(19) Europäisches Patentamt
European Patent Office
Office européen des brevets

(11) Publication number: **0 046 394**
A1

(12) EUROPEAN PATENT APPLICATION

(21) Application number: **81303731.4**

(51) Int. Cl.³: **A 61 G 1/00**

(22) Date of filing: **17.08.81**

(30) Priority: **18.08.80 AU 5071/80**

(43) Date of publication of application: **24.02.82 Bulletin 82/8**

(84) Designated Contracting States: **AT BE CH DE FR GB IT LI LU NL SE**

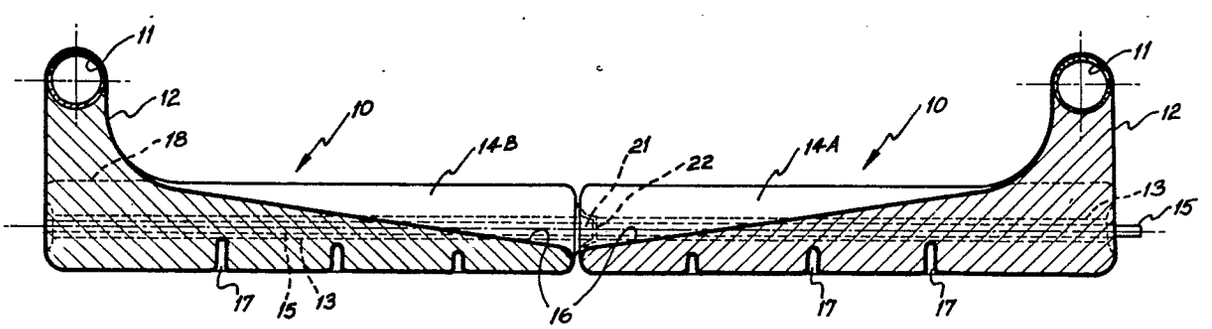
(71) Applicant: **Yelverton Holdings Pty. Limited, Golden Eagle Flats 6 Fawcett Street, Ballina New South Wales 2478 (AU)**

(72) Inventor: **Williams, Patrick Yelverton, Golden Eagle Flats 6 Fawcett Street, Ballina New South Wales 2478 (AU)**

(74) Representative: **Carter, Caroline Ann ABEL & IMRAY et al, Northumberland House 303-306 High Holborn, London WC1V 7LH (GB)**

(54) A stretcher.

(57) A stretcher is formed from a pair of elongated, substantially rigid, bored-like support members (10) each having handle means (11) and connecting means (15) such as a metal rod passed through aligned bores at each end of the assembled stretcher for interconnecting the support members in a working position, the adjacent edges of the support members being relatively thin such that the support members may be slid under a patient lying on the ground for respective opposite sides of the patient with only minor movement of the patient. Preferably each support member comprises a foam filled ABS plastic body with increased thickness end walls and means for aligning bores in the end walls of the stretchers for receiving an interconnection element such as a spring steel rod (15).



EP 0 046 394 A1

A STRETCHER

The present invention relates to a stretcher.

Conventional stretchers comprise a rectangular framework with handles at the end and canvas or similar flexible material spanning between the sides of the stretcher for supporting a patient. Another known form of stretcher comprises a rectangular framework supporting a sheet of aluminium or the like.

Particularly in the case of seriously injured patients where the extent of injuries may be not fully known there is both a difficulty and danger in loading the patient onto the known types of stretchers referred to hereinbefore. The patient is likely to be in a state of shock and may well have serious injuries and there is a danger that the loading of the patient onto the stretcher may exacerbate the injuries particularly in the case of spinal injury. Furthermore, delay may prejudice the patient's life and there is a need for a convenient, easily used and effective stretcher system to permit easy and rapid loading of a patient onto a stretcher.

Attempts have been made to meet these objectives. One such attempt has produced a stretcher comprising a rectangular framework which is laid as an open framework around the patient who is lying on the ground and has

been moved into a straight position. A multiplicity of flexible plastic slats are then pushed under the patient at respective spaced locations and connected to the side frames of the framework. This system is time consuming to operate and delay may prejudice the life of the patient. Furthermore, in some circumstances major practical difficulties exist in pushing the slats under the patient; for example on rough surfaces the slats may dig in and bind on the surface, and assembly of the stretcher can be difficult.

The present invention at least in a preferred embodiment provides a new and useful alternative to previous proposals and may provide a stretcher which can be readily transported, easily loaded with a patient and used to convey a patient in safety.

According to the present invention there is provided a stretcher comprising first and second elongated, substantially rigid, board-like support members which are arranged to be slid at least partially under a patient lying on the ground from respective opposite sides of the patient so as to bring adjacent edges of the support members into a working position, connecting means for interconnecting the support members when they are in said working position, whereby the patient can be supported by the support members when the stretcher is lifted, said adjacent edges of the support members being relatively thin such that the support members may be readily inserted under a patient with only minor movement of the patient, and handle means on each of the support members, whereby the stretcher may be picked up and moved.

In order to pick up a patient, the patient must be lying reasonably straight on the ground and only a minor disturbance of the patient is necessary in order to load him onto the stretcher. First, one of the support members is moved under the patient as the patient is

rolled slightly through a few degrees and then the opposite support means is inserted with the patient being rolled back a few degrees in the opposite direction.

Preferably, the connecting means comprises transverse bores extending through the respective end portions of said support members, the bores extending approximately in the general plane of each of the support members and being adapted to align with one another at each longitudinal end of the stretcher, and an elongated locking element arranged to be inserted through the aligned bores at the respective ends of the stretcher.

In a preferred and important embodiment, the elongated locking element comprises a metal rod, preferably of spring steel, having an end stop at one end to limit the insertion of the rod, the rod being dimensioned so as to extend right across the stretcher.

This configuration can be extremely simple but nevertheless effective particularly in the preferred embodiment of the invention in which each of the support members comprises a substantially rigid plastic moulding and the bores are defined by metal tubes embedded in the moulding, the support members having a small degree of flexibility whereby when the stretcher is picked up in the working position with a patient thereon, the weight of the patient causes some flexing of the support means thereby jamming the locking rods in their respective bores.

Preferably the first and second support means are substantially identical and at said adjacent edges have location means for aligning said bores.

In a preferred embodiment, each of the support members is moulded in a plastic foam-filled material which provides an integral upwardly extending side wall to define the outer edge of the stretcher in which is embedded a metal tube providing the handles, the thickness of the patient supporting portion of the support member

decreasing towards the edge which is to be located in the centre of the stretcher.

Typically this thin edge is of the order of 1cm thick.

Preferably, the support members are vacuum formed in ABS with the skin providing substantial strength and longitudinal corrugations in the base providing stiffners.

In order to provide strength and durability at the ends of the stretcher, it is preferable for the adjacent edges of the support members each to increase in thickness at the respective longitudinal ends thereby providing a strong structure.

For illustrative purposes only a preferred embodiment of the invention will now be described with reference to the accompanying drawings, of which:-

Figure 1 is a transverse cross-sectional view through a stretcher when in the assembled working position;

Figure 2 is a plan view of one of the stretcher sections shown in Figure 1;

Figure 3 is an elevation taken in the direction of arrow A in Figure 2 and showing the outer edge of the stretcher;

Figure 4 is an elevation taken in the direction of arrow B in Figure 2 and showing the inner side of the stretcher sections;

Figure 5 is a cross sectional end elevation taken along the lines V-V of Figure 2; and

Figure 6 is a cross sectional elevation taken along the lines VI-VI of Figure 2.

Referring first to Figure 1, the transverse cross sectional end elevation shows a stretcher formed from two identical stretcher sections 10 comprising a plastic foam-filled moulded vacuum formed structure of ABS plastic or similar material and having embedded therein

an metal pipe 11 extending along the top of the longitudinal side wall 12 and a smaller diameter transverse metal tube 13 embedded in each end wall 14 and accommodating a spring steel locking rod 15. It will be noted that in the patient support region, each stretcher section is generally wedge-shaped and tapers towards a thin inner edge 16 which is about 12 mm thick in a preferred embodiment and is about 45 mm thick at the outer edge at the junction with the side wall 12. In addition longitudinal strengthening corrugations 17 in the skin formed in the base of each stretcher section 10.

As is better shown in Figures 2 to 4, each stretcher section 10 has handles formed by the metal tube 11 which is embedded in the side wall 12 with apertures 18 being provided for convenient hand holes. In addition these locations may be used for passing securing straps across stretcher so as to retain a patient firmly in position. This can be important for some uses including patients with spinal injuries and also in rescue work for example using helicopters.

Figure 4 best shows the progressive thickening (as indicated at 19) of the inner portion of each stretcher section 10 toward each end of the stretcher.

On the interior of the side wall 12 an L-shaped recess 20 is provided for accommodating in push fit relationship a metal locking rod for locking the stretcher at one end. The second stretcher section carries the second rod.

As will be apparent from Figures 5 and 6 when read in conjunction with Figure 2, the end walls 14A and 14B differ in that end wall 14B has its metal tube 13 extending to a circular flared nose 21 whereas a flared corresponding cavity 22 is provided on end wall 14A. Thus location and engagement of the stretcher

sections 10 are provided before the rods are inserted.

It will be appreciated that the material chosen for the stretcher sections can be a good insulator and provide a reasonably comfortable support for the patient; the stretcher can be readily cleaned and furthermore the stretcher, since it can float, is suitable for use for marine rescue applications.

Another advantage of the embodiment which is illustrated in the drawings is that the stretcher can be stored and moved in separate sections and this can facilitate greatly the handling of the stretcher.

Prior art stretchers have not been convenient for use on stairs and this has been a great problem for handling of many patients. The preferred embodiment of the present invention however could be used on stairs and for this purpose preferably a footboard is dropped into the foot end of the stretcher to take the patient's weight as the patients tend to slide down towards the footboard and in addition securing straps can be placed across the hand holes. Furthermore the multiplicity of hand holes facilitates the work of attendants when negotiating stairs with a patient on the stretcher.

CLAIMS

1. A stretcher comprising first and second elongated, substantially rigid, board-like support members (10) shaped and dimensioned for being slid at least partially under a patient lying on the ground from respective opposite sides of the patient so as to bring adjacent edges of the support members into a working position, connecting means (15) for interconnecting the support members (10) when they are in said working position, such that the patient can be supported by the support members when the stretcher is lifted, said adjacent edges of the support members being relatively thin such that the support members may be readily inserted under a patient with only minor movement of the patient, and handle means (11) on each of the support members (10) whereby the stretcher may be picked up and moved.

2. A stretcher as claimed in claim 1, wherein the connecting means comprises transverse bores (13) extending through the respective end portions of said support members (10), the bores extending approximately in the general plane of each of the support members and being adapted to align with one another at each longitudional end of the stretcher, and an elongated locking element (15) for insertion through the aligned bores at each of the respective ends of the stretcher.

3. A stretcher as claimed in claim 2, wherein each said locking element (15) comprises a metal rod having an end stop at one end for limiting insertion of the rod through said bores (13), and the rod being dimensioned so as to extend right across the stretcher.

4. A stretcher as claimed in claim 2 or claim 3, wherein each metal rod (15) is of spring steel.

5. A stretcher as claimed in claim 2, claim 3 or claim 4, wherein metal tubes are secured in said respective end portions of the support members, the interior of

said metal tubes defining said transverse bores (13).

6. A stretcher as claimed in any one of claims 1 - 5, wherein each of said support members (10) comprises a substantially rigid plastic moulding.

7. A stretcher as claimed in claim 6 wherein said plastic moulding is a vacuum formed, foam-filled ABS plastic body.

8. A stretcher as claimed in any one of claims 1 - 7, wherein said first and second support member (10) are substantially identical and, at said adjacent edges, location means (21, 22) are provided for aligning the bores (13) at the respective ends of the stretcher.

9. A stretcher as claimed in any one of the claims 1 - 8, wherein each of the support members (10) includes an integral, upwardly extending side wall (12) defining each outer edge of the stretcher, a metal tube (11) being embedded in the side wall to provide the handles.

10. A stretcher as claimed in any one of the claims 1 - 9, wherein the thickness of the patient supporting portion of each support member (10) decreases towards the edge which is to be located in the centre of the stretcher.

11. A stretcher as claimed in any one of the claims 1 - 10, wherein said adjacent edges of the support members (10) are approximately 1 cm thick.

12. A stretcher as claimed in claim 10 or claim 11, wherein each of said support members (10) has an increased-thickness end portion (14A, 14B) at each end.

0046394

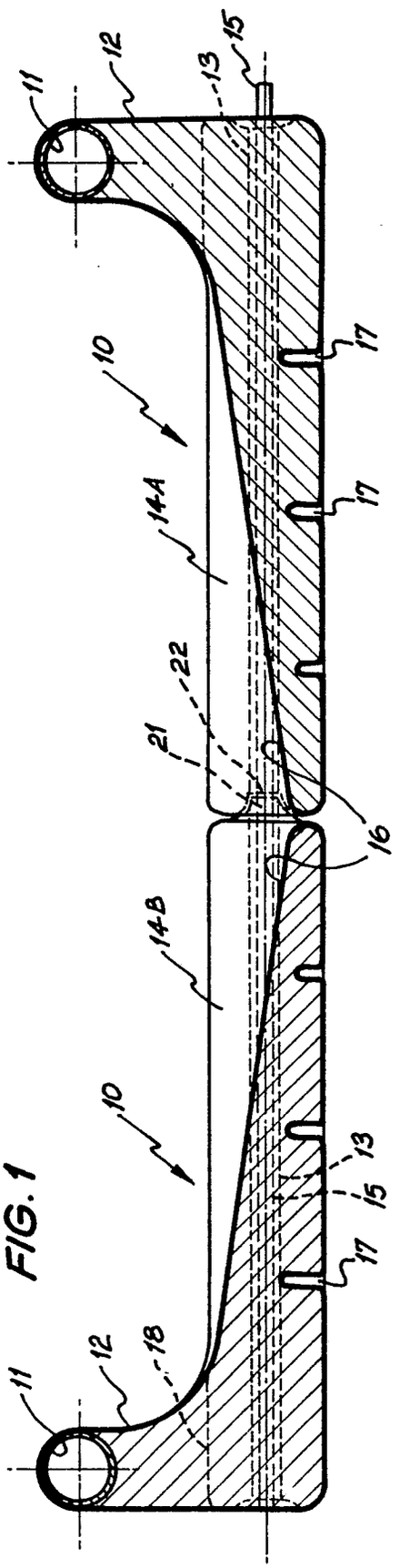


FIG. 1

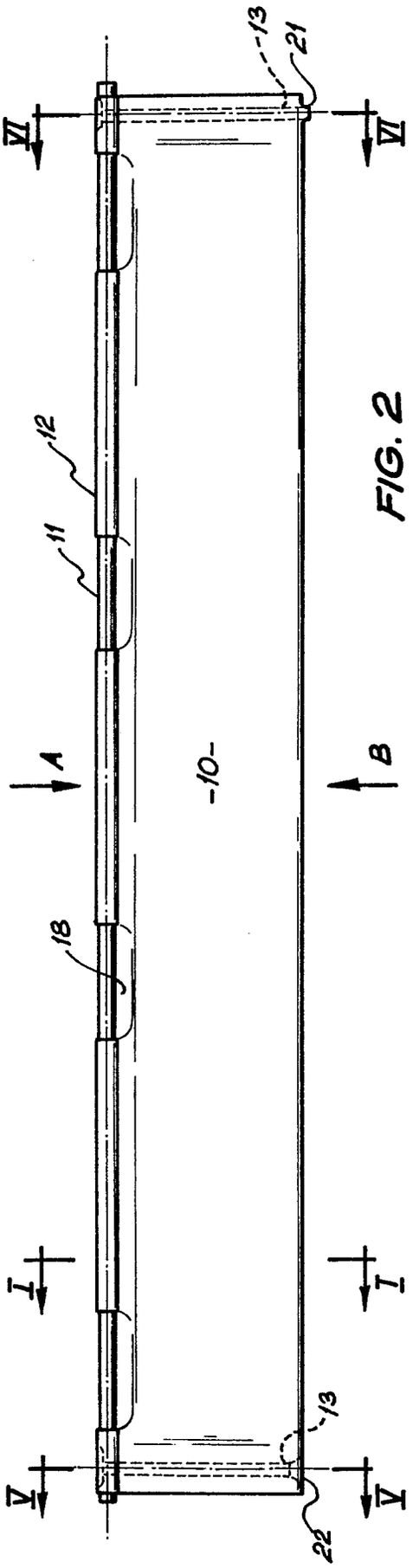


FIG. 2

0046394

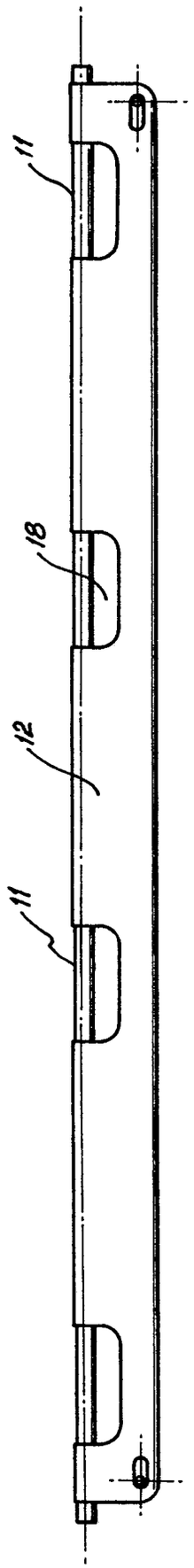


FIG. 3

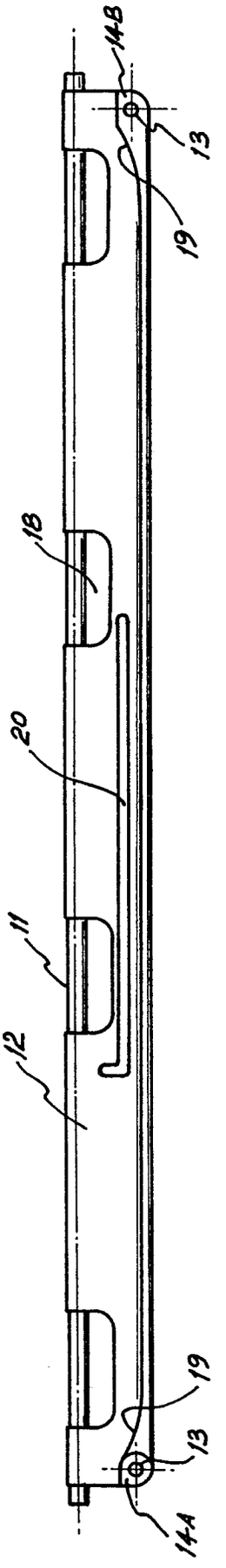


FIG. 4

0046394

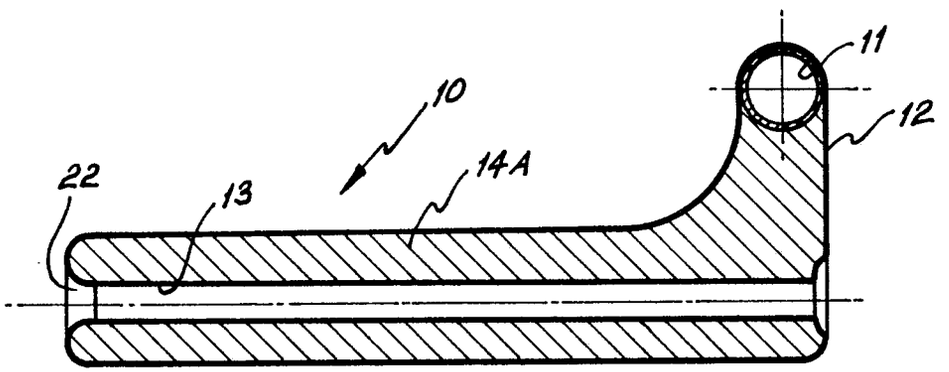


FIG. 5

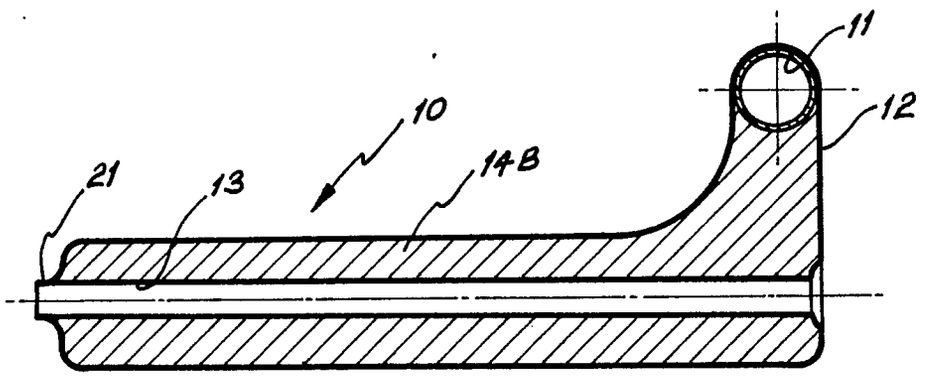


FIG. 6

European Patent Office

EUROPEAN SEARCH REPORT

0046394
Application number
EP 81 30 3731

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim
X	GB - A - 332 865 (MELZER) * Page 1, lines 21-39; page 2, lines 51-73 and 97-117; page 3, lines 15-35; figures 1-4 *	1-3,5, 9
X	FR - A - 2 326 911 (MOUYSSET) * Page 1, lines 8-11 and 22-38; figure 1 *	1,2,8
X	GB - A - 1 164 312 (KAUFMANN) * Page 2, lines 88-107; page 3, lines 14-45 and 100-112; figures 2,5 *	1,3,6, 10
	GB - A - 1 473 862 (COAL INDUSTRY) * Page 2, lines 38-43 *	6,7

CLASSIFICATION OF THE APPLICATION (Int. Cl.³)

A 61 G 1/00

TECHNICAL FIELDS SEARCHED (Int. Cl.³)

A 61 G

CATEGORY OF CITED DOCUMENTS

X: particularly relevant
A: technological background
O: non-written disclosure
P: intermediate document
T: theory or principle underlying the invention
E: conflicting application
D: document cited in the application
L: citation for other reasons

&: member of the same patent family, corresponding document

+ The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
The Hague	20-10-1981	MAROSCIA

EPO Form 1503.1 06.78