Feb. 5, 1946. H. E. ROBINSON 2,394,264

CARRYING APPARATUS

Filed April 7, 1943 2 Sheets-Sheet 1

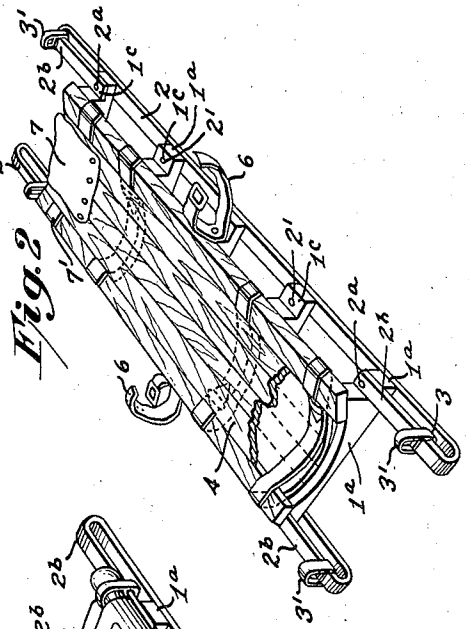


Fig. 2

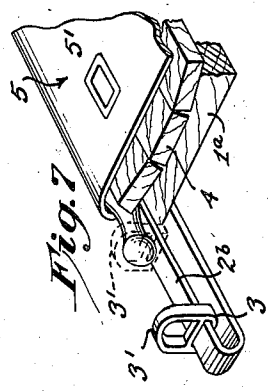


Fig. 7

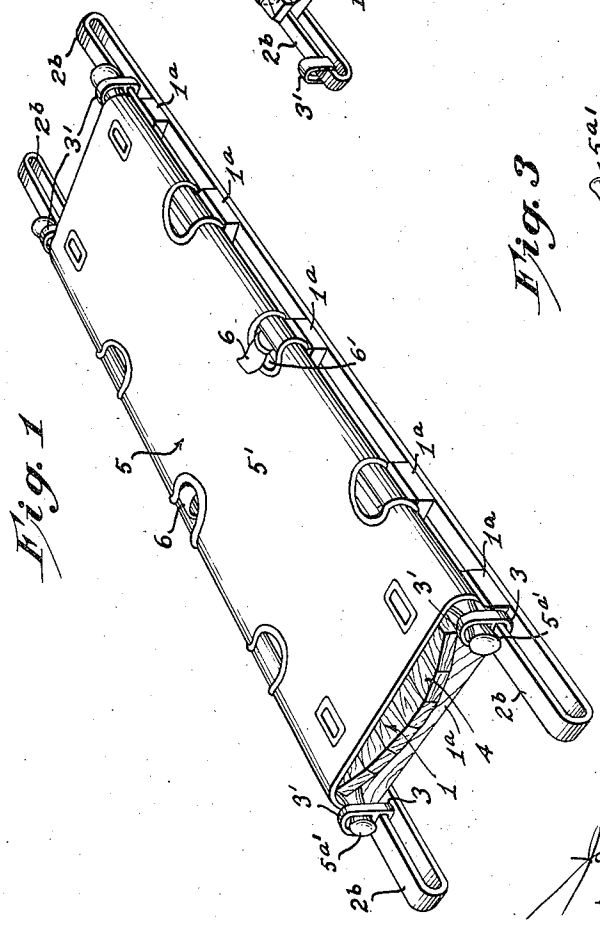


Fig. 1

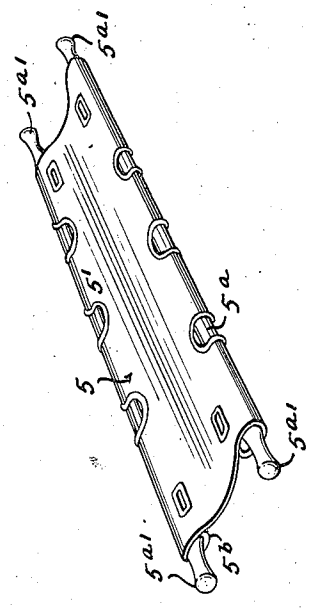


Fig. 3

Inventor

HAROLD E. ROBINSON

Joseph A. O'Brien

By

Attorney

Feb. 5, 1946. H. E. ROBINSON 2,394,264

CARRYING APPARATUS

Filed April 7, 1943 2 Sheets-Sheet 2

Fig. 4

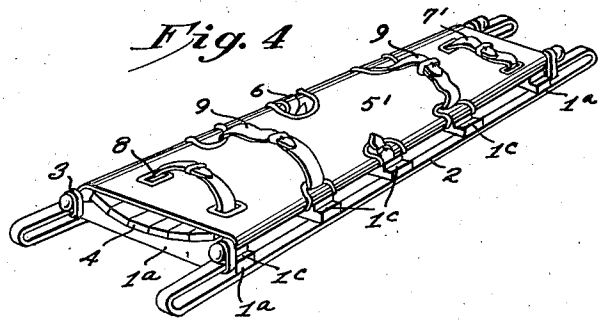


Fig. 5

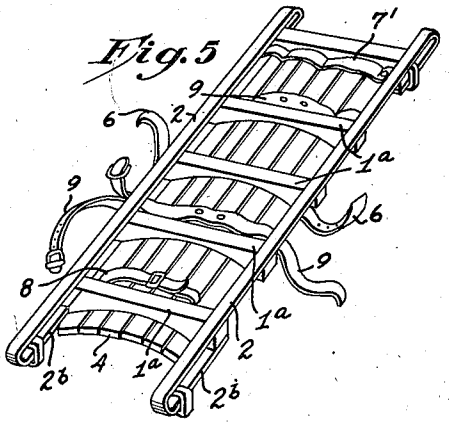
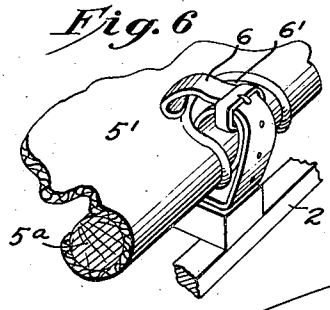


Fig. 6



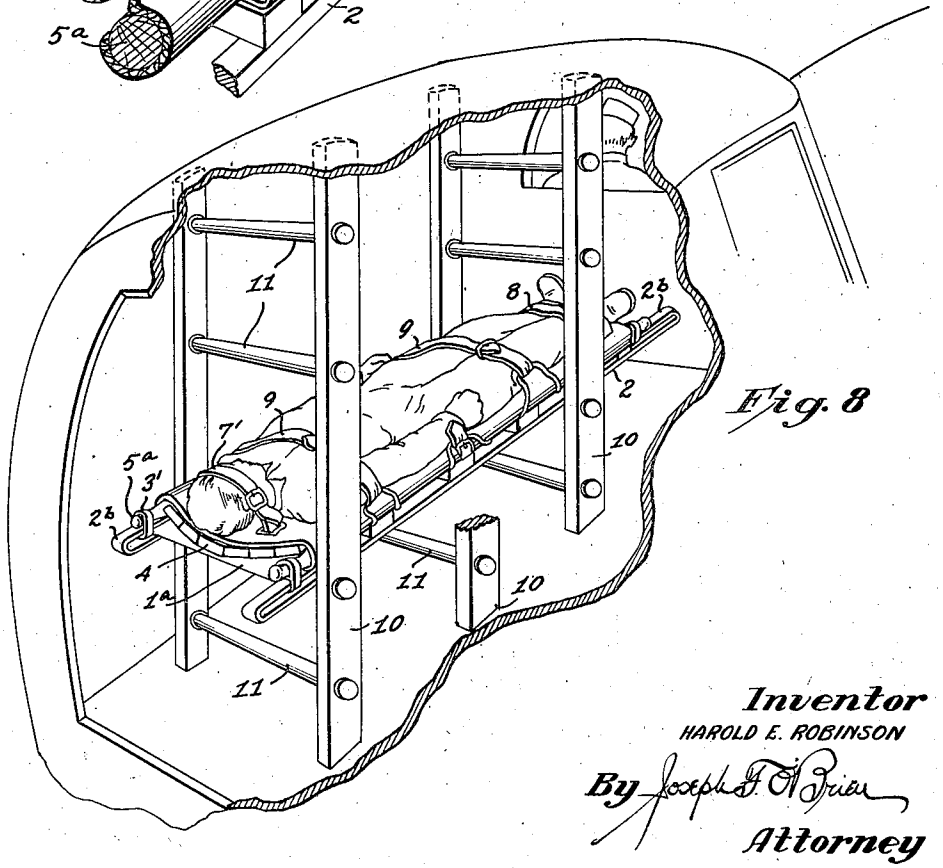


Fig. 8

Inventor
HAROLD E. ROBINSON
By Joseph T. O'Brien
Attorney

Patented Feb. 5, 1946

2,394,264

UNITED STATES PATENT OFFICE

2,394,264

CARRYING APPARATUS

Harold E. Robinson, Astoria, Long Island, N. Y.

Application April 7, 1943, Serial No. 482,103

4 Claims. (Cl. 5—82)

My invention relates to improvements in carrying-apparatus for sick, disabled, unconscious or injured persons generally and more particularly to carrying-apparatus adapted to enable the safe handling of fracture cases as well as various other types of cases.

Heretofore injured persons and particularly fracture cases were carried on one of many varying types of stretchers to an operating room in a hospital and then independently lifted therefrom to an operating table, bed or the like. This independent secondary handling at times resulted in dislocations, discomfort and injury to the patient, a highly unsatisfactory condition. Also most former stretchers were adapted to handle special cases only and were unsatisfactory for the carrying and subsequent handling of more than one type of case.

One of the objects of this invention is to provide carrying-apparatus adapted for general use in carrying patients having all types of injuries such as are usually received at fires, explosions, disasters, accidents and in war, and particularly is adapted not only for safe initial carrying of the patient but for subsequent supported transfer of the patient without the usual discomfort of unsupported lifting by hand.

Another object is to provide a carrying-apparatus which combines in one device all the advantages of the conventional stretcher and fracture-board, and which is convertible from one type to the other immediately and is capable of independent or conjoint use in accordance with the requirements of a given situation.

Another object is to provide an apparatus having many of the advantages of the rigid and flexible types of stretchers.

Other objects include the provision of apparatus that may be stacked or stored with economy of space and may be readily stacked when loaded with patients; that provide for comfortable rigid transportation; that is sanitary; that will permit a patient to be comfortably carried or moved in vertical or horizontal positions or in inverted position to permit oral eruption and prevent strangulation; to permit the stretcher in field operation to be easily drawn over rough terrain or rubble without hazard or injury to the patient and may be readily moved vertically to permit transfer of the patient from a shell hole or from a roof down the side of a building or from other heights to level ground without danger to the patient; that is of sturdy, economical construction with a minimum of priority material and has a low initial cost of manufacture and minimum cost of maintenance.

With these and other objects in view my invention comprises, in its preferred embodiment, the construction shown in the accompanying drawings, in which:

Fig. 1 is a perspective view in stacking condition of my apparatus assembled as a combined fracture board and stretcher with the straps out of sight beneath the fracture-board; Fig. 2 is a similar view partly broken away of the fracture-board alone; Fig. 3 is a similar view of the stretcher removed from the fracture board; Fig. 4 is a perspective view similar to Fig. 1 with the straps fastened shown above the stretcher; Fig. 5 is a perspective view of the reverse or bottom side of the apparatus; Fig. 6 is a perspective fragmentary view of the middle strap connected to the stretcher poles; Fig. 7 is a perspective view of one of the corners of the apparatus showing the means for fastening the stretcher to the fracture board at the corners; and Fig. 8 is a fragmentary view showing a loaded apparatus stacked in a conveyance.

Like reference characters indicate similar parts in the figures.

Referring now to these drawings, 1 indicates a built up fracture board comprising a supporting structure composed of a series of five supporting struts 1*a* extending transversely and spaced from each other, and each strut having an upper or top edge portion intermediate its ends of arcuate conformation. These spaced struts are suitably mounted and fastened by rivets 2' or the like between the ends of a pair of longitudinally-disposed runners 2 comprising, as illustrated, metal strips reversely or reentrantly bent at opposite ends into U-shaped conformation first to provide handles 2*b* at the four corners and also to permit fastening of each strip terminal to the end struts by rivets 2*a*. The arcuate edge portions of the struts register with each other to form a support for slats 4 mounted on said arcuate top edge portions of the struts to produce an elongated arcuate rigid surface or bed of the fracture board 1.

Removably mounted on the fracture board 1 in such position as to extend from one side of the arcuate surface to the other while tautly spanning said surface to form a cushioning element thereon is a stretcher member 5 comprising a flexible fabric 5' and carrying poles 5*a*. The stretcher is preferably mounted in the following manner:

The supporting struts are provided at each side of the slat-covered intermediate arcuate portions with angular and preferably substantially rectangular end notches 1*c* adapted to receive and seat the stretcher poles 5*a* which are

fitted within sheaths 5b formed at the sides of the flexible fabric stretcher member 5' and having handles 5a' projecting at opposite ends. The stretcher poles 5a when fitted and fastened within the end notches 1c cause the flexible fabric member 5' to be stretched across the arcuate rigid bed surface of the fracture board so as to furnish a covering for the slatted surface which, though providing a more comfortable cushioning effect will not detract from the necessary rigidity requirements of a fracture board.

The stretcher member 5 is securely though removably or demountably fastened to the fracture-board member preferably by mounting sliding ferrules 3 on reentrant portion of the handle portions 2b and providing said ferrules with engaging ring portions 3' adapted to embrace the handles 5a' of the stretcher member and securely to lock the same to the metallic handles 2b of the fracture-board member 1. In order to brace the poles intermediate their ends, I provide short straps 6 fastened to the surface of the notches in the middle strut and arranged to engage the middle portions of the poles, apertures 6' being made in the fabric for this purpose. By loosening the straps 6 and sliding the ferrules 3 outwardly, the stretcher member may be readily and quickly demounted from the fracture board member either for independent use in emergencies where the requirements of a situation make such use necessary or for the preferable conjoint use in transferring a patient from the fracture-board to an operating table, after initial carrying of the patient on the combined fracture-board and stretcher.

My combined fracture board and stretcher is provided with a series of straps for securely fastening a patient to the same and the stretcher member is provided with a series of openings to permit effective fastening. As illustrated, the fracture board is provided at its head with a headrest 7 and a head-strap 7' is preferably anchored intermediate its ends to the slats and passes up between slats and through openings in the stretcher fabric to permit embracing and fastening of the head of the patient as shown in Figs. 4 and 8. The feet of the patient may be likewise fastened by a strap 8 and intermediate straps 9 are provided for the legs and breast of the patient.

The combined fracture board and stretcher takes up little storage space when not in use and when in use carrying patients several devices may be stacked readily, quickly and securely in small space in proper position within ambulances or small trucks by providing simple stacking apparatus such as shown in Fig. 8 comprising uprights 10 having rollers 11 suitably mounted therein so that the bottom of the runners may be slid along the same. Also, in use, patients having all type of injuries may be safely and comfortably carried to a hospital and then transferred to the operating table or the like by demounting of the stretcher and the movement of the patient thereon without change to such operating table.

Having described my invention, I claim:

1. A combined fracture-board and stretcher comprising, in combination a supporting rigid fracture-board member having a bed portion provided with an arcuate surface and provided with runners extending longitudinally below and at opposite sides of said arcuate body, and having portions projecting longitudinally forwardly and rearwardly beyond said arcuate bed portion to function as handles for the fracture-board member, a flexible fabric stretcher member comprising a body of fabric and carrying poles connected to said body at the side edges thereof, said fracture-board member having side-edge seats for said poles, and means for demountably securing said poles in said seats comprising sliding ferrules on the projecting handles of the fracture board passing over the handles of the flexible stretcher.

2. A combined fracture-board and stretcher comprising, in combination, a supporting rigid fracture-board member comprising a pair of longitudinally-disposed runners, a built-up supporting structure mounted on and fastened at the opposite side edges to said runners and composed of a series of spaced transverse supporting struts having a top-edge of arcuate conformation and pole-seats at opposite sides thereof, rigid bed members mounted on and fastened to said transverse struts to provide a bed portion having a rigid arcuate surface, a separable stretcher member comprising a pair of longitudinal poles and a flexible fabric mounted on said poles, said stretcher poles being adapted to fit into said pole-seats and to stretch said fabric over said bed portion, and means on said fracture-board member for demountably securing said stretcher poles in said seats.

3. A combined fracture-board and stretcher comprising, in combination, a supporting rigid fracture-board member comprising a pair of longitudinally-disposed runners, a built-up supporting structure mounted on and fastened at the opposite side edges to said runners and composed of a series of spaced transverse supporting struts having a top-edge of arcuate conformation and pole-seats at opposite sides thereof, rigid bed members mounted on and fastened to said transverse struts to provide a bed portion having a rigid arcuate surface, a separable stretcher member comprising a pair of longitudinal poles and a flexible fabric mounted on said poles, said stretcher poles being adapted to fit into said pole-seats and to stretch said fabric over said bed portion, and means on said fracture-board member for demountably securing said stretcher poles in said seats, said runners having portions projecting longitudinally in opposite directions beyond said arcuate bed portion to function as handles for the fracture-board member and stretcher.

4. A combined fracture-board and stretcher comprising, in combination, a supporting rigid fracture-board member comprising a pair of longitudinally-disposed runners, a built-up supporting structure mounted on and fastened at the opposite side edges to said runners and composed of a series of spaced transverse supporting struts having a top-edge of arcuate conformation, and pole-seats at opposite sides thereof, rigid bed members mounted on and fastened to said transverse struts to provide a bed portion having a rigid arcuate surface, a separable stretcher member comprising a pair of longitudinal poles and a flexible fabric mounted on said poles, said stretcher poles being adapted to fit into said pole-seats and to stretch said fabric over said bed portion, and means on said fracture-board member for demountably securing said stretcher poles in said seats, said fracture-board having patient-securing straps fastened thereto and said stretcher member having holes in its fabric body portion through which said straps pass to contact with a patient.

HAROLD E. ROBINSON.