Nov. 7, 1961 K. ZAUGG 3,007,180

STRETCHER COMPRISING A RECTANGULAR FRAME AND HANDLE MEANS FOR TRANSPORTATION

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Fig. 1

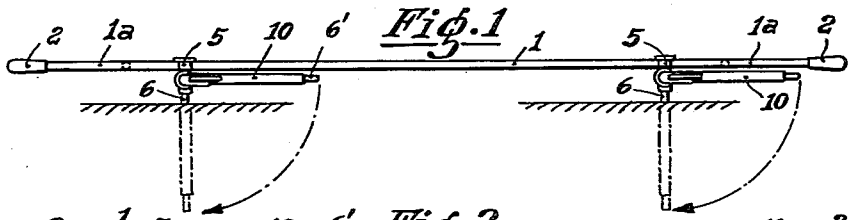


Fig. 2

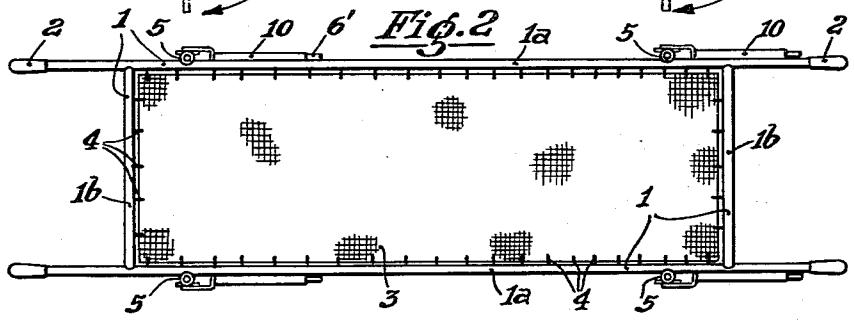


Fig. 3

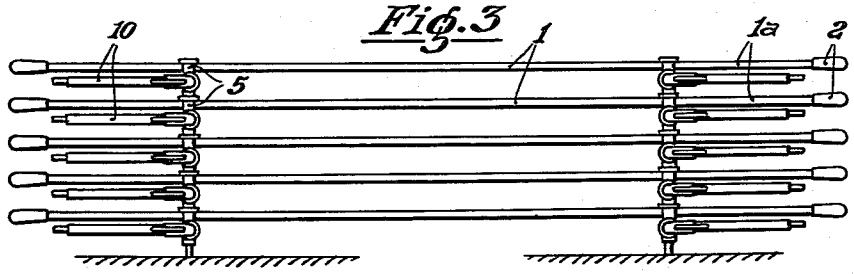
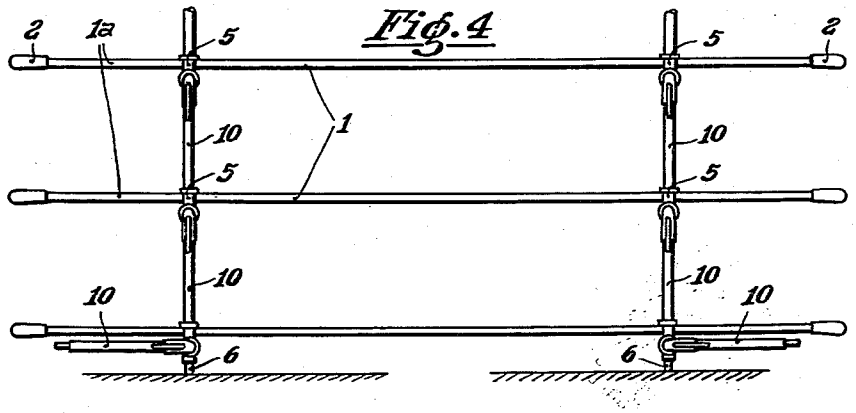


Fig. 4



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STRETCHER COMPRISING A RECTANGULAR FRAME AND HANDLE MEANS FOR TRANSPORTATION

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Fig. 5

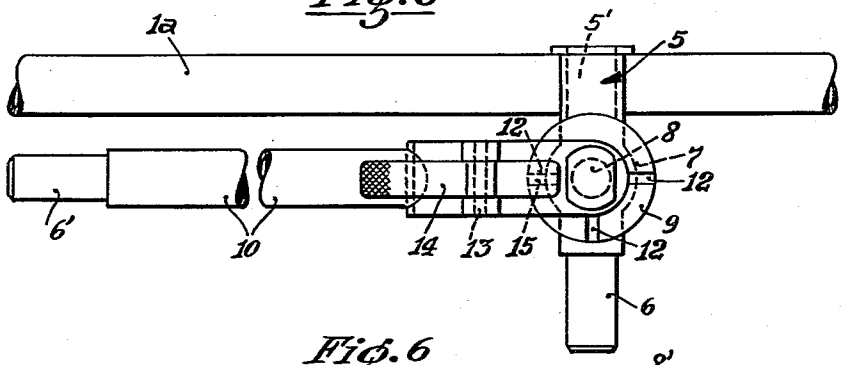
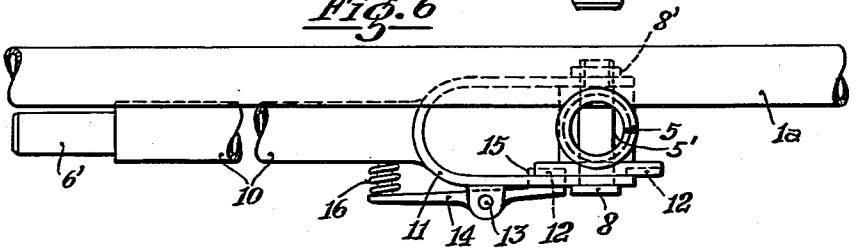


Fig. 6



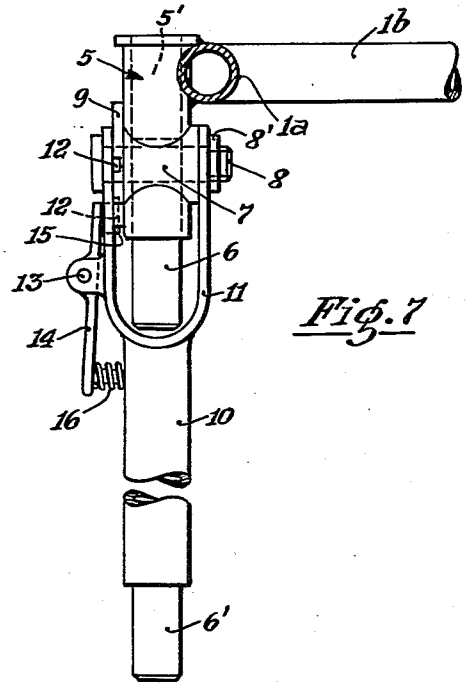


Fig. 7

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STRETCHER COMPRISING A RECTANGULAR FRAME AND HANDLE MEANS FOR TRANSPORTATION

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Fig. 8

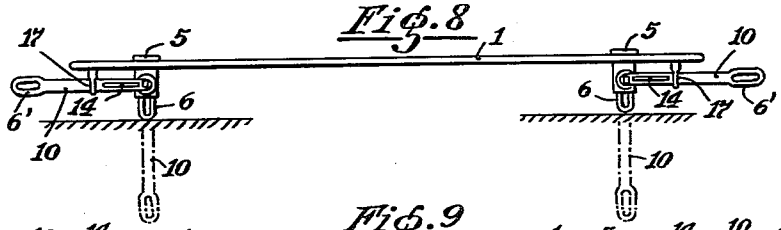


Fig. 9

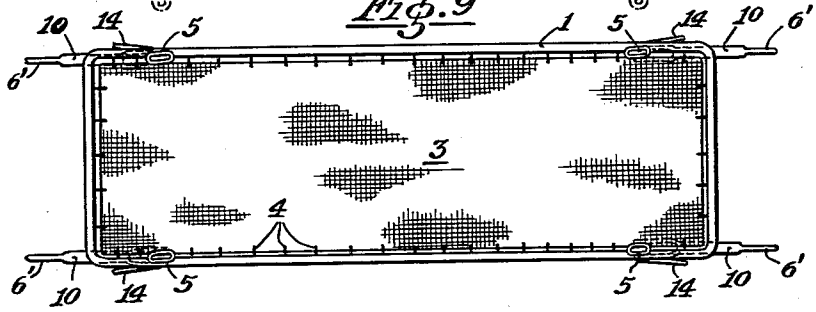


Fig. 10

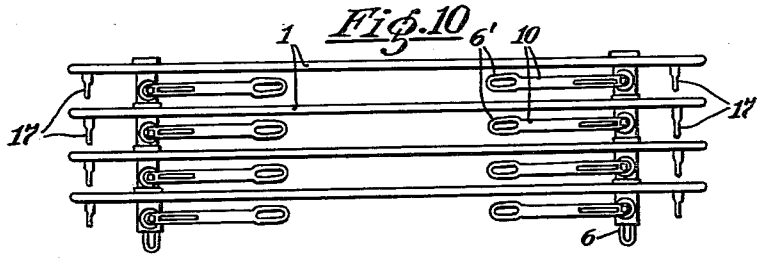
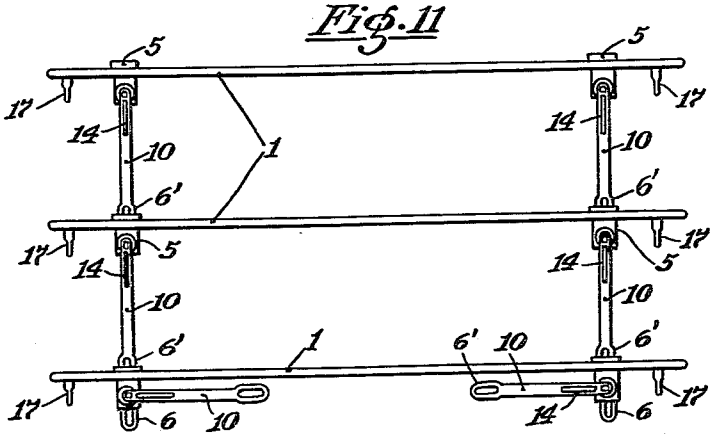


Fig. 11



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Fig. 12

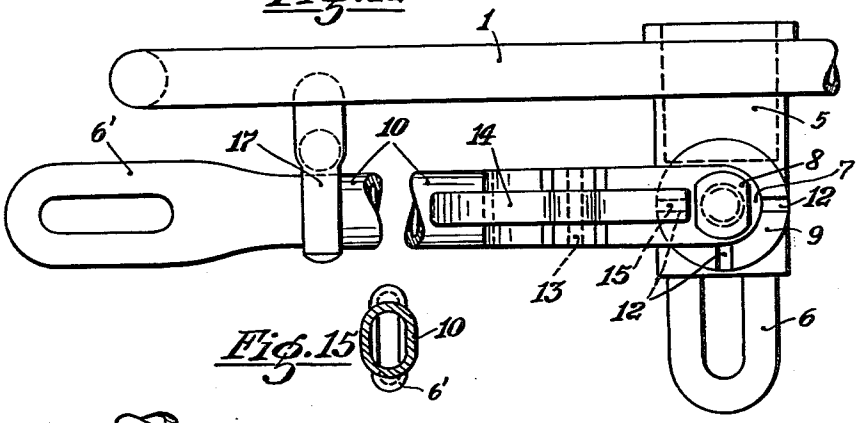
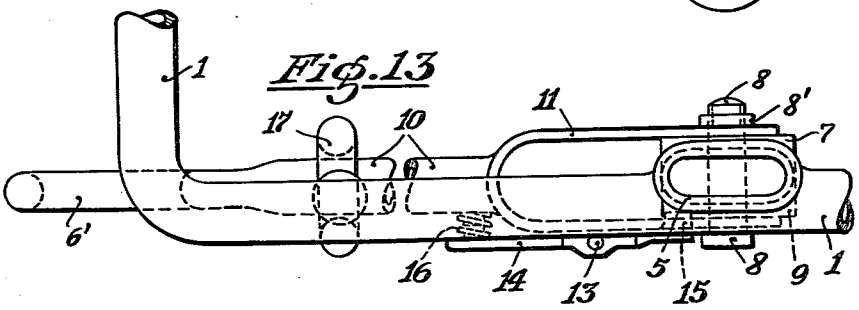


Fig. 15

Fig. 13



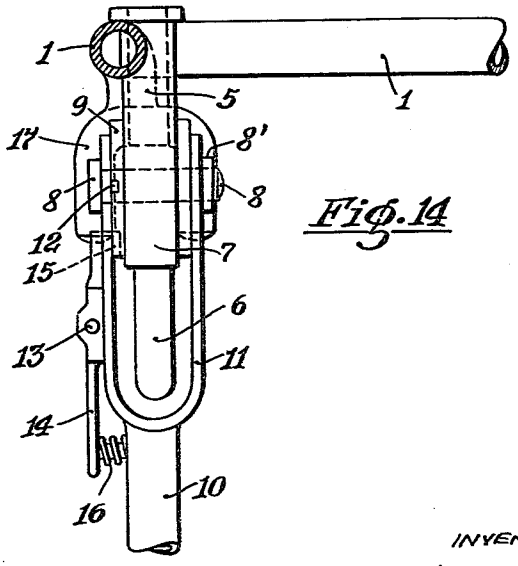


Fig. 14

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3,007,180

STRETCHER COMPRISING A RECTANGULAR FRAME AND HANDLE MEANS FOR TRANSPORTATION

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Claims priority, application Switzerland June 7, 1958
4 Claims. (Cl. 5—82)

This invention relates to stretchers particularly adapted for emergency cases, where it is desirable to use them as emergency beds for wounded persons, as may be desirable for field hospitals.

It is an object of the invention to provide for stretchers with short feet rigidly fastened to the frame and formed on the upper end with a plug hole and on the lower or bottom end shaped as a plug. The plug fits the plug hole, so that several stretchers may be plugged together for transportation or storage.

The main object of the invention is to provide the described feet of a stretcher with extensions capable of being firmly fixed in horizontal and vertical positions. One end of such extension being rotatably fixed on the short feet by mechanism permitting blocking the extensions of the short feet which are rigidly fastened to the frame, in the horizontal or vertical position, whereby with the extensions in the vertical position, several stretchers may be stacked and used as emergency beds in automotive ambulances or emergency housings.

In the accompanying drawings two embodiments of stretchers according to the invention are shown.

FIG. 1 is a side-view of the stretcher with the extensions of the feet turned into the horizontal position.

FIG. 2 is a plan-view of the stretcher shown in FIG. 1.

FIG. 3 shows a stack of five stretchers which are plugged together at small height with the use of their short feet.

FIG. 4 shows three stretchers plugged together at greater height, one standing with its short feet on the floor, while the other two stretchers have their extensions used in the vertical position for the stacking.

FIG. 5 is a fragmentary large scale elevational side-view of the mechanism to rotate the extension of the short feet, showing the extension on a short foot in the horizontal position.

FIG. 6 is a fragmentary large scale plan-view of the mechanism shown in FIG. 5.

FIG. 7 is a fragmentary large scale elevational, partly sectional, front-view of the mechanism of FIG. 5 but wherein the extension is vertically positioned.

The FIGURES 8 to 15 relate to a modification of the first embodiment.

FIG. 8 is a side-view of the stretcher with the extensions of the feet in the outward horizontal position.

FIG. 9 is a plan-view of the stretcher according to FIG. 8.

FIG. 10 shows several stretchers in the condition for transportation with the extensions of the feet in the inward horizontal position.

FIG. 11 shows the stretchers according to FIG. 10 in the position where the extensions of the feet of two stretchers are vertically positioned and plugged upon each other, and also plugged upon the bottom stretcher, whereof the extensions of the feet are in the inward horizontal position.

FIG. 12 is a side-view of a joint mechanism showing an extension in outward horizontal position.

FIG. 13 is a plan-view of the mechanism shown in FIG. 12.

FIG. 14 is a front-view of the mechanism shown in FIG. 12 but wherein the extension is vertically positioned.

FIG. 15 is a sectional view of an extension according to FIG. 12.

The stretcher according to the above figures is made of a steel pipe frame **1**. The longitudinal frame members or tubing members or pipes **1***a* project beyond the cross-connections **1***b*. The pipes **1***a* are provided with handles **2**. **3** indicates a mat for a person to rest on which is attached to the steel frame by elastic band connections or an elastic string connection. On the outer side of the longitudinal pipes **1***a*, near the cross-members **1***b*, short vertical feet **5** are rigidly attached. The feet **5** are welded to the longitudinal frame members **1***a*. Each short foot **5** has a leg that includes a recessed plug-shaped lower end portion **6**, and defines on top a plug hole **5'**. The lower end portions **6** of the short feet **5** are so dimensioned and spaced apart as to fit the plug holes **5'** of a stretcher beneath it in a stack of stretchers. This is shown in FIG. 3. Each short foot **5** has between the lower end portion **6** and the plug hole **5'** a bearing **7** for a bolt **8**. The axis of the bearing **7** is perpendicular with respect to the longitudinal tubing members of the stretcher frame **1**. The axis of the bolt **8** intersects the axis of the foot **5**. Outside the bearing **7** a star plate **9** is rigidly fastened to the outer side of the foot **5**. An extension **10** is tiltably journalled to each foot **5** below the frame **1**, in the following manner: Each extension **10** has a fork **11** at one end, and an outermost part or end portion **6'** at the other. The bolt **8** tiltably connects the fork **11** of each extension **10** to the respective short foot **5**. Each extension **10** is tiltable about the bolt **8** between a vertical position wherein its end portion **6'** is vertically aligned with the end portion **6** of the foot **5** (FIG. 7) and, respectively, a horizontal position (FIG. 3). The legs of the fork **11** are long enough to permit the extensions **10** to be turned around the short feet. The bolt **8** is firmly fastened to the fork **11** by means of a screw nut **8'**, or any other suitable means. The fork **11** carries a pin **13**. The extensions **10** can be set fast in vertical and horizontal positions by means of the star plate **9** and catch lever **14** that is journalled for tilting about the pin **13**. For this purpose the outside leg of the fork **11** which makes contact with the surface of the star plate **9** has a mounting to fasten the catch lever **14** thereon pivotally. The catch lever has a cam **15** on one end which registers with a corresponding aperture in the outer leg of the fork **11** and extending into notches of the star plate **9**. The cam **15** of the catch lever is urged by spring means **16** acting upon the outer end of the catch lever towards the star plate **9** and into the notches **12** in either horizontal or vertical positions of the extensions **10**. By pressure against the spring means **16** the setting on the star plate is released by disengagement of the cam **15** with the star plate **9**. The length of the legs constituting the fork **11** is such as to place in the vertical position the foot **5** within the fork **11**. This is shown in FIG. 7.

By plugging the stretchers above each other with each foot **5** engaging a hole **5'** below and the extensions **10** in the horizontal position (FIG. 3), a steady stack of stretchers is had, either for transport or for storage thereof.

In the firmly set vertical position of the extensions **10** (FIG. 4), on the other hand, a steady stack of several stretchers is also had. The extensions are of such lengths that each stretcher is capable to accommodate a person. For this purpose the extensions **10** are also provided with the said end portions **6'**, suitable to fit into the plug holes **5** of the stretcher situated beneath. In this condition of the stretchers several thereof may be used for transportation of wounded persons. Such stacks may also be used as emergency beds in field hospitals.

According to a second embodiment of stretchers the rectangular frame **1** does not include handles for carrying the stretchers, see FIGS. 8–15. In this case the feet **5**

are situated inside the longitudinal members of the rectangular frame, and of oval or rectangular shape. Such feet have lower end portions **6**, adapted to be plugged into oval or rectangular plug holes **5'** of another stretcher, or to act as feet to place the stretcher on the floor. Between the plug hole **5'** and the lower end portion **6** there is formed a horizontal bearing **7** for the shaft part of a bolt **8**, whereon an extension **10** of the short feet **5** which includes a tubular part is firmly fastened by means of a fork **11** at the end thereof, whereby the extension and the bolt **8** are turned in the bearing **7**, all as described in detail in connection with the first embodiment of a stretcher and as shown in the FIGURES 8 to 15. The tubular part of the extension **10** may have oval cross section, as shown in FIGURE 15. The outermost part **6'** of the extension **10** may be formed with an elongated slot and can be used as handles when in horizontal position, and an inverted fork-shaped rest **17** is connected to the frame **1** for each extension **10** for steadying the latter when the stretcher is carried at the handles **6'**.

I claim:

1. In a stretcher having a rectangular frame and a mat suspended from said frame, in combination, a series of short vertical feet secured to said frame and each including a short leg terminating in an end portion below said frame, means on said frame defining a series of plug holes open on top, the position of the feet matching the position of the plug holes, and an extension journalled below said frame to each short foot and movable between a horizontal position wherein the said foot projects downwardly from said frame beyond any part of said extension and, respectively, a vertical position wherein at least the lowermost end portion of said extension is in vertical alignment with said short foot and extends downwardly beyond the same, the end portion of each foot and of each extension fitting into the hole of a stretcher below, whereby stretchers may be stacked with the holes of a lower stretcher receiving the end portions of the feet of a stretcher above with the extensions placed horizontally for small vertical space stacking and, respectively, said holes receiving the end portions of said extensions of the next upper stretcher with the extensions disposed vertically for large vertical space stacking.

2. In a stretcher, as claimed in claim 1, each extension including a fork engaging said short foot, and means operable for releasably securing said fork in horizontal and vertical positions, respectively, relative to said foot.

3. In a stretcher, as claimed in claim 1, the lower end portion of each foot and of each extension being recessed to fit into said hole.

4. In a stretcher, as claimed in claim 1, the end portion of each extension being formed as a handle, a rest connected to the underside of said frame open at the bottom and operable to engage an extension in the horizontal position thereof, for manual suspension of said stretcher from said handles in the horizontal position of said extensions, for stretcher bearing.

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