Aug. 14, 1951 F. J. KELLY 2,564,333

PORTABLE COT

Filed March 31, 1949 4 Sheets-Sheet 1

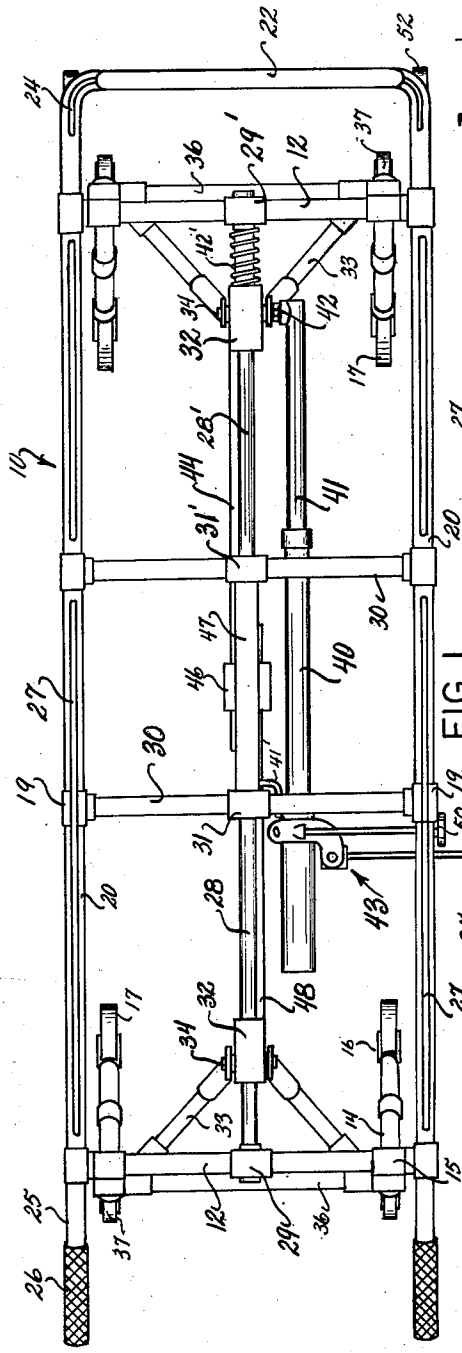


FIG. 1

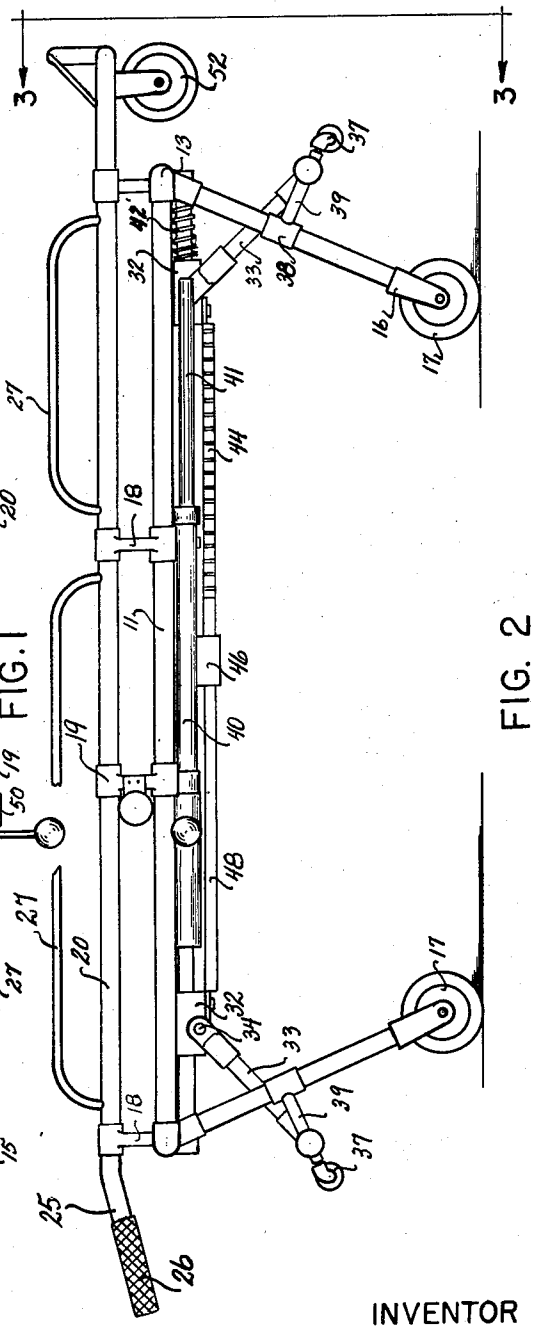


FIG. 2

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PORTABLE COT

Filed March 31, 1949 4 Sheets-Sheet 2

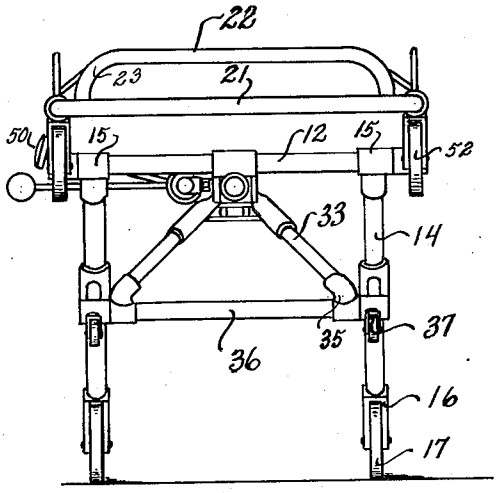


FIG. 3

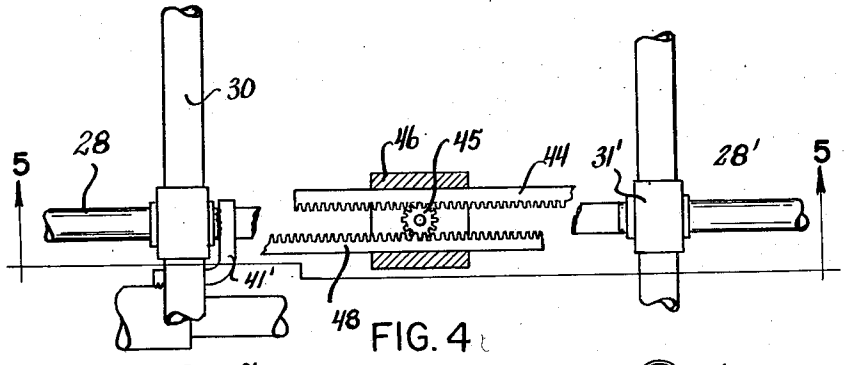


FIG. 4

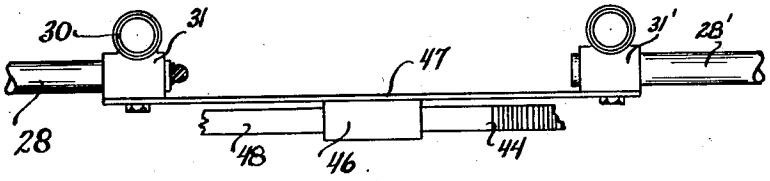


FIG. 5

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PORTABLE COT

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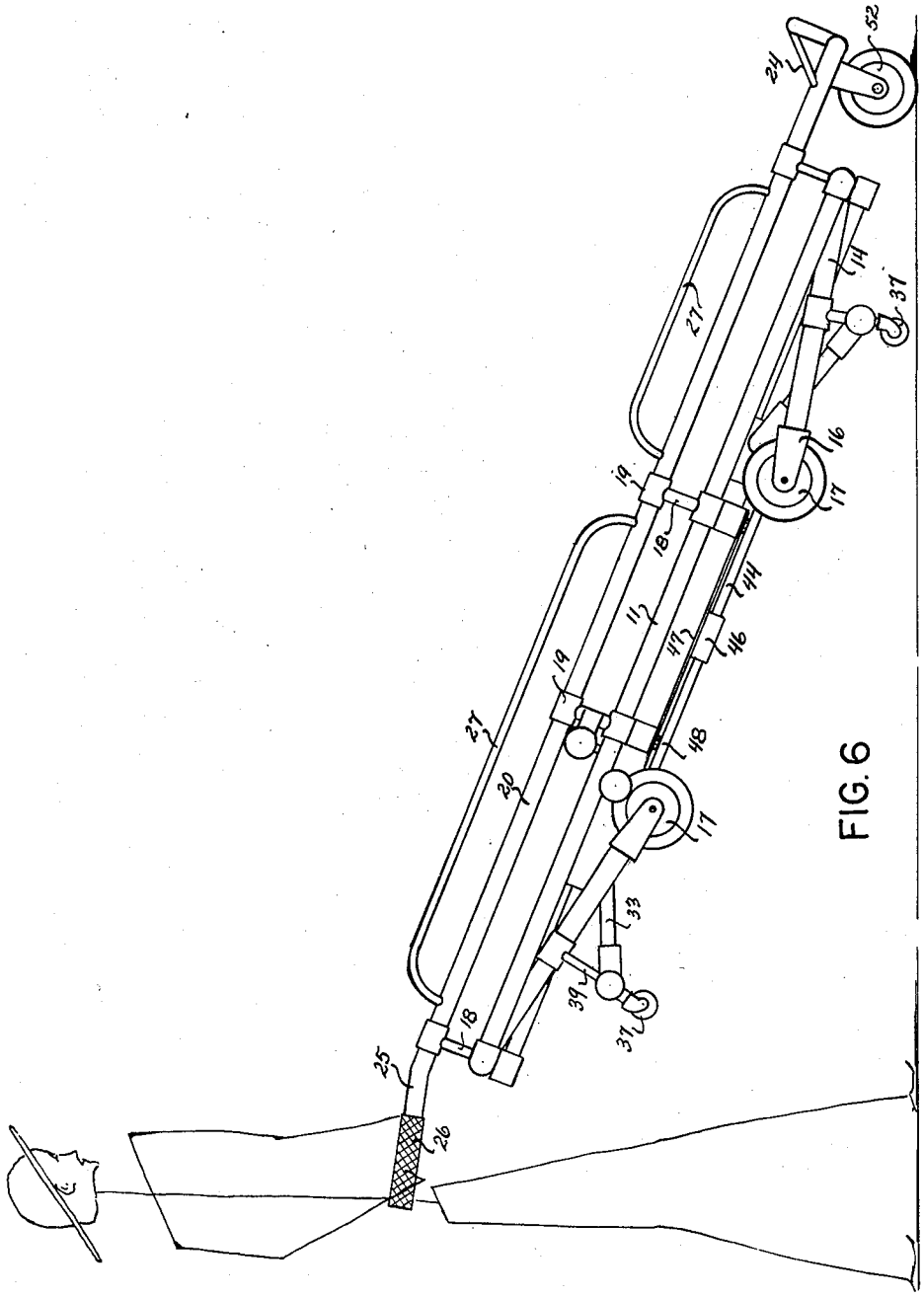


FIG. 6

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PORTABLE COT

Filed March 31, 1949 4 Sheets-Sheet 4

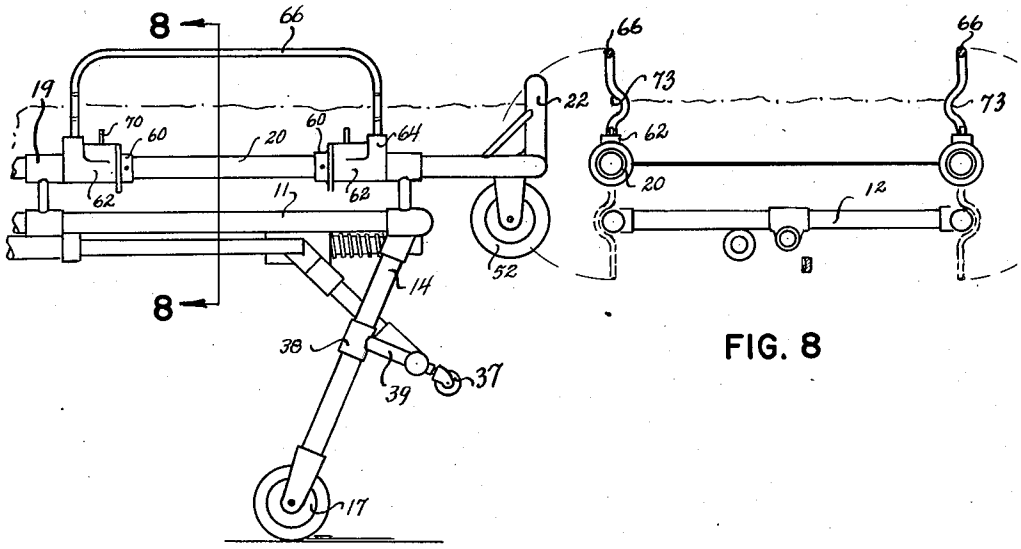


FIG. 8

FIG. 7

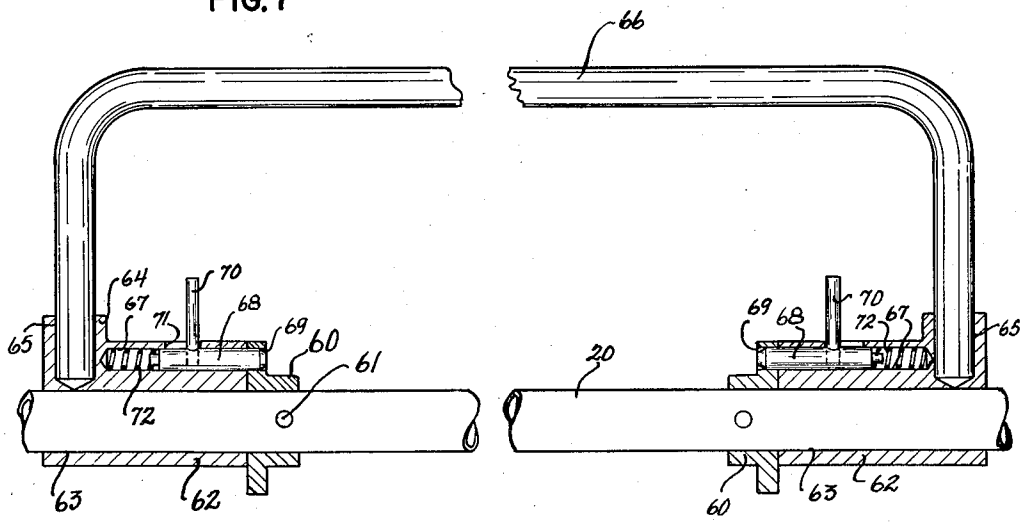


FIG. 9

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Patented Aug. 14, 1951 2,564,333

UNITED STATES PATENT OFFICE

2,564,333

PORTABLE COT

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Application March 31, 1949, Serial No. 84,615

9 Claims. (Cl. 296—20)

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Broadly, the present invention relates to a portable mobile supporting assembly, and in its more specific aspect has reference to a stretcher or cot assembly of the wheeled type.

I am aware, of course, that numerous wheeled stretchers and cots have heretofore been provided for both ambulance service and undertakers' service uses, but the majority of these prior devices have not been such that the cot could be converted from an undertaker's cot to an ambulance cot and vice versa because of the structural details of the cot. The present invention, however, overcomes this undesirable characteristic and, as will later be more fully described, the cot structure may be readily transformed from an undertaker's cot to an ambulance cot by merely adding a back rest and substituting a comfortable mattress for the thin leatherette mattress.

For ideal operation, a cot for undertaker's uses should be so constructed as to eliminate substantially all lifting necessary by the personnel of the undertaker's establishment when handling the body, to be adapted for use in all types of service cars and be such that it may be carried or wheeled in any location where it is necessary to go for the body.

In connection with a stretcher or cot used for ambulance purposes such as moving invalids, injured or sick persons, there are other problems which arise, such as providing comfort for the patient and ease of handling for the operator or attendant of the cot. By virtue of this invention, the cot may be moved directly to the patient's bed, thereby allowing the patient to be placed directly on the cot instead of being first carried to the cot in a chair or litter. Additionally, upon arrival at the receiving ward in a hospital, the cot may be elevated to examination table height, thereby eliminating further moving of the patient until the examination has been completed which, of course, is most important because of the fact that it is sometimes dangerous to the patient's life to be moved or handled unduly.

In order to accomplish the foregoing and other advantageous objects, the invention comprises a tubular framework having wheels at each end thereof supported by legs mounted for swinging movement toward and away from the frame. Suitable hydraulic or mechanical actuating means is associated with the frame and operatively connected with the leg structures whereby the proper actuation of the operating means effects pivotal movement of the wheels. Side rails are detachably connected with the frame and a handle structure is incorporated at one end of the frame,

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while a foot rest or stop forms a part of the opposite end, the foot rest or stop also including a pair of fixed wheels.

By proper manipulation of the control means, the pivotally mounted wheels may be elevated to a position in approximately parallel relationship to the frame to enable the frame to be readily lifted and carried by hand and facilitate the placing of the cot within an ambulance or other vehicle whereby it will take up as little space as possible. Moreover, the control means will enable the supporting legs to be moved to various angular positions relative to the frame, thus enabling the supporting surface of the cot to be adjusted to various heights, eliminating in no small measure the handling of the patient or body, which is highly desirable.

With the foregoing and other objects in view, the invention consists in the details of construction, and in the arrangement and combination of parts to be hereinafter more fully set forth and claimed.

In describing the invention in detail, reference will be had to the accompanying drawings forming part of this application, wherein like characters denote corresponding parts in the several views, and in which:

Figure 1 is a top plan view of the cot framework.

Figure 2 is a side elevational view of the cot shown in Figure 1, the wheels being in a surface-engaging position.

Figure 3 is a view taken along the line 3—3 of Figure 2, looking in the direction of the arrows.

Figure 4 is a fragmental view, partly in section, showing the mechanism whereby the wheel supporting legs are moved about their pivots to the frame.

Figure 5 is a view taken along the line 5—5 of Figure 4 looking in the direction of the arrows.

Figure 6 is a side elevational view showing the wheels in the retracted position whereby the cot may be wheeled by means of the wheels on the foot rest for making sharp turns around doors and in hallways.

Figure 7 is a fragmental side elevation of one end of the cot depicting the manner in which the rail elements may be rotatably mounted on the longitudinal horizontal tubes.

Figure 8 is a sectional view taken along the line 8—8 of Figure 7, looking in the direction of the arrows.

Figure 9 is a detail view, partly in section, showing the means for securing the rail element in the vertical position.

As shown in Figure 1, the cot comprises a framework 10 including a pair of parallel horizontally extending tubes 11 which are connected at each end thereof by transverse tubes 12 by means of elbow joints or the like 13. A pair of spaced apart legs 14 are pivotally mounted at their upper ends to each of the transverse tubes 12, as indicated at 15, and the lower end of each leg carries a bifurcated member 16 between the legs of which a wheel 17, preferably having a resilient tire, is rotatably mounted.

A plurality of spaced vertical standards 18 are conveniently affixed to each of the longitudinal tubes 11. The upper end of each standard, which may be a sleeve 19, supports a horizontal tube 20 in substantially parallel relationship to the tube 11, but the tube 20 is of somewhat greater length than the tube 11, as clearly shown in Figure 2, and the tubes 20 function as side rails for the cot. In Figures 1 and 3 it can be seen that the tubes 20 are connected at one end by means of a cross tube 21, preferably integrally formed therewith, and a tubular section 22 is disposed above the tube 21, and each end of the section 22 is downwardly curved, as at 23, the downwardly curved portions being attached to the tube 21. The section 22 functions as a foot rest and diagonal braces 24 may be secured to the section 22 and the tubes 20 for reinforcing purposes. The opposite or free end of each of the tubes 20 terminates in a handle member 25 which is bent downwardly at a small angle with respect to the tube and is provided with a resilient hand grip 26, for the usual purposes. Furthermore, if desired, rail elements 27 may be attached by welding or the like to the upper portion of each of the tubes 20, as clearly shown in Figures 1 and 2.

As hereinabove pointed out, one of the important objects of my invention is to provide means whereby the legs 14 and the wheels 17 may be moved from a nested position with respect to the frame 10, as shown in Figure 6, to a surface-engaging position, as indicated in Figure 2, or to intermediate positions between the nested and fully extended position. In other words, the legs may be moved to and maintained at any desired angular position with respect to the frame in order that the frame may be located at various heights to enable a patient, for example, to be moved easily from the cot to an examination table in the receiving ward of a hospital. To accomplish this end, a tube 28 extends longitudinally of the frame and one end thereof is suitably attached to one of the cross tubes 12, as indicated at 29. The frame may be strengthened or reinforced transversely by a pair of spaced tubular members 30 intermediate the cross tubes 12, and the tube 28 is secured to a supporting element 31 carried by one of the tubes 30. A similar tube 28' is secured to the other of the cross tubes 12 as shown at 29' and to the tubular member 30 as indicated at 31'. A sleeve 32 encircles the tubes 28 and 28' for sliding movement thereon, and the upper end of a pair of diagonally extending braces 33 is pivotally attached to the sleeve, as shown at 34. The lower ends of the braces 33 are secured, as shown at 35, to a cross tube 36 which carries at each outer end thereof a caster wheel 37 and a casting 38 is attached to each of the legs 14 and is provided with a right angled extension 39 secured to the cross tube. This arrangement is such that when the legs 14 are in their nested position with respect to the frame 10, the casters 37 will be at approximately right angles to the frame and the frame may be easily moved along a floor.

A cylinder 40, connected with a suitable source of pressure, is supported below the longitudinally extending tubes 11 by means of an L-shaped bracket 41', one leg of which is secured to the cylinder while the other leg is attached to the rod 28. A piston (not shown) having a piston rod 41 is connected to the sleeve 32 at the pivot connection 34, as indicated at 42 and hence the hydraulic unit is supported by bracket 41' and pivot 42. A helical spring 42' surrounds the tube 28 intermediate the sleeve and the connection 29' on the cross tube 12. The admission of pressure into the cylinder 40 is actuated by a control designated generally 43. A rack 44 is connected with the sleeve 32 at the foot end of the frame and meshes with a gear 45 journaled in a box 46 carried by a supporting strip 47, each end of which is attached to the bearings 31 and 31' in any convenient manner. A second rack 48 is secured to the opposite sleeve 32 and meshes with the gear 45. Hence, it can be seen that if pressure is admitted into the cylinder, the piston rod will be moved outwardly and therefore likewise move the sleeve 32 at the foot end outwardly, which movement will cause downward movement of the legs 14 about their pivots to the cross tubes by virtue of the connection between the legs and the braces 33 and at the end of the stroke engages spring 42' just before the legs reach the extended position. Obviously, this movement of the sleeve 32 will move the rack 44 in the same direction and rotate the gear 45 which will simultaneously move the rack 48 in the opposite direction, and the sleeve 32 at the head end of the frame will cause the legs 14 at that end to move downwardly about their pivots to the cross tubes so that the wheels 17 will engage the supporting surface. Of course the amount of pivotal movement of the legs can be accurately controlled by the operator 43, and the pressure can be released by the manipulation of the release device 50.

It will, of course, be understood that a suitable mattress or the like is disposed upon the frame 10 and will be supported by the longitudinal tubes 20, and any convenient means may be employed to maintain the mattress properly supported on the tubes.

In employing the cot for undertakers' use, a thin leatherette mattress may be disposed upon the frame. After the body has been disposed upon the frame, it is strapped in position and the cot may be either wheeled on the wheels 17 or the legs may be folded by releasing the hydraulic pressure through manipulation of the release 50, whereupon the cot may be picked up and carried manually, or it may be wheeled by means of wheels 52 supported by the tubes 20 at the foot end of the frame 10, which arrangement enables the cot to make very sharp turns around doors or in hallways. If, however, the distance to be travelled is a substantial one, it is more advisable to actuate the hydraulic control 43 to lower the wheels 17 and thereby obviate any carrying of the cot. To dispose the cot within the service car, the wheels, of course, are moved to their nested position, thus taking up very little space which is important. After arrival at the undertaker's establishment, the wheels are, of course, lowered to raise the cot to the level of the embalming table and thereby avoid any lifting of the body.

To convert the cot for ambulance purposes, it

is merely necessary to add a back rest to the frame and employ a comfortable cotton mattress in lieu of the thin leatherette mattress. By virtue of the fact that the legs may be folded to a compact position relative to the frame, the cot may be taken directly to the patient's bed, which is a marked improvement over current practices, since it will enable the patient to be placed directly upon the cot, rather than being carried downstairs in a chair or canvas litter. The cot may be either moved with the wheels 11 in a lowered position or it may be carried, depending, of course, upon the particular problem encountered.

The present invention eliminates, to a large degree, any great amount of handling of the patient which is most desirable, and by virtue of the hydraulic operation of the wheels, provides considerable comfort for the patient and also ease of handling for the attendants.

In Figures 7 to 9, inclusive, I have shown means whereby the rail elements are rotatably mounted on the horizontal tube 20 so that they may be swung downwardly out of the way during the examination of a patient.

It will be noted that a pair of collars 60 are secured to the horizontal tube 20 by means of pins 61, and one end of a casting 62 abuts the collar 60 while the opposite end engages the sleeve 19. The casting 62 has a longitudinal bore 63 through which the tube 20 extends and is formed with a protuberance 64 at right angles to the bore, the protuberance being provided with a socket 65. Rail element 66 is downturned at each end thereof and each downturned end is fitted within the socket 65.

The casting 62 also includes a bore 67 in which a latch 68 is slidably mounted. The outer end of the bore 67 is in alinement with an aperture 69 formed in the collar 60, and an operating handle 70 conveniently attached to the latch 68 extends upwardly through an elongated slot 71 in the upper face of the casting 62. A helical spring 72 is located within the bore 67 so that one end thereof bears against the end of the bore while the opposite end engages the inner end of the latch 68, thus maintaining the latch in the position shown in Figure 9. In other words, the latch will normally maintain the rail element 66 in the vertical position, since the end of the latch projects into the aperture 69 on the collar 60.

To swing the rail elements downwardly, each of the operating handles 70 is moved inwardly whereby the latch 68 is moved inwardly against the action of the spring 72, and when each latch 68 is withdrawn from each aperture 69, the rail element may be moved downwardly 180° to the position shown in Figure 8. In order that the rail element will be properly nested with respect to the horizontally extending tubes 11, it can be seen that each end of the rail is bowed or curved inwardly at 73 and the rail element 66 will assume the position shown in the dash lines of Figure 8 when in the lowered position.

The invention is not to be confined to any strict conformity with the showing in the drawings, but may be changed or modified so long as such changes or modifications mark no material departure from the salient features of the invention as expressed in the appended claims.

I claim:

1. A portable cot comprising a frame including spaced parallel longitudinal members, a transverse member connecting the ends of said longitudinal members, a pair of legs pivotally mounted to each of said transverse members, a wheel carried by each of said legs, bracing means extending transversely of the longitudinally extending members and connected to said members intermediate the ends thereof, a guide element secured to said bracing means and to one of said transverse members, a second guide element secured to said bracing means and to the other of said transverse members, said guide elements being parallel to the longitudinally extending members, a sleeve mounted on each of said guide elements, a connection between each of said sleeves and the said wheel supporting legs, a drive connection between each of said sleeves, and means to move one of said sleeves along its guide element to effect pivotal movement of the wheel supporting legs, said drive connection imparting simultaneous pivotal movement to the other of said wheel supporting legs.

2. A portable cot comprising a frame including spaced parallel longitudinal members, a transverse member connecting the ends of said longitudinal members, a pair of legs pivotally mounted to each of said transverse members, a wheel carried by each of said legs, bracing means extending transversely of the longitudinally extending members and connected to said members intermediate the ends thereof, a guide element secured to said bracing means and to one of said transverse members, a second guide element secured to said bracing means and to the other of said transverse members, said guide elements being parallel to the longitudinally extending members, a sleeve mounted on each of said guide elements, a connection between each of said sleeves and the said wheel supporting legs, a rack associated with one of said slevees, a pinion meshing with said rack, a second rack meshing with the pinion and connected to the other of said sleeves, and means to move one of said sleeves along its guide element to effect pivotal movement of the wheel supporting legs, said first mentioned rack, pinion and second mentioned rack effecting movement of the other of said sleeves to simultaneously move the wheel supporting legs about its pivot.

3. A cot as claimed in claim 2 wherein hydraulically operated means effects movement of one of said sleeves.

4. A cot as claimed in claim 1 wherein wheels are carried by the connections between the sleeves and the wheel supporting legs for providing surface engaging members when said supporting legs are moved upwardly about their pivots to the transverse members.

5. A cot as claimed in claim 2 wherein wheels are carried2 by the connections between the sleeves and the wheel supporting legs for providing surface engaging members when said supporting legs are moved upwardly about their pivots to the transverse members.

6. A portable cot of the character described comprising spaced parallel longitudinal members, a transverse member connecting the free ends of said longitudinal members, wheels secured to said transverse members, additional spaced parallel longitudinal member supported above said first named longitudinal members, spaced supports rotatably mounted on said second named longitudinal members, a side rail attached to said spaced supports, a pair of collars fixed on the second named longitudinal members, each collar being in facial engagement with each spaced support, each of said collars being provided with an aperture there and a spring-pressed

latch mounted within said spaced support normally lodged in the aperture in the collar to prevent rotation of the support relative to the longitudinal member.

7. A portable cot as claimed in claim 6 wherein the spring-pressed latch is mounted within the spaced support above and in parallel relation to the longitudinal member.

8. A portable cot, spaced parallel longitudinal members, a transverse member connecting the ends of the longitudinal members, wheel supporting legs pivotally mounted to each of the transverse members, a guide element supported in parallel relation to the longitudinal members and connected at one end to one of the transverse members, a second guide element supported in parallel relation to the longitudinal members and operatively connected to the other of said transverse members, a sleeve slidably mounted on each of said guide elements, means connecting each of the said sleeves and the wheel supporting legs, a drive connection between each of the sleeves, and means to slide one of the sleeves along its guide element to effect pivotal movement of the wheel supporting legs, the said drive connection imparting simultaneous pivotal movement to the other of said wheel supporting legs.

9. A portable cot as claimed in claim 8 wherein the drive connection between the slidable sleeves includes a rack connected with one of the sleeves, a pinion meshing with the rack, and a second rack meshing with the pinion and operatively connected to the other of said sleeves.

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