June 9, 1953 F. L. DAVIS 2,640,996

STACKING COT AND LITTER CONSTRUCTION

Filed Jan. 23, 1951 3 Sheets-Sheet 1

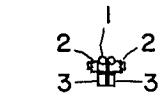

FIG. 1

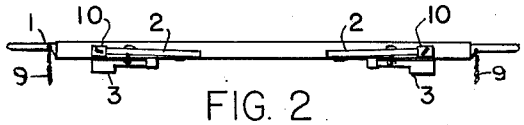

FIG. 2

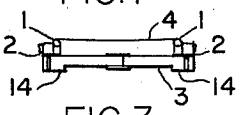

FIG. 3

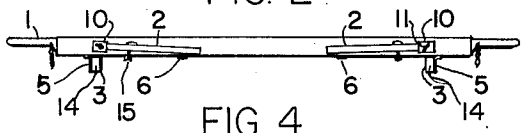

FIG. 4

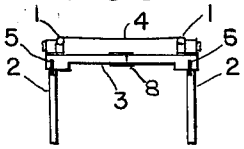

FIG. 5

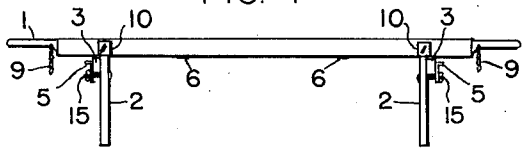

FIG. 6

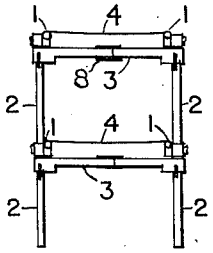

FIG. 7

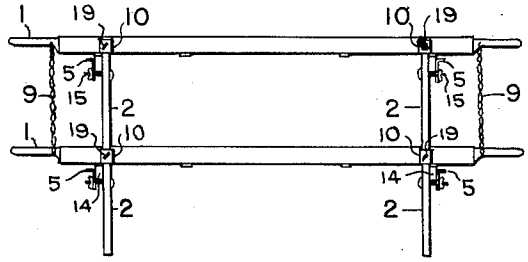

FIG. 8

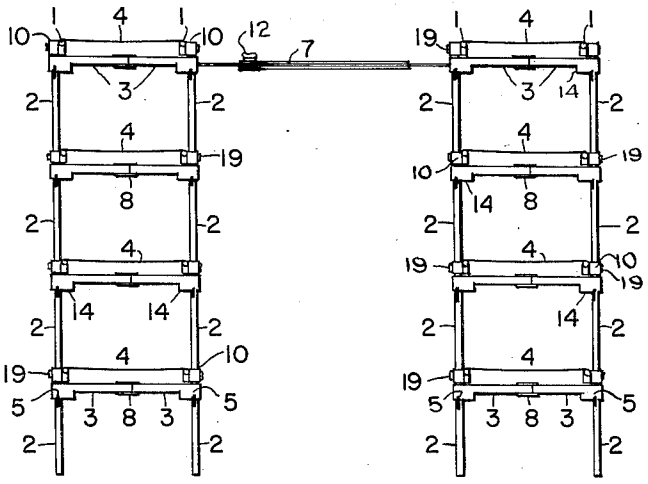

FIG. 9

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STACKING COT AND LITTER CONSTRUCTION

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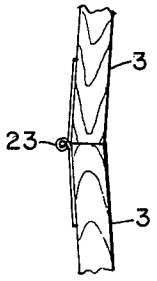

FIG. 13

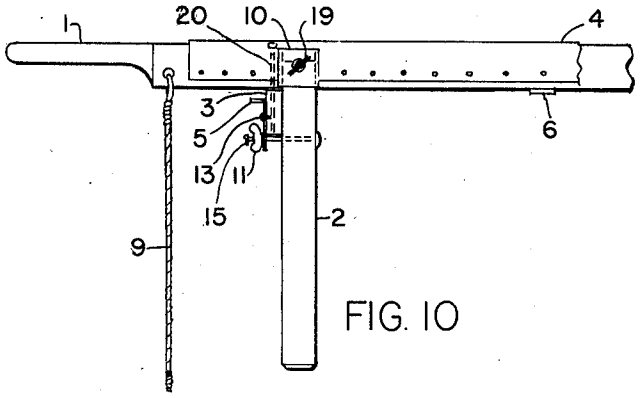

FIG. 10

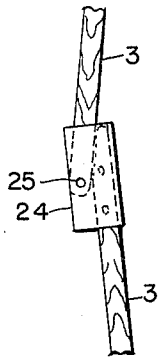

FIG. 14

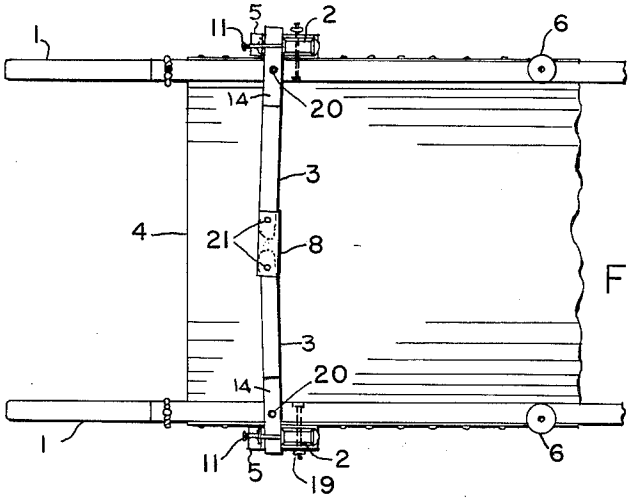

FIG. 11

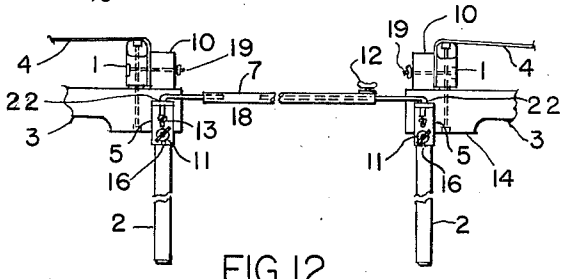

FIG. 12

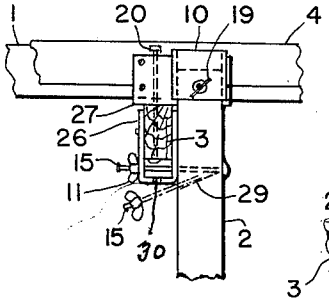

FIG. 15

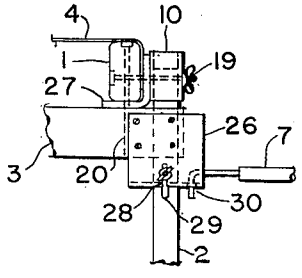

FIG. 16

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June 9, 1953 F. L. DAVIS 2,640,996

STACKING COT AND LITTER CONSTRUCTION

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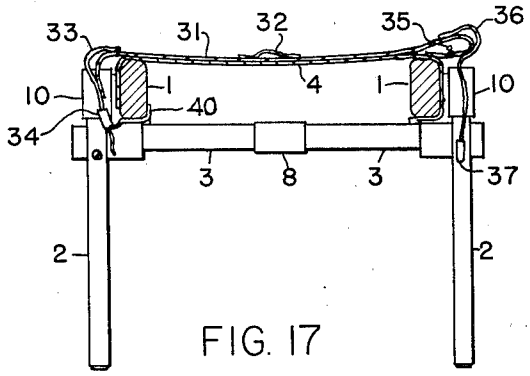

FIG. 17

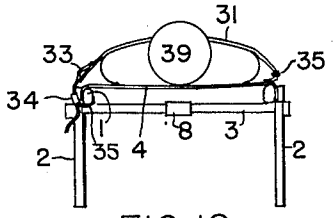

FIG. 19

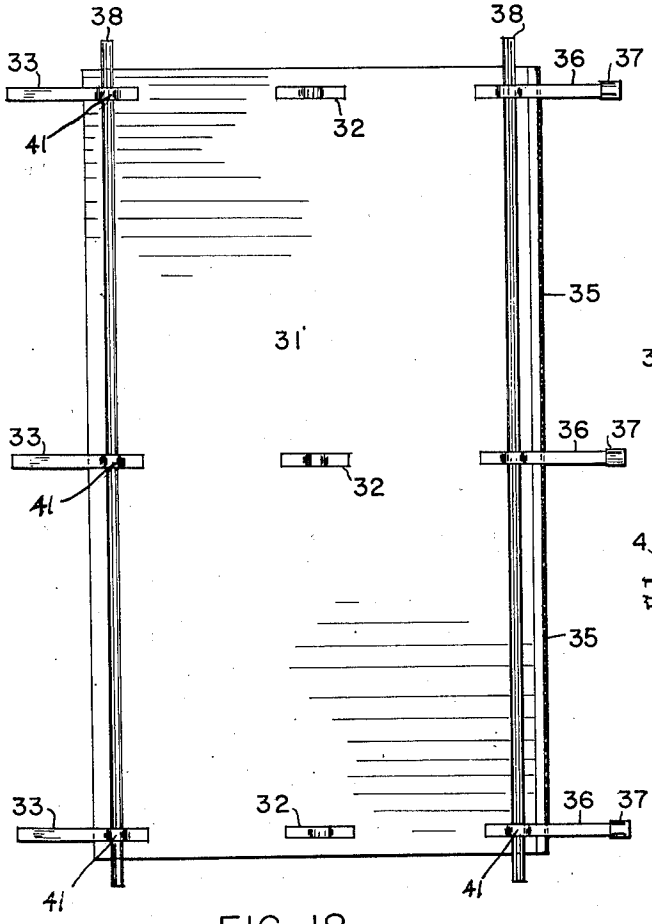

FIG. 18

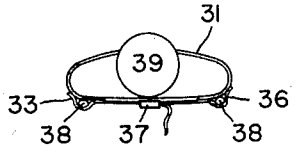

FIG. 20

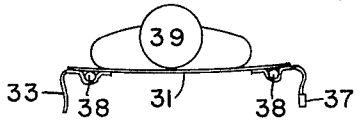

FIG. 21

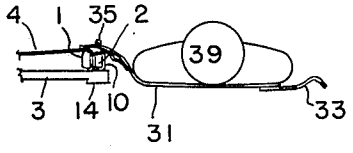

FIG. 22

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Patented June 9, 1953

2,640,996

UNITED STATES PATENT OFFICE

2,640,996

STACKING COT AND LITTER CONSTRUCTION

Frank L. Davis, College Point, N. Y.

Application January 23, 1951, Serial No. 207,250

6 Claims. (Cl. 5—8)

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The invention herein disclosed relates to stretcher and litter constructions, and the general objects of the invention are to provide a complete, self-contained device of this character which can be used on the field as a stretcher or litter and be converted, as required, to a cot or bed and stacked or tiered for transportation or hospitalization without disturbing the patient or casualty.

Particularly it is a purpose of the invention to provide a litter of these possibilities which will be foldable, in the first instance, in compact form occupying but small space, which while of light weight will be of strong, durable construction in each of its several uses, and of a design which can be readily produced in quantity and at reasonably low cost.

Other desirable objects attained by the invention are set forth or will appear in the course of the following specification in which the novel features of the invention are described and broadly claimed.

The drawings accompanying and forming part of the specification illustrate certain present embodiments of the invention but structure and arrangement may be modified and changed as regards the present illustration, all within the true intent and broad scope of the invention as hereinafter defined and claimed.

Fig. 1 in the drawings is an end view showing the litter in compacted, folded relation;

Fig. 2 is a side elevation of the folded litter;

Figs. 3 and 4 are similar end and side views showing the litter opened or expanded, ready for use simply as a stretcher or as a litter for supporting an injured person.

Figs. 5 and 6 are similar end and side views showing the legs of the litter as thrown down and secured to form a cot or bed structure;

Figs. 7 and 8 are end and side views, respectively, showing how one litter may be stacked on top of another;

Fig. 9 is an end elevation showing how two rows of the stacked litters may be braced by a connection or connections, affording an aisle between adjacent rows of litters;

Fig. 10 is an enlarged, broken side elevation illustrating details of the means for securing the legs and stretcher bars;

Fig. 11 is a broken bottom plan view of the same;

Fig. 12 is a broken end view illlustrating details of the connection between adjoining stacks;

Figs. 13 and 14 are broken plan views illustrating modified forms of pivotal connections for the spreader bars;

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Fig. 15 is a broken side elevation illustrating a modified form of interlocking connection between the legs and spreader bars;

Fig. 16 is a broken end elevation of the litter showing also the method of connecting the tie bars in this form of construction;

Fig. 17 is an end elevation of the litter set up as a cot and having an apron or cover form of attachment applied thereto;

Fig. 18 is a plan view of the cover attachment showing stiffening or carrying poles applied to the longitudinal edges of the same;

Fig. 19 is an end elevation showing the cover attached to the cot and folded over a patient;

Fig. 20 is an end view showing the cover separated from the cot and used as a restraining jacket;

Fig. 21 is an end elevation showing how the cover, detached from the stretcher, may be used to shift a patient, with the least disturbance, onto a stretcher, or possibly at the hospital to carry a patient from the stretcher to an operating table or the like;

Fig. 22 is an end view showing how the cover, attached to the stretcher, may be used to roll a patient onto the stretcher, or possibly to turn the stretcher over the patient, after which the cover, fully attached to the stretcher, may be used to hold the patient while the stretcher is being turned back upright.

Essentially the litter consists of the poles or side bars **1**, the downwardly pivoting legs **2** and the spreader bars **3** swinging inwardly to effect separation of the side bars and tensioning of the canvas **4**.

Figs. 1 and 2 show how in the folded relation the legs **2** extend along the outer sides of the side bars and the spreader bars **3** extend in alignment along the lower edges of the side bars so as to take up the least space possible.

Fig. 3 and 4 show the spreader bars **3** swung inward to separate the side bars and set up the device as a litter which may be rested upon the ground or other support with the wide end portions **14** of the spreaders serving as feet or rests for supporting at a proper level for taking care of a person being carried on the litter.

Figs. 5 and 6 show the legs **2** lowered to make the device into a cot or bed which may be used as such for hospitalization or other care of an injured person.

In this condition the legs are located in extended relation by means of plates **5** carried by the end portions of the spreader bars **3** which may drop down into alignment with securing

bolts 15 projecting from the legs and carrying the wing nuts 11.

The plates 5 are shown in Figs. 10 and 12 as slotted at their lower ends, at 16, to lower over the bolts 15 and as held in vertically slidable relation on the spreader bars by screws 13 extending through slots 18 in the plates.

The legs are shown pivotally connected at the sides of the side bars by wing bolts 19 which may be tightened to take up for wear and to hold the legs when not in use, snugly against the sides of the bars.

As a further means of retaining the legs in folded relation at the sides of the side bars 1, washers 6 are shown secured beneath the side bars, projecting slightly outward beyond the edges of these bars, as shown in Fig. 11, to catch and hold the legs in upraised relation, as indicated in Figs. 2 and 4.

The spreader bars 3 are shown in Figs. 10 and 11 as pivotally connected beneath the side bars by long carriage bolts 20 or the like. The spreader elements or bars 3 on opposite side bars are pivotally connected at the center to automatically lock the side bars in the extended relation, for example, according to conventional practice, by having these pivotally connected members swing past a dead-center position.

Fig. 11 illustrates this effect, showing the spreader bars 3 pivotally connected at 21 to an angle plate 8, serving as a stop to hold the bars in the past-center position.

The side bars 1 may have loops of rope or webbing 9 connected therewith which may be used for carrying purposes or for securing the litters when stacked, Fig. 6, or possibly for securing the litters in fully folded condition.

Stacking of the litters when set up as cots, is made possible by providing the upper ends of the legs with extended sleeves 10 which, with the legs in the vertical position shown in Figs. 6 and 10, will form open sockets to receive the lower ends of the legs on an upper cot, as indicated in Figs. 7, 8 and 9.

The extension sleeves 10 are in the nature of open thimbles secured on the upper ends of the legs 2 and may, as shown, be of the same rectangular cross section as these legs. In such case they provide a desirable reinforcement and pivotal mounting for the legs.

Fig. 9 shows how two rows of stacked cots may be braced to form a more substantial structure by means of cross connections 7 which may be hooked at the ends, as indicated at 22, Fig. 12, into openings provided for the purpose in angled flange portions at the upper ends of plates 5.

These cross connections 7 may be telescopic or otherwise longitudinally adjustable in character, as indicated at 12 in Figs. 9 and 12, to permit various spacing of the two rows of cots.

The cross connections 7 may be applied to the upper cots of the rows so as to leave a clear aisle space below, between the rows of superposed cots.

Constructed as disclosed, the litter is a complete unit which will fold into small space and which can be opened or spaced first to form a litter or stretcher and then the legs extended to form a cot, and finally, the cots stacked firmly and securely one on top of the other. Additionally, two rows of cots may be braced by tying them together to steady the two rows and obtain the advantage of a wide base practically equivalent to the spacing of the two rows with the aisle therebetween.

In the completely folded position or in use simply as a litter, as in Figs. 2 and 4, respectively, the legs are securely held in their upwardly hinged relation but may be quickly released and lowered to form a cot or bed. In this lowered condition the legs are rigidly held by the bolts 15 and wing nuts 11, and the securing of these bolts to the plates 5 on the spreaders locks both the spreaders and the legs in their extended relation.

The sockets 10 provided on the upper ends of the legs serve to securely interlock any number of cots in stacked relation and effect a reinforcing of the upper, pivoted ends of the legs.

The unit may be made up in wood or metal and is of a design to be readily produced in quantity and at reasonable cost.

Fig. 13 shows how the spreader bars 3 may be connected simply by a butt hinge form of connection 23.

In Fig. 14 the spreader bars are shown connected by a channel iron 24 fixed to one member, the lower bar 3 in this case, and carrying the pivot 25 for the other member.

Figs. 15 and 16 show how the feet for the litter may be provided by U-shaped shoes 26 secured over the ends of the spreader bars 3, providing locking plates slotted at 28 to receive the bolts 15 which in this instance are mounted to swing up and down in the slots 29 cut in the legs 2.

These U-shaped locking plates are further shown perforated at 30, at the bottom, to receive the hooked ends of the tie connections 7 between adjoining tiers of cots.

These views also show how side bars 1 may carry rubbing angles 27 for the pivotal connections 19 of the legs.

To facilitate transfer of injured to and from the litter, an apron or cover 31 may be used having loops 32 along a central longitudinal line for insertion of a carrying pole and straps 33 projecting from one edge for connection with buckles 34, Fig. 17, connected with one of the side rails of the litter.

This apron 31, which may be in the form of a canvas sheet or blanket of approximately the size of the litter, may be detachably connected by slide fasteners along one side of the canvas of the litter, as indicated at 35.

Additionally this sheet may be provided with the straps 36 opposite the straps 33 on the farther edge of the sheet and carrying buckles 37 cooperable with straps 33.

The straps 33 and 36 where they are connected with the sheet, may be formed with the loops 41 for reception of carrying or stiffening poles 38, Fig. 18.

Fig. 19 shows how the cover 31, when attached to the litter by a zipper or other fastenings 35 at one edge, may be folded over a patient, represented at 39, and secured to hold the patient on the litter.

Fig. 20 shows how the cover 31, when separated from the litter, may be secured by the buckles 37 to confine or restrain the patient.

Fig. 21 shows how the cover, on supporting poles 38, may be slipped beneath badly injured persons to lift them onto the litter, and Fig. 22 shows how the cover may be connected along one edge, at 35, to the litter for rolling a person over onto the litter, or, conversely, rolling the litter over onto the patient and then the patient back onto the litter.

The buckles 34 by which the free edge of the cover 31 may be secured over the patient on the litter are shown in Fig. 17 as carried by straps secured to one of the side bars of the litter, at 40.

The loops 32 along the center and loops 41 along the longitudinal edges of the cover sheet 31, may be provided by strips secured along the central and edge portions of the sheet, and these strips may be extended at the ends beyond the end edges of the sheet to provide hand receiving loops.

The sheet or apron 31 may be secured to the litter in other ways than by means of the longitudinally extending zipper connection 35, for example, by means of connecting straps or by means of loops at the ends of the sheet which may be slipped over the ends of the carrier poles or side bars 1 of the litter.

What is claimed is:

1. A stacking cot and litter construction comprising side bars, spreader bars pivotally connected beneath said side bars and of a height to serve as the feet for supporting the unit in use as a litter, legs pivoted to the sides of said side bars in position to swing downward to form a cot, sockets on the upper ends of said legs of a size to receive the lower ends of the legs of a superposed cot to enable stacking of a number of the cots described and releasable means for securing the legs in lowered position relative to said spreader bars and including slide plates on said spreader bars having flange portions and adjustable tie bars engageable at their ends with said flanged portions for connecting and bracing adjoining rows of stacked cots.

2. A litter as herein disclosed comprising side bars and flexible body supporting material connecting the same, spreader bars pivotally connected together and pivotally connected beneath said side bars, legs hingedly connected at the sides of said side bars and means releasably connecting said legs in lowered relation with said spreader bars for securing of said parts in fixed relation and including bolts on said legs and slide plates on said spreader bars forked to engage over said bolts.

3. A litter as herein disclosed and comprising side bars, flexible body supporting material carried by said side bars, spreader bars hingedly connected together and hingedly connected with said side bars, legs pivotally supported on said side bars for lowering into litter supporting position and interlocking means for connecting the legs in lowered relation with the spreader bars for releasably securing said spreader bars in extended relation and said pivoted legs in lowered, supporting position.

4. A litter as herein disclosed and comprising side bars, flexible body supporting material carried by said side bars, an apron of flexible material detachably connected along one edge with said litter and provided with means for securing the same over the top of said litter and means for enabling the attachment of supporting poles to said apron independently of the connection of the same to said litter.

5. A litter of the character disclosed comprising side bars, body supporting material carried by said side bars, spreader bars hingedly connected together and hingedly connected with said side bars and U-shaped shoes enclosing the sides and lower edges of said spreader bars and forming feet for supporting the litter, said U-shaped shoes being slotted in the lower edges of the same, feet pivotally connected with the side bars and bolts carried by said feet and engageable in the slots in said U-shaped shoes for securing said spreader bars and feet in the extended relation described.

6. A litter of the character disclosed comprising side bars, body supporting material carried by said side bars, spreader bars hingedly connected together and hingedly connected with said side bars and U-shaped shoes enclosing the sides and lower edges of said spreader bars and forming feet for supporting the litter, said U-shaped shoes being slotted in the lower edges of the same, feet pivotally connected with the side bars and bolts carried by said feet and engageable in the slots in said U-shaped shoes for securing said spreader bars and feet in the extended relation described, said feet being vertically slotted and said bolts being pivotally engaged in the slotted portions of said feet for swinging vertically into and out of holding relation with respect to said shoes.

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