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3,516,367

ADJUSTABLE DOLLY-TYPE VEHICLE

Filed June 20, 1968

2 Sheets-Sheet 1

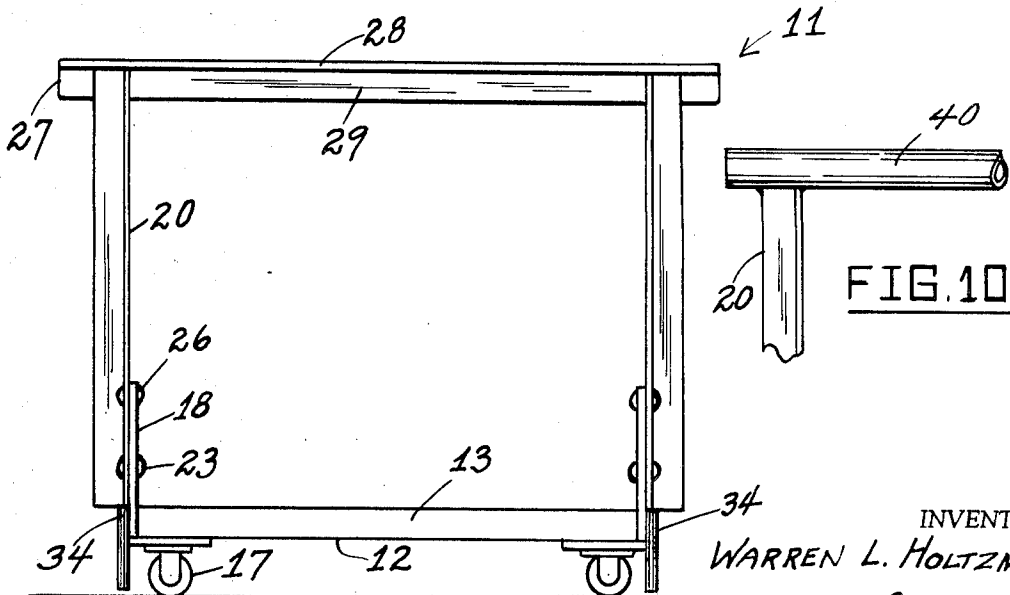
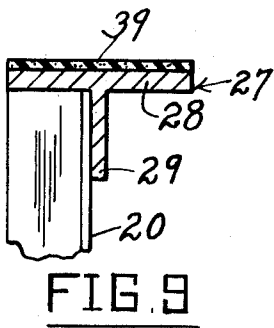
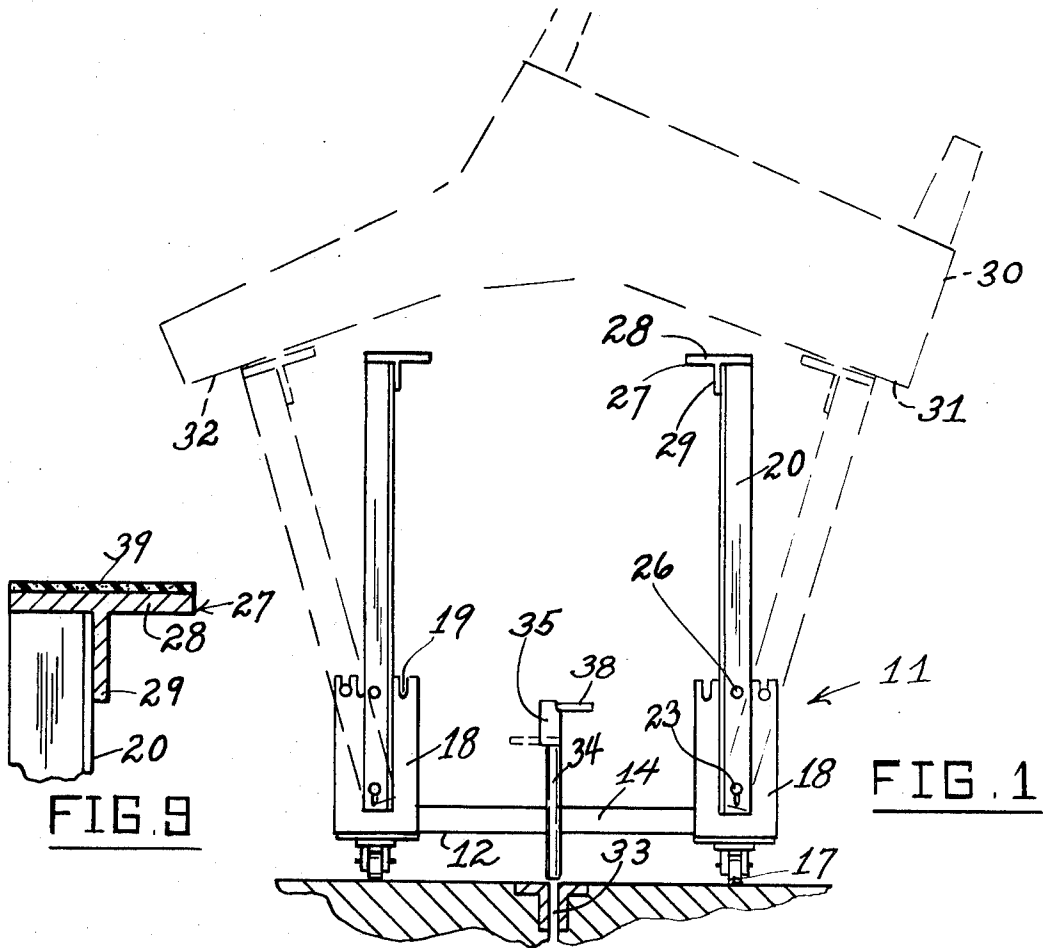


FIG. 10

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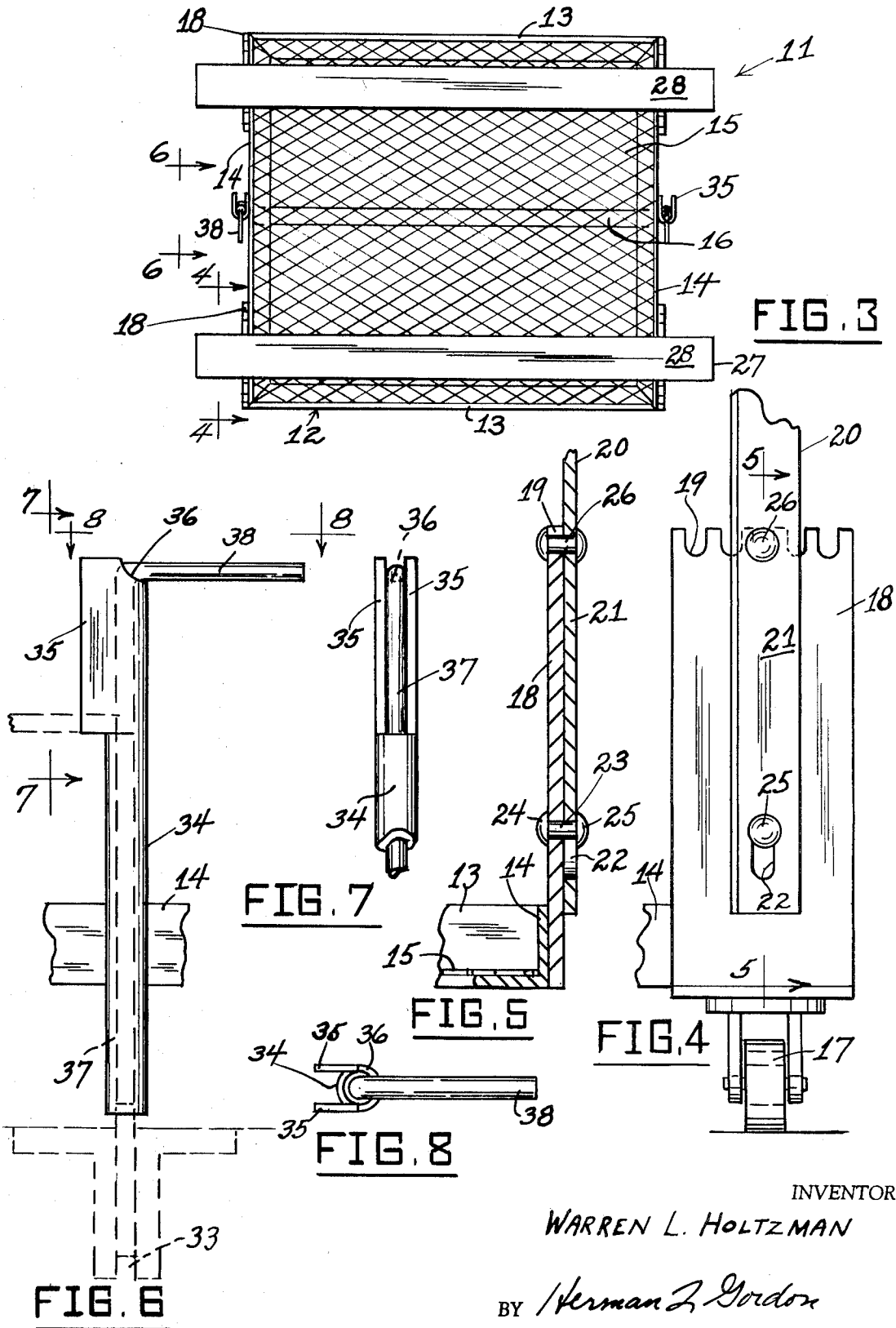
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ADJUSTABLE DOLLY-TYPE VEHICLE

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5 Claims

ABSTRACT OF THE DISCLOSURE

A dolly having opposed upstanding pivoted supporting racks having horizontal top arms, the racks being angularly adjustable so that their top arms can be oriented to supportingly underlie respective spaced surfaces of a piece of furniture or similar article while it is being transported or while it is being worked on. The vehicle has vertical guide pins at its opposite ends slidably engaged through vertical tubular guides. The pins may be retained in elevated inoperative positions or may be allowed to descend to engage in a guide track in the floor.

This invention relates to wheeled vehicles of the dolly type, and more particularly to a dolly of the type provided with article-supporting means.

A main object of the invention is to provide a novel and improved dolly-type vehicle for suitably supporting articles of furniture or similar articles while they are being transported or are being worked on, the vehicle being very simple in construction, being easy to adjust and providing an efficient means for safely supporting a bulky article such as a heavy piece of furniture while it is being transported or while operations are being performed thereon during its construction.

A further object of the invention is to provide an improved dolly-type vehicle for safely supporting bulky articles of irregular shape in a desired position, the vehicle being inexpensive to fabricate, being rugged in construction, being easy to manoeuvre, and serving as an efficient support for a heavy and bulky article, such as a piece of furniture, to securely support the article in properly oriented position for work thereon, as well as for transporting the article between work stations during its fabrication.

A still further object of the invention is to provide an improved work-supporting dolly which has easily adjustable upstanding work-supporting elements, the elements being easy to manipulate and being substantially self-locking.

Further objects and advantages of the invention will become apparent from the following description and claims, and from the accompanying drawings, wherein: FIG. 1 is an end elevational view of an improved furniture dolly constructed in accordance with the present invention.

FIG. 2 is a side elevational view of the dolly of FIG. 1.

FIG. 3 is a top plan view of the dolly of FIGS. 1 and 2.

FIG. 4 is an enlarged fragmentary elevational view taken substantially on line 4—4 of FIG. 3.

FIG. 5 is a vertical cross-sectional view taken substantially on line 5—5 of FIG. 4.

FIG. 6 is an enlarged fragmentary elevational view taken substantially on line 6—6 of FIG. 3.

FIG. 7 is a fragmentary elevational view taken substantially on line 7—7 of FIG. 6.

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FIG. 8 is a top plan view taken substantially on line 8—8 of FIG. 6.

FIG. 9 is an enlarged transverse cross-sectional view taken through the top arm of a rack element of a dolly of the present invention, showing a modification.

FIG. 10 is a fragmentary side elevational view of a top corner portion of one of the rack elements of a further modified form of furniture dolly according to the present invention.

Referring to the drawings, 11 generally designates an improved dolly-type vehicle constructed in accordance with the present invention. The vehicle 11 comprises a base 12 consisting of a pair of longitudinal angle bars 13, 13 rigidly connected at their ends by transverse angle bars 14, 14, the angle bars being arranged with their horizontal flanges directed inwardly. Secured on said horizontal flanges is a flooring member 15 of expanded metal, or the like. A central flat longitudinal bar 16 is rigidly connected between the mid-portions of the horizontal flanges of the transverse angle bars 14, 14, and the expanded metal flooring 15 is likewise rigidly secured, as by welding, to said flat longitudinal bar 16.

The base 12 is provided at its corner portions with the respective conventional universally swivelled casters 17.

Rigidly secured, as by welding or the like, to the opposite end portions of the respective transverse angle bars 14, 14 are the upstanding vertical corner plates 18. Plates 18 are of generally rectangular shape, and a pair of said plates are thus provided at each end of base 12, being located in common transverse vertical planes at the opposite ends of said base. The top edges of the plates 18 are formed with a plurality of regularly spaced relatively deep slots or notches 19, said notches being substantially of equal depth and opening at the top ends of the plates 18. As shown in FIG. 4, the notches 19 preferably have semi-circular bottom edge portions.

Respective upstanding angle bars 20 are pivotally and slidably connected to the plates 18. Thus, each angle bar 20 has a flange 21 thereof substantially in face-to-face engagement with the associated plate 18 and is formed at its lower end portion with a vertical slot 22. A rivet 23 extends through slot 22 and the adjacent plate 18, the rivet having the opposite enlarged retaining heads 24 and 25, whereby to pivotally connect the angle bar 20 to the plate 18 but to allow limited movement of the angle bar in a vertical plane. Another double-headed rivet 26 is secured in the flange 21 at a distance above the top portion of its slot 22 substantially equal to the vertical distance between rivet 23 and the lower portions of the notches 19. Slot 22 is of sufficient length to allow the angle bar 20 to be elevated to a sufficient height to allow rivet 26 to clear the top edge of the associated plate 18 and to allow the angle bar 20 to be rotated so that the rivet 26 can be positioned over any of the notches 19 of the plate 18. The angle bar can be subsequently released to allow rivet 26 to enter the selected notch 19, whereupon slot 22 descends relative to rivet 23, so that when rivet 26 engages the bottom edge of the selected notch 19, the rivet 23 is in the upper end portion of slot 22.

As will be presently explained, this provides a self-locking action for retaining the angle bars 20 in selected angled positions relative to the base 12.

Rigidly secured on the top ends of the angle bars 20 at the respective longitudinal sides of the wheeled base 12

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are respective T-shaped horizontal bars 27, the top corners of the angle bars 20 being received beneath the outer portions of the top flanges 28 in engagement with the depending flanges 29 of the T-shaped bars and are suitably secured to bars 27, as by welding, or the like. Thus, each T-shaped bar 27 and its supporting angle bars 20, 20 define an angularly adjustable rack element at one side of the wheeled base 12.

In their centered positions, namely, as shown in full line view in FIG. 1, the two rack elements present a pair of spaced parallel and longitudinal horizontal support surfaces defined by the top flanges 28 of the T-shaped horizontal bars 27. By angularly adjusting the two rack elements, as above described, namely, by engaging their rivets 26, 26 in selected corresponding pairs of notches 19 at the respective sides of the vehicle, the flanges 28 may be angled so that they can conformably and supportingly engage beneath correspondingly angled surfaces of a piece of furniture to be carried on the vehicle. For example, FIG. 1 shows in dotted view an inverted sofa 30 with one flange 28 conformably and supportingly engaged beneath a front surface portion of the seat 31 of the sofa and the other flange 28 conformably and supportingly engaged beneath a surface portion of the back 32 of the sofa.

The angle bars 20 are of substantial length, for example, between 24 and 30 inches, whereby the object supported on the rack elements is at a convenient height for working thereon. Thus, with the inverted orientation of the sofa 30 shown in dotted view in FIG. 1, the sofa is supported in a convenient position to perform operations on its bottom portion. The sofa, or other article supported on the rack elements can also be readily moved from one work station to the next for performing successive fabrication steps thereon.

In many fabrication procedures using production line techniques it is desirable to guide the article being fabricated in a definite path along which the work stations are located. Thus, a trackway or groove 33 may be provided in the floor corresponding to the desired path of movement of the article being fabricated. In accordance with the present invention, the article-supporting vehicle 11 is provided with guide pin means adapted to cooperate with such a trackway 33.

Rigidly secured vertically to the mid-portions of the transverse angle bars 14, 14 are respective guide tubes or sleeves 34, 34, said tubes terminating slightly above floor level. The top ends of the tubes are formed with pairs of parallel laterally directed substantially vertical guide flaps 35, 35, of substantial height, whereby the upper portions of the guide tubes are of U-shaped cross-section. Each tube has a U-shaped central retaining notch 36 at the top edge thereof, as shown in FIGS. 7 and 8. A vertical guide pin 37 is slidably engaged in each tube, each pin having a horizontal top arm 38, serving as a handle. Each guide pin 37 is almost equal in length to the total length of its associated guide tube 34, so that when the handle arm 38 is supportingly engaged with the notch 36 of the tube, the bottom end of the guide pin is held above floor level. The pin may be raised by means of its handle 38 and rotated 180° to the dotted view position thereof shown in FIG. 6, allowing the pin to be dropped to a position wherein its lower end portion is receivable in the trackway 33. In this position, the handle arm 38 is supported on the top edge of the cylindrical portion of the tube 34, as will be apparent from FIG. 6, limiting the descent of the guide pin, with the flaps 35, 35 preventing rotation of the pin.

With both guide pins 37, 37 in lowered positions received in the trackway 33, the vehicle will be accurately guided along its desired path of motion. When the guide pins are elevated and retained in their inoperative positions, as shown in full line view in FIGS. 1 and 2, the vehicle may be moved in any desired direction without being constrained to move in a particular pattern.

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As shown in FIG. 9, the article-engaging flanges 28 may be provided with a layer of suitable cushioning and friction-gripping material, such as a layer of sponge rubber 39, or the like, of suitable thickness, which acts to prevent marring of the surface of the piece of furniture engaged thereby and which serves to provide a frictional gripping action thereon, minimizing the risk of accidental shifting of position of the piece of furniture as it is transported on the vehicle.

The horizontal top arms of the rack elements may have any desirable cross-sectional contour. Thus, the embodiments illustrated in FIGS. 1 to 9 employ substantially flat horizontal top arms (as defined by the top flanges 28). Alternatively, said top arms may be tabular or cylindrical in shape, as shown at 40 in FIG. 10.

In the use of the device, the weight of the supported article, acting on the rack elements, provides a self-locking action, preventing the rivets 26 from accidentally rising out of the notches 19 in which they are engaged.

While certain specific embodiments of an improved dolly-type vehicle have been disclosed in the foregoing description, it will be understood that various modifications within the spirit of the invention may occur to those skilled in the art. Therefore it is intended that no limitations be placed on the invention except as defined by the scope of the appended claims.

What is claimed is:

1. A dolly comprising a base provided with supporting casters, respective upstanding supporting racks at the opposite sides of the base, means pivotally connecting the lower ends of said supporting racks to the base for rotation around substantially parallel axes, said supporting racks each including a substantially horizontal top bar member for supportingly engaging the underside of an object, the racks being swingable relative to each other so as to vary the spacing between the top bar members, and means to releasably lock the supporting racks in selected angularly adjusted positions relative to the base, wherein said base is provided with transversely extending upstanding plate means at its opposite end portions, the means pivotally connecting the lower ends of the supporting racks to the base being located on said plate means, wherein each supporting rack has a pair of upstanding supporting bars connected to its horizontal top bar member, said supporting bars extending adjacent and being in sliding engagement with said plate means, wherein the means pivotally connecting the lower ends of the supporting racks to the base comprises respective rivet members supportingly engaged with the lower end portions of the supporting bars and supportingly engaged with said plate means, each rivet member extending through respective adjacent portions of the associated supporting bar and plate means, one of said adjacent portions being formed with a slot receiving the rivet member and having a substantial vertical component, whereby the supporting bars are slidable vertically as well as pivotally connected to the plate means, said plate means having spaced notches in its top edge portions, the means to lock the supporting racks in selected adjusted positions comprising pin elements on the supporting bars located adjacent said top edge portions and being selectively engageable with the notches.

2. The dolly of claim 1, and respective vertical guide tubes secured to the opposite ends of said base, each guide tube having a U-shaped top end portion defining a pair of parallel vertical flaps with a bight portion therebetween forming a vertical extension of the guide tube, and a guide pin slidably engaged in each guide tube, each guide pin having a horizontal top arm receivable between the flaps to allow the pin to descend to a lowered position, the pin projecting below floor level in said lowered position so as to be receivable in a guide track in the floor, said U-shaped top end portion being of sufficient height to retain the lower end of the pin above

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floor level when the top arm is engaged on the top edge of said bight portion.

3. The dolly of claim 2, and wherein said bight portion is formed with a retaining notch in its top edge to receive said top arm.

4. The dolly of claim 1, and wherein the top bar members are of substantially T-shaped cross-section with flat top surfaces. 5

5. The dolly of claim 4, and wherein said upstanding supporting bars are angle irons whose top ends are snugly received in and rigidly secured to the corners defined between the top flanges and the depending webs of the T-shaped top bar members. 10

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