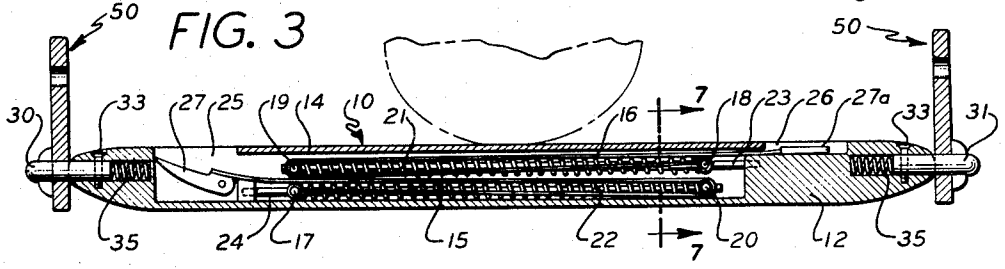


FIG. 4

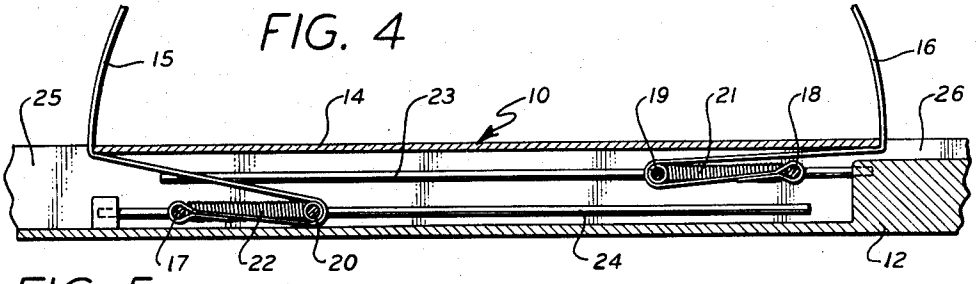
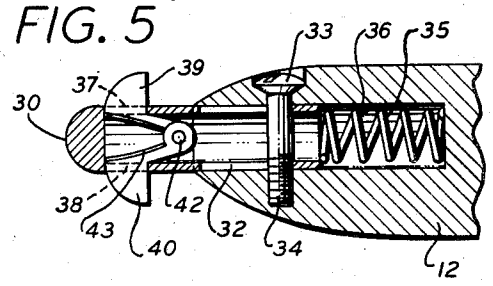


FIG. 5



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FIG. 6

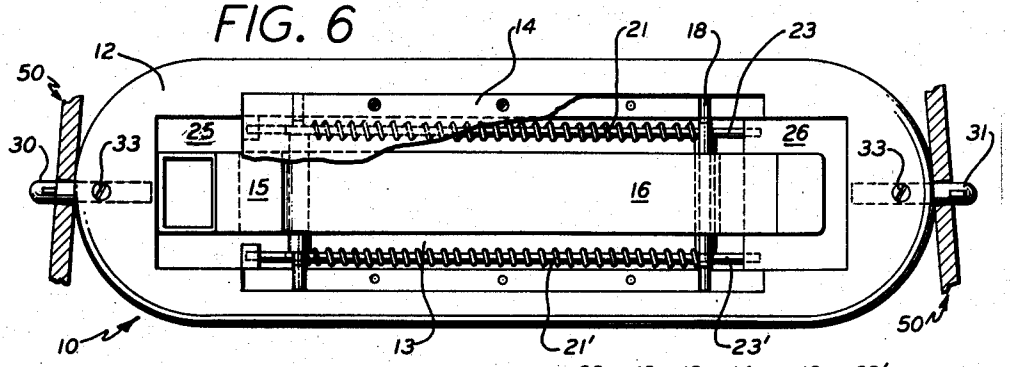


FIG. 7

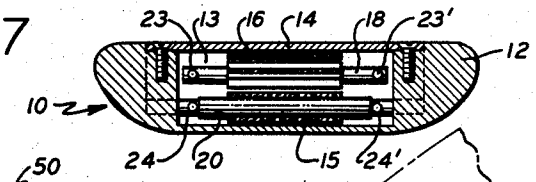


FIG. 8

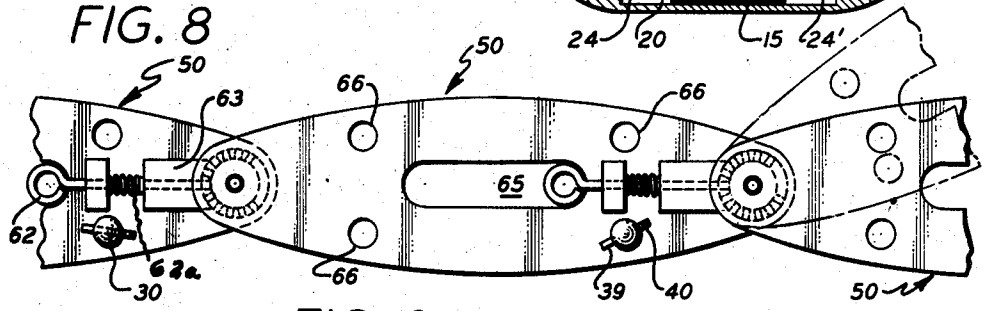


FIG. 9

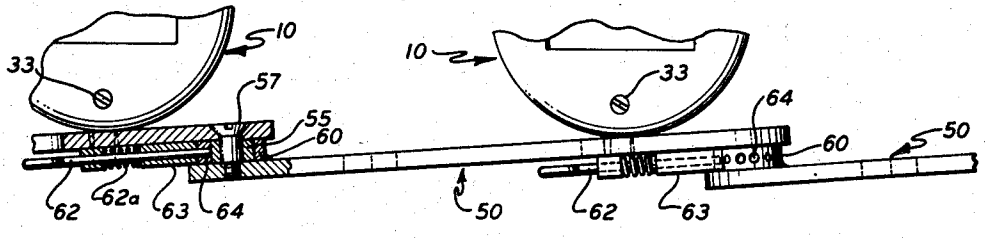
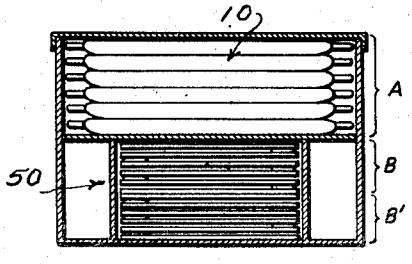


FIG. 10



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FIG. 11

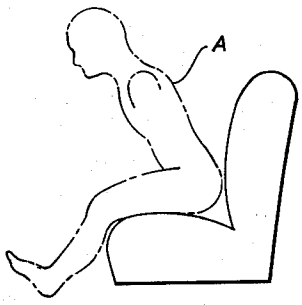


FIG. 12

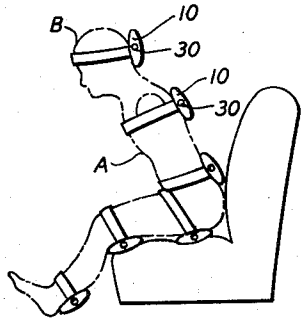


FIG. 13

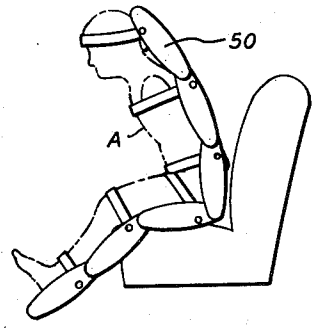


FIG. 14

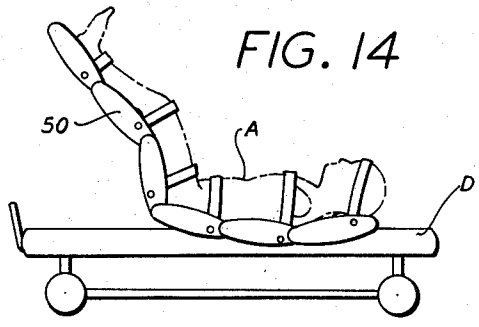


FIG. 15

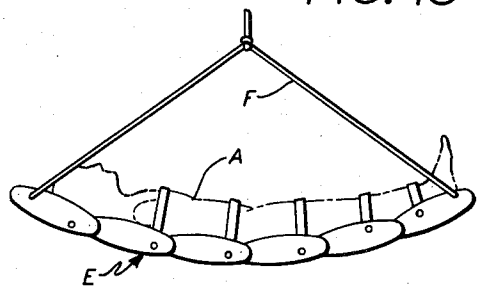


FIG. 16

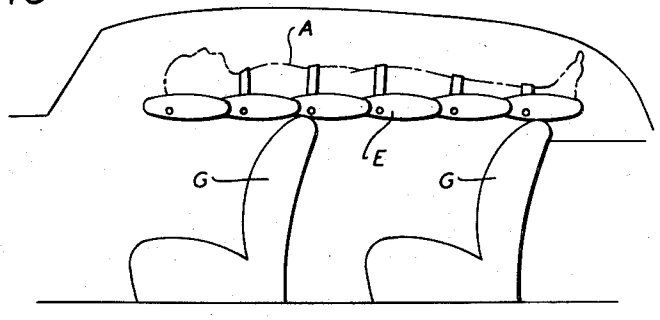
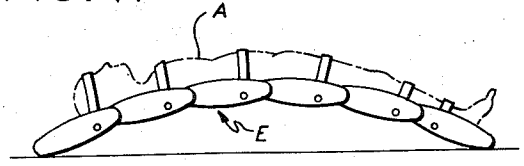


FIG. 17



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United States Patent Office 2,947,007 Patented Aug. 2, 1960

2,947,007

PORTABLE COLLAPSIBLE STRETCHER

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Filed June 9, 1958, Ser. No. 740,655

5 Claims. (Cl. 5—82)

This invention concerns a portable collapsible stretcher.

Heretofore stretchers have been made in many ways, however, all have a common fault which is that the person to be carried must be laid out flat and in a uniform reclining position. To force the body of an injured person into a flat reclining posture often causes additional injuries and endangers his life. A person after an injury should be moved as little as possible and the limbs and portions of the body should be disturbed as little as possible to avoid hemorrhage and further cutting of the interior of the body by movement of sharp fragments of fractured bones.

In view of the foregoing one of the objects of my invention is to provide a stretcher which can be applied to an injured person in the position in which he is found.

Another object is to provide a stretcher having a number of cross supports which may be placed under the injured person's body and to which he may be strapped, combined with a number of side sections which have means of mutual attachment near their ends and means between their ends for attachment to the several cross members.

Another object is to provide a means for attaching a plurality of cross members to an injured person at different positions along his body, and then attaching a plurality of side members to the ends of said cross members and at the same time connecting the ends of said side members and positioning them longitudinally in immobile relation.

Still another object is to provide the transverse members above mentioned with self-contained straps which may be withdrawn and extended and applied to the injured person quickly and easily and without the use of tools or other apparatus.

Still another object is to provide the parts above mentioned with means whereby they can be easily stored in predetermined arranged positions so that they may be withdrawn quickly from a container in the manner in which they are to be applied to the injured person.

Other objects will appear hereinafter.

I attain the foregoing objects by means of the construction and design of the parts hereinafter illustrated and in the combinations of the parts to attain the results desired, all as shown in the accompanying drawings made a part of this application, in which—

Figure 1 is a plan view of my improved stretcher in assembled form and as applied to an injured person:

Figure 2 is a side elevational view thereof;

Figure 3 is a longitudinal sectional view of one of the transverse members of my stretcher; said section being taken substantially on line 3—3 of Figure 2 and drawn on an enlarged scale;

Figure 4 is a longitudinal section of the interior of one of the transverse members of my stretcher after the holding straps have been withdrawn and showing movement of the several parts relative to the positions of said parts shown in Figure 3; all parts being drawn on an enlarged scale;

Figure 5 is a midsectional elevational view of the end portion of one of said transverse stretcher parts;

Figure 6 is a plan view of one of the transverse sectional parts of the stretcher with certain portions broken out to show interior construction;

Figure 7 is a cross sectional view of one of the transverse members of the stretcher; said section being taken substantially on line 7—7 of Figure 3.

Figure 8 is a side elevational view of one of the longitudinal members of the stretcher together with fragments of adjacent longitudinal members showing the means of mutually attaching said longitudinal members and securing the joints in relative desired position;

Figure 9 is a plan view of said longitudinal side elements as they are shown in Figure 8;

Figure 10 is a sectional view of a container adapted to hold the several parts of the stretcher in positions advantageous to their use when desired;

Figure 11 is a semi-diagrammatic side elevation showing the position in which the driver of an automobile is usually found after a head-on collision accident;

Figure 12 illustrates the first step in attaching the stretcher to such person showing the attachment of several transverse stretcher elements at various positions to the injured person;

Figure 13 shows the attachment of the longitudinal elements to said transverse elements;

Figure 14 shows the injured person supported on a standard truck wherein he is supported by the stretcher in the same position as when found after the accident;

Figure 15 is a side view of the adaptation of the stretcher to the hoisting movement of an injured person from a well or its equivalent after an accident;

Figure 16 is a side view of the stretcher adapted to transport an injured person supported on the back of the seats of a standard sedan; and

Figure 17 is a diagrammatic side elevation of the the stretcher when applied to an injured person having a back injury.

Similar numerals refer to similar parts in the several views.

The details of the transverse stretcher parts are shown in Figures 3, 4, 5, 6 and 7. These transverse members **10** are composed of a hollow metal case **12** which has an access plate **14** at the top held in place by a number of screws. Within the open part of the body **12** of each of these cross members there is mechanism for holding and retracting web straps **15** and **16**. These straps are each anchored within the openings in members **10** on cross pins **17** and **18**, respectively. The webbing then extends over cross rollers **19** and **20** which are held in extended position as shown in Figures 3 and 6 by springs **21** and **22**, **21'** and **22'**. These springs are held in place by rods **23** and **24**, **23'** and **24'** on which they ride. These rods extend parallel to the length of each transverse member **10**, and are secured in place in cavity **13** by insertion into the body **12** at the end of each cavity.

This structure permits the straps to be pulled out from slots **25** and **26** on the top face of each member **12**, and after the strap encloses a portion of the injured person they are hooked together by the compression clasp **27** on strap **15** which attaches to the free end **27a** of strap **16**.

At the ends of the body **12** there are axially positioned pins **30** and **31**. Each pin is provided with a slot **32** which receives a securing screw **33**, which has a shank to slidably fit in slot **32** and a threaded lower end **34** which is screwed into the body **12** to hold it in place. A spring **35** is placed in each axially extending bore **36** and presses the pin body outward. At the outer end of each of these pins there are slots **37** and **38** through which the hooks **39** and **40** extend. These hooks are hinged

together at 42 and provided with springs 43 operating around the hinge pin 42 to urge each of the hooks outward through their respective slots. There is a space between each end of body 12 and the inner face of each hook 39 and 40 to accommodate the thickness of the longitudinal stretcher members 50 which will be hereinafter explained in detail.

Each of the transverse members is the same and may be stored one upon the other, as shown particularly in Figure 10.

The longitudinal members 50 are made of flat aluminum sheets approximately 3/8" thick and are lens shaped. At each end there are connecting devices so that each longitudinal piece may be connected to the next and the angle that each piece bears to the adjacent piece may be adjusted and held.

To do this I provide a male connecting disk 55 secured to one end of each longitudinal element 50, by a flat head screw 57. The male connecting disk 55 fits into a female connecting ring 60 welded to the adjacent end of the next adjoining longitudinal member. These connecting parts are pivotally joined by shouldered flat head screws 57. Spring held locking pins 62 operate in guide blocks 63 and extend into any one of several radially extending and peripherally spaced locking holes 64 in the female ring member 60.

Each longitudinal member has a hand clearance hole 65 in its central portion and four pin receiving holes 66. These are positioned adjacent the side edges of the body 50 and symmetrically on each side of its center and are made of a size sufficient to receive the pins 30 and 31 on the transverse members.

It will be noted that after any one of the transverse members is inserted in any one of the holes 66 the hooks 39 and 40 snap out from their compressed position within each of the pins and engage the outer face of the transverse member immediately adjacent to the hole 66 in which the pin is inserted. In this way each end pin of the transverse member is locked into any one of the holes, such as 66, in the transverse member.

In assembling the stretcher and confining the body A of an injured person thereon several of the transverse members are applied to the body A, as shown in Figure 12. That is, a transverse member 10 is placed behind the head of the body A and the straps 16 and 17 withdrawn from the interior of the transverse member 10 as shown; these straps are then brought around the head B as indicated in Figure 12 and the ends of the straps secured by latching the end 27 of strap 15 into the clasp 27*a* of strap 16.

A second transverse member 10 is then placed in back of the shoulders of the body A, as shown in Figure 12, and the straps withdrawn and clamped together, as shown, over the shoulders of the body. Similarly, different transverse members are placed on the body A in whatever position it may be found after an accident. When the necessary transverse members are in position then the longitudinal members are attached to the pins 30 on the right hand ends of transverse members 10 and longitudinal members are then attached to the pins 31 on the left ends of all transverse members. The transverse members are located and adjusted so that the pins will fit into any one of the four holes 66 in the transverse members. In doing this care is taken to see that the transverse members are parallel and extend at right angles to the length of the body A.

As the longitudinal members are applied they are set with the elements 10 at such angles relative to each other to accommodate the positioning of the pins at the ends of the transverse members. When the correct angle is ascertained they are locked in place by the pins 62. The pins hold their position by reason of the springs 62*a*. When all the transverse members have been joined by affixing and adjusting the longitudinal members the body is in the conditon shown in Figure 13 and is ready to be moved as indicated in Figure 14. It will be noted that the legs of the body bear the same relation to the torso as when the body was first discovered after the accident in Figure 11. Therefore, injury both internal and external is minimized during the process of attaching the stretcher parts and in moving the body to a truck such as D.

A body A secured in and on the composite stretcher E may also be lifted out of a mine shaft or the like by the attachment of a cord or rope yoke F as shown in Figure 15. Optionally the body may be held straight with the longitudinal members 50 longitudinally aligned with each other, as shown in Figure 16. In this case the body is maintained straight and may be supported on the top edges of the backs of seats G of any automotive vehicle.

In Figure 17 the elements 10 are set at the joints so that E has an arched aspect. The body A is thus held in a position considered beneficial for certain spinal injuries.

The Figures 11 through 17 are to be considered semi-diagrammatic and are added herewith to illustrate some of the varied uses to which the composite stretcher E may be put.

In Figure 10 a case is shown in which the several parts of the stretcher may be conveniently placed. Thus, in the upper part A—A the stretcher members are placed because they are the first ones needed when an injured person is to be accommodated. In a compartment B—B the other, such as the side elements 50, are placed because they are needed after the transverse members are in place. Two other compartments B'—B' are added to provide space for various accessories needed.

I claim:

1. A stretcher for moving the bodies of injured persons, conforming to the position of the injured person when found, consisting of a plurality of transverse members having straps for attaching to parts of the body of the injured person along the length thereof, and jointed longitudinally extending lateral members pivotally attached to the ends of the transverse members, and latching means operating on the joints of said lateral members whereby said lateral members will conform to the longitudinal bends of the body of the injured person.

2. A stretcher-like device adapted to conform to the shape of the body of an injured person which is to be ing pins attached at each end to said lateral members, having straps at each end attached to portions of the body of the injured person, lateral members and attaching pins attached at each end to said lateral members, said lateral members being composed of a plurality of flat elements interconnected by pivot joints at their ends, said pivotal joints having spring held latches to maintain said joints in predetermined fixed positions whereby the angular relations between said elements may be varied and maintained to conform to the shape and position of the body to be moved.

3. A stretcher for moving injured persons adapted to conform to the shape of the body to be moved, composed of a plurality of transverse members, and two parallel composite lateral members; said transverse members having interior cavities retaining joinable attaching straps for attachment to portions of the body of an injured person, extensible from each end of each of said members and resiliently retractable into said cavities, and attaching pins at each end having latches at their ends, being pivoted to said lateral members; said lateral members each being composed of a plurality of flat elements connected by pivot joints at their ends said flat elements having a plurality of openings in their central portions to receive the attaching pins of said transverse members, spring held latches on said flat elements to engage the pivotal joints of said elements to hold said joints at desired positions to vary the angles between said flat elements and hold said elements at desired relative angular positions.

4. A device for moving and handling the bodies of

injured persons composed of transverse members having extensible straps at each end for attachment to various parts of the injured person's body along the length thereof, and holding pivot pins at the ends of said transverse members, and lateral members composed of longitudinal elements having their ends pivotally interjoined to bend in a plane extending at right angles to the axes of said transverse members, and latching means for holding the pivotal joints in predetermined rotative position, and holes intermediate of the lateral members to receive the holding pins on the ends of said transverse members.

5. In a stretcher adapted to hold, inflexible, the bodies of injured persons and conform to the shape of the body longitudinally, a transverse member attachment to the body of the injured person consisting of a substantially rectangular flat body having a pivot pin at each end, each having a resilient holding latch at their outer end, said rectangular body having a rectangular cavity in its center portion closed by a plate providing slots at each end of the cavity, straps contained within said cavity

each secured to cross pins within the cavity and extending over cross rollers slidably mounted on longitudinally extending slide rods, springs operating on said longitudinally extending slide rods to hold said cross rollers in position to retract said straps; said straps extending over said cross rollers to form flat loops and thence out through the slots at each end of said plate to provide means for attaching the transverse member to the body of an injured person.

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