Oct. 21, 1952 O. P. SMITH 2,614,266

STRETCHER

Filed April 19, 1948

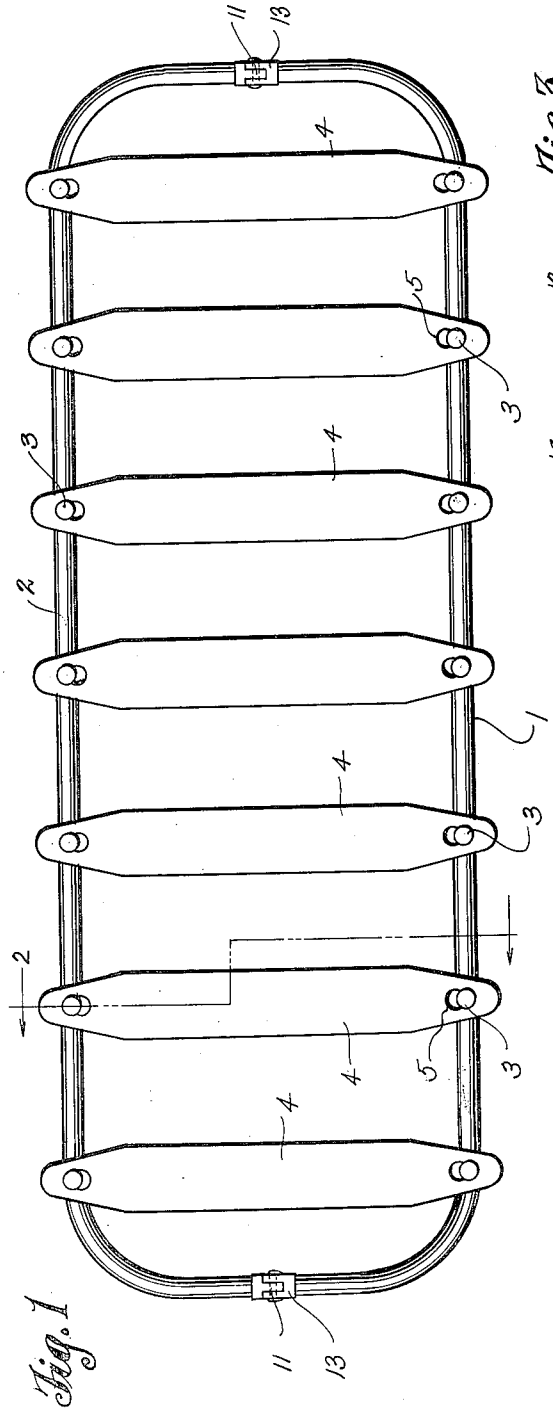


Fig. 1

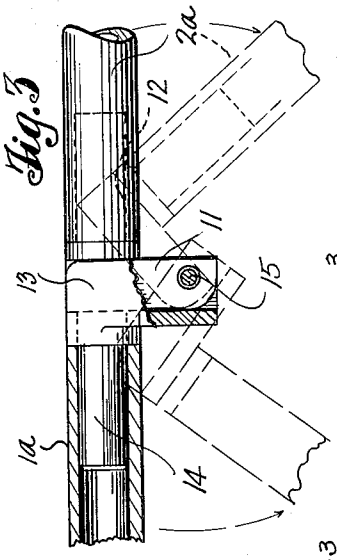


Fig. 3

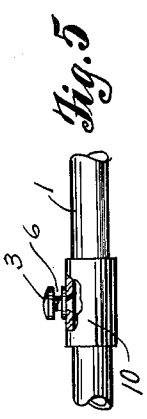


Fig. 5

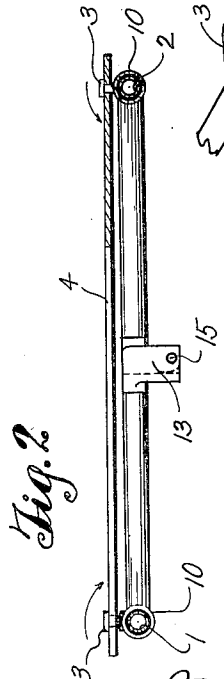


Fig. 2

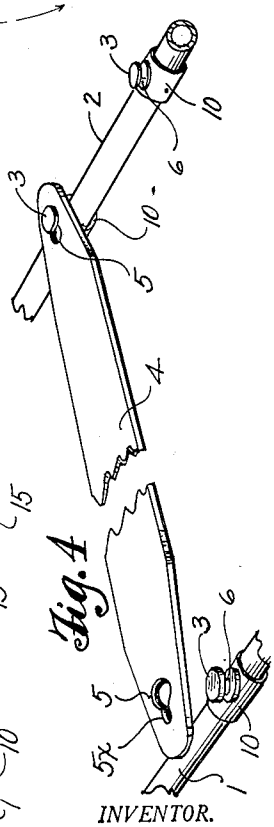


Fig. 4

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Patented Oct. 21, 1952 2,614,266

UNITED STATES PATENT OFFICE

2,614,266

STRETCHER

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Application April 19, 1948, Serial No. 21,840

5 Claims. (Cl. 5—82)

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This invention relates to stretchers for the handling of sick, invalid or injured persons, and it has for its principal object to provide a stretcher that is especially designed for the picking up and carrying of persons who have been severely injured, for example, a person who has been struck down by an automobile and who may have internal injuries or one or many bone fractures, making the manner in which they are picked up or handled of extreme importance to their chance of recovery or of further injury.

It is also an object of this invention to provide a stretcher which eliminates the usual procedure of placing the stretcher adjacent the injured person, and then picking him up, usually by shoulders and feet, and placing him on the stretcher, and provides that the injured person, lying prone in the street or on the ground, may be picked up without having first to be lifted or in any way moved from his position of proneness for placement on the stretcher.

More specifically stated, it is an object of this invention to provide a stretcher comprising a rigid, rectangular frame structure that, with stretcher bed removed therefrom, may be located about a person lying prone on the ground, and a plurality of flat strips of material of such rigidity that they may be projected beneath the prone person, and opposite ends then secured to opposite side members of the frame, to serve together in the formation of a stretcher bed or bottom on which the injured person may then be lifted and carried.

It is also an object of my invention to provide a stretcher of the above stated character that may be collapsed when not in use, for convenience in storage or for easier carrying. Furthermore, to provide means on the opposite longitudinal members of the stretcher frame for the quick and secure attachment of the detachable cross members thereto.

Still further objects of the invention reside in the details of construction and combination of parts embodied in the stretcher, and in the use of the device, as will hereinafter be fully described.

In accomplishing the above stated and other objects of the present invention, I have provided the improved details of construction, the preferred forms of which are illustrated in the accompanying drawings, wherein:

Fig. 1 is a top, or plan view of a stretcher, embodying the novel features of the present invention therein.

Fig. 2 is a cross-section taken on line 2—2 in Fig. 1.

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Fig. 3 is an enlarged detail of a hinge structure whereby opposite longitudinal members of the frame are joined.

Fig. 4 is a perspective view of one of the cross strips used to form the stretcher bed, and showing the provision of means for its attachment at opposite ends to the side members of the stretcher frame.

Fig. 5 is a sectional detail showing the manner of mounting the strip attaching buttons on the frame structure.

Referring more in detail to the drawings:

In its present preferred form of construction the stretcher embodied by my invention comprises a frame structure comprised of a pair of similar members, each having a central portion 1, 2 and inturned ends. Each member comprises a straight length of tubing or round rod, with opposite end portions thereof curved laterally to the same extent; these inturned end portions of the opposite side members being hingedly joined together as noted in Fig. 1, for a purpose presently explained.

In their normal functional use, the hingedly joined frame portions 1 and 2 provide a rigid, substantially rectangular frame structure, which for its most common, or for its most practical use, should be approximately sixty-four inches long and twenty-six inches wide. Made in such dimensions, the frame may be readily placed on a surface about a prone body, with the body in most any position it is apt to assume.

Secured on the top sides of the longitudinal opposite side portions 1 and 2, at equally spaced intervals therealong, and at points directly opposite each other on the frame, are studs or buttons 3, and extending across the frame and detachably secured at their opposite ends to oppositely located buttons, are strips 4 which together provide a stretcher bed or bottom on which the injured person may be lifted and carried.

Each cross strip 4 comprises a flat, flexible strip of Bakelite, or any equivalent material that has some flexibility, yet enough stiffness that it can be pushed endwise beneath the prone person and ground, or other surface on which the person to be picked up is lying. Preferably the strips are about five to six inches wide and about one-sixteenth to one-eighth inch thick, and preferably tapered along opposite end portions as shown. Near their ends, the strips are formed with openings, as at 5, to receive the studs or buttons 3 therethrough to effect a holding connection between strips and frame members.

As a feature of the construction, the studs or

buttons 3, which are about ¾ inch in diameter, are formed with encircling channels as at 6 in Fig. 5, and the openings 5 of the cross strips are of keyhole form, with a circular inner end portion that may be easily applied over the button and an inner slot 5x, as in Fig. 4, that will fit within the channel 6 of the button. Under the tension of a person resting in the strips, the connection between the ends of the strips and buttons will be retained. It is preferred that the buttons or studs 3 be mounted as shown in detail in Fig. 5. Each stud is shown as being fixed in a collar or sleeve 10 that is applied about the frame member 1 or 2. The collars, after being properly spaced, may then be spot welded to the frame members in any suitable manner.

The hinged connections of the inturned end portions of the opposite side members 1 and 2 of the frame are preferably as shown in Fig. 3, wherein inturned end portions of the opposite side bars are designated at 1a and 2a, respectively. The hinge whereby the parts are joined comprises, at one side, a flat, vertically disposed hinge wing 11 with a stem or stud 12 fixed rigidly thereto. This stem is fitted and secured within the tubular end portion of part 2a. Likewise, at the other side of the hinge, is a hinge wing 13 that is vertically channeled and contains the wing 11 therein. The wing 13 also has a stem 14 fixed thereto that is projected into and secured in the inturned end portions of part 1a. A pivot pin 15 hingedly secured to the lower end of wing 11 in the slotted portion of wing 13 in a manner permitting the joined parts to swing from their full line positions of Fig. 3 to and beyond the dotted line position in which they are shown. When in the full line position, the hinge wings 11 and 13 abut flatly together and lock the connected parts 1 and 2 against any farther upward swing relative to the pivot point. However, the opposite side parts of the frame may be swung downwardly until the longitudinal side bars 1 and 2 come together, this being the collapsed condition of the stretcher frame for convenient storage or easier carrying while not in use.

It will be understood that when the cross strips 4 are in place, as in Fig. 1, and the weight of a person is applied thereto and the stretcher is being carried by grasping its side members, there is no tendency for the connected parts to hinge upwardly. This is due to the fact that the pull of the straps is on the buttons and the tendency is then to rotate the side members as indicated by the arrows adjacent thereto in Fig. 2.

Use of the device is as follows: To pick up a prone person, the frame is opened to its rectangular form and placed about the prone body as it lies on the ground or in the street. Then the strips 4 are individually projected endwise beneath the person, without the necessity of lifting or moving his body. The ends of the cross strips are then applied to the studs or buttons 3 on the side members 1 and 2. The stretcher is then lifted by means of the side members by persons at the side or at the ends of the stretcher frame.

The particular advantage of this form of structure is that it eliminates the dangerous procedure of manually lifting the injured person from the ground and placing him on the stretcher. Handling of the person from ground to hospital may be accomplished without requiring that he be touched.

Such stretchers are practical for use by ambulance attendants on battle fields, as well as by city ambulance organizations. They may be made of light strong metal and when collapsed may be easily and readily handled by one person.

Having thus described my invention, what I claim as new therein and desire to secure by Letters Patent is:

1. A stretcher comprising a frame including a pair of similar members each having a central portion and inturned ends, hinges joining corresponding inturned ends and having means limiting the upward swinging movement of the members about the longitudinal axis of the frame to a first position wherein said central portions are at the greatest distance apart and corresponding upper surfaces of central portions thereof define a plane, a set of headed studs secured to each central portion at the said corresponding surfaces, said studs having reduced diameter shanks below their heads, and a plurality of flat, flexible cross strips positioned transversely of said members and having keyhole-shaped openings in the end portions thereof engaged on said studs, said strips having such stiffness as to be readily pushed endwise between a prone person and a supporting surface, said strips being non-removably held on said frame when the members are in said first position for supporting a person, said members being swingable from said first position to a second position wherein said strips are independently removable from said studs.

2. A stretcher comprising a frame including a pair of similar members each having a central portion and inturned ends, hinges joining corresponding inturned ends and having means limiting the upward swinging movement of the members about the longitudinal axis of the frame to a first position wherein said central portions are at the greatest distance apart and corresponding upper surfaces of central portions thereof define a plane, a set of headed studs secured to each central portion at the said corresponding surfaces, said studs having reduced diameter shanks below their heads, and a plurality of flat, flexible cross strips positioned transversely of said members and having keyhole-shaped openings in the end portions thereof engaged on said studs, said strips having such stiffness as to be readily pushed endwise between a prone person and a supporting surface, the smaller diameter portions of said keyhole-shaped openings being outwardly of the larger diameter portions with the distance between centers of the smaller diameter portions of the openings being substantially equal to the distance between centers of the studs when the members are in the said first position, at which position the smaller diameter portions of the openings receive the reduced diameter shanks and exclude the heads of the studs, said strips being held on said frame when the members are in said first position for supporting a person by engagement of said heads with the edges of said openings, said members being adapted to swing from said first position to a second position wherein said strips are independently removable from said studs.

3. A stretcher comprising a frame including a pair of similar members each having a central portion and inturned ends, hinges joining corresponding inturned ends and having means limiting the upward swinging movement of the members about the longitudinal axis of the frame to a first position wherein said central portions are at the greatest distance apart and corresponding upper surfaces of central portions thereof define

a plane, a set of headed studs secured to each member at the said corresponding surfaces, said studs having reduced diameter shanks below their heads, and a plurality of flat, flexible cross strips positioned transversely of said members and having keyhole-shaped openings in the end portions thereof engaged on said studs, said strips having such stiffness as to be readily pushed endwise between a prone person and a supporting surface, the smaller diameter portions of said keyhole-shaped openings being outwardly of the larger diameter portions with the distance between centers of the smaller diameter portions of the openings being substantially equal to the distance between centers of the studs when the members are in the said first position, at which position the smaller diameter portions of the openings receive the reduced diameter shanks and exclude the heads of the studs, said strips being held on said frame when the members are in said first position for supporting a person by engagement of said heads with the edges of said openings, said members being adapted to swing from said first position to a second position wherein said strips are independently removable from said studs, said hinges having extensions projecting downwardly therefrom for engagement with a supporting surface whereby when said frame is disposed on a supporting surface with the extensions supported thereby, said central portions move to said second position.

4. A stretcher comprising a frame including a pair of similar members each having a central portion and inturned ends, a set of anchoring means secured to each central portion at spaced intervals therealong, hinges joining corresponding inturned ends and having means limiting the upward swinging movement of the members about the longitudinal axis of the frame to a first position wherein said anchoring means on the central portions are at the greatest distance apart, and a plurality of flat, flexible cross strips positioned

transversely of said members and having formations in the end portions thereof to releasably engage said anchoring means, said strips having such stiffness as to be readily pushed endwise between a prone person and a supporting surface, each formation including a portion non-releasably engaging one of the anchoring means on said frame when the members are in said first position for supporting a person, said members being swingable from said first position to a second position wherein said anchoring means are at a lesser distance apart than in said first position, each formation including another portion permitting independent removal of the corresponding end portion from its anchoring means.

5. A stretcher as recited in claim 4 wherein said hinges have extensions projecting downwardly therefrom for engagement with a supporting surface whereby when said frame is disposed on a supporting surface with the extensions supported thereby said central portions move to said second position.

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