SYSTEM FOR MOVING FURNITURE

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ABSTRACT
A container of the kind that can be erected for loading and knocked down for storage includes a floor, two separate sidewall panels and back, top and front wall panels that are interconnected by hinges to form a single member that can be accordion folded to a flat, stacked condition.

A transport dolly includes a drive motor connectable to a drive shaft for two of the dolly wheels to power those wheels of the container for moving the loaded container.

7 Claims, 10 Drawing Figures

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BACKGROUND OF THE INVENTION

This invention relates to a container and system for moving furniture and particularly to a container that can be erected for loading and knocked down for storage.

The present invention provides a new system for moving household furnishings.

Present methods of moving household furnishings have many drawbacks. The household furnishings are usually transported by a highway van, and many separate handling operations and related documentation are required to complete the move. For example, a carrier usually makes a preliminary estimate and delivers boxes and barrels for the smaller items to be moved and provides crating or other special handling for other items as required. The packing of the boxes is then a time-consuming operation and must be accompanied by certain amount of inventory documentation. The carrier often provides the packing service, and the amount of time required to complete the packing is often difficult to estimate. The packing might be completed fairly early in one working day or might extend over into an additional working day. Thus, the loading and departure of the transport vehicle is to that extent also indefinite, and this provides difficulty in scheduling.

When the transport vehicle arrives at the point of destination, the driver in almost every case requires additional help to unload. This often causes a further delay if the arrival is fairly late in the day or if help is not available for some reason. After the furnishings have been unloaded, the driver must obtain a release, and this involves additional documentation and quite often additional delays. The entire prior art moving process is susceptible to loss of furnishings and damage to furnishings in transit. This leads to customer dissatisfaction and claims against the carrier. Because of the delays and many problems presented by the prior art methods of moving household furnishings, the expense of moving the furnishings has been relatively high.

It is a primary object of the present invention to overcome the problems of the prior art methods of moving household furnishings. It is a closely related object of this invention to provide a system in which the customer can perform the packing and unpacking operations and in which the security of the furnishings in transit is assured. In the system of the present invention a minimum of documentation is required, and delays, loss of furnishings and damage to furnishings are minimized, and expenses are substantially reduced.

SUMMARY OF THE INVENTION

The present invention utilizes a container of the kind that can be erected for loading and knocked down for storage. The container comprises a floor with wheels on the bottom of the floor. The sides, front and back and top of the container are constructed so that the edges of all these parts can be securely interlocked to form a quite rigid unit when the container is erected.

The sidewalls are constructed as two separate panels and the lower edges of these panels are connectable to and disconnectable from the floor by a hook type connection.

The back, top and front panels are all interconnected by hinged connections to form one continuous member, and the hinged connections are made in a manner so that the member can be accordion folded to a flat condition for storage on the floor.

The front of the container includes two separate panels with a top panel that swings upwardly and outwardly about the hinged connection to the top panel and with a lower panel that swings rearwardly and upwardly about the hinged connection to the upper front panel. This arrangement permits the front of the erected container to be opened for front loading. At least one of the side panels has a brace which is swung out to prop the front panels open during loading and which is swung back to a recessed position when the front panels are closed.

A locking arrangement is provided to lock the container closed prior to loading on the carrier. The owner of the household furnishings keeps the key and thereby knows that the contents of the container cannot be disturbed until he unlocks the container at the point of destination.

The wheels of the container also have locks to prevent shifting of the container and the furnishings during transport.

In a specific form of the invention two of the wheels on the floor are connected by a drive shaft, and the drive shaft has a coupling for connection to a drive motor of a transport dolly. The floor of the container also has guide means on the underside for aligning the transport dolly with the drive coupling. The transport dolly has an articulated frame with the drive motor in one part of the frame and wheels on another part of the frame. The dolly wheels are movable between an upper position in which the dolly is readily rollable under the container and a lower position in which the dolly lifts one side of the container high enough to raise the wheels on that side of the container off of the ground. When the wheels are in this lower position, a hook on the dolly locks the dolly to the container, and the drive motor in the dolly is then controlled to drive the container-dolly combination through the drive shaft connection to the dolly wheels.

The container is constructed in a number of standard sizes. For example, one container has a volume of 250 cubic feet, another container has a volume of 350 cubic feet and another container has a volume of 500 cubic feet. In each case the container width is the same and is just slightly less than the interior width of the moving van so that each of the container sizes fit within the van without loss of shipping space.

The van has a rail along the inside of each sidewall. This rail is positioned at or slightly above the height of the wheel wells so that the container is spaced above the floor of the van. This space below the container in the van provides room for rolled-up rugs and similar furnishings.

The system for moving furniture using the container of the present invention comprises delivering the container in a knockdown condition at the point of origin. The container is erected and packed with the household furnishings. It is then locked and loaded on the carrier. The wheels are then locked to prevent shifting of the container during transport. The container is transported to the point of destination where it is unloaded from the carrier. The customer unlocks the container and the container is unpacked. The container is
then collapsed to a flat condition for storage until it is used again for transporting household furnishings. A container and moving system having the structural features noted above and effective to function in the ways described above constitute further, specific objects of the present invention.

Other objects, advantages and features of my invention will become apparent from the following detailed description of one preferred embodiment taken with the accompanying drawings.

**BRIEF DESCRIPTION OF THE DRAWINGS**

FIG. 1 is an exploded isometric view of a container constructed in accordance with one embodiment of the present invention showing the manner in which the container is erected for loading;

FIG. 2 is a front elevation view showing the container of FIG. 1 in the collapsed condition for storage;

FIG. 3 is an isometric view of the container of FIG. 1 in the fully erected and closed condition. This FIG. 3 also shows details of the drive shaft and drive coupling for the wheels of the container;

FIG. 4 is an end elevation view showing how the FIG. 1 container is constructed in various fixed sizes by increasing the length of the container while holding the width and height constant;

FIG. 5 is a front elevation view of one of the wheels of the FIG. 1 container;

FIG. 6 is an end elevation view taken along the line and in the direction indicated by the arrows 6—6 in FIG. 5 showing a key lock associated with the wheel for locking the wheel;

FIG. 7 is a back end elevation view of a van with the container of the present invention loaded in the van;

FIG. 8 is a top plan view of a dolly used with the container shown in FIGS. 1 and 3;

FIG. 9 is a side elevation view taken along the line and in the direction indicated by the arrows 9—9 in FIG. 8; and

FIG. 10 is an end elevation view showing the two panel front wall of the container propped in the open condition by sidewalk braces.

**DESCRIPTION OF THE PREFERRED EMBODIMENTS**

A container constructed in accordance with one embodiment of the present invention is indicated generally by the reference numeral 20 in FIGS. 1 and 3. The container 20 has a floor 22. Wheels 24 and 26 are mounted on the bottom of the floor at the corners as best illustrated in FIG. 3.

In a specific form of the present invention the wheels 26 are connected by an axle 28, and a drive shaft 30 is connected through a gear box 32 to drive the axle and the wheels. The end of the drive shaft 30 has a drive coupling 34 for connection to a drive motor on a companion dolly (as will be described in greater detail below).

Guide means, in the form of two guide rails 36, are mounted on the bottom of the floor 22 in line with the drive coupling 34 for guiding the dolly and drive motor into proper engagement with the drive coupling 34.

The wheels 24 are mounted in casters so that these wheels are freely rotatable to permit maneuvering of the container.

As best illustrated in FIG. 1 the container 20 has a pair of sidewalls 38 which are detachably connected to the floor 22 by hooks 40 on the lower part of the sidewall and loops or staples 42 on the related edges of the floor.

As illustrated in FIG. 1 each sidewall 38 may be constructed in two parts to facilitate stacking on the floor 22 when the container is collapsed for storage as illustrated in FIG. 2. Thus, the sidewall 38 has an upper part 44 which is exactly the same rectangular dimensions as the floor 22 and a lower panel 46 which is connected to the upper panel 44 by a horizontally extending hinge 48. The panel 46 provides whatever additional amount of height that is required to obtain the desired standard cubic foot storage capacity of the container while retaining a standard width W (to fit within a carrier van) for a particular length L of the container.

The back, top and front walls of the container 20 are all hinged together to form a one piece wall member 50 which can be accordion folded to the flat, collapsed, storage position on top of the floor 22 as illustrated in FIG. 2. The back wall 52 is connected to the floor 22 by hooks and loops like the hooks 40 and loops 42 for the sidewalls.

The top of the back wall 54 is connected to the top wall 56 by hinge 55.

The back wall comprises two separate panels 52 and 54 which are connected together by a hinge 53.

The lower edge of the panel 52 is connected to the floor 22 by hooks and loops (not shown in the drawings) like the hooks 40 and the loops 42 for the sidewalls. The upper edge of the top panel 54 of the back wall is connected to the top wall 56 by a hinge 55.

The front edge of the top wall 56 is connected to an upper panel 58 of a two-part front wall. The upper panel 58 is connected to the lower panel 60 by a hinge 59.

The panels 52, 54, 56, 58 and 60 each have a metal strip 62 extending along the inner surfaces of panels near the side edges. The metal strips 62 have slots 64 which accept outwardly extending metal guides 66 on the edges of the sidewalls 38. The slot 64 and guides 66 form connecting means for connecting the container walls together to form a rigid unit in the erected form of the container.

The lower edge of the front panel 60 has pins or hooks 68 which fit within metal loops 42 when the front wall is closed.

As best shown in FIG. 10 the two-part front wall permits the front of the container to be opened for front loading while the front panels are held propped open by a brace 70. The brace 70 is pivotally connected at its lower end by a pivot 72 to a recessed front edge of one of the sidewalls 38.

A retaining strap 74 holds the brace 70 in the position illustrated in FIG. 1. When the strap 74 is released and the front panels 60 and 58 are moved upwardly to the position shown in FIG. 10, the upper end of the brace 70 is swung outwardly and is positioned within a small opening 76 in the panel 60 to hold the panels 58 and 60 in the open position illustrated in FIG. 10.

In order to be able to lock the container 20 after it has been packed, a hasp comprising a strap 80 on each sidewall and staples 82 on the front panel 60 are provided. The strap is swung over the staple, and a padlock 84 locks the container closed.

As best illustrated in FIG. 4 the container 20 can be constructed with a standard width and height (to fit with a maximum of efficiency within a standard carrier.
van as illustrated in FIG. 7) and can have variable depths to provide a series of standard volumes, such as 250 cubic feet, 350 cubic feet and 500 cubic feet when erected. The various standard sizes are illustrated by the phantom outlines in FIG. 4.

To prevent shifting of the container within the carrier during transit (and thus to minimize damage to the contents) locking means are provided for the wheels 24. As illustrated in FIGS. 5 and 6 the side wheel mounting flanges 90 are provided with a key lock 92 having a pin 94 which is insertable through one of a series of openings 96 in the wheel hub when the lock is locked. This is done after the container has been loaded in the van, as will now be described.

The container 20 of the present invention is specifically designed for transport within a motor van 100. The van 100 has a flanged rail 102 extending along the length of the van on the inside of each sidewalk. The rail 102 is disposed at or slightly above the height of the wheel wells 104. The space 106 which is thus provided between the floor 108 of the van and the floors of the containers can be used for loading long objects such as rolled-up rugs and the like.

As also illustrated in FIG. 7, a winch 110 can be mounted in this space to winch the containers 20 up loading ramps 112 and onto the rails 102.

In a specific embodiment of the container 20 of the present invention the container 20 is constructed for transport by a dolly 120 shown in FIGS. 8 and 9. The dolly 120 is an articulated unit having a back frame 122 and a front part 124 connected together for pivoting motion about a king pin 126.

The front part 124 has a plate 128 having side edges 130 which slide within the guides 36 shown in FIG. 3. A motor 132 is mounted beneath the plate 128 and has a drive shaft connected to an output coupling 134 which connects to the coupling 34 shown in FIG. 3.

The power cord 136 for the motor 132 extends up through the shaft 138 for the control handle 140 of the dolly 120.

A finger operated switch 142 controls the power to the drive motor 132.

The wheels 144 of the dolly are mounted on an axle 146 which is movable between an upper position in the frame 122 in which the dolly is freely slidable beneath the container floor and a lower position in the frame 122 in which the dolly lifts one side of the container to raise the container wheels 24 off the ground. These two positions are illustrated in FIG. 9. The axle 146 is movable in a slot 148 in the frame 122. The axle 146 is moved from the upper position in FIG. 9 to the lower position shown in phantom outline by a jack 150 which engages the top of the axle and is movable in response to the position of a control switch 152 on the control handle.

A hook 154 is mounted in the front part 124 of the dolly on a pivot 156 and is linked to the movement of the jack 150 so that the hook 154 is pulled upward into engagement with a slot 158 in the bottom of the container floor 22 when the jack 150 moves the wheels 24 down to lift the side of the container described above. This locks the container securely to the dolly 120.

The present invention thus provides a system for moving household furnishings. The container is delivered in a knockdown condition to a point of origin. It is then erected to an upright form and packed with the household furnishings to be moved. After the container has been packed, it is closed, locked and then loaded in a carrier van. The wheels are locked after the container has been loaded, and the container is then transported to the point of destination. The wheels are unlocked, and the locked container is unloaded from the carrier van. The container is then unlocked and unpacked. After unpacking it is knocked down to the collapsed flat condition for subsequent pickup and storage by the carrier.

This system minimizes documentation and delays in loading and unloading. It also minimizes the risk of damage and the risk of loss of the household items since the items are locked within the container at all times during transport. The system of the present invention also minimizes expenses since the customer may do his own packing and unpacking; and the loading and unloading can be accomplished by the driver alone, without the need for additional help.

To those skilled in the art to which this invention relates, many changes in construction and widely differing embodiments and applications of the invention will suggest themselves without departing from the spirit and scope of the invention. The disclosures and the description herein are purely illustrative and are not intended to be in any sense limiting.

1. A container of the kind that can be erected for loading and knocked down for storage, said container comprising, a floor, wheel means on the bottom of the floor, collapsible wall and top means, and connecting means for connecting the wall and top means to form a rigid container when erected for loading and for disconnecting the wall and top means to a stack on the floor when collapsed for storage, and wherein the collapsible wall and top means include two separate sidewall panels and a single hinged member comprising back wall, top wall, front wall panels connected together by hinges for folding to a flat condition by an accordion type fold, and wherein the wheel means include wheels at the corners of the floor, the wheel means include a drive shaft connected to at least two laterally spaced wheels and a drive connection for engaging a drive motor with the drive shaft to power the wheels.

2. The invention defined in claim 1 wherein the container includes guide means for connecting a dolly and drive motor to the drive shaft.

3. The invention defined in claim 2 including a dolly and drive motor connected to the guide means and wherein the dolly has a pair of wheels and wheel positioning means for moving the wheels between an upper position in which the dolly is freely slidable under the container floor and a lower position in which the dolly lifts one side of the container high enough to disengage the laterally spaced wheels at that side of the container from the ground.

4. The invention defined in claim 2 including locking means on the dolly actuated in the second position of said wheel positioning means to lock the dolly to the underside of the container floor.

5. A container-dolly combination comprising a container having a rectangular floor and wheels at the four underside corners of the floor, a drive shaft connecting two laterally spaced wheels, connection means for connecting a drive motor to the drive shaft, a dolly having a drive motor, guide means for connecting the dolly drive motor to said connecting means when the dolly
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is positioned beneath the container, said dolly having a pair of wheels and wheel positioning means movable between a first position in which the dolly can be freely rolled under the container floor and a second position in which the dolly wheels are moved downwardly with respect to the dolly to raise one side of the container high enough to move the wheels on that side of the container out of engagement with the ground.

6. The invention defined in claim 5 including locking means for locking the dolly to the container in said second position of the wheel positioning means.

7. The invention defined in claim 6 including articulation means between the wheels of the dolly and the drive motor.

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