

E. KOTTUSCH.
COLLAPSIBLE STRETCHER.
APPLICATION FILED AUG. 22, 1902.

NO MODEL.

5 SHEETS—SHEET 1.

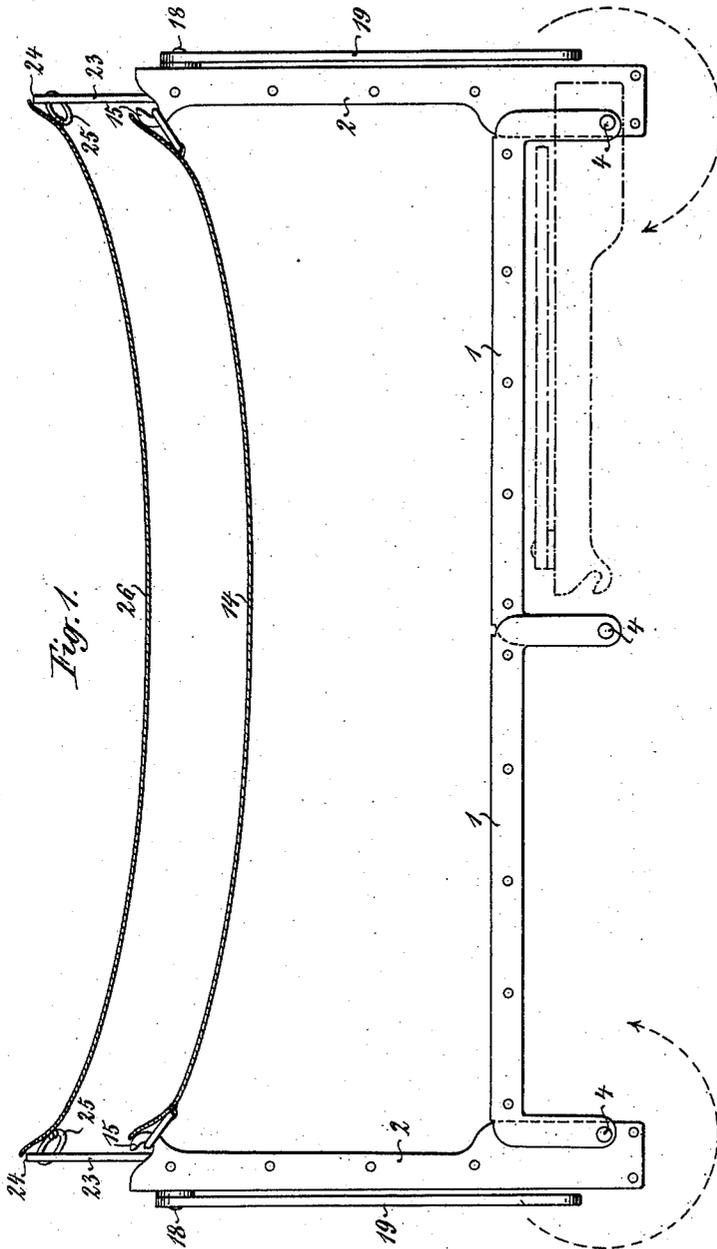


Fig. 1.

Witnesses:
J. Myrand
Ed Page

Emanuel Kottusch
 Inventor,
 by *Marion Marion*
 Attorneys.

E. KOTTUSCH.
COLLAPSIBLE STRETCHER.
APPLICATION FILED AUG. 22, 1902.

NO MODEL.

5 SHEETS—SHEET 2.

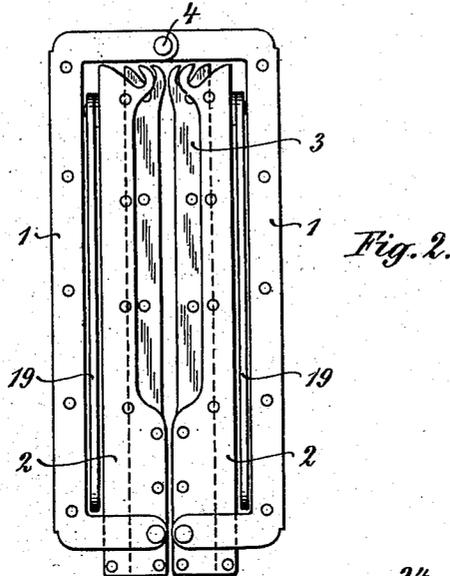


Fig. 2.

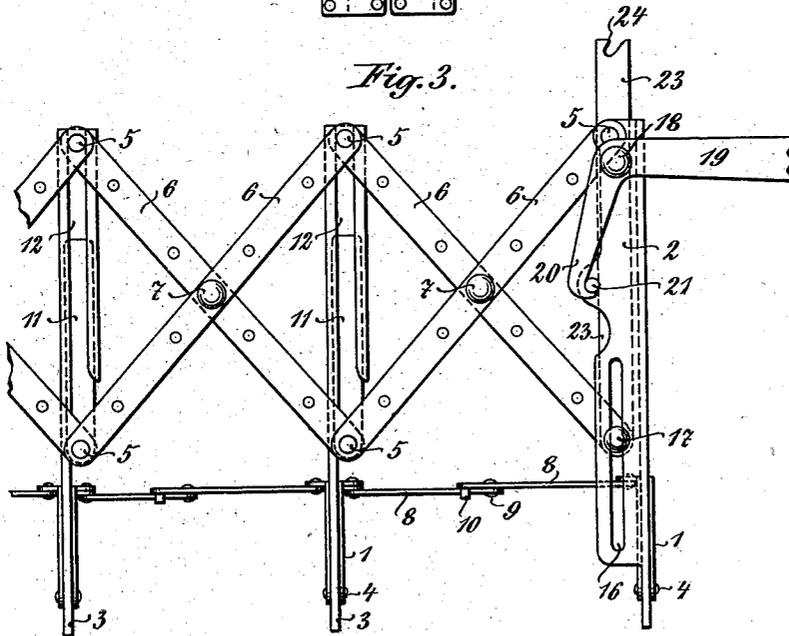


Fig. 3.

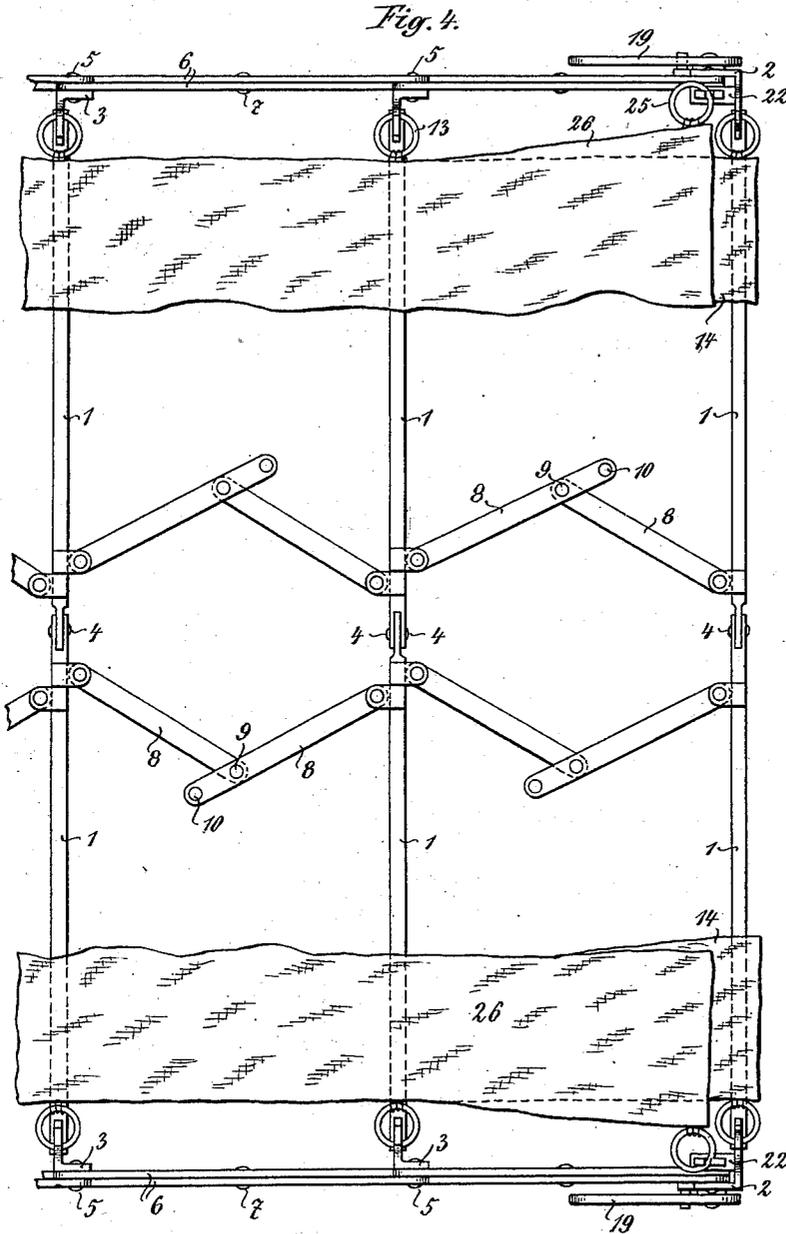
Witnesses:
J. Mynard
Jed Page

Emanuel Kottusch,
Inventor,
by Marion Marion,
Attorneys.

E. KOTTUSCH.
COLLAPSIBLE STRETCHER.
APPLICATION FILED AUG. 22, 1902.

NO MODEL.

5 SHEETS—SHEET 3.

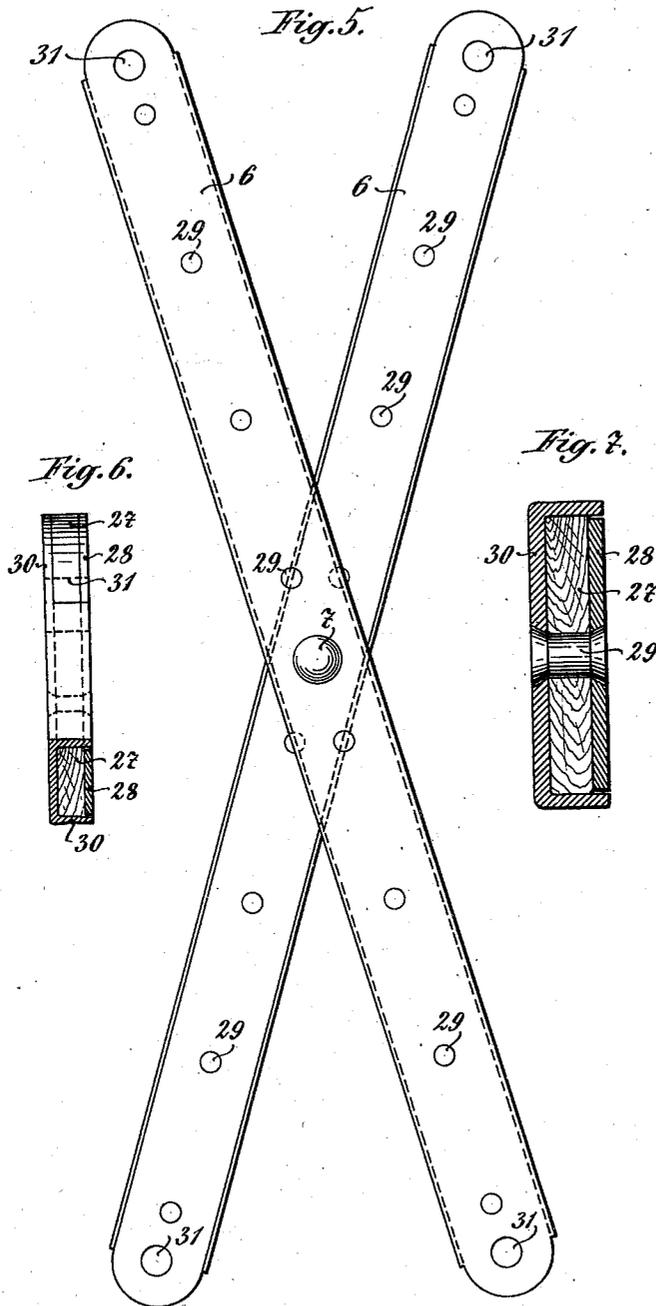


Witnesses:
J. Mynard
J. Ed. Page

Emanuel Kottusch,
Inventor,
by Marion Marion
Attorneys.

E. KOTTUSCH.
COLLAPSIBLE STRETCHER.
APPLICATION FILED AUG. 22, 1902.

NO MODEL.



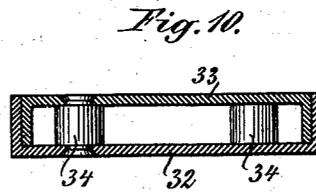
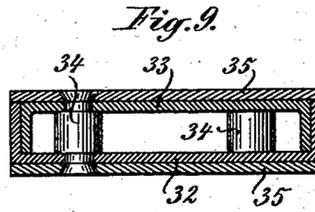
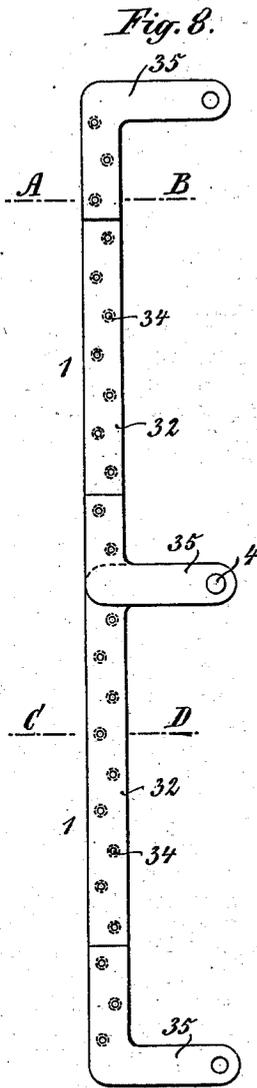
Witnesses:
J. Mynard
J. Ed. Page

Emanuel Kottusch,
Inventor,
by *Marion Marion*
Attorneys.

E. KOTTUSCH.
COLLAPSIBLE STRETCHER.
APPLICATION FILED AUG. 22, 1902.

NO MODEL.

5 SHEETS—SHEET 5.



Witnesses:
J. Mynard
J. Ed. Page

Emanuel Kottusch,
 Inventor,
 by *Marion Marion*
 Attorneys.

UNITED STATES PATENT OFFICE.

EMANUEL KOTTUSCH, OF ZURICH, SWITZERLAND, ASSIGNOR TO FRITZ
HOLZACH, OF ZURICH, SWITZERLAND.

COLLAPSIBLE STRETCHER.

SPECIFICATION forming part of Letters Patent No. 748,289, dated December 29, 1903.

Application filed August 22, 1902. Serial No. 120,712. (No model.)

To all whom it may concern:

Be it known that I, EMANUEL KOTTUSCH, a citizen of the Republic of Switzerland, residing at 19 Schoenthalstrasse, Zurich, Switzerland, have invented new and useful Improvements in Collapsible Stretchers, of which the following is a true and exact specification.

My invention relates to a collapsible stretcher of a kind in which the longitudinal sides of the carrying-frame consist of standards connected by movable joints made after the style of the so-called "lazy-tongs." Several kinds of such stretchers are known.

The object of the present invention is to improve these stretchers and to obviate certain disadvantages which have presented themselves.

Essentially this invention consists of an elaboration of the cross connections which connect the side frames (consisting of the lazy-tong sections) in order to impart to the stretcher the necessary stiffness. These cross connections are not lazy-tongs, but constitute a folding connection of partly straight and partly angular levers arranged in such a manner that when opened out for use they form a row of stiff frames (after the style of bed-frames) and when collapsed they fold into small compass and at the same time insure that the lazy-tong parts of the side frames and of the lower side rest within a stiff frame, so that they are not liable to be warped or bent during transport. This and the stiffness of the framework when opened out for use constitute features of great importance, for where these characteristics are wanting it has been found that through the bending of the lazy-tong rails troublesome measures have to be taken, which entail loss of time, render the opening out of the stretcher difficult, so that in war time and when accidents happen the practical value of the stretcher is considerably diminished and delay is involved for the injured and sick, which in certain circumstances may have serious and very injurious consequences. Further, when wounded persons are being transported and there is a want of stiffness in the framework of the stretcher, the canvas flaps up and down violently and the wounded are shaken and sometimes, if the ground is very rough, are even thrown against the bottom sections and

severely shaken and may suffer concussions which may prove very detrimental to a speedy cure. The collapsibility of the framework of this type of my stretcher is such that the whole stretcher can be folded up and carried (like a haversack) on the back of one man, and as the side standards of each frame are provided with guideways in which are guided parts (tongues and pins) connected with the lazy-tong sections, it follows that when the stretcher is opened out the ends of the lazy-tong sections are properly guided in the frame-standards. In order to obtain rigidity combined with lightness, each of the frame-bars, according to a useful mode of construction shown in the drawings, is made of a strip of light and hard wood, (preferably ash,) which rests in a trough-shaped steel frame, which is closed on the trough side by a flat steel plate and the whole is riveted together by means of rivets inserted at short intervals apart. This insures a strong and stiff construction. According to another useful mode of construction, also shown in the drawings, the said parts are made of two trough-shaped steel frames fitting each in the other and riveted together by stay-bolts.

Referring to the drawings, which illustrate my improved stretcher, Figure 1 is an end view of the stretcher as it appears when opened out ready for use. Fig. 2 is an end view of the same when folded up. Fig. 3 is a partial side elevation of one end of the stretcher when opened out. Fig. 4 is a plan of the same. Fig. 5 is a side elevation, on an enlarged scale, of a single lazy-tong section. Figs. 6 and 7 are respectively an oblique sectional elevation and a transverse section through one member of the same. Fig. 8 is a side elevation of a modified form of cross-frame section; and Figs. 9 and 10 are transverse sections of the same taken, respectively, on the lines A B and C D of Fig. 8.

The stretcher-frame consists of a number of jointed cross-frames 1, each of which is made up of two channel-shaped angularly-bent bars connected at the center with each other by movable joints and to the side standards 2 and 3 by the pivots 4. The four side standards 2 of the two end cross-frames and the side standards 3 of the inner cross-frames

have an angular cross-section. (See Fig. 4.) The bars of the cross-frames 1 are pivotally connected on one flange of the standards, while the lazy-tong sections 6 (constituting the sides of the stretcher) are jointed by means of pins 5 to the other flange. The members of the lazy-tong sections 6 are pivoted together by the pivot-pins 7. The cross-frames 1 are connected with one another by the jointed links 8, which consist of steel tongues, and these tongues are connected together by the pivots 9, and one bar of each link carries a stop-pin 10, which rests against the other bar when the lateral lazy-tong sections 6 are fully extended.

The ends of the lazy-tong sections are guided by steel tongues 11, which are secured to the lower pins 5 (see Fig. 3) and move in lateral guide-flanges 12, fitted to the side standards 3. When drawing out the cross-frames, and thereby extending the lazy-tong sections 6, the steel tongues 11 work in the guide-flanges of the standards, which are thereby always retained at equal distances apart from one another, so that the canvas 14 is stretched uniformly taut. The rings 13 of the canvas are hooked onto the hooks 15 of the side standards 2 and 3.

The side standards 2 of the two end frames instead of having a guide for the steel tongues are each provided with a slot 16, Fig. 3, for guiding the stop-pin 17 of the last lazy-tong section.

The side standards 2 of the two end frames are provided with handles 19, which are movable on pins 18 and are used for the purpose of drawing out and carrying the stretcher. These handles have their inner ends bent outwardly and hooked, as shown at 20, so that they may be folded up alongside of the rails 2 when the stretcher is collapsed. (See Fig. 2.) When opening out and lifting the stretcher, the hook 20 catches against a stop-pin 21 on the standard 2, Fig. 3, so that the handles 19 cannot be raised beyond a horizontal position.

The side standards 2 of the stretcher end shown in Fig. 4, which is the end where the head of the wounded person lies, have vertical sockets 22, in each of which is carried a rod 23, which is pivotally connected at its lower end to the last lazy-tong section 6 by the pin 17. This rod 23 is of such length that when the stretcher is being drawn out it projects a little above the upper end of the standard 2, Figs. 1 and 3, and is provided at its upper end with a notch 24, into which may be inserted the ring 25 of a fold or flap 26, formed in or on the stretcher-canvas 14 at its end. By engaging the rings 25 in the notches 24 the flap is directed upward at a slant from the rest of the horizontally-stretched canvas, and thus forms a raised support for the head of the wounded or sick person. As each rod 23 is connected with one of the lazy-tong sections 6, it moves back when the stretcher is being folded together, so as to admit of the stretcher

being folded up when not in use, as shown in Fig. 2.

When the stretcher is to be folded together after use, the rings 13 and 25 of the stretcher-canvas 14 and the head-rest 26 are unhooked. The cross-frames, consisting of the parts 1, and 2 and 3, are pushed toward each other. The handles 19 being released fall into folded position through their own weight. The side standards 2 and 3 of all the frames are then turned around in the direction of the arrows through an arc of two hundred and seventy degrees into the position shown in dotted lines at Fig. 1, so that they rest inside the channel-shaped bars 1, which are then folded up toward each other, as shown in Fig. 2. All the movable parts then rest inside the bars 1, which form a box-like frame, and the parts are thus protected as far as possible against injury during transport.

All the parts of the stretcher may be constructed as shown in Figs. 5, 6, and 7. These views show a lazy-tong section 6 in side view and section—that is to say, they consist of a wooden (preferably ash) strip 27, resting in a trough-shaped steel frame 30 and covered by a steel plate 28. The connection is made by rivets 29, inserted at intervals. Where the lazy-tong sections 6 or the other parts are rounded off or catch into one another, the trough-shaped steel frame 30 is left open, so that at these parts (see Fig. 6, top) the wood 27 is visible, whereas at the other parts it is completely incased in steel. The pivot-holes 31, Fig. 5, are bored through the steel casing and the wood core.

In Figs. 8, 9, and 10 are shown certain modified forms of the construction of the cross-frames and frame-bars. In this construction the wooden strip or core of the frame-bar is omitted. The latter consists of two channel-shaped steel bars 32 33, which fit one into the other and are connected together by means of shouldered countersunk rivets 34. At the ends of the frame-bars steel angle-plates 35 are riveted to the casing 32, as shown in Figs. 8 and 9.

The hollow-column construction of the frame-bars above described is, so far as I know, original with me and is adapted to secure rigidity of the bearing parts, and the general construction of the bed also secures the greatest possible rigidity consistent with the greatest possible lightness and freedom from distortion or bending, rendering the bed difficult to collapse and unfold and at the same time insuring an uninterrupted and safe use of the structure to transport injured persons. These are specially important features for the ambulance service in time of war.

Having thus described my invention, what I claim, and desire to secure by Letters Patent, is—

1. A folding stretcher comprising two pairs of corner-posts, a series of lazy-tong sections connecting the posts of each pair and pivoted

thereto at their upper corners, the lower end of each lazy-tong section being arranged to slide in a vertical slot in the post, a series of intermediate vertical standards pivotally connected to each pair of lazy-tong sections and adapted to support the latter, and a series of cross-frames connecting each opposite pair of posts and standards, and each comprising two channel-shaped members pivoted together at their adjacent ends and to the said posts and standards at their opposite ends, whereby after the bed has been collapsed lengthwise and the posts, standards and lazy-tong members turned through an angle of two hundred and seventy degrees the two longitudinal halves of the frame are adapted to fold about the intermediate pivots of the cross-frames, the latter forming an inclosing casing for the entire frame.

2. A folding stretcher comprising two pairs of corner-posts, a series of lazy-tong sections connecting the posts of each pair and pivoted thereto at their upper corners, the lower end of each lazy-tong section being arranged to slide in a vertical slot in the post, a series of intermediate vertical standards pivotally connected to each pair of lazy-tong sections and adapted to support the latter, a series of cross-frames connecting each opposite pair of posts and standards and each comprising two channel-shaped members pivoted together at their adjacent ends and to said posts and standards at their opposite ends, and a series of foldable connections joining each set of link members of the cross-frames at their adjacent ends, said connections being foldable in a horizontal plane and being provided with means for holding them extended.

3. A folding stretcher comprising two pairs of corner-posts, a series of lazy-tong sections connecting the posts of each pair and pivoted thereto at their upper corners, the lower end of each lazy-tong section being arranged to slide in a vertical slot in the post, a series of intermediate vertical standards pivotally connected to each pair of lazy-tong sections and adapted to support the latter, a series of cross-frames connecting each opposite pair of posts and standards and each comprising two channel-shaped members pivoted together at their adjacent ends and to said posts and standards at their opposite ends, a series of foldable connections joining each set of link members of the cross-frames at their adjacent ends, said connections being foldable in horizontal plane and being provided with means for holding them extended, a pair of rods 23 slidably mounted in guides in the respective head-posts of the bed, and means for holding them in raised position.

4. A folding stretcher comprising two pairs of corner-posts, a series of lazy-tong sections connecting the posts of each pair and pivoted thereto at their upper corners, the lower end of each lazy-tong section being arranged to slide in a vertical slot in the post, a series of intermediate vertical standards pivotally con-

nected to each pair of lazy-tong sections and adapted to support the latter, a series of cross-frames connecting each opposite pair of posts and standards and each comprising two channel-shaped members pivoted together at their adjacent ends and to said posts and standards at their opposite ends, a series of foldable connections joining each set of link members of the cross-frames at their adjacent ends, said connections being foldable in a horizontal plane and being provided with means for holding them extended, a pair of rods 23 slidably mounted in guides in the respective head-posts of the bed, and means connecting said rods with said lazy-tong sections whereby said rods are automatically projected above the upper ends of the head-posts of the bed when the frame of the bed is extended.

5. A folding stretcher comprising two pairs of corner-posts, a series of lazy-tong sections connecting the posts of each pair and pivoted thereto at their upper corners, the lower end of each lazy-tong section being arranged to slide in a vertical slot in the post, a series of intermediate vertical standards pivotally connected to each pair of lazy-tong sections and adapted to support the latter, a series of cross-frames connecting each opposite pair of posts and standards and each comprising two channel-shaped members pivoted together at their adjacent ends and to said posts and standards at their opposite ends, and a series of foldable connections joining each set of link members of the cross-frames at their adjacent ends, said connections being foldable in a horizontal plane and being provided with means for holding them extended, the bars forming the lazy-tong sections and links of the cross-frames comprising each a channel-shaped metallic bar, a plate closing the open or trough side thereof, rivets permanently joining the two plates, and means for holding the intermediate portions of the two plates in equidistant relation.

6. In a folding bed or stretcher, the folding cross-frame comprising a pair of channel-shaped links, the ends of which project downwardly and are joined respectively to each other and to the side portions of the bed-frame.

7. A folding bed or stretcher comprising a pair of collapsible side frames, and a series of collapsible cross-frames connecting opposite parts of said side frames at intervals along the length of the latter, each cross-frame comprising a pair of channel-shaped links joined at their ends to each other and to parts of the side frames and adapted to inclose the latter when folded so as to form a protective box or casing.

In witness whereof I have hereunto set my hand in the presence of two witnesses.

EMANUEL KOTTUSCH.

Witnesses:

A. LIEBERKNUHT,
F. HOLZSACH.