United States Patent [19]

Moulson et al.

[11] **3,757,897**

[45] **Sept. 11, 1973**

[54] **VERTICALLY MOVING TRANSPORTING APPARATUS FOR BUILDINGS**

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[73] Assignee: **Sky-Van Limited**, Burnaby, British Columbia, Canada

[22] Filed: **Apr. 26, 1971**

[21] Appl. No.: **137,472**

Related U.S. Application Data

[63] Continuation-in-part of Ser. No. 879,207, Nov. 24, 1969, abandoned, and a continuation-in-part of Ser. No. 879,208, Nov. 24, 1969, abandoned, and a continuation-in-part of Ser. No. 209,469, Dec. 17, 1971, abandoned.

[52] **U.S. Cl.** **187/6,** 214/16.4, 294/67

[51] **Int. Cl.** **B66b 9/00**

[58] **Field of Search** 187/6, 7, 8, 12, 187/9, 10, 83, 86, 20, 27, 90; 182/141; 214/16.4; 294/67

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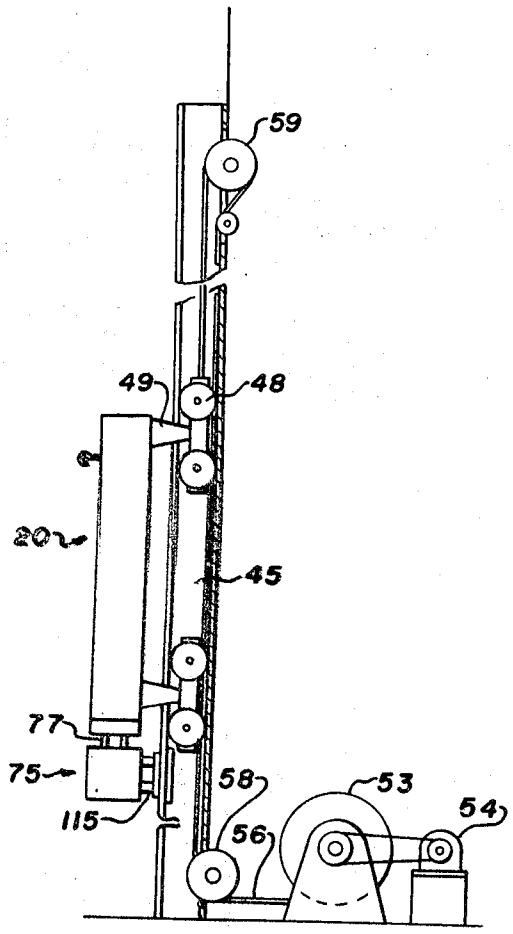
[57] **ABSTRACT**

There is disclosed apparatus for moving containers up and down on track means secured to buildings. The apparatus includes a lift unit adapted to travel up and down on tracks mounted on a wall of a building. This lift unit has securing means for releasably connecting a container thereto, and power means for selectively operating this securing means to grip and to release the container. The power means is preferably located in an actuator unit which is releasably connected to the lift unit. The actuator unit has means for connecting it to the tracks either permanently or for movement along said tracks.

17 Claims, 16 Drawing Figures



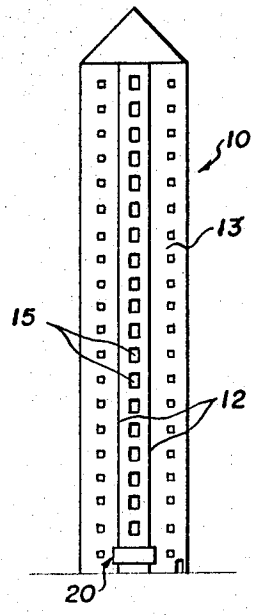


Fig. 1.

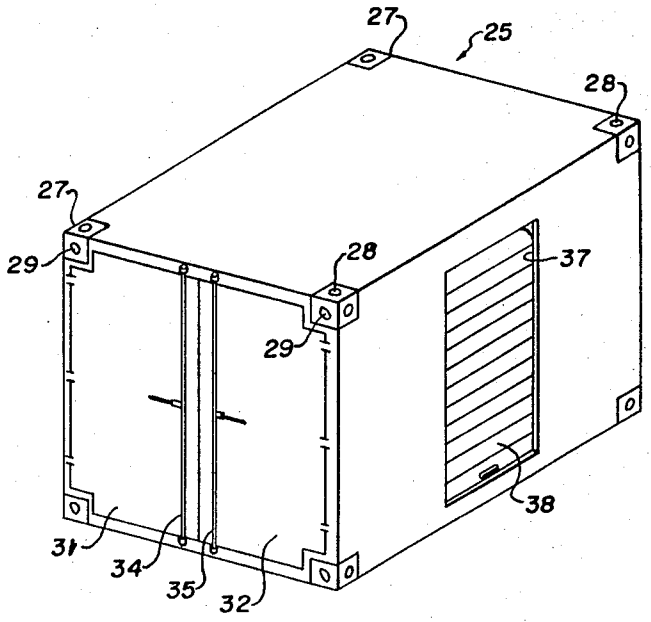


Fig. 2.

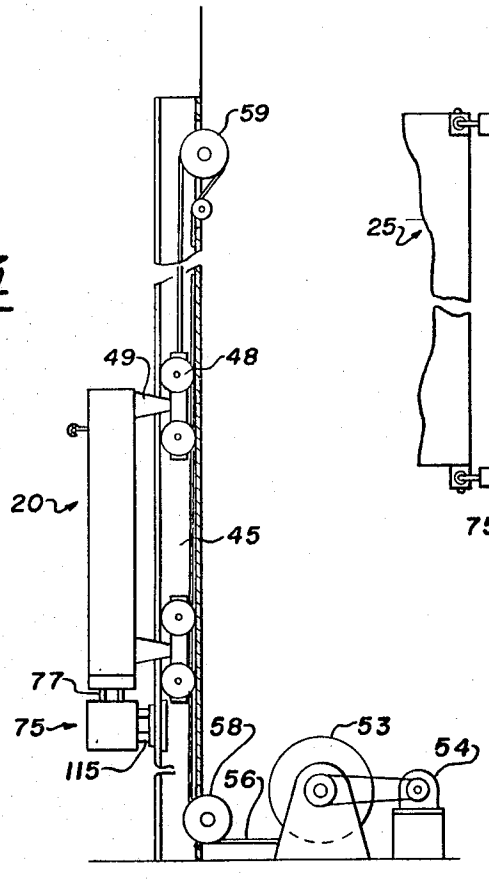


Fig. 3.

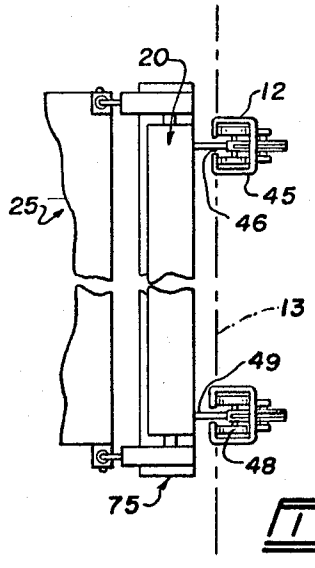


Fig. 4.

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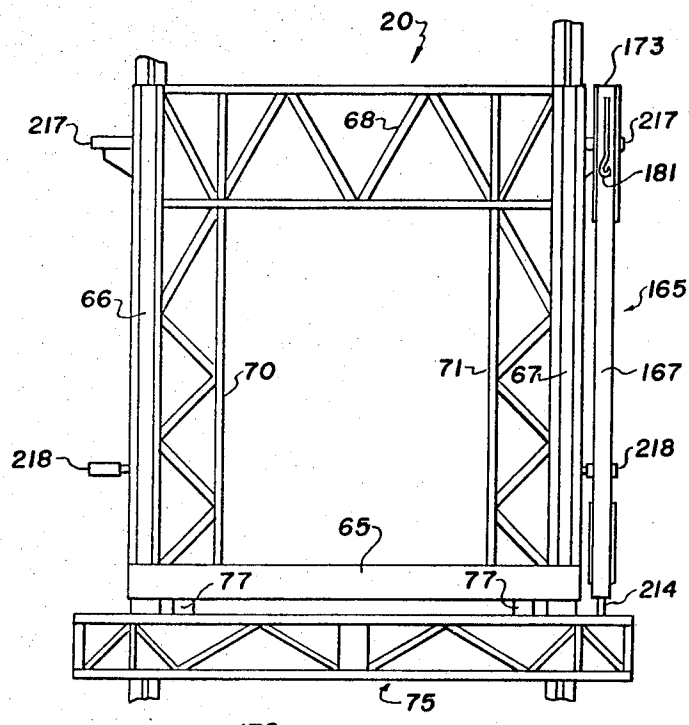

Fig. 5.

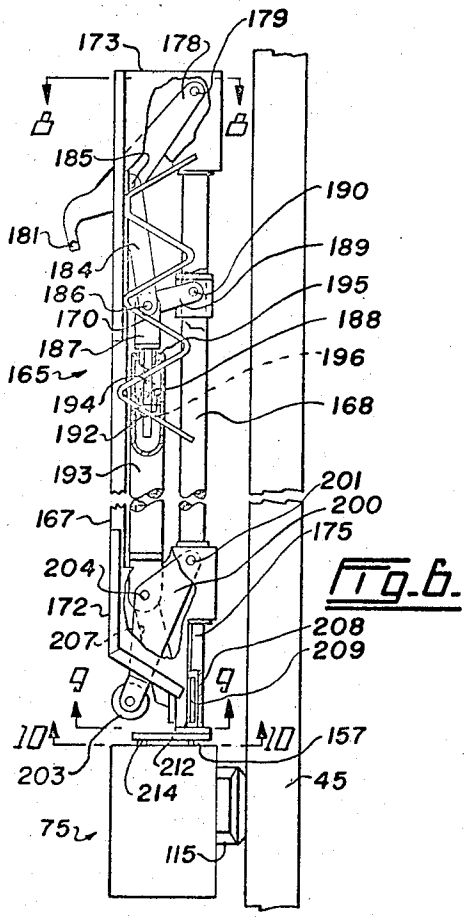

Fig. 6.

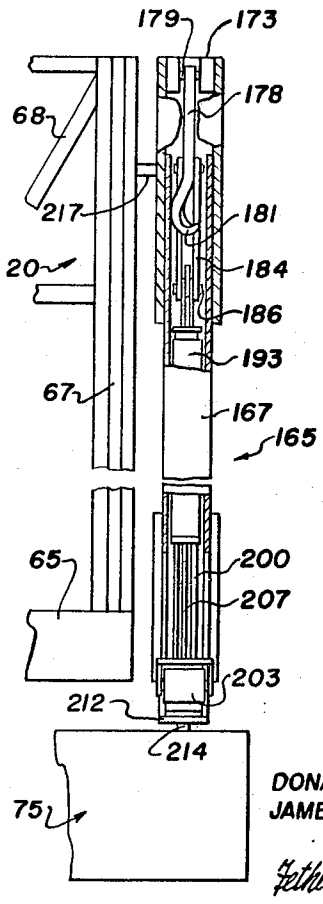

Fig. 7.

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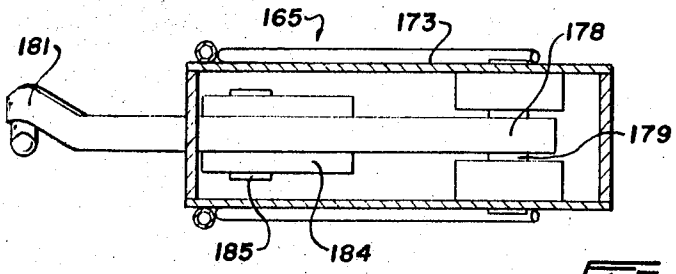

Fig. 8.

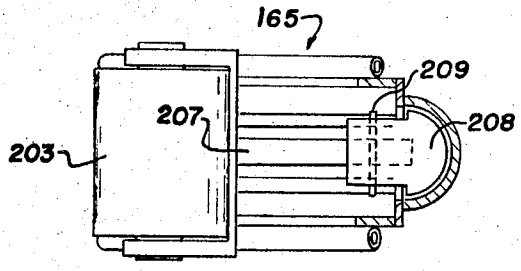

Fig. 9.

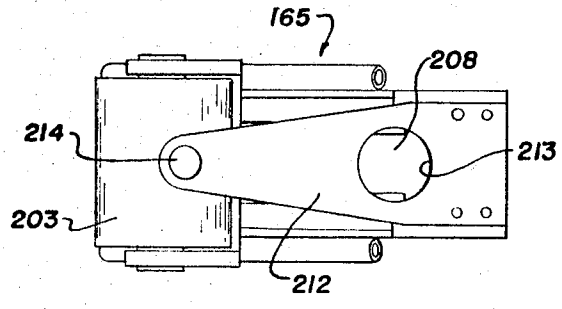

Fig. 10.

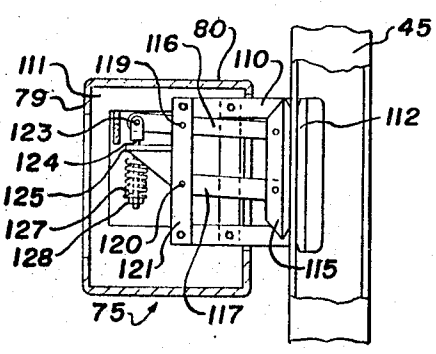

Fig. 14.

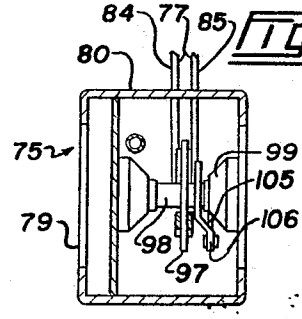

Fig. 15.

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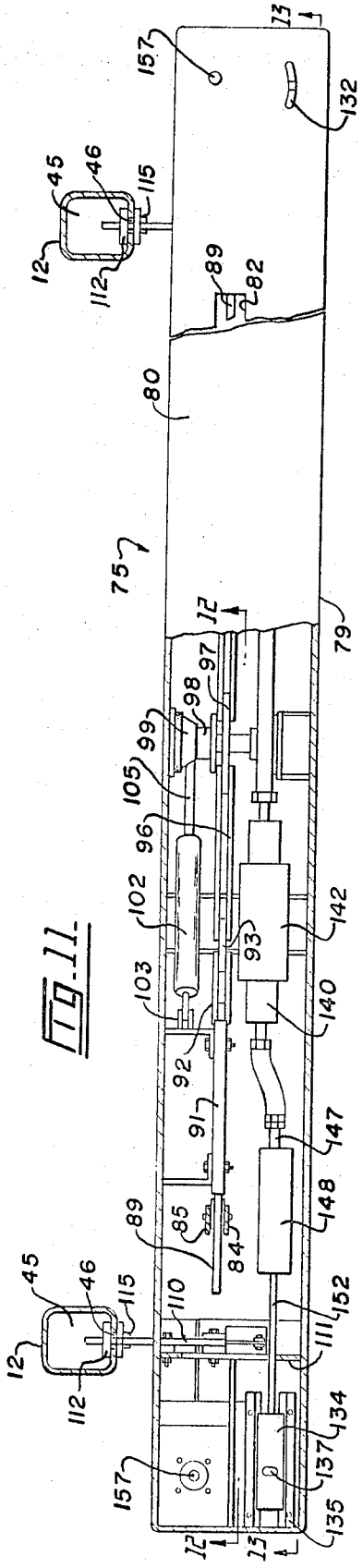

FIG. 11

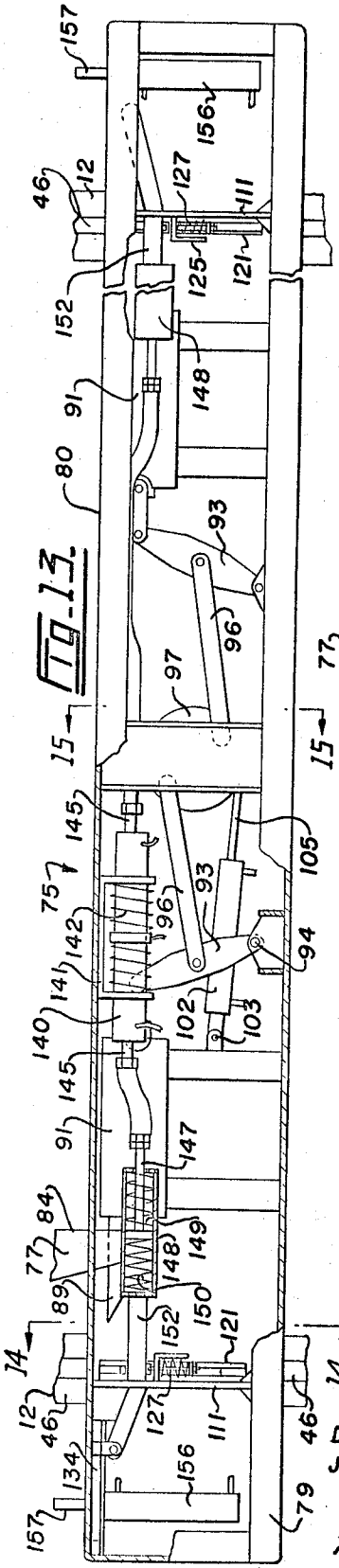

FIG. 13

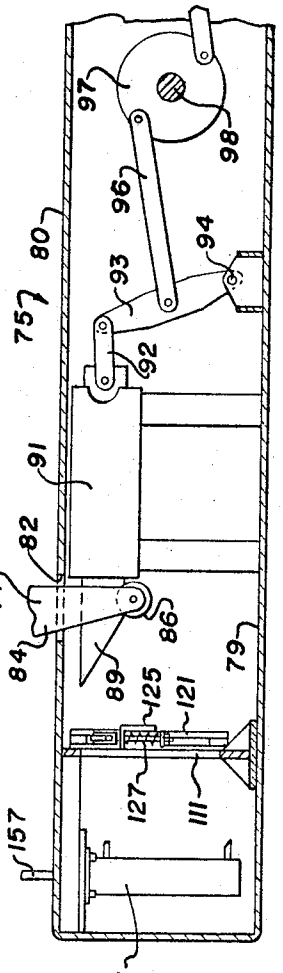

FIG. 12

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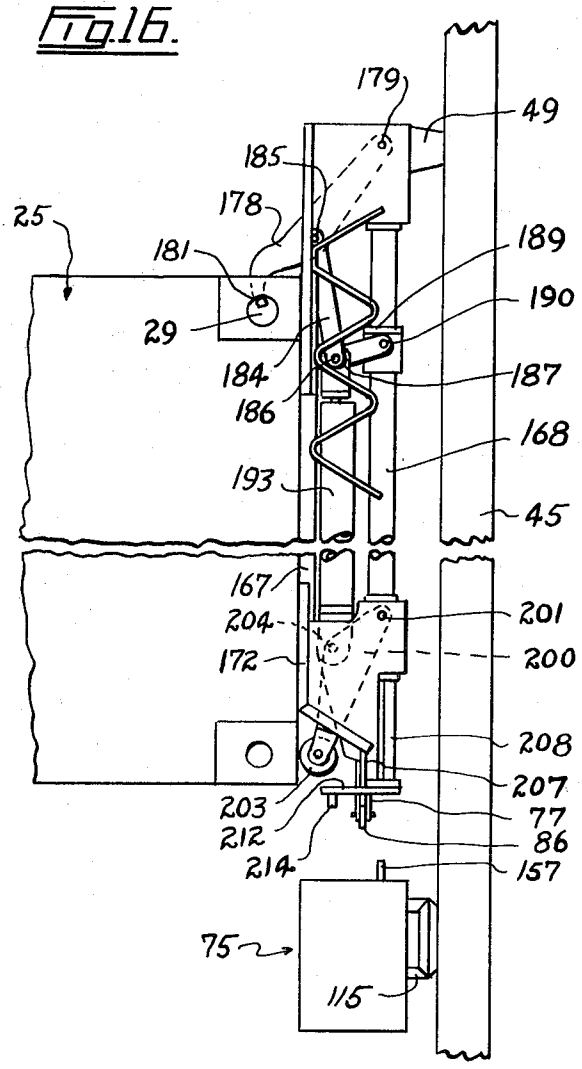
Fig. 16.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VERTICALLY MOVING TRANSPORTING APPARATUS FOR BUILDINGS

This is a continuation-in-part of applications Ser. No. 879,207 and Ser. No. 879,208, both filed Nov. 24, 1969, and application Ser. No. 209,469, filed Dec. 17, 1971 all abandoned.

This invention relates to transporting apparatus for moving containers up and down on track means secured to buildings, and particularly multi-storied buildings commonly known as high rise buildings.

Goods have been moved into and out of buildings in substantially the same way for a great many years. The multi-storied buildings may be apartment buildings, office buildings, warehouses and the like, and the goods may be anything, such as articles, machines, household effects, office furniture and equipment, and the like. Although the movement of goods always has been difficult and troublesome, the movement thereof into and out of high rise buildings is extremely difficult, and some solution to the problem has to be found. The problems relative to movement of household effects into and out of a high rise apartment building will serve as an example.

The usual thing is for a loaded moving van to move into position at or near the entrance of the building. Then the household articles are carried one by one into the building lobby, are loaded into an ordinary passenger elevator, and after the latter has moved to the desired floor, the articles are moved one by one into the desired apartment. If the person is moving out of the building, this operation is reversed. These operations result in a great waste of time and effort, since the movers must be strong men to handle relatively large objects or pieces of furniture, and yet they spend much of their time carrying and handling many times armfuls of light things during each move. The truck stands on the road while being loaded and unloaded and, therefore, is a traffic hazard, takes up parking space, and remains idle during the operation. The use of an elevator puts it out of commission for the regular inhabitants of the building while it is being used for moving goods into or out of the building. Furthermore, the size of the articles, particularly furniture, that can be moved is limited by the size or capacity of the elevator. In the past, some buildings have had freight elevators, but these do not appear in modern buildings, probably because of the cost and the space that is required. In addition, a freight elevator does not solve this problem, the only thing it does is to eliminate the necessity of using the regular elevator system. However, the freight elevators are only used now and then so that they represent a great waste of space within the buildings.

We have developed transportation apparatus which eliminates the above objections, this transportation apparatus being described in our co-pending application. The present invention relates to improved apparatus for use in the overall system.

The apparatus in accordance with the present invention assists in the elimination of the above objections. It greatly reduces the time and effort for loading and unloading, eliminates the necessity of using the standard elevators of the building, and eliminates the necessity of the transporting vehicle waiting on the street or being tied up during the loading and unloading operations. This reduces traffic hazards, and the fact that the normal elevators of the buildings are not used for moving purposes is beneficial to the building owners

and to the tenants. Furthermore, the apparatus does not use any of the space within the building, and does not disfigure the exterior of the building in any way.

Another advantage is that the apparatus according to this invention can be used to move firemen to various floors of high rise buildings in order to fight fires, and to evacuate person, injured or otherwise, from the building should this be necessary. If the firemen have to walk up to upper floors of high rise buildings there is considerable time consumed, and the firemen are not very effective after such a long climb.

The usual use for this apparatus is in connection with apartment buildings and office buildings, but it may be used for other purposes. The floors serviced by the apparatus can be above and/or below ground level. It also can be used in association with hospitals, hotels, warehouses, and the like.

Vertically moving transporting apparatus according to the present invention for moving containers up and down on track means secured to a building, comprises a lift unit having means for connecting said unit to the track means for movement along the latter. The lift unit is provided with securing means for releasably connecting a container thereto. Power means on the unit is adapted to operate the securing means to connect the container to the lift unit and to release the container therefrom. The power means is preferably located in an actuator unit which may be fixedly secured to the track means or the wall of the building, but it is preferably releasably connected to the lift unit. In either case, when the lift unit and the actuator unit are together, the power means in the latter is able to operate the securing means.

The lift unit is adapted to releasably grip a container so that the container can be moved thereby to any desired floor of the building. When the lift unit moves upwardly, it separates from the actuator unit so that it is not necessary to move the power means. This eliminates the necessity of having electric wires and/or hoses moving up and down with the lift unit. When the lift unit returns to the loading level, it stops at the actuator unit so that the container can be released. If the actuator is movably mounted on the track means, both of these units may be moved downwardly below the loading level so as to be out of the way when not required.

In drawings which illustrate a preferred embodiment of the invention,

FIG. 1 diagrammatically illustrates a high rise building having the apparatus of this invention mounted thereon,

FIG. 2 is a perspective view of a container used with this apparatus,

FIG. 3 is a vertical section through part of a wall of the building, showing the lift unit in side elevation,

FIG. 4 is a plan view of the apparatus of FIG. 3, but showing part of a container connected to the lift unit,

FIG. 5 is a front elevation of the lift unit,

FIG. 6 is an enlarged side elevation of the lift unit,

FIG. 7 is an enlarged front elevation of one side of the lift unit,

FIG. 8 is an enlarged section taken on the line 8—8 of FIG. 6,

FIG. 9 is an enlarged sectional view taken on the line 9—9 of FIG. 6,

FIG. 10 is an enlarged section on the line 10—10 of FIG. 6,

FIG. 11 is a plan view of the actuator unit with part of the top wall broken away,

FIG. 12 is a section taken on the line 12—12 of FIG. 11,

FIG. 13 is a section taken on the line 13—13 of FIG. 11,

FIG. 14 is a section on the line 14—14 of FIG. 13,

FIG. 15 is a section on the line 15—15 of FIG. 13, and

FIG. 16 is an enlarged side elevation similar to FIG. 6 showing a container secured on the lift unit and with the actuator unit detached therefrom.

Referring to the drawings, 10 represents a high rise building having track means mounted on an outer wall thereof. In this example, the track means consists of a pair of rails 12 mounted within a wall 13 of the building and opening outwardly therefrom. The rails extend from ground level up as high as desired on the building, and if the building has floors below ground level, the rails may extend down to the lowermost floor. The rails span a plurality of vertically arranged openings 15 in building wall 13, there being an opening at each floor which is to be serviced by this apparatus. A lift unit 20 is mounted on rails 12 for movement therealong. Any suitable elevator hoisting means may be used for moving this lift unit up and down the tracks.

One or more containers 25 are provided for use with this apparatus, one of which is illustrated in FIG. 2. Although these containers may be of any desired size, it is preferable to make them the same size as the shipping containers that are now being commonly used in the transportation of freight by rail and boat. The standard dimensions are 10 feet long, 8 feet wide and 8 feet high. The container has a lifting connector 27 at each corner thereof, each connector forming a socket having an entrance 28 opening upwardly or downwardly from the container. A side opening 29 is formed in each of these connectors. This is standard equipment on this type of container.

At either or both ends of the container are hinged doors 31 and 32 which constitute most of said end wall, these doors being held closed by standard locking bars 34 and 35. Container 25 of this invention also includes a doorway 37 in at least one side wall thereof, and a door 38 for closing said doorway. This may be any desired type of door, but for convenience a roll-up, as shown, is preferred.

In this example, each track 12 is in the form of a channel 45 having a slot 46 in the outer wall thereof and opening outwardly of building wall 13, see FIG. 4. Lift unit 20 has a plurality of follower rollers 48 riding in each track channel 45, said follower rollers being connected to the lift unit by webs 49 which extend from the lift unit through the track slots 46.

As stated above, any suitable elevator power equipment may be used for moving the lift units along the tracks. FIG. 3 shows a cable drum 53 for this purpose, said drum being located at any suitable place in the building, such as in the basement thereof. This drum is rotated back and forth in any suitable manner, such as by a reversible electric or hydraulic motor 54. There is a hoist cable 56 for each track channel 45. Each cable 56 is wound on drum 53 and extends therefrom around a pulley 58 located near the lower end of and extending into one of the track channels. This cable extends upwardly through the channel, around a pulley 59 near the top thereof and back down to lift unit 20. In this example, each cable is connected to one of the webs 49 which connects the rollers 48 to the lift unit. Standard elevator controls, not shown, are provided for controlling the operation of the lift unit.

Lift unit 20 and the latching mechanism for connecting container 25 thereto may be of any desired construction. FIGS. 5 to 15 illustrate, by way of example, a desirable form of lift unit and latching mechanism associated therewith. Although the latching mechanism may be on the containers, it is preferably on the lift unit, as shown.

In this example, lift unit 20 is made up of a base 65 with side members 66 and 67 extending upwardly therefrom. A brace member 68 extends between and connects the upper ends of the side members. Reinforcing members 70 and 71 may be connected to and extend between base 65 and brace 68 just inside side members 66 and 67, as shown in FIG. 5.

The unit 20 of this example includes an actuator unit 75 beneath and extending parallel to base 65 and removably connected thereto by a pair of arms 77 secured to and projecting downwardly from said base. Actuator unit 75, shown in detail in FIGS. 11 to 15, is made up of an elongated casing 79 having a top 80. Arms 77 project downwardly into casing 79 freely through openings 82 formed in casing top 80. Although actuator unit 75 is shown releasably connected to unit 20, said actuator unit can be fixedly secured to rails 12 or the side of the building and not connected to the lift unit.

One of the arms 77 is shown in FIGS. 13 and 15. This arm is made up of a pair of side members 84 and 85 having a roller 86 therebetween at their lower ends. When actuator unit 75 is connected to this unit 20, the arm projects into the actuator unit casing, and a horizontal latch 89 within the casing projects between side members 84 and 85 thereof over roller 86, as clearly shown in FIG. 12. As long as latches 89 are in this position, the two units are secured together.

Each latch 89 is slidably mounted in a guide 91 fixedly mounted within casing 79, and is connected at its opposite end by a link 92 to the upper end of a rocker arm 93 which is pivotally mounted at 94 at its lower end. A link 96 is connected at one end to rocker arm 93 and at its opposite end to a crank or disc 97 near the top thereof. This crank is fixedly mounted on a shaft 98 journalled in suitable bearings 99 within casing 79, see FIG. 15. The set-up of latch 89 at the opposite end of the actuator unit is similar to the one shown in FIG. 12, excepting that the link 96 of the other latch is connected to crank 97 near the bottom thereof. An actuating hydraulic cylinder 102 is pivotally mounted at 103 within the casing 79, and the piston rod 105 of this unit extends out and is connected to the lower end of a vertical arm 106 which extends up and is fixedly secured to shaft 98. With this arrangement, actuation of cylinder 102 retracts and extends the two latches 89 of the actuator unit. When these latches are retracted into guides 91, arms 77 are released from the actuator unit.

When unit 75 is connected to lift unit 20, the former moves up and down rails 12 with the latter. Suitable clamp means is provided for holding the actuator unit in position on the rails when it is disconnected from the lift unit. There is a clamp for each rail 12, but one only will now be described in detail. A thin frame 110 is mounted on a vertical support 111 within casing 79 and

projects outwardly therefrom through slot 46 of the adjacent track channel 45. A slide 112 is secured to frame 110 within channel 45 and slidably bears against the inner surface thereof, as clearly shown in FIGS. 11 and 14. A clamp shoe 115 bears against the outer surface of the wall of channel 45 against which slide 112 bears. Shoe 115 is mounted on parallel arms 116 and 117 which are swingably mounted at outer ends thereof on pins 119 and 120 carried by a bracket 121 mounted on support 111. The end of arm 116 is produced outwardly beyond bracket 121 and is swingably connected at 123 to the upper end of a pin 124 which slidably extends through a plate 125 carried by and projecting from bracket 121. A spring 127 is mounted on pin 124 between plate 125 and a nut 128 is threaded on the lower end of this pin.

By referring to FIG. 14, it will be seen that arms 116 and 117 are inclined slightly downwardly towards clamp shoe 115 when the latter is bearing against track channel 45. With this arrangement, if casing 79 is released from lift unit 20, the weight of the casing and the various elements therein tend to move bracket 121 downwardly so that shoe 115 is pressed against the track wall and thereby retains actuator unit 75 in position on the rail. If the actuator casing is moved upwardly, shoe 115 does not interfere with this movement but slides along the rail. On the other hand, if the actuator casing is moved downwardly by the lift unit, shoe 115 bearing against the track is forced upwardly until arms 116 and 117 are inclined slightly upwardly, at which time the shoe does not interfere with the downward movement. The clamp shoe is returned to the position shown in FIG. 14 when sufficient force is applied to the actuator casing to move it upwardly.

An arcuate slot 132 is formed in casing top 80 adjacent each of the opposite ends thereof. A slide 134 is movably mounted in a guide 135 secured to the under surface of casing top 80 beneath each opening 132 thereof. Slide 134 has a slot 137 therein which registers with and extends across opening 132. A two-piston hydraulic cylinder 140 is provided for moving the slides 135 at the opposite ends of the actuator unit. This cylinder is movably mounted in a bracket 141 and is retained in a normal position by centralizing springs 142. A piston rod 145 extends out from each end of cylinder 140, and the rod shown in FIG. 12 is connected to a plunger 147 slidably mounted in a spring housing 148 between springs 149 and 150. The opposite end of housing 148 is connected by link 152 to the adjacent slide 134. When fluid is directed into the central portion of cylinder 140 between the pistons thereof, these pistons are moved outwardly, moving piston rods 145 in the same direction. This movement moves the slides 134 outwardly by means of housings 148 and the springs therein. When fluid is directed to the outer ends of cylinder 140, the slides are moved inwardly. The purpose of this slide movement will be described later.

Another hydraulic cylinder 156 is mounted in the actuator housing 79 near each end thereof. A plunger 157 projects upwardly from each of these cylinders and through the casing top 80. Operation of cylinders 156 moves plungers 157 up and down. The purpose of this will be described later.

The illustrated lift unit 20 has the latch means for the containers 25 associated therewith. A pick-up unit 165 is swingably mounted on each side of the lift unit 20, and clearly seen in FIG. 5. One of these pick-up units is illustrated in FIGS. 6 to 10.

Pick-up unit 165 includes a front channel member 167 and a back tube or member 168 spaced therefrom and extending parallel thereto, these members being interconnected by suitable means attached to the sides thereof, such as webbing 170. Front member 167 is connected at a lower end to a base 172, and at its upper end to head 173. Tube 168 is connected at its upper end to head 173, and extends downwardly through and beyond base 172, as indicated at 175 in FIG. 6. At the upper end of unit 165 latch arm 178 is swingably mounted on a pin 179 which is carried by head 173 above tube 168. This latch arm extends downwardly and forwardly from its pin 179 in front member 167. The lower end of this arm is provided with a laterally projecting hook 181. When unit 167 is swung laterally about the vertical axis of tube 168, latch arm 178 is swung laterally. Suitable means is provided for swinging this latch arm up and down. In this example, links 184 are connected by a pin 185 at their upper ends to latch arm 178, and at their lower ends by a pin 186 to a clevis 187 which is fixedly secured to a vertical rod 188. Another link 189 is connected at one end to said pin 186 and at its opposite end to a pin 190 which is secured to the back tube 168. When arm 178 is in its normal lower position, link 189 is inclined downwardly slightly from the horizontal plane, as clearly shown in FIG. 6.

Rod 188 extends downwardly from clevis 187 and slidably extends through a lower spring cap 192 which is fixedly mounted in a tubular link 193 near the upper end thereof. A spring 194, surrounding rod 188, is seated on cap 192, and extends upwardly to an upper spring cap 195, said upper cap slidably fitting in the upper end of link 193. Clevis 187 is seated on cap 195, which in turn, rests on spring 194. A nut 196 threaded on the lower end of rod 188 holds the assembly together.

A roller arm 200 is mounted on a pin 201 carried by back tube 168 spaced above the lower end thereof. This arm extends downwardly and forwardly from pin 201, and carries a roller 203 on its lower or outer end. Arm 200 is connected by a pin 204 to the lower end of link 193, said pin 204 being spaced below and outwardly of pin 201, see FIG. 6.

A link 207 is connected at its upper end to said pin 204 and extends downwardly and inwardly therefrom to guide shoe 208 slidably mounted for vertical movement in the lower end of back tube 168. Link 207 is connected to this guide shoe by a pin 209.

A horizontal shifter arm 212 is fixedly connected near one end thereof to the lower end of tube 168, and extends forwardly from said tube, as clearly shown in FIGS. 6 and 10. Arm 212 has an opening 213 therein directly beneath guide shoe 208, see FIG. 10, and a pin 214 projects downwardly from this arm near the end thereof remote from tube 168.

Each pick-up unit 165 is mounted for swinging movement on a side of lift unit 20. In this example, upper and lower loops 217 and 218 are mounted on and project laterally from each side edge of the lift unit, see FIG. 5. Back tube 168 of the pick-up unit extends through loops 217 and 218, and head 173 of the pick-up unit rests upon upper loop 217. At this time, one of the pins 157 of actuator unit 75 projects upwardly through opening 213 of shifter arm 212 to engage the lower end

of guide shoe **208**; and pin **214** of this shifter arm extends downwardly through one of the slots **132** of the actuator unit and into slot **137** of the adjacent slide **134.**

Actuator unit **75** includes the mechanism for operating latch arms **178** when it is desired to attach a container **25** to lift unit **20** and to release the container therefrom. Operation of cylinder **102** causes latches **89** to engage and disengage the arms **77** projecting downwardly from the lift unit. Operation of cylinder **140** moves slides **134** back and forth, and since pins **214** of pick-up units **165** are projecting into slots **137** of the slides, shifter arms **212** are rotated about the longitudinal axis of back tubes **168** so that said tubes rotate to swing the latch arms **178** back and forth in a lateral direction. When cylinders **156** are operated, plungers **157** are moved up and down, and since these plungers engage the lower ends of guide shoes **208,** links **193** are moved up and down through links **207.** This up and down movement of links **193** swings the hooks **181** of arms **178** up and down. At the same time, rollers **203** are moved arcuately up and down. When the latch arms are moved up and down and arms **200** are moved outwardly and inwardly relative to unit **165.**

When it is desired to move goods from a floor of high rise building **10,** a container **25** mounted on a truck is moved to the bottom of rails **12** so as to position the container over lift unit **20.** Latch arms **178** are swung upwardly a little, and then pick-up units **165** are swung laterally to position hook **181** over the adjacent socket entrances **28** of the container. The hooks are then lowered into the sockets, and the pick-up units swung laterally to move hooks **181** through the side openings **29** of these sockets. After this, arms **178** can be swung upwardly to lift the container off the truck, at which time rollers **203** are swung outwardly against the lower portion of the container as shown in FIG. **16.** Latch arms **178** are lowered, at which time rollers **203** swing inwardly to permit the lower portion of the container to bear against the pick-up units. Crank **97** is then rotated to withdraw the latches **89** from engagement with the arms **77** so that actuator unit also as shown in FIG. **16** **75** is detached from the lift unit. The lift unit is now raised to the desired floor by the elevator raising mechanism, not shown, but actuator unit **75** remains in place on the tracks. The reason for this is that it would not be practical to haul the necessary hydraulic hoses up the side of the building, which would take place if this unit were not detached from the lift unit. A hydraulic system has been shown for operating the various components in the actuator unit, but it will be understood that an electrical system could be used for this purpose, if desired.

The container is loaded with goods at the floor, then the lift unit is lowered until it is back down to the stationary actuator unit. Latch arms **178** are raised a little, and a truck is moved under the container. The latch arms are then lowered until the container is on the truck. The latch arms are swung laterally to clear the hooks **181** of the socket side openings **29,** and then they are raised to withdraw the hooks from the container sockets.

We claim:

1. Transporting apparatus for moving containers on vertical track means secured to an external wall of a building adjacent to at least one opening in said wall providing access to a floor of the building above ground level, said apparatus comprising follower means adapted cooperatively to engage with said track means for movement therealong, a container lift unit rigidly connected to the follower means for movement therewith and adapted to facilitate access to the building through one of said openings from a container secured on the lift unit, securing means on the lift unit for reasably connecting a container thereto, an actuator unit mounted below the lift unit with said lift unit being movable to and from the actuator unit on the track means, power means in the actuator unit, and releasable means extending between the actuator unit and the lift unit and operatively connecting said power means to said securing means for selectively operating said securing means to connect the container to the lift unit and to release the container therefrom.

2. Transporting apparatus as claimed in claim **1** in which said securing means comprises pick-up units swingably mounted for lateral movement on the lift unit, and hook means on the pick-up units swingably mounted for vertical movement.

3. Transporting apparatus as claimed in claim **2** in which said releasable means is connected to the hook means to operate the latter.

4. Transporting apparatus as claimed in claim **2** in which said releasable means is connected to the pick-up units to swing the latter units laterally.

5. Transporting apparatus as claimed in claim **1** in which said securing means comprises a pick-up unit swingably mounted for lateral movement on the lift unit, hook means on the pick-up unit swingably mounted for vertical movement, said releasable means being connected to the hook means to operate the latter.

6. Transporting apparatus as claimed in claim **1** in which said securing means comprises a pick-up unit swingably mounted for lateral movement on the lift unit, hook means on the pick-up unit swingably mounted for vertical movement, said releasable means being connected to the pick-up unit to swing the latter unit laterally.

7. Transporting apparatus as claimed in claim **1** in which said securing means comprises a pick-up unit swingably mounted for lateral movement on the lift unit, hook means on the pick-up unit swingably mounted for vertical movement, a movable pin extending between the lift unit and the actuator unit, means connecting said pin to the hook means, movement of said pin back and forth swinging the hook means therewith, and connecting means in the actuator unit between said pin and the power means, whereby the power means can move said pin back and forth.

8. Transporting apparatus as claimed in claim **1** in which said securing means comprises a pick-up unit carried by a vertical support rotatably mounted on the lift unit, hook means on the pick-up unit swingably mounted for vertical movement, releasable means extending between the actuator unit and the lift unit and operatively connecting said power means to said hook means to operate the latter, a shifter arm connected to said vertical support and projecting laterally therefrom near the bottom of the lift unit, a movable pin extending from the shifter arm to the actuator unit, movement of said pin back and forth rotating said vertical support and swinging the pick-up unit laterally, and connecting means in the actuator unit between said pin and the

power means, whereby the power means can move said pin back and forth.

9. Transporting apparatus for moving containers on vertical track means secured to an external wall of a building adjacent to at least one opening in said wall providing access to a floor of the building, said apparatus comprising follower means adapted to co-operatively engage with said track means for movement therealong, a container lift unit connected to the follower means for movement therewith and formed to facilitate access to the building through one of said openings from a container secured on the lift unit, securing means on the lift unit for releasably connecting a container thereto, an actuator unit below the lift unit, connecting means on the actuator unit for connecting said actuator unit to the track means for movement therealong, power means in the actuator unit for selectively operating said securing means to connect the container to the lift unit and to release the container therefrom, means for releasably securing said actuator unit to said lift unit for movement together, and operating means releasably and operatively connecting said power means to the securing means.

10. Transporting apparatus as claimed in claim **9** in which said securing means on the lift unit comprises a pick-up unit swingably mounted for lateral movement on the lift unit, hook means on the pick-up unit swingably mounted for vertical movement, releasable means extending between the actuator unit and the lift unit and operatively connecting said power means to said hook means to operate the latter, and releasable means extending between the actuator unit and the lift unit and operatively connecting said power means to said pick-up unit operable to swing said pick-up unit laterally.

11. Transporting apparatus for moving containers, comprising vertical track means secured to a building and extending past openings therein, follower means adapted to travel along the track means, a container lift unit rigidly connected to the follower means for movement therewith and adapted to facilitate access to the building through one of said apertures from a container secured on the lift unit, securing means on the lift unit for releasably connecting a container thereto, an actuator unit separate from and below the lift unit, power means in the actuator unit for selectively operating said securing means to connect the container to the lift unit and to release the container therefrom, and releasable operating means extending between the power means in the actuator unit and the securing means in the lift unit to operate said securing means.

12. Transporting apparatus as claimed in claim **11** in which said actuator unit is mounted for movement on the track means, and including means releasably securing the actuator unit to the lift unit for movement therewith, and means for retaining the actuator unit in position when released from the lift unit.

13. Transporting apparatus as claimed in claim **9** including brake means on the actuator unit for releasably securing said actuator unit to the track means when released from the lift unit.

14. Transporting apparatus as claimed in claim **9** in which said releasable securing means comprises arms extending from the lift unit to the actuator unit, and latch means on the actuator unit operable to latch on to and release said arms.

15. Transporting apparatus as claimed in claim **9** in which said securing means comprises pick-up units swingably mounted for lateral movement on the lift unit, and hook means on the pick-up units swingably mounted for vertical movement.

16. Transporting apparatus as claimed in claim **15** including releasable means extending between the actuator unit and the lift unit and operatively connecting said power means to said hook means to operate the latter.

17. Transporting apparatus as claimed in claim **15** including releasable means extending between the actuator unit to the lift unit and operatively connecting said power means to said pick-up units operable to swing the pick-up units laterally.

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