Dec. 3, 1968 D. T. SWANN 3,413,663

COMBINATION STRETCHER, TABLE, CHAIR COMBINATION

Filed Feb. 23, 1967 4 Sheets-Sheet 1

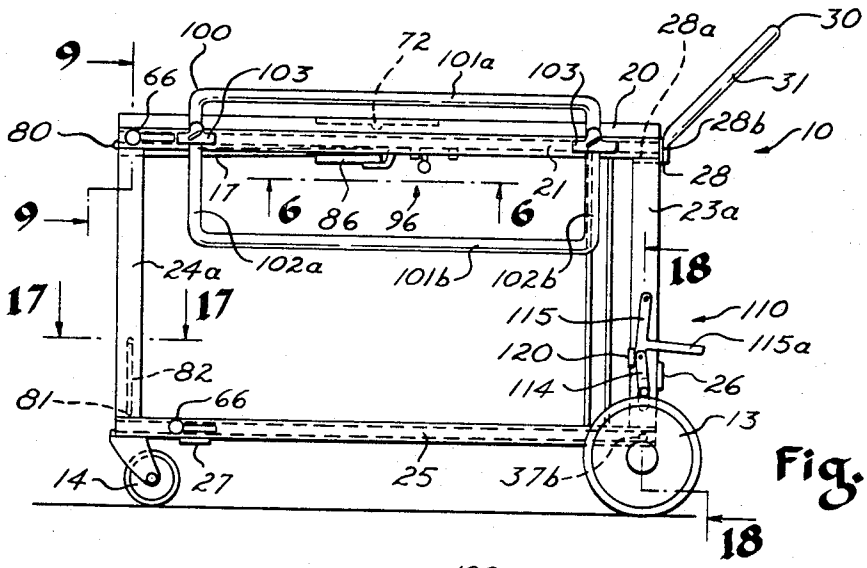


Fig. 1

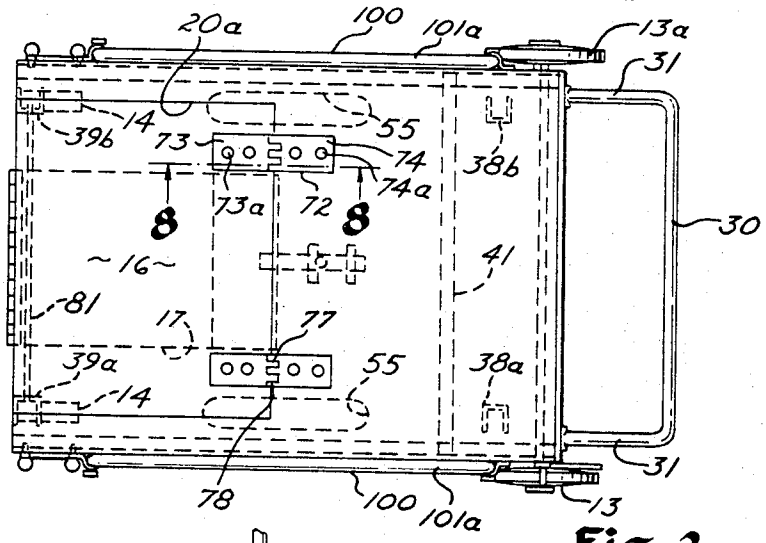


Fig. 2

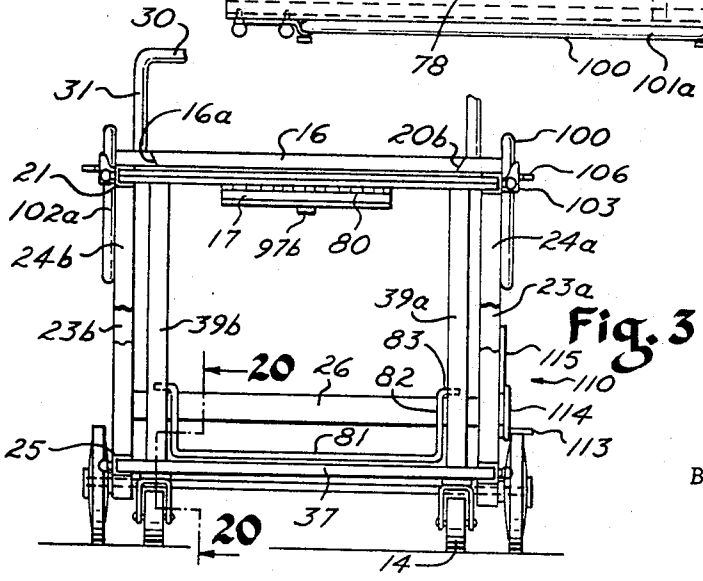


Fig. 3

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COMBINATION STRETCHER, TABLE, CHAIR COMBINATION

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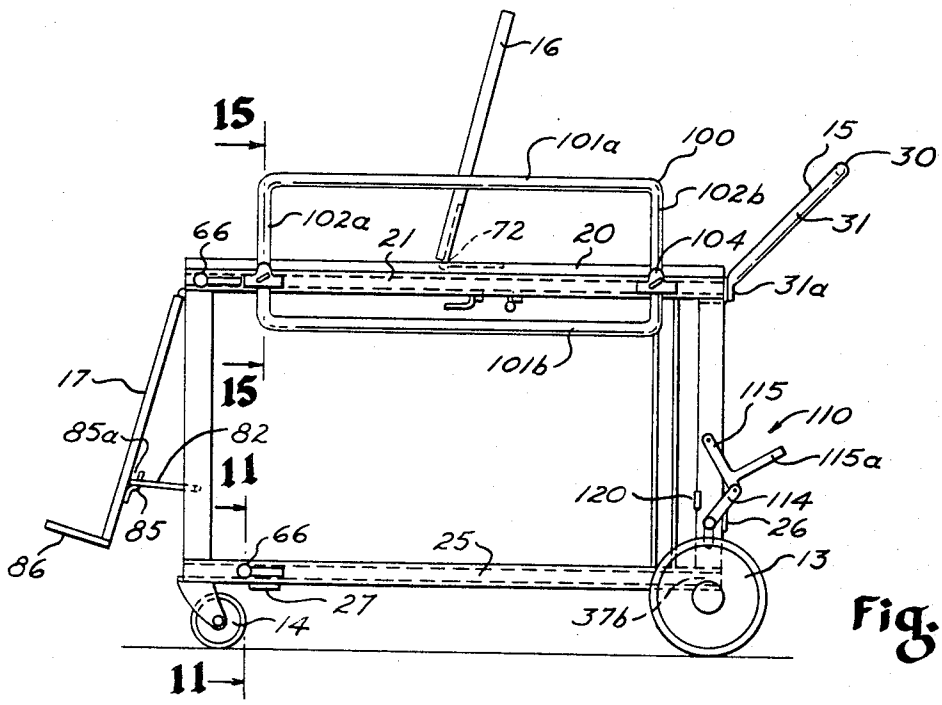


Fig. 4

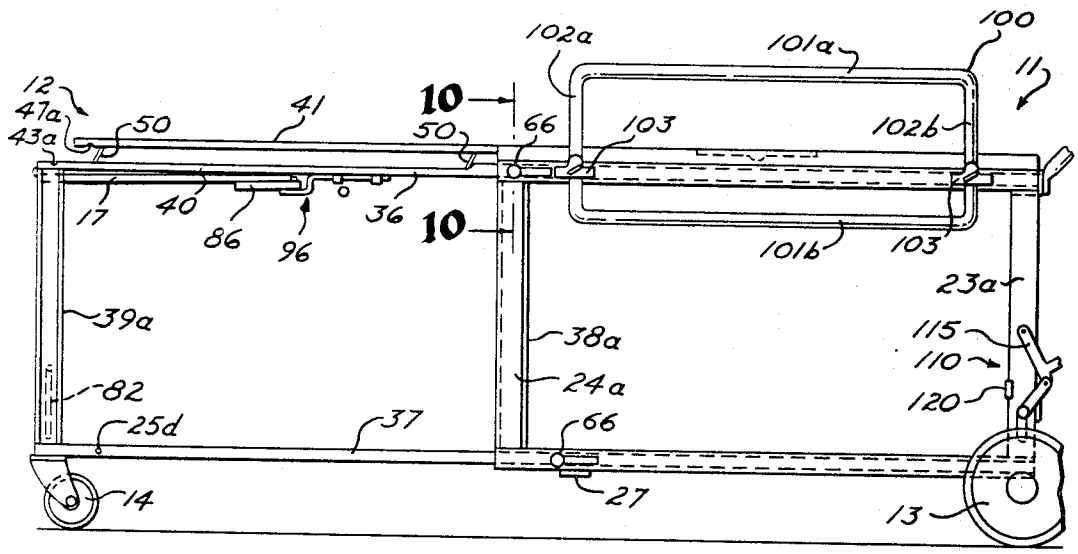


Fig. 5

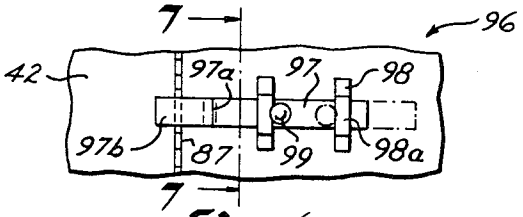


Fig. 6

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COMBINATION STRETCHER, TABLE, CHAIR COMBINATION

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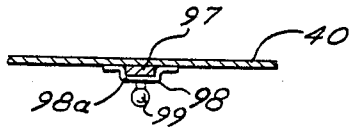


Fig. 7

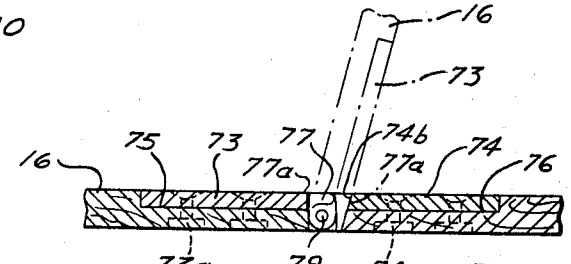


Fig. 8

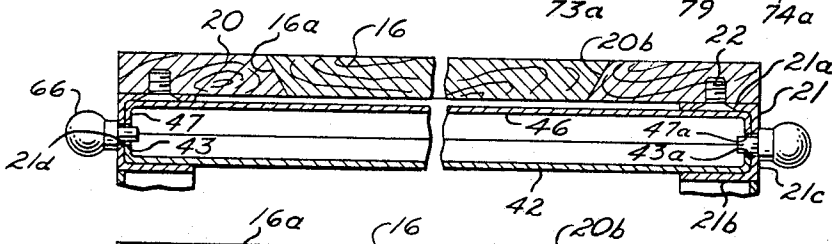


Fig. 9

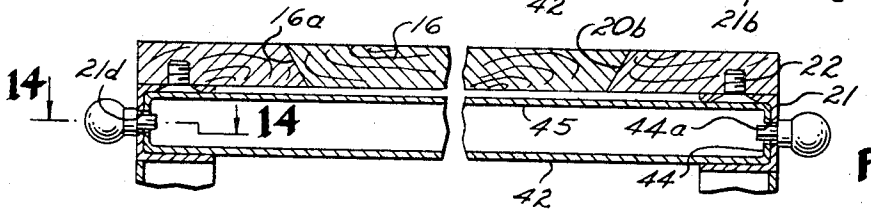


Fig. 10

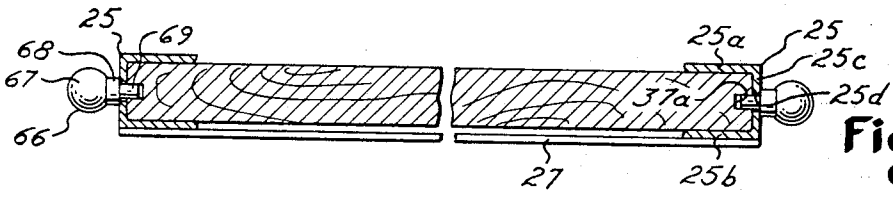


Fig. 11

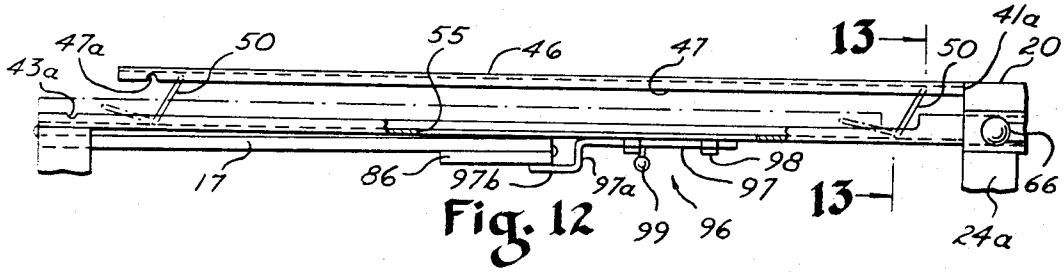


Fig. 12

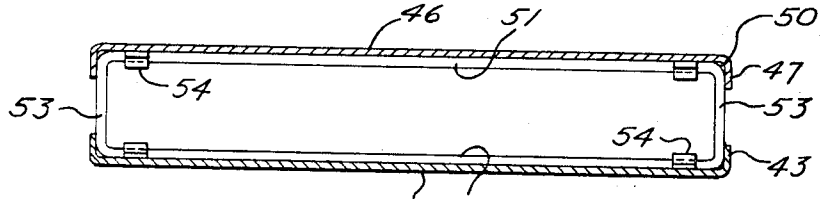


Fig. 13

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COMBINATION STRETCHER, TABLE, CHAIR COMBINATION

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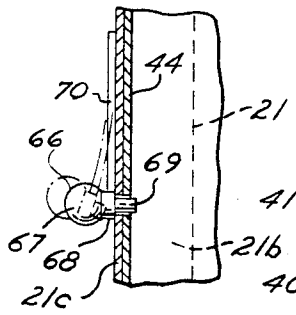


Fig. 14

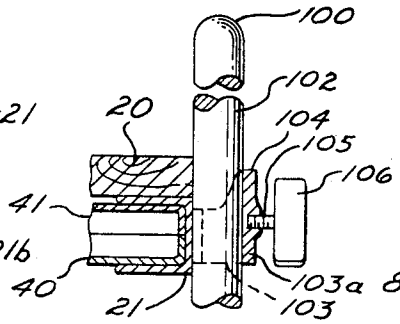


Fig. 15

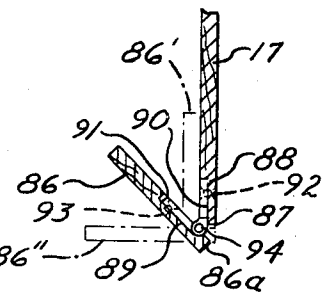


Fig. 16

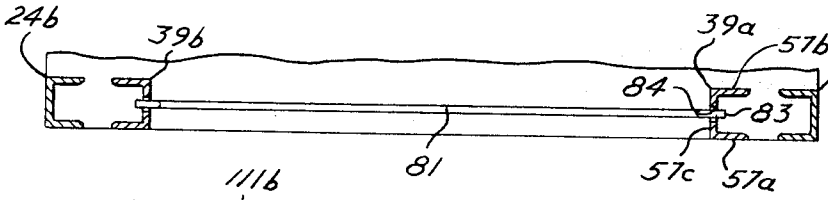


Fig. 17

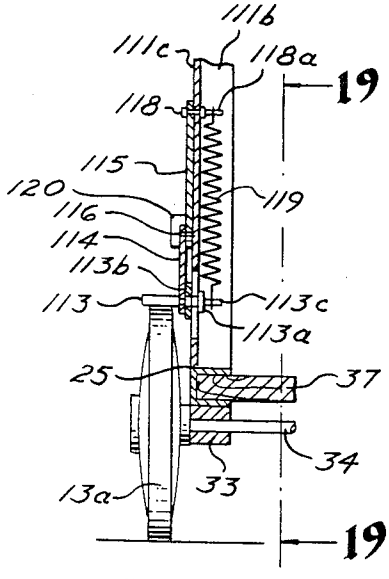


Fig. 18

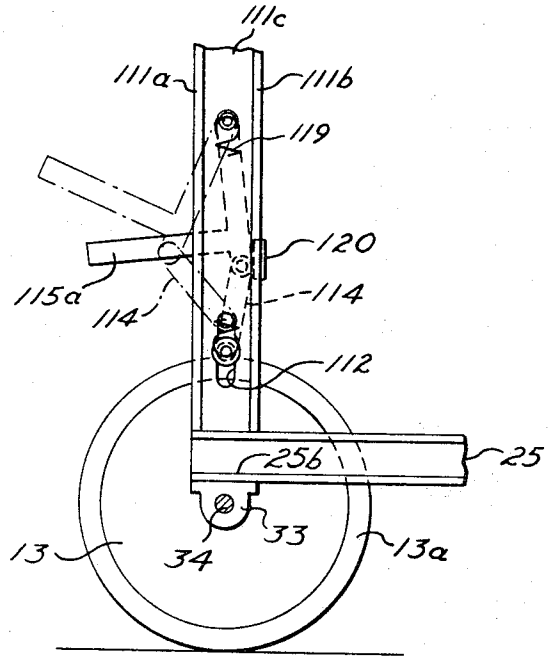


Fig. 19

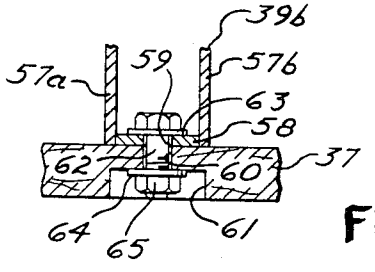


Fig. 20

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United States Patent Office 3,413,663 Patented Dec. 3, 1968

3,413,663

COMBINATION STRETCHER, TABLE, CHAIR COMBINATION

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Filed Feb. 23, 1967, Ser. No. 617,943
12 Claims. (Cl. 5—81)

ABSTRACT OF THE DISCLOSURE

There is disclosed herein a cart for use in hospitals and similar institutions for transporting supplies, the cart including means affording foldable back and leg rests and further means for elongating the upper surface thereof whereby it is convertible from a cart to either a wheel chair or a litter.

This invention relates to improved apparatus for transporting medical supplies or handling and moving patients and relates more particularly to a wheeled cart or table which is easily convertible into a litter or wheel chair.

In hospitals, sanitariums, and similar institutions, much time is lost in ascertaining, locating, and obtaining the correct type of equipment for transporting supplies and patients. The situation is further aggravated by the current shortage of personnel and the limited space available for storing the variety of apparatuses needed, such as utility carts, wheel chairs, litters, and the like. All of these items are needed in almost every part of a hospital at one time or another, and the problem of keeping a supply of each item readily available on each floor or in each department is a serious one.

In view of the foregoing, it is an important object of this invention to provide improved supply transporting and patient handling apparatus which reduces the time needed to locate and obtain equipment of a specific type and which reduces the amount of space needed to store a variety of such equipment.

A further object of this invention is to provide, in a single apparatus, means whereby a patient can be transported either in a seated position or in a prone position, the said apparatus being available at other times for use as a table or transfer cart.

Still another object of this invention is to provide a wheeled cart or table having parts thereof movable to positions providing back- and leg-rests whereby said cart is convertible into a wheel chair.

Yet another object of this invention is to provide a wheeled cart or table having parts thereof movable to positions whereby said cart is extendible in a lengthwise direction to become a wheeled litter.

Another object of this invention is to provide a wheeled cart or table having the features and characteristics set forth above which is adapted to be quickly and easily converted from one type of equipment to another with a minimum of movements and adjustments by the hospital personnel.

A still further object of this invention is to provide a wheeled cart or table as set forth above which is adapted to be stored in a minimum of space.

Another object of this invention is to provide improved apparatus of the type referred to which is economical in construction, composed of but few parts, simple, and efficient in operation, and highly durable in use.

Other objects of this invention and the invention itself will become more readily apparent from the following description of the invention and the accompanying drawings, in which drawings:

FIGURE 1 is a side elevation of the apparatus of this invention showing the same adapted for use as a cart or table with side rails thereof shown in the lowered position;

FIGURE 2 is a top plan view of the invention as shown from the left in FIGURE 1;

FIGURE 3 is a front elevation of the invention as seen from the left in FIGURE 1;

FIGURE 4 is a side elevation of the invention, similar to FIGURE 1, showing the same adapted for use as a wheel chair with the side rails shown in the raised position;

FIGURE 5 is a side elevation of the invention, similar to FIGURE 1, showing the same adapted for use as a litter;

FIGURE 6 is a bottom plan view of a portion of the invention as viewed from the line **6—6** of FIGURE 1;

FIGURE 7 is a section taken along the line **7—7** of FIGURE 6;

FIGURE 8 is a longitudinal section taken along the line **8—8** of FIGURE 2 showing a detail of a backrest hinge;

FIGURE 9 is a transverse section taken along the line **9—9** of FIGURE 1;

FIGURE 10 is a transverse section taken along the line **10—10** of FIGURE 5;

FIGURE 11 is a transverse section taken along the line **11—11** of FIGURE 4;

FIGURE 12 is an enlarged detail part of which is broken away, of a portion of the side elevation of FIGURE 5;

FIGURE 13 is a transverse section taken along the line **13—13** of FIGURE 12;

FIGURE 14 is a horizontal section taken along the line **14—14** of FIGURE 10;

FIGURE 15 is a vertical section taken along the line **15—15** of FIGURE 4;

FIGURE 16 is a sectional detail similar to FIGURE 8 showing a second hinge for mounting a footrest of the invention;

FIGURE 17 is a horizontal section taken along the line **17—17** of FIGURE 1;

FIGURE 18 is a vertical section taken along the line **18—18** of FIGURE 1;

FIGURE 19 is a vertical section taken along the line **19—19** of FIGURE 18; and

FIGURE 20 is a vertical section taken along the line **20—20** of FIGURE 3.

Referring now to the drawings, in all of which like parts are designated by like reference characters, the apparatus of this invention comprises a cart, generally shown at **10**, having a main frame, generally shown at **11**, and a relatively slidable extendible frame, generally shown at **12** (best seen in the extended view of FIGURE 5). The main frame **11** is provided with means slidably receiving the extendible frame **12** whereby the cart **10**, as shown in FIGURE 2, can be lengthened to form a litter, as shown in FIGURE 5, by pulling said extendible frame forwardly or toward the left with respect to the drawings. Rear wheels **13** of the cart **10** are carried by the main frame **11** whereas front casters **14** are carried by the extendible frame **12**. Said casters are fully rotatable about vertical axes whereby the cart (or litter, when the apparatus is in that form) can be easily steered in any direction. A push handle **15** is carried adjacent to the top of the main frame **11** for manually grasping and maneuvering the cart or litter. A backrest **16** is unfoldable upwardly from the top of said cart, and a leg rest **17** is pivotable downwardly and forwardly from the front edge of the extendible frame **12** whereby said cart is convertible into a wheel chair as illustrated in FIGURE 4.

The foregoing is a general description of the apparatus of this invention, each part and all of the features thereof being hereinafter fully described in detail. The cart **10** may be made of any suitable construction material, such as metal and/or wood, and the invention as disclosed herein is one preferred form thereof.

The main frame **11**, as herein described and illustrated, comprises an upper, flat, horizontally disposed, wooden panel **20** of substantial vertical thickness. Said panel is rectangular in shape having a longer dimension disposed lengthwise of the cart **10**. Channel shaped upper ways **21**, shown in detail in FIGURES 9 and 10, are secured to the bottom side of the upper panel **20**, adjacent to the longer, laterally disposed edges of said panel, by any suitable means such as screws **22**. The ways **21**, as shown herein, are preferably of right-angled U-form in section having the open sides thereof disposed inwardly of the cart and comprising upper and lower flanges **21***a* and **21***b*, respectively, and vertically disposed webs **21***c*. The screws **22** are disposed upwardly through the upper flanges **21***a* and into the upper panel **20**.

The rearwardly disposed ends of the uper ways **21** (the right-hand ends as shown in the drawings) carry vertically disposed channel shaped rear legs **23***a* and **23***b* having the open sides thereof disposed inwardly or toward each other. The forwardly disposed ends of said ways **21** are similarly provided with vertically disposed, channel shaped front legs **24***a* and **24***b*. All of the legs **23***a*, **23***b*, **24***a*, and **24***b* are preferably similar in section to the upper ways **21** and are made of metal with said legs being welded to said ways. A pair of lower ways **25**, having upper flanges **25***a*, lower flanges **25***b*, and webs **25***c*, are carried by and preferably welded to the lower ends of the pairs of legs **23***a*, **24***a*, and **23***b*, **24***b*, respectively, and are disposed with the open sides thereof directed inwardly in the same manner as said upper ways (FIGURE 11). Lateral bracing for the main frame **11** is preferably provided and may comprise a laterally disposed bar **26** welded or otherwise suitably connected across rear legs **23***a*, **24***a* and a laterally disposed bar **27** welded or otherwise suitably connected across the lower flanges **25***b* of the lower ways **25**. An angle shaped, lateral brace **28** connects the upper ends of the legs **23***a*, **23***b* by means of a horizontal flange **28***a* thereof, said lateral brace having a vertically disposed, upwardly projecting flange **28***b* connecting the rearmost ends of the upper ways **21**.

The push handle **15** is preferably made of metal tubing formed to provide a laterally directed, horizontal gripping portion **30** (FIGURE 2) and forwardly and downwardly directed arms **31**. The lowermost ends of said arms have downwardly directed flattened portions **31***a* which are preferably welded or otherwise suitably secured to the vertical flange **28***b* of the lateral brace **28**.

Means for mounting the rear wheels **13** comprise bearings **33** (FIGURES 18 and 19) which are mounted in any suitable manner to the bottom surfaces of the lower flanges **25***b* adjacent to the rearmost ends of the lower ways **25**. An axle **34** is journaled in said bearings, said axle extending laterally outwardly beyond the lower ways **25** and carrying the rear wheels **13** laterally outside of said lower ways.

From the foregoing it will be seen that the main frame **12** basically comprises a rigid structure having a flat upper surface, pairs of upper and lower, inwardly open, matching ways, and a pair of rearwardly disposed wheels. The extendible frame **12** preferably comprises upper and lower panels **36** and **37** (FIGURE 5) of rectangular shape and of such thickness as to slidably interfit the pairs of ways **21**, **21** and **25**, **25**, respectively. The panels **36** and **37** are connected together adjacent to the rearwardly directed ends thereof by vertically disposed, rear legs **38***a* and **38***b* and are similarly connected together adjacent to the forwardly directed ends thereof by vertically disposed, front legs **39***a* and **39***b*. The legs **38***a* and **38***b*, **39***a*, and **39***b* are preferably channel shaped in section having the open sides thereof directed laterally outwardly of the cart **10** as herein shown.

Referring now particularly to FIGURES 5, 9, 10, and 13, the upper panel **36** of the extendible frame **12** preferably comprises two sections, a base section **40** and an elevator section **41**. As herein disclosed, both sections are preferably formed of heavy sheet metal.

The base section **40** comprises a horizontally disposed, flat bottom wall **42** having vertical flanges **43** projecting upwardly along its lateral edges throughout the greater part of its length (FIGURE 9). Adjacent to the rearwardly disposed end of said base section, the flanges continue upwardly to form vertical side walls **44** (FIGURE 10); and a horizontally disposed upper wall **45** is integrally connected to the upper edges of said side walls whereby the said rearwardly disposed portion has a hollow, rectangular cross section. The upper ends of the legs **38***a*, **38***b*, **39***a* and **39***b* are preferably welded or otherwise suitably secured to the bottom wall **42** and are disposed inwardly of the lateral edges of the cart **10** whereby they pass easily between the legs **23***a*, **23***b*, **24***a*, and **24***b* of the main frame **11** when the extendible frame **12** is telescoped into said main frame.

FIGURE 12 illustrates the elevator section **41** and its movement in detail. Said elevator section is slightly shorter than the flanged portion of the base section **40** and is superimposed thereover. Said elevator section comprises a horizontal wall **46** having vertically downwardly turned flanges **47** disposed along its lateral edges which said downwardly turned flanges are coplanar with the upwardly turned flanges **43** of the base section **40**. In its lowered position, the elevator section **41** rests with its flanges **47** disposed edgewise against the flanges **43** of the base section, and when in this position, the horizontal wall **46** is coplanar with the upper wall **45** of the base section **40**. This lowered position is illustrated in broken lines in FIGURES 12, and in this position of said elevator section, the upper panel **36** of uniform thickness throughout itse length and adapted to slidably interfit the upper ways **21**.

It will be readily noted that when the upper panel **36** is extended outwardly to convert the cart **10** into a litter, the upper surface of the upper panel **20** of the main frame **11** is necessarily disposed somewhat higher than the upper surface of the panel **36** of the extendible frame **12**. The elevator section **41** corrects for this difference in height when raised to the full line position of FIGURES 5 and 12 wherein the upper surface of the horizontal wall **46** is disposed at the same level as the upper surface of the upper panel **20**.

Means is provided for quickly and easily raising the elevator section **41** in the form of link members **50** which connect the base and elevator sections adjacent to the ends thereof, one of said link members being detailed in FIGURE 13. It will be understood that said link members are identical whereby only the one shown in said FIGURE 13 need be described.

Each link member **50** comprises laterally and horizontally directed, upper and lower rods **51** and **52**, respectively, connected together at the ends thereof by arms **53**. The rods **51** and **52** are disposed flatwise against the horizontal wall **46** and the bottom wall **42**, respectively, and are pivotally mounted to said walls by small bearing members **54**. It will be particularly noted in FIGURE 13 that the arms **53** are disposed closely adjacent to the flanges **47** and **44** whereby lateral displacement of the elevator section **41** relative to the base section **40** is prevented.

By means of the link members **50**, the elevator section **41** is readily manually moved in a pivoting motion from the broken line position of FIGURE 12 to the full line position thereof. In said full line position, the link members **50** have passed over center from left to right whereby the weight of a person lying upon the litter tends to hold said elevator section in its raised position and prevent counterclockwise movement of said link members as seen

in FIGURE 12. The raised position of the elevator section **41** disposes its rearwardly directed end, indicated at **41***a*, against the forwardly directed end of the upper panel **20** of the main frame **11** thereby stopping the movement of said elevator section at exactly the desired level.

Referring especially to FIGURES 2 and 12, oblong access openings **55** are preferably provided in the bottom wall **42** adjacent to the sides of the cart **10** whereby an attendant can reach under and press upwardly against the horizontal wall **46** of the elevator section **41** to raise and pivot said elevator section into the raised position. A similar movement combined with a slight pull on said horizontal wall **46** toward the front of the cart will return the elevator section to its lowered position.

As best shown in FIGURE 11, the lower panel **37** is a flat, wooden member of substantial thickness being rectangular in shape and adapted to slidably interfit the ways **25**. The lowermost ends of the vertical legs **38***a*, **38***b*, **39***a* and **39***b* are secured to said lower panel **37** in any suitable manner, one securing means being illustrated in FIGURE 20. All of the legs **38***a*, **38***b*, **39***a*, and **39***b* are identical, and only the securing means associated with the leg **39***b* is herein illustrated and described in detail.

The leg **39***b* is preferably channel shaped having parallel flanges **57***a* and **57***b*. A small plate **58** of rectangular shape is disposed horizontally between and is preferably welded to said flanges. The plate **58** is provided with an aperture **59**, and the lower panel **37** has an aperture **60** of the same diameter and co-axial with said aperture **59**. The bottom of the panel **37** has an enlarged recess **61** which is also co-axial with the apertures **59** and **60**. A bolt **62** projects downwardly through a suitable washer **63**, aperture **59**, aperture **60**, and into the recess **61** where it carries a washer **64** and a nut **65**. By similar means, each of the legs **38***a*, **38***b*, and **39***a* are firmly secured to the lower panel **37** of the extendible frame **12**.

Means are provided for retaining the extendible frame **12** either in the position as shown in FIGURES 1 to 4, wherein said extendible frame is fully retracted within the main frame **11**, or the position shown in FIGURES 5 and 12, wherein said extendible frame is fully extended. Said means comprise identical detent members **66** which are clearly detailed in FIGURES 9 to 11 and 14. FIGURE 14 shows one of said detent members which comprises a ball shaped handle **67** having a shaft **68** projecting therefrom, said shaft having a diametrically reduced, coaxial pin **69** projecting therefrom. Each detent member **66** is mounted on one end of a strong leaf spring **70**, the opposite end of said spring being welded or otherwise suitably secured to the outer surface of a web **21***c* or **25***c* of a way **21** or **25**. Each pin **69** projects inwardly through an aperture **21***d* or **25***d* in the associated web **21***c* or **25***c*, and the innermost end of said pin engages a suitable aperture in either the upper panel **36** or the lower panel **37** of the extendible frame **12**.

In the retracted position of the extendible frame **12**, the pins **69** of the detent members **66** which are mounted to the upper ways **25** engage forward apertures formed by semicircular, matching cutouts **43***a* and **47***a* in the flanges **43** and **47** of the base section **40** and the elevator section **41**, respectively. Said cutouts form a circular opening when the elevator section **41** is in its lowered position as illustrated in FIGURE 9. The pins of said detent members which are mounted to the ways **25** are adapted to simultaneously engage forwardly positioned sockets **37***a* provided in the vertical side edges of the lower panel **37** of the extendible frame **12**. When said extendible frame is moved to the extended position, said pins **69** are adapted to engage apertures **44***a* in side walls **44** (FIGURE 10) and rearwardly positioned sockets **37***b* (FIGURES 1 and 4) provided in the vertical side edges of said lower panel **37**. Disengagement of the detent members **66** from any of the apertures or sockets is effected by manually grasping the handles **67** and pulling them outwardly to the broken line position of FIGURE 14. The leaf springs **70** automatically return the pins **69** into the apertures or sockets when aligned therewith.

The backrest **16** comprises a rectangular portion of the upper panel **20** of the main frame **11**. When in the lowered position, said backrest fits within a rectangular cutout **20***a* opening at the front edge of said panel **20** and extending rearwardly approximately to the midportion of said panel. Said backrest is preferably fastened to the panel **20** by a pair of hinges **72** which are adapted to limit clockwise pivotal movement of said backrest as seen in FIGURE 4. As shown in FIGURE 3, the lateral side edges **16***a* of said backrest and the inner side edges **20***b* of the cutout **20***a* are beveled from their upper edges downwardly and inwardly whereby said backrest can pivot in a counterclockwise direction only to a position coplanar with the upper panel **20**.

The hinges **72** are identical in construction, each comprising an elongated, flat hinge portion **73**, secured to the backrest **16** by rivets **73***a*, and a similar hinge portion **74**, secured to the upper panel **20** along the transverse edge of the cutout **20***a* by rivets **74***a* (FIGURES 2 and 8). The hinge portions **73** and **74** are countersunk within recesses **75** and **76** of the backrest **16** and upper panel **20**, respectively, whereby their upper surfaces are coplanar with the upper surfaces of said backrest and panel.

The adjacent ends of the hinge portions **73** and **74** are provided with laterally spaced, integral bearings **77** and **78**, respectively, which overlap and interengage and are pivotally connected together by a horizontal hinge pin **79** in a well-known manner.

FIGURE 8 illustrates the means for limiting the clockwise movement of the backrest **16**. The hinge portion **74** if provided with upwardly and rearwardly slanted surfaces **74***b* opposite each bearing **77** of the hinge portion **73**. The hinge portion **73** is pivotable in the clockwise direction only until the flat upper surface of each bearing **77**, indicated at **77***a*, abuts the aligned slanted surface **74***b* of the hinge portion **74**. In this manner, the backrest **16** is limited to the position shown in FIGURE 4 when raised. The hinges **72** and **73** are preferably of heavy, sturdy construction whereby additional bracing for said backrest in its raised position is unnecessary.

The legrest **17** is preferably a flat, rectangular member pivoted at one edge to the front edge of the base section **40** of the upper panel **36** of the extendible frame **12** by a conventional hinge **80**. Said legrest is adapted to pivot rearwardly and upwardly to a substantially flatwise position beneath the base section **40** (FIGURES 1, 2, 3, 5, and 12) and forwardly outwardly beyond the transverse plane of the front legs **24***a*, **24***b* and **39***a*, **39***b* of the main frame **11** and the extendible frame **12**, respectively. Said legrest is swingable freely between the front legs **39***a*, **39***b* and is provided with means for retaining it in the position shown in FIGURE 4. Said means comprises a horizontal bar **81** having right angularly disposed, upwardly directed arms **82** carrying laterally outwardly directed journal portions **83** at their upper distal ends, as shown in FIGURE 3. As detailed in FIGURE 17, the journal portions **83** are disposed within apertures **84** of webs **57** of the legs **39***a* and **39***b*, and said bar **81** normally hangs downwardly between said legs.

When it is desired to use the cart **10** of this invention as a wheel chair, the legrest **17** and the bar **81** are swung to the positions shown in FIGURE 4 whereby said legrest is maintained in an uptimum position for supporting the legs of a patient seated in the chair. A simple retainer **85** carried on the back of said legrest and affording an upwardly open slot **85***a* into which the bar **81** is dropped prevents said bar from swinging downwardly when in use to support the legrest.

The legrest **17** carries a foldable footrest **86** at the edge thereof opposite the hinge **80**, or at its lower edge as seen in FIGURE 4. Said footrest is preferably a flat member foldable upwardly flatwise against the front surface of the legrest **17** as best shown in FIGURE **16**. Said footrest is

connected to said legrest by a conventional hinge **87** having hinge portions **88** and **89** disposed within recesses **90** and **91** of the legrest **17** and footrest **86**, respectively. Rivets **92** and **93** secure the hinge portions **88** and **89**, respectively, and a suitable hingle pin is provided at **94**.

It will be noted that whereas the hinge portion **88** is mounted on the lower edge of the legrest **17**, the hinge portion **89** is mounted forwardly of a rear edge **86***a* of the footrest **86** (FIGURE 16). As a result, when said footrest is pivoted downwardly from the broken line position **86'** to the broken line position **86"** of FIGURE 16, a portion of said footrest rearwardly of the hinge **87** pivots upwardly and abuts the lower edge of the legrest **17** thereby limiting the downward movement of said footrest to the position shown in FIGURE 4.

Latch means is provided for securing the legrest **17** in its folded position underneath the base section **40** of the extendible frame **12**, said latch means being generally indicated at **96** and best shown in FIGURES 5–7 and 12. Said latch means comprises a slide member **97** which is slidably mounted against the bottom surface of the base section **40** by means of spaced, hat-shaped, preferably metal guides **98**. The guides **98** are spaced longitudinally of the cart **10**, are preferably welded to the base section **40**, and have outwardly stepped ways **98***a* for captively receiving the slide member **97**. Said slide member carries a downwardly projecting handle **99** which is disposed between the guides **98**. Said guides limit the movement of said handle and, therefore, of the slide member **97** whereby said slide member cannot be moved completely out of either of said guides.

The slide member **97** projects forwardly beyond the front guide **98** and is outwardly stepped at **97***a* and provided with a forwardly projecting retainer portion **97***b* which is spaced away from the bottom surface of the base section **40**. Said retainer portion is adapted to slide under the distal end portion of the legrest **17** and the folded footrest **86** when the handle **99** is moved forwardly thereby retaining said leg-and-footrest in an out-of-the-way position underneath the upper panel **36** of the extendible frame **12**. It will be readily understood that the legrest **17** is easily released for pivoting downwardly and forwardly by moving the handle **99** to its rearmost position thereby moving the retainer portion **97***b* rearwardly away from said leg-and-footrest.

When using the cart **10** for transporting a patient in either a seated or prone position, it is important that means be provided for preventing the patient from tipping or rolling sidewise off of said cart. In the invention as herein embodied, illustrated, and described, this means is provided in the form of adjustable side rails **100** which serve not only as side rails for the safety of a prone patient but also as chair arms for the safety of a seated patient.

Side rails **100** are provided on both sides of the main frame **11**, each preferably comprising a continuous bar or tube in the shape of an elongated rectangle having horizontally disposed, upper and lower rail members **101***a* and **101***b*, respectively, and front and back, vertically disposed rail members **102***a* and **102***b*, respectively. Said side rails are adjustably mounted to the outer surfaces of the webs **21***c* of the upper ways **21** of the main frame **11** by means of hat-shaped guides **103** which are welded or otherwise suitably secured to said webs and which have outwardly curved ways **103***a* through which the vertical rail members **102***a*, **102***b* project. As seen in side elevation in FIGURES 1, 4, and 5, the ways **103***a* have upwardly projecting lips **104** thereby affording an increased bearing surface for the vertical rail members **102***a*, **102***b* and consequent increased stability.

The side rails **100** are vertically adjustable whereby they can be moved downwardly out of the way when the present invention is being used merely as a table or cart (FIGURE 1) or upwardly to provide either arms (FIGURE 4) or side rails (FIGURE 5). As herein disclosed, set screws **105** having wing shaped heads **106** are thread fitted through the walls of the ways **103***a* whereby the side rails **100** can be secured in any vertically adjusted position.

In any of the uses of the present invention, i.e. as a cart, table, wheel chair, or litter, it may be desirable to prevent its rolling or moving. For this purpose, a brake generally shown at **110** is preferably provided on at least one of the rear wheels **13**. Referring now particularly to FIGURES 18 and 19, the channel shaped leg **23***a* has inwardly directed flanges **111***a* and **111***b* connected by a laterally outwardly facing web **111***c*. Said web is provided with a vertically elongated slot **112** which extends a short distance above and below the top of the outer periphery of a resilient tire **13***a* preferably provided on each wheel **13**. A brake shoe **113**, which may be in the form of a bar or rod, extends through the slot **112** and carries an enlarged portion **113***a* disposed on the inside of the web **111***c* to prevent outward displacement of said shoe, a washer **113***b*, disposed on the outside of said web to prevent inward displacement of said shoe, a lower link **114** pivotally connected at its lower end to said shoe outwardly adjacent to said washer, and a small pin portion **113***c* projecting inwardly beyond the enlarged portion **113***a*. The main body of the brake shoe **113** projects over the tire **13***a* and is adapted to brake the wheel by being jammed downwardly against said tire (full line position of FIGURE 19) or release said wheel by moving upwardly away from said tire (broken line position of FIGURE 19).

The upper end of of the lower link **114** is pivoted to the lower end of an upper link **115** by means of a pin **116**. The upper end of said upper link is, in turn, pivoted to the web **111***c* by a small rod **118** having a pin portion **118***a* projecting inwardly between the flanges **111***a* and **111***b* above the pin portion **113***c*. The upper link has a generally rearwardly projecting integral handle portion **115***a* by means of which the link **115** can be pivoted between the full and broken line positions of FIGURE 19 thereby causing vertical up-and-down movement of the brake shoe **113**. A coil spring **119** connects the pin portions **113***c* and **118***a* and acts as an overcenter spring for urging the linkage to fold upwardly on either side of a straight, in line position of the links **114** and **115**. A stop member **120** is secured to and projects laterally outwardly from the forward outer edge of the leg **23***a*. Said stop member limits the folding of the links **114** and **115** to an angle just over center when the handle **115***a* is pushed downwardly whereby the brake shoe **113** is in a lowered position and jammed against the tire **13***a*. The spring **119** resiliently retains the linkage in this braked position until the handle **115***a* is raised thereby pivoting the linkage rearwardly over center at which time said spring acts to raise the brake shoe **113** and resiliently hold it upwardly away from the tire **13***a*.

From the foregoing, it will be readily understood that the cart **10** of this invention is easily and quickly convertible from a cart or table either to a wheel chair as illustrated in FIGURE 4 or a litter as illustrated in FIGURE 5. The cart becomes a chair simply by raising the backrest **16** and releasing the leg-and-footrests **17** and **86** from beneath the upper panel **36** and bracing them with the bar **81**. Lifting of the backrest **16** exposes the upper surface of the elevator section **41** which becomes a seat for the patient. The cart becomes a litter by releasing the detent members **66**, pulling the extendible frame **12** forwardly until said detent members engage the apertures **37***b* and **44***a*, and raising the elevator section **41** to the elevated position of FIGURES 5 and 12. The side rails **100**, in their raised position, provide arms for the wheel chair of FIGURE 4 and side rails to protect a patient lying on the litter of FIGURE 5. The brake **110** can be used to prevent rolling of the cart in any of its different converted forms.

It will be understood that many changes in the details of this invention, such as changes in size and dimensions,

may be made without, however, departing from the spirit of the invention or the scope of the appended claims.

What I claim is:

1. A convertible cart for handling and transporting supplies and patients comprising a main frame; said main frame having means providing an upper supporting surface; an extendible frame slidably mounted to said main frame and extendible to elongate said cart; said extendible frame having means providing an upper supporting surface disposed parallel with and in the same general plane as said first mentioned supporting surface and which, when said extendible frame is in the extended position, provides a substantially elongated, upper supporting surface to said cart for use as a litter.

2. A convertible cart for handling and transporting supplies and patients, comprising frame means; said frame means having upper horizontal support means; a portion of said support means comprising a hinged backrest pivotable from a horizontal flatwise position upwardly to a generally upwardly projecting position; said backrest being hinged a substantial distance away from and generally parallel with one edge of said support means; a legrest hingedly mounted adjacent to said one edge and foldable downwardly from beneath said support means and outwardly beyond said one edge; means for retaining said legrest in a generally downwardly and outwardly projecting position; and wheel means mounted to said cart for engagement with a floor surface.

3. A convertible cart for handling and transporting supplies and patients, for use in a hopsital or similar institution, said cart comprising a main frame; wheel means mounted adjacent to one end of said main frame; an extendible frame; means slidably mounting said extendible frame to said main frame whereby said extendible frame can be nested within said main frame and extended outwardly beyond the end of said main frame opposite said one end; wheel means carried by the outwardly directed end of said extendible frame; means providing an elevated, horizontal supporting surface for said main frame; means providing an elevated, horizontal supporting surface for said extendible frame at substantially the same level as the supporting surface of said main frame whereby when said extendible frame is extended, said cart is elongated to provide a litter; a legrest mounted to the outwardly directed edge of said extendible frame and adapted to support the legs of a patient seated upon said cart when said extendible frame is retracted; and a portion of said means providing said upper surface of said main frame being foldable upwardly away from the edge thereof disposed adjacent to said legrest whereby to convert said cart into a wheel chair.

4. A convertible cart for handling and transporting supplies and patients, for use in a hospital or similar institution, said cart comprising a main frame havng an upper horizontal panel; upper way members mounted to the bottom of said panel adjacent to opposite side edges of said panel; said upper way members affording U-shaped ways opening towards each other; said frame having lower way members disposed below and parallel with said upper way members and affording U-shaped lower ways opening toward each other; means rigidly connecting said upper and lower way members; wheel means mounted on a transverse axis to said lower way members adjacent to the back end of said cart; an extendible frame comprising an upper horizontal panel slidably interfitted at opposite side edges thereof within said upper ways; said extendible frame having a lower panel slidably interfitted at opposite side edges thereof within said lower ways; means rigidly connected said upper and lower panels of said extendible frame; wheel means mounted adjacent to the front end of said extendible frame; and means for retaining said extendible frame in a retracted position within said main frame to provide a supply cart and in an extended position forwardly of said main frame to provide a litter.

5. A convertible cart as set forth in claim 4: a legrest; hinge means pivotally mounting said legrest to the front edge of said upper panel of said extendible frame whereby said legrest is swingable upwardly flatwise beneath said upper panel and forwardly beyond the front edge of said upper panel; means for maintaining said legrest in said flatwise position and means for retaining said legrest in said forward position; and a portion of said upper panel of said main frame being foldable upwardly and away from the frame of said cart and having means for retaining said portion in an upwardly directed position whereby to provide a backrest and legrest for a patient seated upon the forward edge portion of said upper panel of said extendible frame when said extendible frame is in the retracted position.

6. A convertible cart as set forth in claim 5: side rails mounted on either side of said main frame; means mounting said side rails for vertical adjustment whereby said side rails can be raised to protect a patient seated or lying on said cart and lowered to an out-of-the-way position when not needed.

7. A convertible cart as set forth in claim 6: means for braking at least a part of said wheel means whereby to prevent said cart from rolling in any converted adaptation thereof.

8. A convertible cart as set forth in claim 4: said upper panel of said extendible frame comprising a base section; an elevator section superimposed upon the forward portion of said base section; said elevator section being completely disengaged from said upper way members when said extendible frame is in the extended position; means connecting said base section and said elevator section whereby said elevator section is pivotable to a raised position to dispose the upper surface thereof coplanar with the upper surface of said upper panel of said main frame.

9. A convertible cart as set forth in claim 4: said front wheel means comprising a pair of casters pivotable about vertical axes whereby said cart is steerable in either converted adaptation; and handle means mounted to the back of said main frame for pushing and guiding said cart.

10. A convertible cart for handling and transporting supplies and patients, for use in a hospital or similar institution, said cart comprising a main frame and an extendible frame telescoped within said main frame; wheel means carried at the back of said main frame and caster means carried at the front of said extendible frame; both said frames having upper horizontal panel means whereby the upper surface of said cart can be elongated to form a litter by extending said extendible frame; foldable leg-and-footrest means carried at the front of said extendible frame and foldable backrest means carried by one of said panel means for converting said cart into a wheel chair when said frames are fully telescoped together; side rails mounted to the sides of said cart and disposed above the upper surface thereof; said side rails being so positioned as to afford armrests when said cart is converted into a wheel chair and protective side rails when said cart is converted into a litter; and a push handle mounted to the back of said main frame for manipulating said cart in any converted form thereof.

11. A convertible cart as set forth in claim 1: said means providing an upper supporting surface for said main frame comprising a horizontal panel; said means providing an upper supporting surface for said extendible frame comprising a second horizontal panel mounted beneath said first mentioned panel; slide means longitudinally slidably mounting said second panel to said first mentioned panel; said second panel comprising a base section; an elevator section superimposed upon a portion of said base section which is completely disengaged from said slide means when said extendible frame is in the extended position; and means connecting said base section to said elevator section for raising said elevator section to a position whereby the upper surface thereof is coplanar with the upper surface of said first mentioned panel.

12. A convertible cart as set forth in claim 11: said means connecting said base section to said elevator section comprising parallel acting link members pivoted to said base member and said elevator member whereby when said elevator member is pivoted upwardly with said link members passing over center with respect to the pivot points on the base member, one end of said elevator member abuts an end of said base member.

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