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ADJUSTABLE HEIGHT GURNEY

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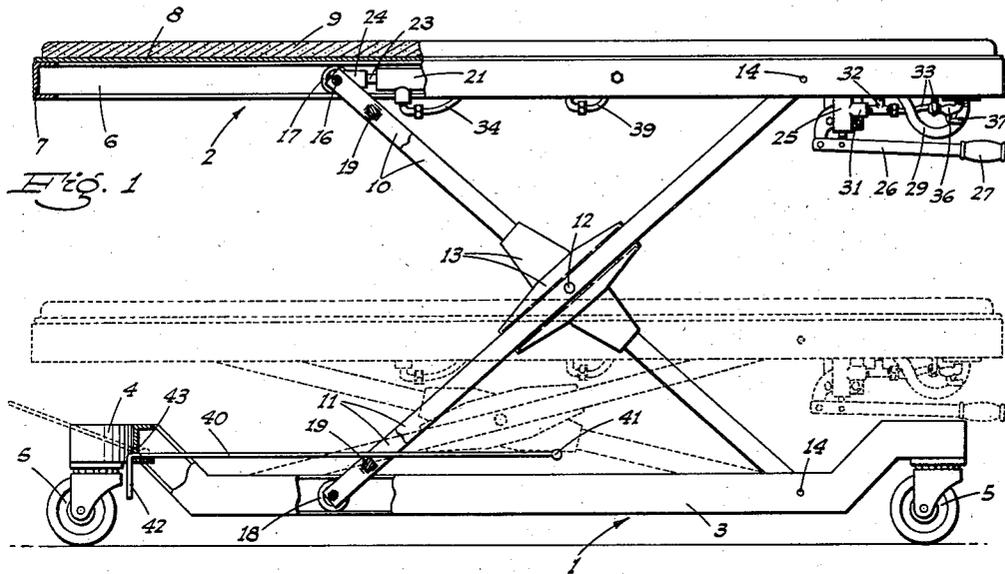


Fig. 2

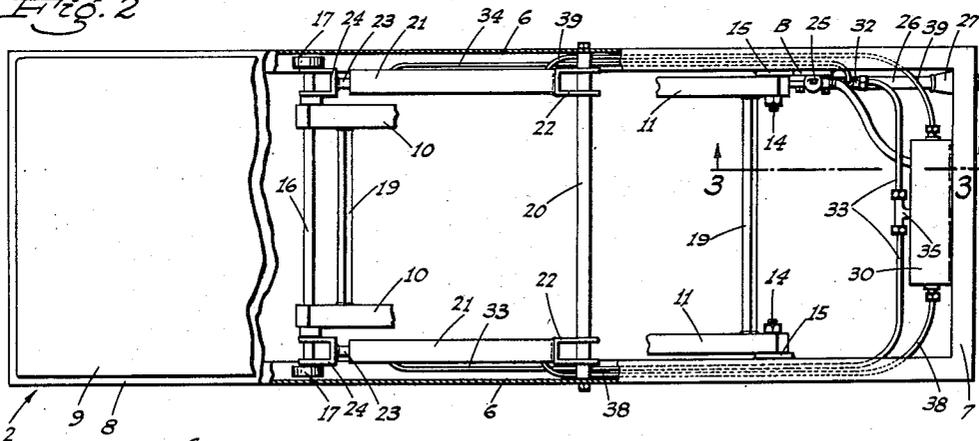
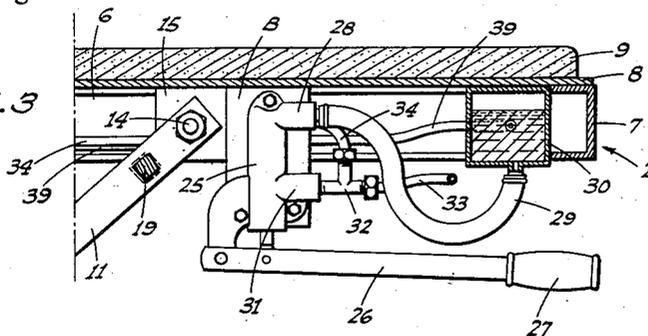


Fig. 3



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ADJUSTABLE HEIGHT GURNEY

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1 Claim. (Cl. 296—20)

This invention relates in general to an improved wheeled or mobile stretcher, commonly known as a "gurney," which is used for supporting and transferring an ill or injured person—in a recumbent position—from point to point.

The major object of this invention is to provide a stretcher which is readily adjustable in height; there being a top or mattress supporting frame of the stretcher movable between a lowered position relatively close to the floor or ground, and a raised position at substantially the height of a hospital bed or operating table. When in the lowered position, the stretcher can be conveniently carried in an ambulance for use in much the same manner as a conventional stretcher, and yet at the hospital the stretcher can be adjusted to raise the person thereon to a level of the hospital bed or operating table.

Another important object of the invention is to provide a stretcher, as above, which includes a novel adjustable mounting structure between the top or mattress-frame and a wheeled bottom or carrier frame; such mounting structure incorporating a lever assembly which effectively supports such top frame for up or down motion, while maintaining the same horizontal at all times.

An additional object of the invention is to provide a stretcher, as in the preceding paragraph, which includes novel power mechanism for accomplishing such vertical adjustment of the top frame relative to the bottom frame; such mechanism normally holding said top frame in its selected position of adjustment.

It is also an object of the invention to provide an adjustable height stretcher which is designed for ease and simplicity of manufacture and convenience of use.

Still another object of the invention is to provide a practical, reliable, and durable adjustable height gurney, and one which will be exceedingly effective for the purpose for which it is designed.

These objects are accomplished by means of such structure and relative arrangement of parts as will fully appear by a perusal of the following specification and claim.

In the drawings:

Fig. 1 is a side elevation, partly broken away and partly in section, of the stretcher; the top or mattress supporting frame being shown in full lines in a raised position and in dotted lines in a lowered position.

Fig. 2 is a plan view of the stretcher partly broken away and partly in section.

Fig. 3 is an enlarged fragmentary sectional elevation taken on line 3—3 of Fig. 2.

Referring now more particularly to the drawings, and to the characters of reference marked thereon, the adjustable height stretcher comprises a bottom or carrier frame, indicated generally at 1, and—in symmetrical relation thereabove—a top or mattress supporting frame, indicated generally at 2; said frames being elongated.

The bottom frame 1 includes longitudinal, transversely

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spaced side beams 3, each formed with a drop-center section, as shown, and said side beams 3 being of inwardly opening, channel form in cross section. The side beams 3 are rigidly connected at the ends by lower cross beams, the forward one of which is indicated at 4, which cross beams are arcuate in a longitudinally inward direction in order to provide for full clearance for the person walking at the end of—and manipulating—the stretcher.

Beyond the drop-center section 3—i. e. at the ends thereof—each of the side beams 3 is fitted with and supported by a caster wheel unit 5.

The top frame 2 includes side beams 6 of inwardly opening, channel form in section, and which side beams are connected at the ends by cross beams 7; such top frame being provided with a cover plate 8 on which a pad or mattress 9 is disposed to support the person carried by the stretcher.

The following adjustable mounting structure connects the top frame 2 with the bottom frame 1 in supported but vertically adjustable relation:

At each side of the gurney there is a pair of intersecting lever arms 10 and 11 disposed in a longitudinal vertical plane; such lever arms being relatively elongated with the point of intersection substantially centrally of their ends, and at said point the lever arms 10 and 11 of each pair are transversely pivoted together, as at 12. In order to stabilize the intersecting and pivoted-together lever arms 10 and 11 against lateral wobbling, said arms are fitted on adjacent faces with intersecting stabilizer plates 13 which engage in face to face relation.

The pivots 12 of the pairs of lever arms 10 and 11 are alined transversely of the stretcher, and—at one end of the mounting structure—the upper and lower ends of the lever arms of each pair are pivoted by bolts 14 to blocks 15 fixed to the adjacent side beams 6 and 3 of the respective frame. At the other end of the mounting structure, the upper ends of the lever arms 10, which lie inwardly of corresponding lever arms 11, are connected by a cross shaft 16 which projects at the ends beyond said arms; the ends of the cross shaft 16 being fitted with rollers 17 which run in the channel of the adjacent side beams 6. At the corresponding ends, the lever arms 11 carry rollers 18 which run in the channels of the related side beams 3.

The corresponding lever arms 10, and 11, of the pairs thereof are connected in rigid relation by cross or tie bars 19.

With the above described mounting structure between the bottom frame 1 and the top frame 2, scissors-like movement of such structure causes vertical adjustment of said top frame; such movement being attained through the use of the following power mechanism:

Intermediate the ends thereof the top frame 2 is provided with a cross shaft 20, and a pair of transversely spaced, relatively small-diameter power cylinders 21 are connected at their rear ends by yokes 22 to said cross shaft 20, thence extending longitudinally—along but inwardly of the side beams 6—in the direction of the cross shaft 16. At their outer ends the power cylinders 21 include projecting piston rods 23, each fitted with a yoke 24 coupled to the cross shaft 16 between the corresponding lever arm 10 and the related roller 17.

It will be recognized that when the power cylinders 21 are contracted, the mounting structure—comprised of the pairs of intersecting lever arms 10 and 11—will be vertically extended, with the top frame 2 in a raised position. With such vertical extension the rollers 17 and 18 travel inwardly in the channels of the related side beams 6 and 3, as shown in full lines in Fig. 1.

Conversely, when the power cylinders 21 are extended,

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the top frame 2 occupies a lowered position, as shown in dotted lines in said figure.

The power cylinders 21 are actuated and controlled by a fluid pressure conduit system comprising the following:

A manual type hydraulic pump 25 is supported by a bracket B fixed to, and depending from, one of the side beams 6 adjacent but short of an end of the top frame 2; such pump including a longitudinally extending, pump actuated lever or handle 26 fitted at the outer end with a grip 27 which is disposed below the near end of the top frame 1.

By engaging the grip 27 and working the handle 26 up and down, the hydraulic pump 25 is actuated, feeding pressure to the power cylinders 21 and causing contraction thereof and resultant raising of the top frame 2; said cylinders being of a type which shorten in their effective length upon the application of fluid pressure to their outer ends.

More specifically, the hydraulic pump 25 has an intake fitting 28 connected by a hose 29 with the bottom of a hydraulic fluid reservoir 30 mounted on the near end beam 7 inwardly thereof; the output fitting of the pump being indicated at 31.

A T 32 is connected to the output fitting 31, and conduits 33 and 34 lead from such T to corresponding ones of the power cylinders 21 at the outer ends of the latter.

Intermediate the ends thereof the conduit 33, in a portion thereof which extends transversely of the top frame 2, has another T 35 interposed therein, and the lateral leg of such T connects to a valve 36 whose other end returns to—and is in communication with—the reservoir 30 at the bottom thereof; said valve 36 having a hand lever 37.

When the pump 25 is actuated to feed pressure to the power cylinders 21 to cause the same to contract, and which raises the top frame 2, the valve 36 is closed. Thereafter, to effect lowering of said top frame 2, the valve 36 is opened, which—under the weight of such top frame—permits the hydraulic fluid to feed back through the conduits 33 and 34 through the T 35 and said valve into the reservoir 30.

Thus, by the simple expedient of working the handle 26, or opening the valve 36, the top frame 2 of the gurney is raised or lowered, respectively.

Other conduits 38 and 39 lead from the rear ends of the power cylinders 21 to corresponding ends of the reservoir 30; these last named conduits being merely for the purpose of bleeding back to the reservoir any of the hydraulic fluid which may bypass the pistons in the power cylinders 21 and gain access to the rear portions thereof.

For the purpose of manually towing the stretcher, when desired, a pull rod 40 is provided; such pull rod being fitted at its rear end with a stop knob 41, and at its forward end with a lateral handle 42. The pull rod 40 normally extends through a hole 43 in one of the lower cross beams 4 centrally of its ends, with the handle 42 adjacent the front of said cross beam and depending therefrom; the

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rod 40 then being supported intermediate its ends by one of the cross bars 19. See Fig. 1.

In use of the pull rod 40 the handle 42 is grasped and said rod is pulled outwardly until the stop knob 41 abuts the back side of the related cross beam 4; the handle then projecting in a stretcher pulling position from one end thereof, and as shown—in part—in dotted lines in said figure.

The described stretcher—while being relatively simple in its structure—is extremely practical and advantageous, particularly with respect to the ability to adjust such stretcher in its effective height, for the purposes hereinbefore recited.

From the foregoing description it will be readily seen that there has been produced such a device as will substantially fulfill the objects of the invention as set forth herein.

While this specification sets forth in detail the present and preferred construction of the device, still in practice such deviations from such detail may be resorted to as do not form a departure from the spirit of the invention, as defined by the appended claim.

Having thus described the invention, the following is claimed as new and useful, and upon which Letters Patent are desired:

An adjustable-height stretcher comprising an elongated wheel-supported bottom frame which includes inwardly facing channel side beams, an elongated mattress-supporting top frame which includes inwardly facing channel side beams, pairs of intersecting lever arms disposed in transversely spaced longitudinal planes, the lever arms of each pair being pivotally connected intermediate their ends, means transversely pivoting the corresponding upper and lower ends of the lever arms to the corresponding side beams of the top and bottom frames, rollers on the other ends of the arms riding in said beams, hydraulic cylinders parallel to and laterally inward of the side beams of the upper frame, and in a longitudinal position between the upper ends of the pairs of arms, means connecting the cylinders at one end to those arms having the rollers on their upper ends, means connecting the cylinders at their other ends to the corresponding side beams of the upper frame, and a manually operated fluid pressure system mounted on the upper frame adjacent one end and connected to the cylinders to supply power thereto.

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