No. 874,159. PATENTED DEC. 17, 1907.

H. BRUSIS.

STRETCHER SUPPORTING FRAME.

APPLICATION FILED JAN. 5, 1907.

4 SHEETS—SHEET 1.

Fig. 1.

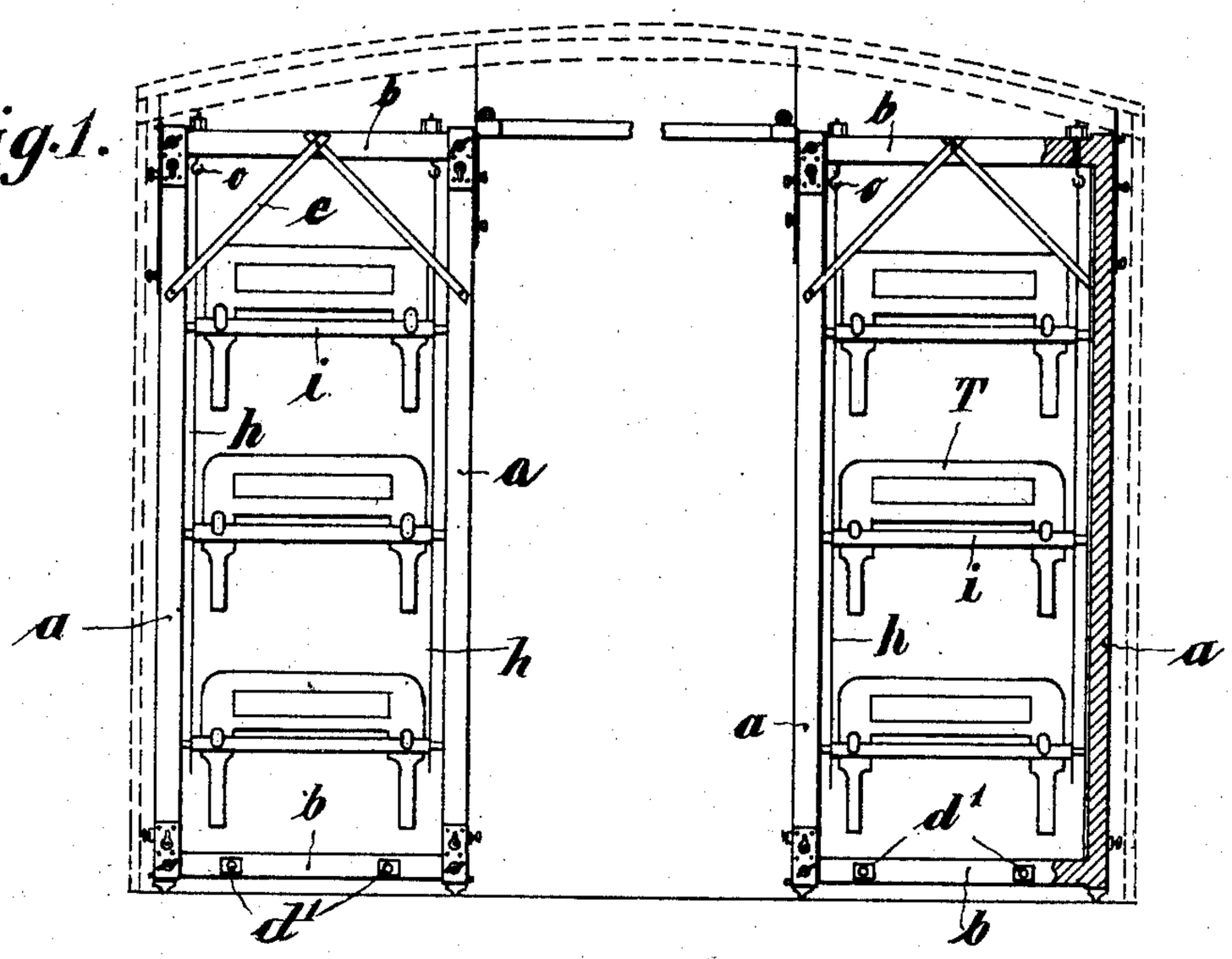
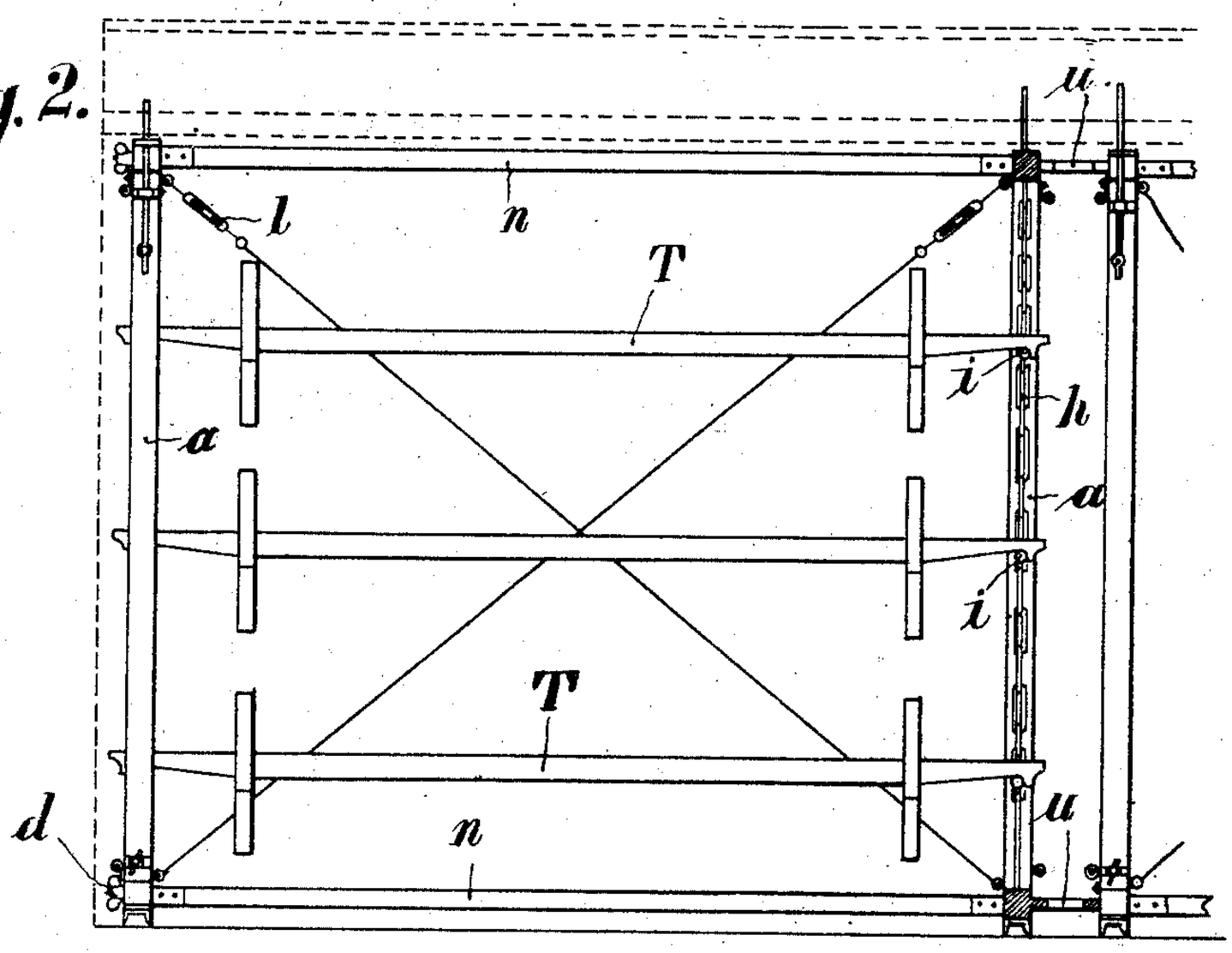


Fig. 2.



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By his atty. [signature]

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4 SHEETS—SHEET 2.

Fig. 3.

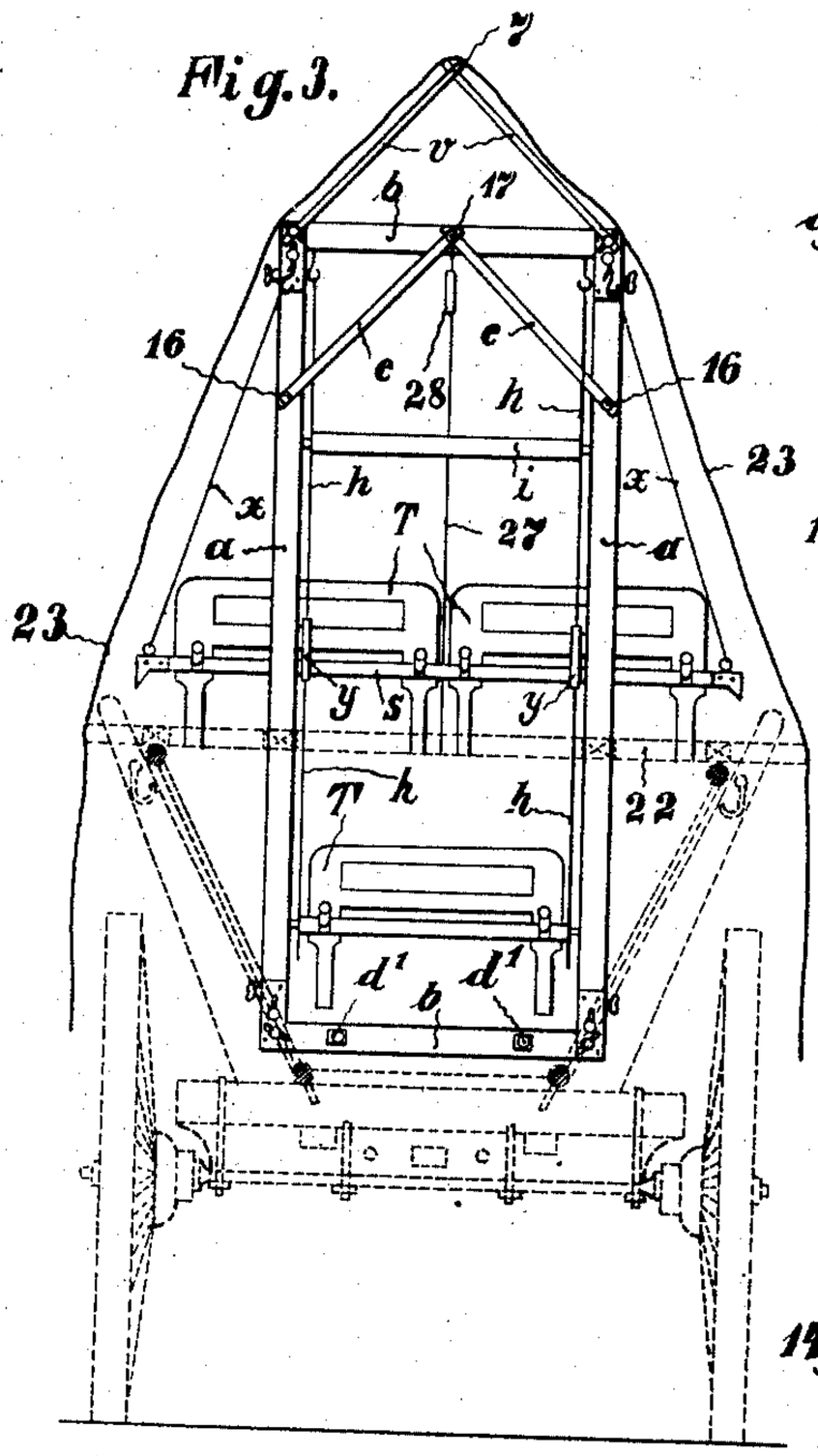


Fig. 5.

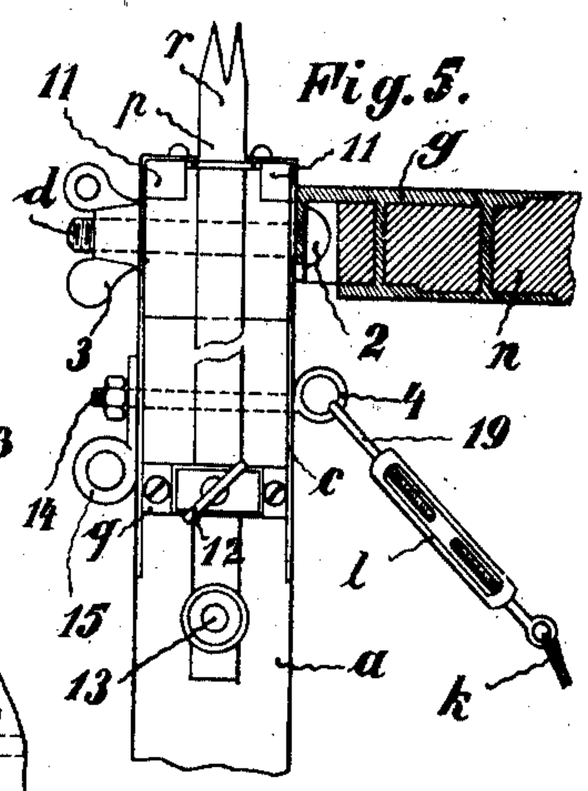
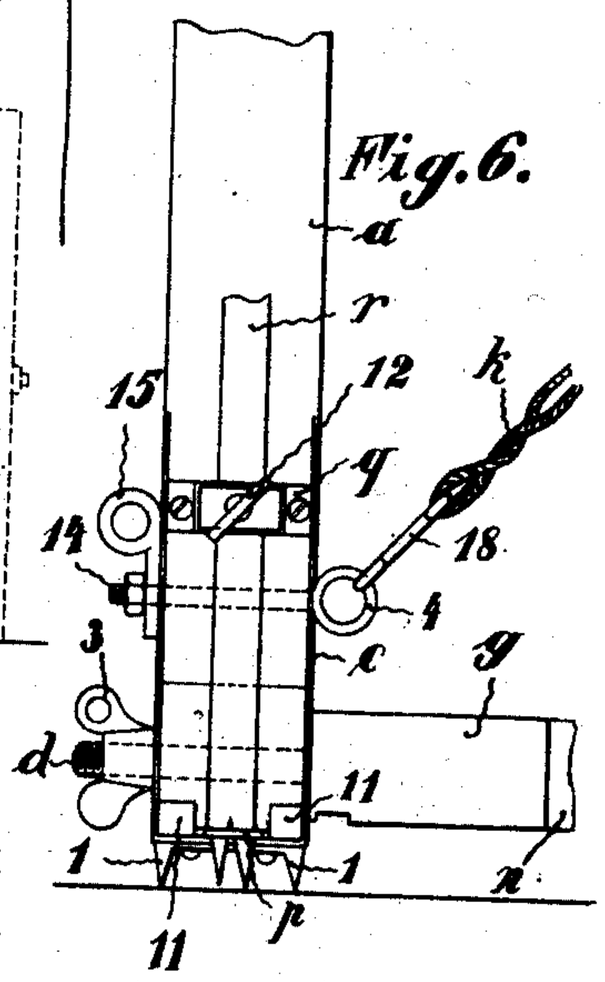


Fig. 6.



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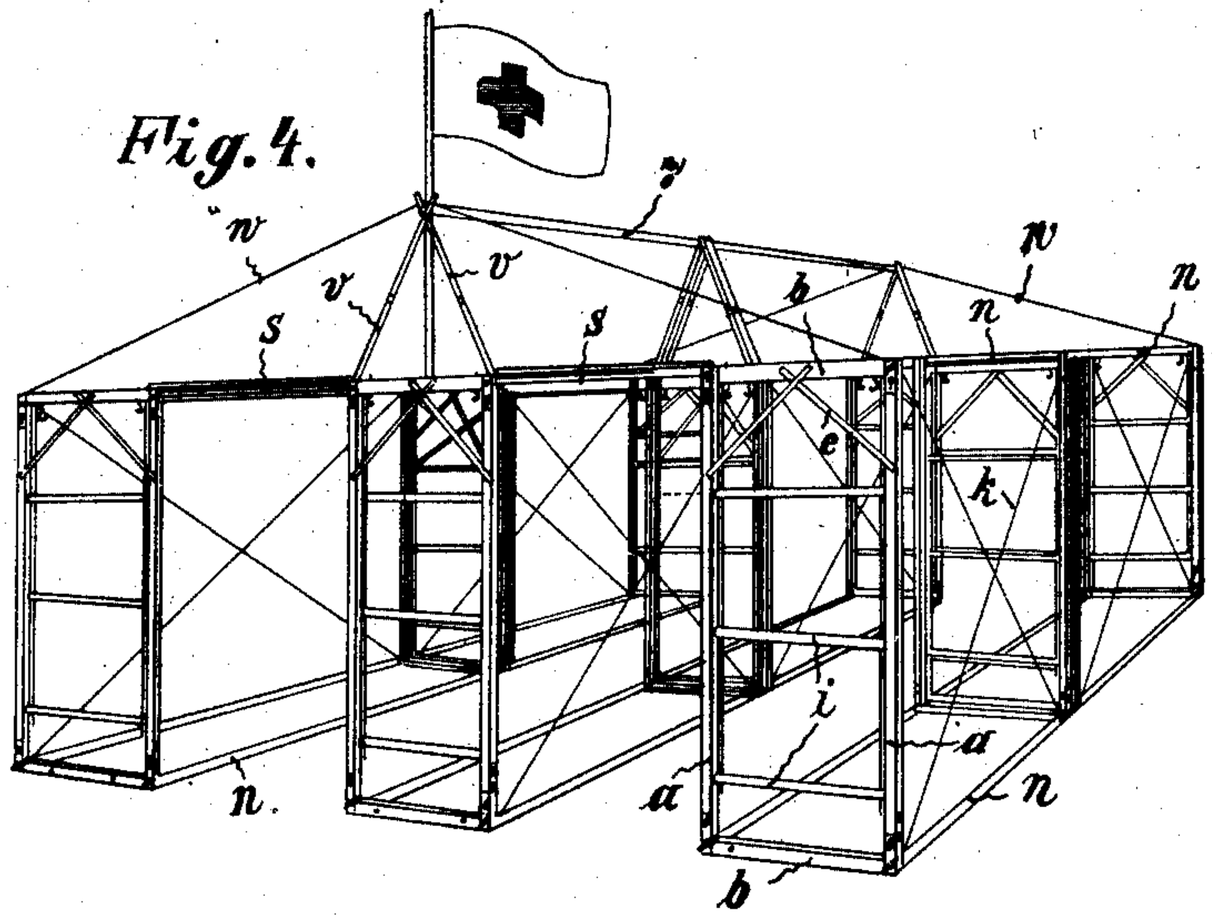
4 SHEETS—SHEET 3.

Fig. 4.



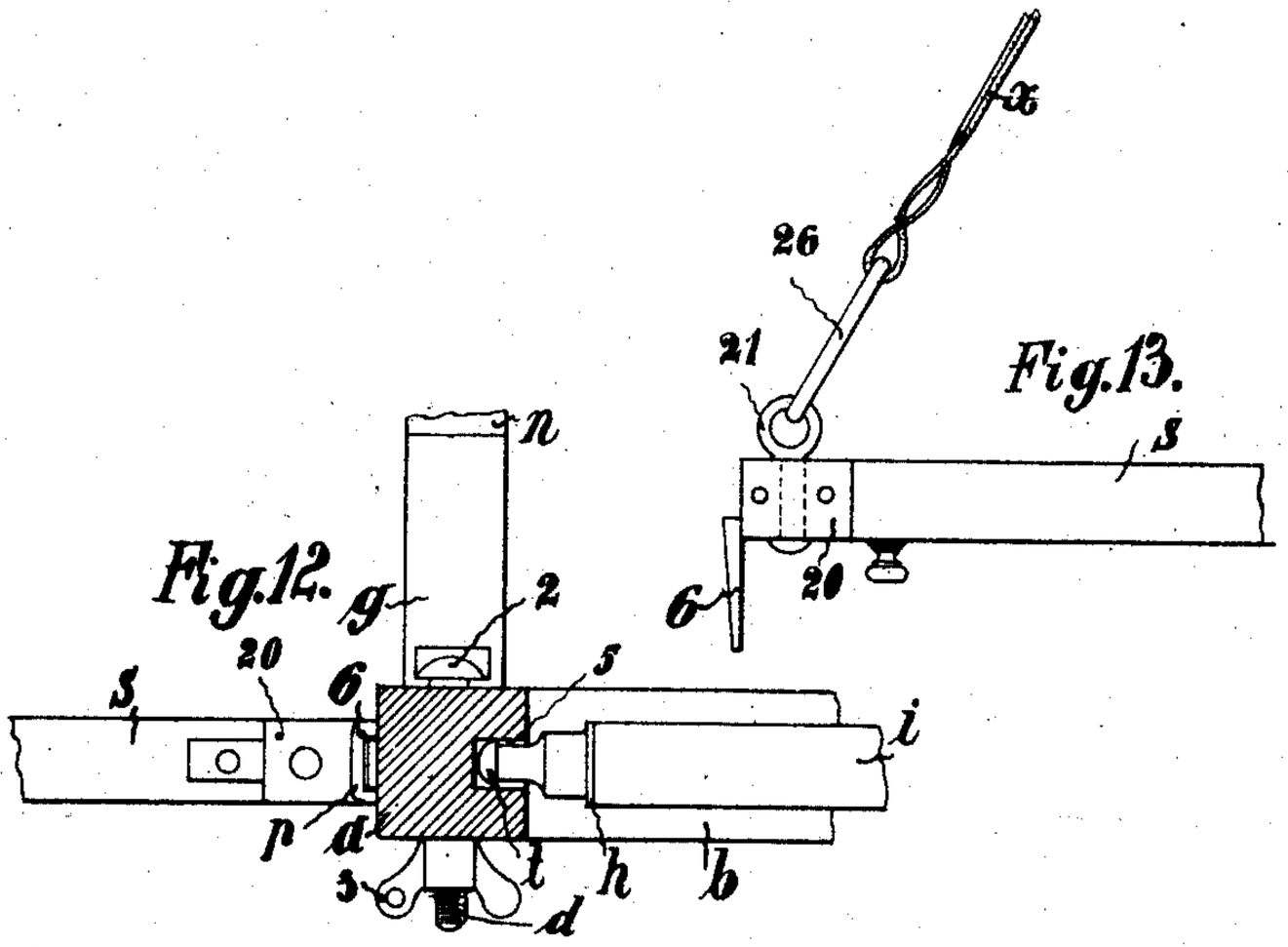


Fig. 12.

Fig. 13.

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4 SHEETS—SHEET 4.

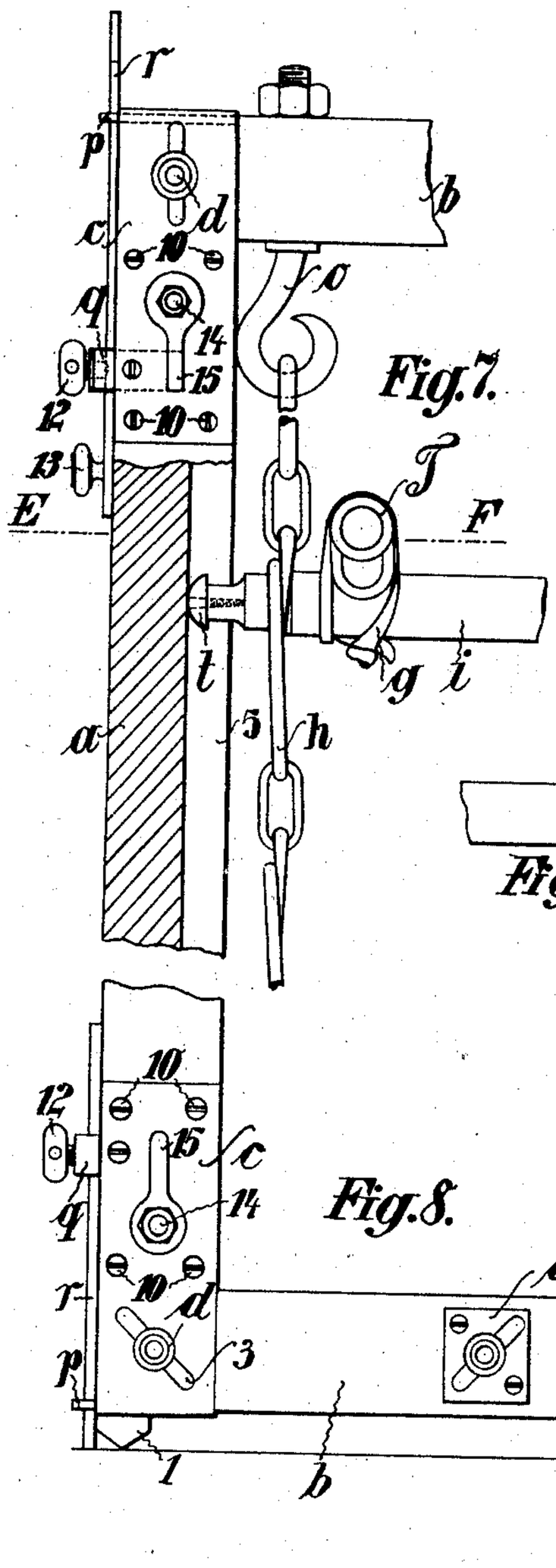

Fig. 7.

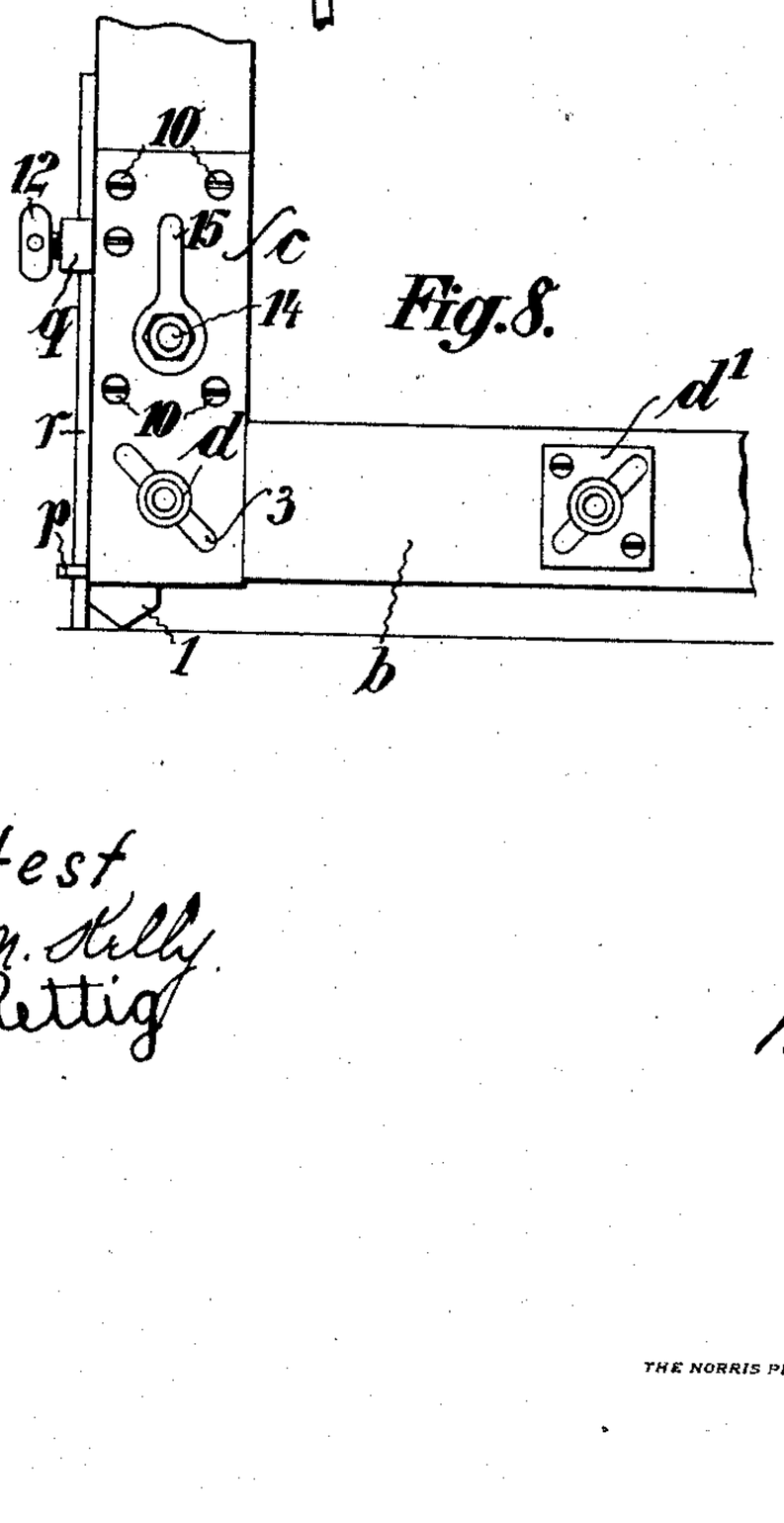

Fig. 8.

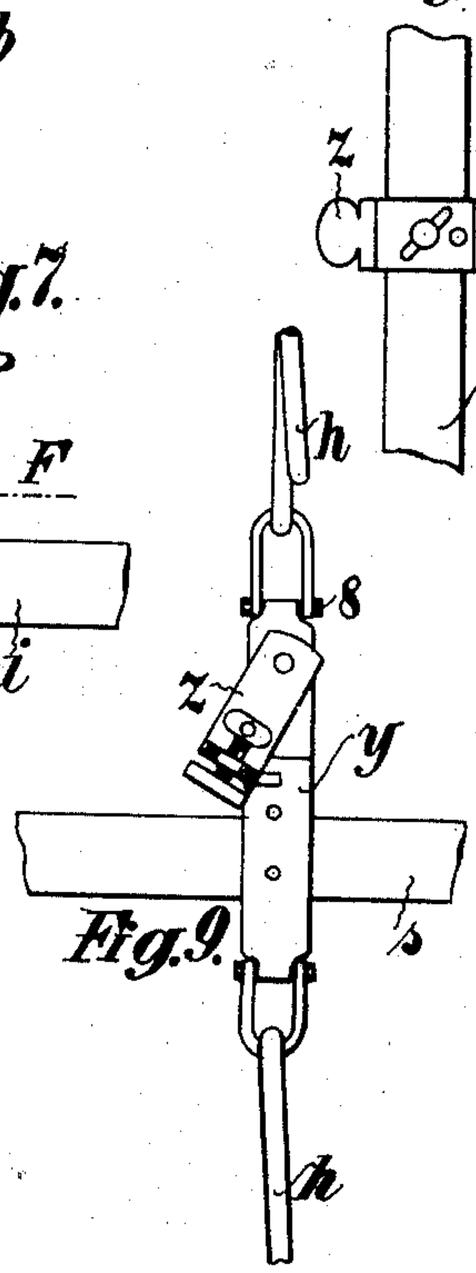

Fig. 9.

Fig. 10.

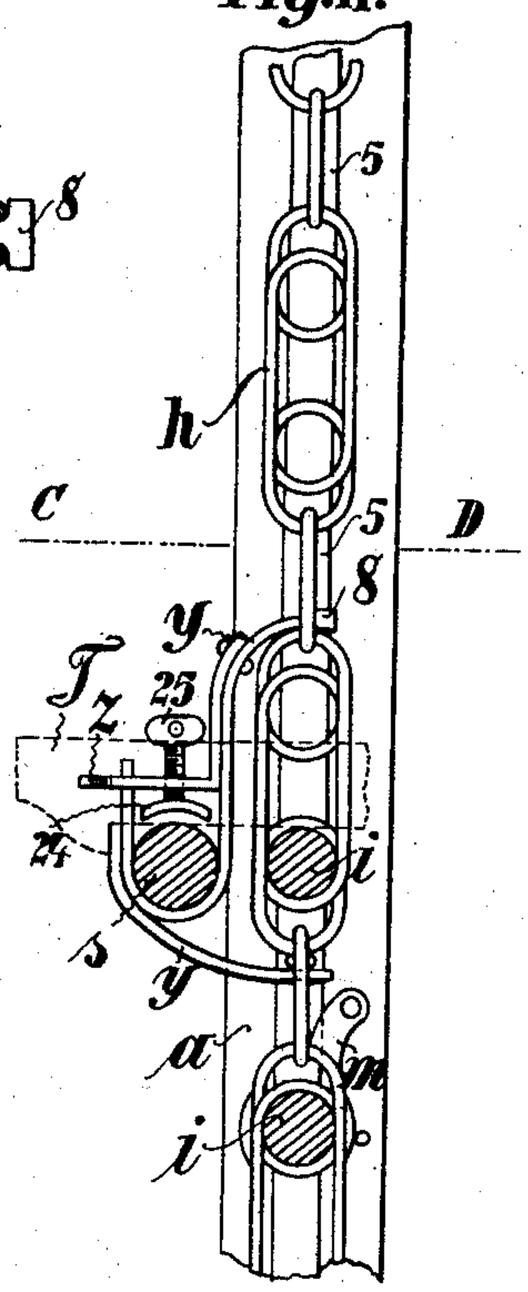

Fig. 11.

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UNITED STATES PATENT OFFICE.

HEINRICH BRUSIS, OF SOEST, GERMANY.

STRETCHER-SUPPORTING FRAME.

No. 874,159. Specification of Letters Patent. Patented Dec. 17, 1907.

Application filed January 5, 1907. Serial No. 350,923.

To all whom it may concern:

Be it known that I, HEINRICH BRUSIS, a citizen of the Empire of Germany, residing at Soest, in Westphalia, in the Empire of Germany, have invented a new and useful Compoundable Stretcher-Supporting Frame, of which the following is a specification.

My invention relates to a light timber frame, that can be easily and quickly composed in any vehicle and on any place and is adapted to support for example three superposed stretchers at a time, on which wounded or sick people or the like may be transported or placed. A number of such frames may be disposed at a time in a railway car, either open or covered, for transporting quite a number of persons on the stretchers. A smaller number of these frames may be placed and secured on a rack-wagon or other vehicle and a corresponding number of them may be erected on board a ship. It is also possible to combine a convenient number of such frames to at once form a field-hospital for say 18 to 50 patients.

I will now proceed to describe my invention with reference to the accompanying drawings, in which—

Figure 1 is an end view of two rows of compoundable stretcher supporting frames with stretchers within a railway-car, the latter being indicated by dotted lines, Fig. 2 is a vertical section on the line A—B in Fig. 1, Fig. 3 is an end view of a rack-wagon (indicated by dotted lines) with one frame or a row of two frames each supporting three stretchers, Fig. 4 is a perspective view of a field-hospital composed of six compoundable stretcher supporting frames, Fig. 5 is an elevation of the upper left part of a frame when looked at its long side, partly in section, Fig. 6 is an elevation of the lower left part of the same, Fig. 7 is an elevation of the upper left part of the same, when looked at its small side, partly in section, Fig. 8 is an elevation of the lower left part of the same, Fig. 9 is an elevation of a part shown in Fig. 11, seen from left to right, Fig. 10 is a horizontal section through the same on the line C—D in Fig. 11, Fig. 11 is a vertical longitudinal section through an intermediate part between the parts shown in Figs. 5 and 6, Fig. 12 is a horizontal section on the line E—F in Fig. 7, seen from below, and Fig. 13 is an elevation of a part of a stay shown in Figs. 3 and 4.

Similar characters of reference refer to similar parts throughout the several views.

A compoundable stretcher supporting frame according to my invention is mostly made from timber and is composed of four posts *a a*, four cross bars *b b*, four longitudinal bars *n n* and other parts, which will be described later on.

Each post *a* is provided at its two ends with two U-shaped metallic plates *c c* (see Figs. 5 to 8), which are fastened on it in any known manner, for example by means of screws 10, 10 in Figs. 7 and 8, and form eyes, into which the ends of the cross bars *b b* can be introduced. On the inside of each plate *c* a slotted plate *p* with two bent projections 11, 11 (Figs. 5 and 6) is fastened, while on the lower face of the lower plate *c* two pointed angle-pieces 1, 1 (Figs. 6 and 8) are fastened. The bent projections 11, 11 serve as stops for limiting the motion of the cross bar *b* during its insertion. The angle-pieces 1, 1 are to prevent the post *a* from slipping on the floor or soil. The slot in the slotted plate *p* serves as a guide for a metallic bar *r* for which a second guide *q* is disposed on the post *a*. The two bars *r r* are vertically movable and are each provided at the one end with points (see Figs. 5 and 6). They serve as spikes and can be longitudinally adjusted by means of winged screws 12, 12. The upper bar *r* may be provided with a knob 13, by means of which it can be shifted. A bolt *d* passes through each metallic plate *c* and the end of the respective cross bar *b* for connecting the latter with the post *a*, a winged nut 3 being preferably employed for fastening these two parts. A bolt 14 passes through each metallic plate *c* and the post *a* and is made in one piece with a ring 4 (Figs. 5 and 6). An eye 15 may be fastened on the post by means of the nut of each bolt 14. Each post *a* is provided with a longitudinal groove 5, which may extend over its whole length. Moreover it is provided near its upper end with a screw 16 (see Figs. 1 and 3).

Each upper cross bar *b* is provided near its two ends with two hooks *o o* and at its middle with a screw 17 (Figs. 1 and 3). Each lower cross bar *b* is provided with two bolts d^1 d^1 and winged nuts similar to the bolts *d d* on the posts *a a* and all these bolts are made sufficiently long to permit internally screw-threaded short tubes *u u* (Fig. 2) to be screwed on them.

Each longitudinal bar *n* is provided at its two ends with two metallic head pieces *g g* (Figs. 2, 5 and 6). There are recesses in the bar *n* and slots in the metallic head pieces *g g*, in which the heads 2 of the bolts *d d* (Fig. 5) in the posts *a a* can engage. Two chains *h h* can be easily attached to the two hooks *o o* of each upper cross bar *b* and are allowed to hang downwards. Each chain *h* consists of several short links and several long looped links, which alternate with each other, see Fig. 11. The long looped links render the chains elastic and present each two eyes, into either of which a reduced part of a supporting bar *i* can engage. Each end of this bar *i* is made thinner and can engage in the groove 5 of the respective post *a*. Preferably a buffer *t* (Figs. 7 and 12) of india rubber is fastened in any known manner at each end of the bar *i*, so as to prevent the latter from making any noise during the transport of the stretcher T, which is placed on the bar *i*. Preferably a turnable lock *m* (Fig. 11) is provided on each post *a* for preventing the upward motion of the respective end of the lowermost supporting bar *i*.

The parts of the frame described so far are put together as follows: The ends of two cross bars *b b* are partly introduced into the eyes of two posts *a a*, which eyes are formed by their metallic plates *c c*. The ends of say three round supporting bars *i i* are introduced first into convenient eyes of two chains *h h* and then into the longitudinal groove 5, 5 of the two posts *a a*, after which the latter are pushed towards each other, so that the ends of the two cross bars *b b* strike against the stops 11, 11 in the said eyes. The bolts *d d* are drawn across the U-shaped plates *c c* and the cross bars *b b* and their winged nuts 3, 3 are put on them. The end frame so formed is stiffened by means of two metallic braces *e e* (Figs. 1 and 3) and the screws 16, 17 and 16. The uppermost links of the two chains *h h* are put over the two hooks *o o* of the upper cross bar *b* and the ends of the lowermost supporting bar *i* are secured by turning on the turnable locks *m*. The ends of the supporting bars *i i* with the india rubber buffers *t t* are permitted to move up and down a little in the grooves 5, 5 of the posts *a a* by reason of the elasticity of the two chains *h h*. A second end frame is formed in a similar manner from two posts *a a* and two cross bars *b b*. The two end frames are then put up and connected with each other by means of four longitudinal bars *n n*, the heads 2 of the eight bolts *d d* in the posts *a a* engaging in the recesses and slots of the metallic end pieces *g g* (Fig. 5), after which the winged nuts 3, 3 are screwed home. Care should be taken, that the braces *e e* and the winged nuts 3, 3 of all the bolts *d d* be placed outside. On one long side the frame so formed is then stiffened by means of two diagonals *k k* (Fig. 2), which may be wire ropes with hooks 18 and 19 and screw-joints *l l* (Figs. 5 and 6), the hooks 18 and 19 being inserted in the eyes 4, 4.

Now the frame will be ready for use. If a number of such frames is to be disposed in a covered railway-car, each frame may be placed along the one long side of the car and may be secured by adjusting their spikes *r r*, which on the front side may be driven into the bottom and the roof of the car by soft blows of a hammer. Thereby the frames will be prevented from shifting. The several frames in both rows (Figs. 1 and 2) are then connected one with another by means of the internally screw-threaded tubes *u u*, which are screwed on the external ends of the bolts *d d*. Wooden stays *s s* may be employed for connecting the opposite frames of the two rows, as is shown at Fig. 1. These stays *s s* are each provided at both ends with metallic head pieces 20, slightly tapering hooks 6 and eyes 21 (Figs. 12 and 13). The hooks 6 of each stay *s* are inserted in the slots of the plates *p*, after the spikes *r r* have been removed. Or the said slots may be made sufficiently wide for both the spikes *r r* and the hooks 6 of the stays *s s*. The eyes 15, 15 (Figs. 7 and 8) may be utilized for the insertion of ropes or the like, which may be employed for connecting the opposite ends of two frames, if so preferred. The several stretchers T T are then placed on the supporting bars *i i* and their ends may be fastened on the latter by means of straps, as is shown in Fig. 7. Of course the diagonals *k k* of the several frames will require to be near the walls of the car, so as to give easy access to the stretchers.

Obviously a number of frames may be erected in a similar manner on board a ship or the like.

Fig. 3 illustrates the manner, in which one or two frames may be disposed on a rack-wagon. The bottom of the box being in general narrower than the breadth of the frame, the intermediary bolts d^1 d^1 of the lower cross bars *b* are utilized for connecting the opposite ends of two frames by means of the internally screw-threaded tubes *u u* (see Fig. 2). The posts *a a* of the frame or frames may be secured in any known manner on the vehicle, for example by means of cross bars 22 and ropes or the like. Metallic rods *v v* similar to the braces *e e* may be fastened on the frame or frames by means of the upper bolts *d d* and winged nuts 3 3. The upper ends of the rods *v v* at both ends of either frame are connected by means of a suitable rod 7, which serves for supporting an awning 23 or the like. To facilitate the survey of the wounded persons, each frame may be arranged for supporting three stretchers T T only, of which one is be-

low and the two others are placed above side by side as is indicated in Fig. 3. In this case two stays *s s* are employed for supporting the two upper stretchers T T, each stay *s* being attached to two chains *h h* by means of two suspenders *y y*¹ shown in Figs. 9 to 11. Each suspender is formed of two bent metallic strips *y* and *y*¹ riveted together, of which the upper strip *y* is near its upper end 8 cut out on both sides to form a hinge 8 while the lower strip *y*¹ is simply reduced in width at the lower end. For attaching the suspender *y y*¹ to the chain *h* it is only necessary to first bring the former into a horizontal plane, then to insert the end 8 of the upper piece *y* in the respective short link so that this end 8 projects on the other side, next to turn the suspender downwards, so that the two branches of the said short link engage in the cuts near the end 8 and prevent the latter from slipping away (Fig. 10), and at last to insert the reduced end of the lower piece *y*¹ in the next lower short link, as is clearly shown in Fig. 11. A bent cover *z* is made turnable on the upper piece *y* (see Fig. 9) and to engage in a slot in the lower end of the same. The cover *z* is provided with a screw 25 by means of which a bent plate 24 can be pressed on the stay *s* for securing it. The two eyes 21, 21 of the stay *s* are connected with the upper two eyes 15, 15 on the posts *a a* by means of wire ropes *x* or the like and two hooks 26 (Fig. 13). The middle of each stay *s* may be connected with the screw 17 on the upper cross bar *b* by means of a wire rope 27 or the like and a screw-joint 28. On the two stays *s s* in each frame the two upper stretchers way be fastened by means of leather straps or the like.

Fig. 4 illustrates the manner, in which a field-hospital can be formed of six frames in three parallel rows. The two frames in each row are connected in the manner described above with reference to Figs. 1 and 2. The clear distance between any two rows is made like the length of the stays *s s* and the hooks 6, 6 of the latter are inserted in the slots of the slotted plates *p p*. Above the middle row of frames metallic rods *v v* are disposed in the manner described above with reference to Fig. 3 and are connected with each other by means of rods 7, 7 over which awnings or the like can be placed to protect the patients from the weather. The upper corners of the two external rows of frames are connected with the external ends of the rods 7, 7 by means of wire ropes *w w*, over which the said awnings or the like are placed.

The compoundable stretcher supporting frame may be varied without departing from the spirit of my invention.

I claim:

1. In a compoundable stretcher supporting frame, the combination with four posts provided with longitudinal grooves, of four cross bars, four longitudinal bars, means for connecting said four posts with said four cross bars and said four longitudinal bars to form a parallelopipedal frame, braces for stiffening the frame, four elastic chains suspended from the ends of the two upper cross bars, horizontal bars engaging in said four elastic chains and guided in the grooves of said four posts and adapted to support a plurality of superposed stretchers, and means for securing the frame to a supporting foundation.

2. In a compoundable stretcher supporting frame, the combination with four posts having longitudinal grooves, of four cross bars, four longitudinal bars, means for connecting said four posts with said four cross bars and said four longitudinal bars to form a parallelopipedal frame, braces for stiffening the frame, four elastic chains suspended from the ends of the two upper cross bars, horizontal bars engaging in said four elastic chains and guided in the grooves of said four posts and adapted to support a plurality of superposed stretchers, four locks on said four posts for checking the upward motion of the two lowermost horizontal bars, and means for securing the frame to a supporting foundation.

3. In a compoundable stretcher supporting frame, the combination with four posts having longitudinal grooves, of four cross bars, four longitudinal bars, means for connecting said four posts with said four cross bars and said four longitudinal bars to form a parallelopipedal frame, braces for stiffening the frame, four elastic chains suspended from the ends of the two upper cross bars, horizontal bars engaging in said four elastic chains and adapted to support a plurality of superposed stretchers, india rubber buffers for guiding the ends of said horizontal bars in the grooves of said four posts, four locks on said four posts for checking the upward motion of the two lowermost horizontal bars, and means for securing the frame to a supporting foundation.

4. In a compoundable stretcher supporting frame, the combination with four posts having longitudinal grooves, of four cross bars, four longitudinal bars, means for connecting said four posts with said four cross bars and said four longitudinal bars to form a parallelopipedal frame, braces for stiffening the frame, four elastic chains suspended from the ends of the two upper cross bars, horizontal bars engaging in said four elastic chains and guided in the grooves of said four posts and adapted to support a plurality of superposed stretchers, means for securing the frame to a supporting foundation, and means for connecting either end of the frame with the opposite end of a similar frame.

5. In a compoundable stretcher support-

ing frame, the combination with four posts having longitudinal grooves, of four cross bars, four longitudinal bars, means for connecting said four posts with said four cross bars and said four longitudinal bars to form a parallelopipedal frame, braces for stiffening the frame, four elastic chains suspended from the ends of the two upper cross bars, horizontal bars engaging in said four elastic chains and guided in the grooves of said four posts and adapted to support a plurality of superposed stretchers, means for securing the frame to a supporting foundation, means for connecting either end of the frame with the opposite end of a similar frame, and distance pieces with hooks connecting either side of the frame with the opposite side of another similar frame.

6. In a compoundable stretcher supporting frame, the combination with four posts having longitudinal grooves, of four cross bars, four longitudinal bars, means for connecting said four posts with said four cross bars and said four longitudinal bars to form a parallelopipedal frame, braces for stiffening the frame, four elastic chains suspended from the ends of the two upper cross bars, two horizontal bars engaging in the lower ends of said four elastic chains and guided in the grooves of said four posts and adapted to support one stretcher, means for securing the frame in any rack-wagon, four suspenders engaging in said four elastic chains between their ends, two long horizontal bars in said four suspenders and adapted to support two stretchers placed side by side, and means connecting the ends of said two long horizontal bars with the upper ends of said four posts.

7. In a compoundable stretcher supporting frame, the combination with four posts having longitudinal grooves, of four cross bars, four longitudinal bars, means for connecting said four posts with said four cross bars and said four longitudinal bars to form a parallelopipedal frame, braces for stiffening the frame, four elastic chains suspended from the ends of the two upper cross bars, two horizontal bars engaging in the lower ends of said four elastic chains and guided in the grooves of said four posts and adapted to support one stretcher, four locks on said four posts for checking the upward motion of said two horizontal bars, means for securing the frame in any rack-wagon, four suspenders with clamps engaging in said four elastic chains between their ends, two long horizontal bars adapted to be clamped in said four suspenders and to support two stretchers placed side by side, and means connecting the ends of said two long horizontal bars with the upper ends of said four posts.

8. In a compoundable stretcher supporting frame, the combination with four posts having longitudinal grooves, of four cross bars, four longitudinal bars, means for connecting said four posts with said four cross bars and said four longitudinal bars to form a parallelopipedal frame, braces for stiffening the frame, four elastic chains suspended from the ends of the two upper cross bars, horizontal bars engaging in said four elastic chains and guided in the grooves of said four posts and adapted to support a plurality of superposed stretchers, means for securing the frame to a supporting foundation, struts on the two upper cross bars, a beam on said struts and adapted to support an awning or the like, means for connecting either end of the frame with the opposite end of a similar frame, and distance pieces with hooks connecting the sides of the frame with opposite sides of other similar frame, so that a field-hospital may be formed.

9. In a compoundable stretcher supporting frame, the combination with four posts having metallic end pieces and longitudinal grooves, of four cross bars adapted to be secured in the metallic end pieces of said four posts, four longitudinal bars with metallic end pieces which are adapted to combine themselves with the metallic end pieces of said four posts, the said parts forming when combined a parallelopipedal frame, diagonals connecting the end pieces of said four posts to longitudinally stiffen the frame, braces connecting the upper cross bars and the posts to transversally stiffen the frame, four elastic chains suspended from the ends of the two upper cross bars, horizontal bars engaging in said four elastic chains and in the grooves of said four posts and adapted to support a plurality of superposed stretchers, guides on said four posts, spikes vertically adjustable in said guides and adapted to secure the frame to a supporting foundation.

10. In a compoundable stretcher supporting frame, the combination with four posts having metallic end pieces and longitudinal grooves, of four cross bars adapted to engage in the end pieces of said four posts, bolts passing through the end pieces of said four posts for securing said four cross bars and provided with winged nuts, four longitudinal bars with metallic end pieces which are adapted to be hooked on the metallic end pieces of said four posts by means of the heads of said bolts, the said parts forming when combined a parallelopipedal frame, diagonals adapted to be hooked on the end pieces of said four posts to longitudinally stiffen the frame, braces adapted to connect the upper cross bars and the posts for transversally stiffening the frame, four elastic chains suspended from the ends of the two upper cross bars, horizontal bars engaging in said four elastic chains and in the grooves

of said four posts and adapted to support a plurality of superposed stretchers, guides on said four posts, spikes vertically adjustable in said guides and adapted to secure the frame to a supporting foundation, internally screw-threaded tubes adapted to fit on said bolts for connecting either end of the frame with the opposite end of a similar frame, and distance pieces with hooks adapted to be hooked on the end pieces of said four posts for connecting either side of the frame with the opposite side of another similar frame.

HEINRICH BRUSIS. [L. S.]

Witnesses:
OTTO KÖNIG,
J. A. RITTERSHAUS.