Dec. 4, 1962 H. H. RUSSELL 3,066,320

SPLINT STRETCHER

Filed July 15, 1960

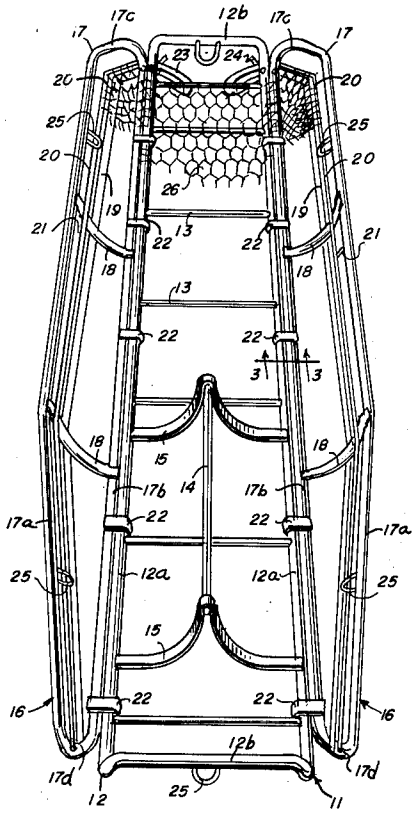


FIG. 1

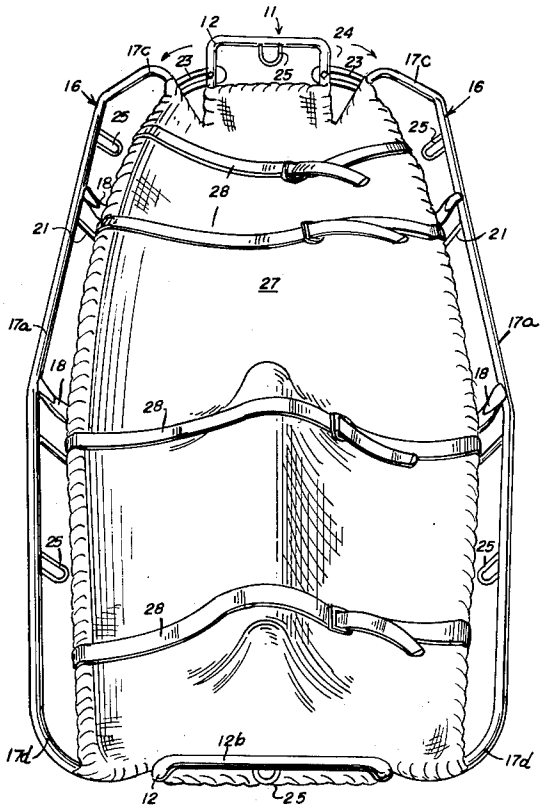


FIG. 2

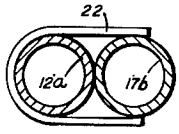


FIG. 3

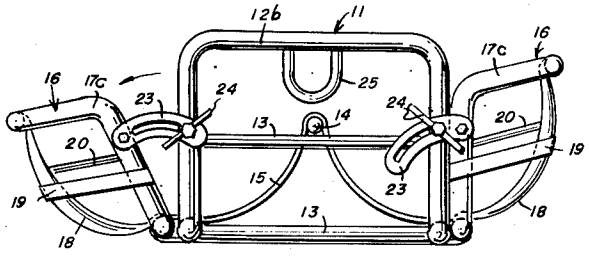


FIG. 4

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SPLINT STRETCHER

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This invention relates to a body splint stretcher; and, more particularly, a body splint stretcher which makes it possible to remove an injured person from a difficultly accessible location while affording the injured person complete protection.

Body splint stretchers which enable an injured person to be comfortably transported from one place to another and which provide means for immobilizing an injured part of the human body are well known in the art. Such devices are commonly elongated basket shaped receptacles comprising a frame made up of longitudinal strips curved at the ends, cross pieces which are curved at the ends, and an oval band which attaches to the ends of each of the longitudinal strips and cross pieces. The frame thus provided is ordinarily covered with a suitable material such as mesh wire and is fitted with straps to hold the patient immobile. In addition, such devices have a suitable longitudinal offset rod extending part of the length of the stretcher which divides the legs of the injured person. Herefore, however, it has not been possible to use such a stretcher in very close confines due to its bulkiness.

Most industrial plants have numerous places in which men work, such as tanks, vessels, vapor piping, air ducts, etc., which are very confining and which have small openings providing the only means of access to these places. In the past, when a person has been injured or otherwise incapacitated in such a place and it is impossible to fit a conventional splint stretcher into the area, it has been necessary to remove the person by carrying him in a manner such that only the arms and legs of the injured person are supported or, at best, by putting him in a blanket sling. Such methods are obviously not satisfactory since it is impossible to maintain proper body alignment and permanent damage to the injured person may result.

It is the principal object of this invention to provide a splint stretcher which may be readily used in a small confined or restricted area. It is a further object of this invention to provide a stretcher which may be made smaller to enable it to be passed through a small opening and which may subsequently be enlarged to make the patient more comfortable. It is yet another object of this invention to provide a splint stretcher which will enable a patient to be transported safely from one place to another while maintaining proper body alignment and immobilizing any possible body fractures. It is still another object of this invention to provide a stretcher which fits the contours of the patient's body and which prevents the patient from being bumped or jostled while being transported.

The foregoing objects are accomplished by this invention which, briefly, consists of a body splint stretcher comprising a pair of longitudinally extending side panels and one longitudinally extending center panel. One of the side panels is positoned on each of the opposite sides of the center panel adjacent to the side edges thereof. The side panels are pivotally connected to the center panel by a suitable means so that the side panels may be pivotally rotated about the side edges of the center panel, thus enabling the width of the stretcher to be made greater or lesser depending upon the size of the opening through which the stretcher must be passed. Adjustment means are provided at one end of each side panel which enables the side panel to be secured in the desired position with

respect to the center panel. A convenient adjustment device comprises an arcuate slotted plate fastened to the end of the side panel, the slot being engaged by a bolt in the end of the center panel. When the bolt in the center panel is loose, the side panel may be moved freely. However, when this bolt is tight, the side panel is held securely in a fixed position. The side panels and center panel, when so assembled, are covered with a suitable material such as wire mesh lining, canvas or sailcloth lining. The stretcher may also be provided with straps to hold the patient immobile; a longitudinal raised rod running part of the length of the center panel to act as a leg divider; handles on the end of the stretcher to facilitate handling; and loops on the panels in which to snap safety lines so the stretcher may be raised or lowered in a vertical position.

The preferred embodiment of this invention is illustrated in the accompanying drawings wherein:

FIG. 1 is a perspective view from above of the assembled middle and side panels of a stretcher constructed according to this invention showing the side panels in closed position to provide minimum stretcher width and a fragmentary showing of the wire mesh lining for the panels.

FIG. 2 is a perspective view above of the completed stretcher, the side panels in open position to provide maximum stretcher width.

FIG. 3 is a sectional view on line 3—3 of FIG. 1 showing the hinge which connects a side panel of the stretcher with the center panel.

FIG. 4 is an end elevational view of the assembled middle and side panels showing the adjustment means for selectively securing the side panels in open and closed position.

The drawings are more fully explained hereinafter with particular reference to the various numerical designations, each individual numeral having the same significance in the different figures.

Referring to the drawings in detail, FIG. 1 shows the three main parts of a stretcher constructed according to this invention which comprise one center panel **11** and two side panels **16**. The center panel **11** consists of a generally rectangular shaped frame **12**, which is curved upwardly at each end thereof. The frame **12** is composed of side rail members **12***a*—**12***a* and end rail members **12***b*—**12***b* and may be constructed of any suitable material, though it is preferred to use light-weight metal tubing, such as thin-walled iron, aluminum or magnesium alloy tubing. However, one or more solid metal rods may be used in lieu of metal tubing for added strength. The frame **12** is provided with transversely extending cross bars **13** which are spaced at intervals along the length of frame **12** and fastened to the opposite sides **12***a*—**12***a* of frame **12**. These cross bars may be of the same material as frame **12**. A leg divider bar **14** extends longitudinally midway between the side panels **12***a*—**12***a* part of the length of the center panel **11** and is secured in an elevated position above the center panel by the metal straps **15**. The metal straps **15** are each formed with two concave portions which extend downwardly from the divider bar **14** to the adjacent side rail **12***a* of the frame **12** to which the straps **15** are secured.

The side panel members **16** each comprise a frame **17** composed of an upper longitudinally extending tubular member **17***a* and a corresponding lower tubular member **17***b* which are joined at their ends by tubular end members **17***c* and **17***d*. The lower tubular member **17***b* of each side panel **16** is straight and is positioned next to the adjacent side rail member **12***a* of the frame **12**. The upper tubular member **17***a* of each side panel **16** is bent so that the ends of the member **17***a* extend inwardly to-

ward the region above the frame **12**. The upper tubular member **17***a* lies in a vertically disposed plane that is spaced outwardly from the vertically disposed plane which the lower tubular member **17***b* occupies. The end members **17***c* of each side panel **16** are sharply bent in a V-shape and the tubular members **17***d* are outwardly curved so as to maintain the offset relation of the tubular members **17***a* and **17***b* described and shown in FIGURES 1 and 4.

Each side panel **16** is provided with a plurality of spaced ribs **18**, which curve outwardly and upwardly away from center panel **11**, are situated at intervals along frame **17**, the ends being fastened to the upper and lower tubular members **17***a* and **17***b* of the frame **17**. These may be made of the same materials as used in side panels and the center frame. A band **19**, which is secured at both end members **17***c* and **17***d* of the frame **17** of each side panel **16**, extends the length of side panel **16** and bounds the ribs **18** on the outside, thereby reinforcing the structure. This band is preferably a metal such as iron or steel. A rod **20**, which extends the length of each side panel **16** and is attached to ribs **18** on their inside surface, serves as a means for securing the lining on the stretcher. Each rod **20** is connected at intervals to the upper tubular member **17***a* of the frame **17** of each side panel **16** by means of supports **21**.

Side panel members **16** are connected to center panel **11** by means of a plurality of hinges **22** positioned at spaced intervals along the length of the structure. These hinges, as can be clearly seen in FIG. 3, are U-shaped units, the ends of which are attached to the lower tubular members **17***b* of each side frame **17** such as by welding or by means of rivets, and the closed portion of the U-shaped hinge surrounds and engages the side rails **12***a* of the center frame **12**. Thus, side panel members **16** each may be pivotally rotated about the side rails **12***a* of the center frame **12**.

Each side panel member **16** may be selectively positioned with relation to the region above the center frame **12** by means of a locking mechanism consisting of an arcuate slotted plate **23** fastened to each end member **17***c* of each of side frames **17** (see particularly FIG. 4). The bolts **24**, located one on each side and secured to the end rail members **12***b* of the center panel **11** extend through the slotted opening of the plate **23** and wing nuts engaging the threads of the bolts thus making it possible to secure the side panels **16** in the desired position relative to center panel member **11**. When wing nuts on the bolts **24—24** are loosened, the side panel members **16—16** may be moved inwardly or outwardly with respect to center panel member **11**. However, when wing nuts on the bolts **24—24** are tightened, the side panel members **16—16** are securely held in a fixed position.

A plurality of rigid or flexible loops **25** are provided on the end rails **12***b* of center frame **11** and along the upper tubular members **17***a* of the side panels **16** so that safety lines may be fastened thereto and employed to retain the injured person in the stretcher.

A sheet of wire mesh fabric **26** is fastened to the rod **20** on each of side panel member **16** and to the end cross bars **13** of center panel **11** so as to cover the lower portions of the stretcher.

As shown in FIG. 2, canvas or sailcloth **27** is then similarly fastened on rods **20** and end cross bars **13** to cover the wire mesh fabric. This affords maximum comfort for the patient lying in the stretcher.

Straps **28** are mounted across the tops of rods **17** and underneath panel **11** and the lower side of panels **14**. Straps **28** are brought around the body of the person lying on the stretcher so as to hold the person in an immobile position.

In using the novel body splint stretcher of this invention to pass an injured person through a small opening, the side panels **16** should be adjusted to minimum width to make it as compact as possible. However, as soon as the stretcher has been passed through the small opening, the width of the stretcher should be increased by adjusting side panels **16** outwardly so that the patient will be rendered more comfortable but the body will still be held immobile.

I claim:

1. A body splint stretcher of adjustable width adapted for use in a small area comprising:

(*a*) a center panel member having longitudinally extending side rails and transversely extending crossbars spaced at intervals along and connecting said side rails;

(*b*) a pair of side panel members each positioned on opposite sides of said center panel member adjacent the side edges thereof and pivotally connected to said center panel member;

(*c*) each of said side panel members comprising a frame composed of longitudinally extending upper and lower rails which are connected at spaced intervals by outwardly curved ribs so that said side panel members may conform to the body contours of a person lying in said stretcher when said side panel members are in inward positions with respect to said center panel member and said stretcher is of minimum width;

(*d*) a pair of extensible engaging means, each of said engaging means interconnecting one of said side panel members to said center panel member;

(*e*) and locking means for securing said extensible engaging means and maintaining said side panel members fixed in any selected position with respect to said center panel member.

2. A body splint stretcher as defined in claim 1 wherein the extensible engaging means comprises an arcuate slotted plate fastened to the end of each of said side panel members; said plate being engaged by a bolt in the end of said center panel member; said bolt being adapted to be tightened whereby said plate may be secured.

3. A body splint stretcher as defined in claim 1 wherein said side rails of said center panel curve upwardly at each end thereof, each of said engaging means interconnecting one of said side panel members to said center panel member at one of the upwardly curved end portions of said center panel.

4. A body splint stretcher as defined in claim 3 wherein said center panel member is provided with a leg divider element which extends longitudinally part of the length of said center panel member midway between said side panel members.

References Cited in the file of this patent

UNITED STATES PATENTS

276,123	Woodman et al.	Apr. 17, 1883
316,043	Jones	Apr. 21, 1885
804,538	Hoey	Nov. 14, 1905
1,557,647	Austin	Oct. 20, 1925
2,101,290	Pierson	Dec. 7, 1937
2,360,453	Sullivan et al.	Oct. 17, 1944
2,400,426	Liptay	May 14, 1946
2,512,931	Glover	June 27, 1950

FOREIGN PATENTS

182,701	Germany	Mar. 21, 1907