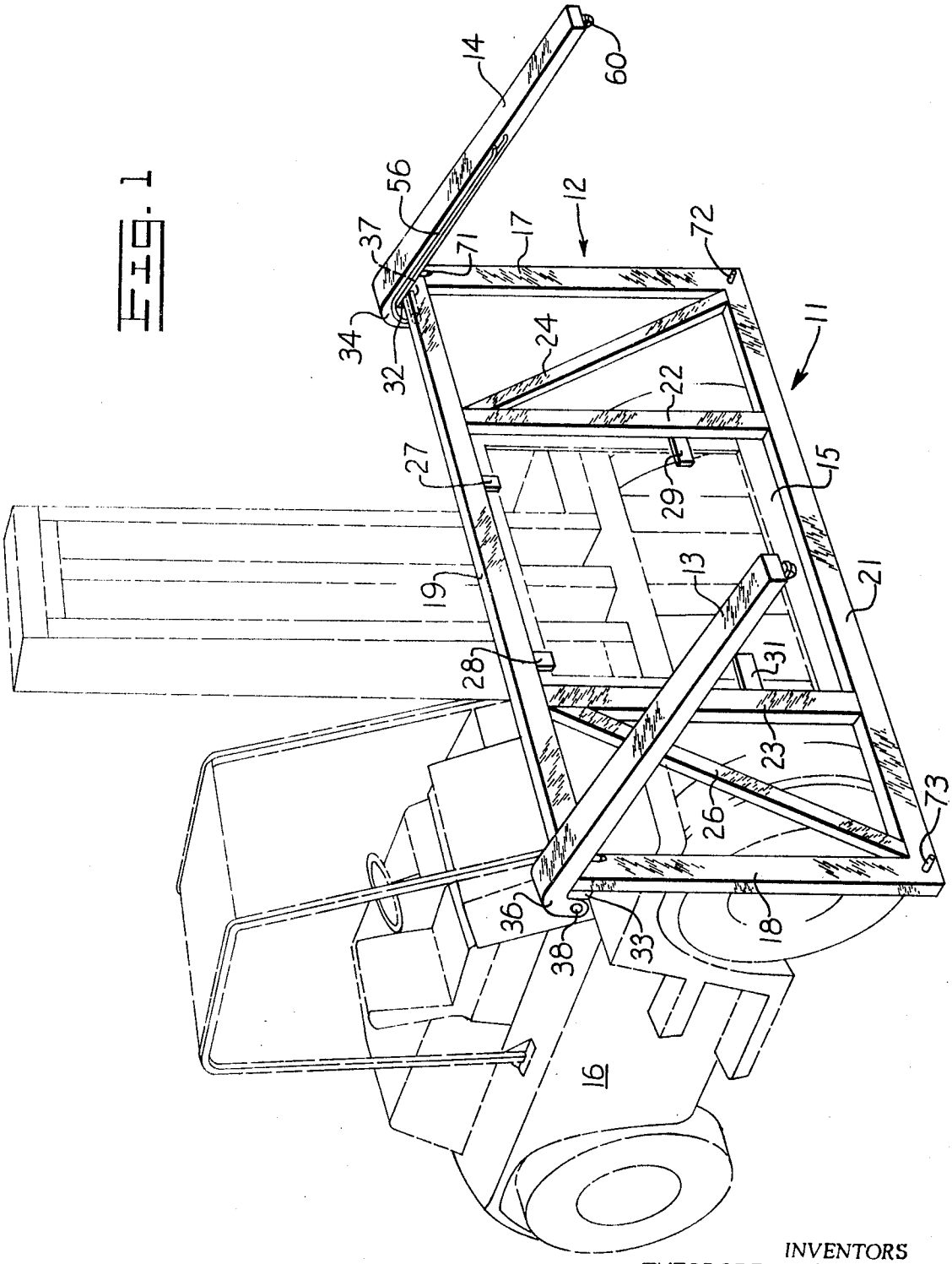
May 26, 1970 T. H. ALLEGRI ET AL 3,514,002

ANTIRACKING CONTAINER LIFT FRAME

Filed Oct. 16, 1967 6 Sheets-Sheet 1

FIG. 1



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Filed Oct. 16, 1967 6 Sheets-Sheet 2

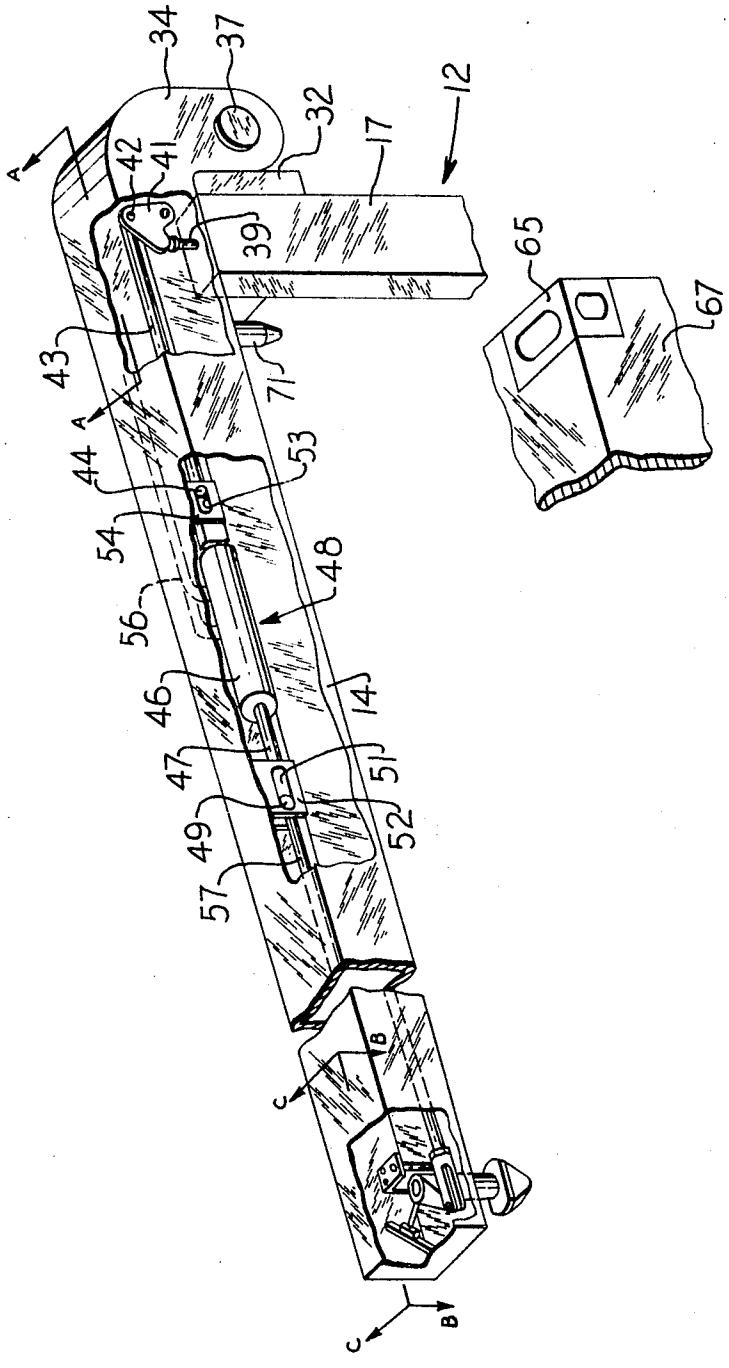

FIG. 2

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Filed Oct. 16, 1967 6 Sheets-Sheet 3

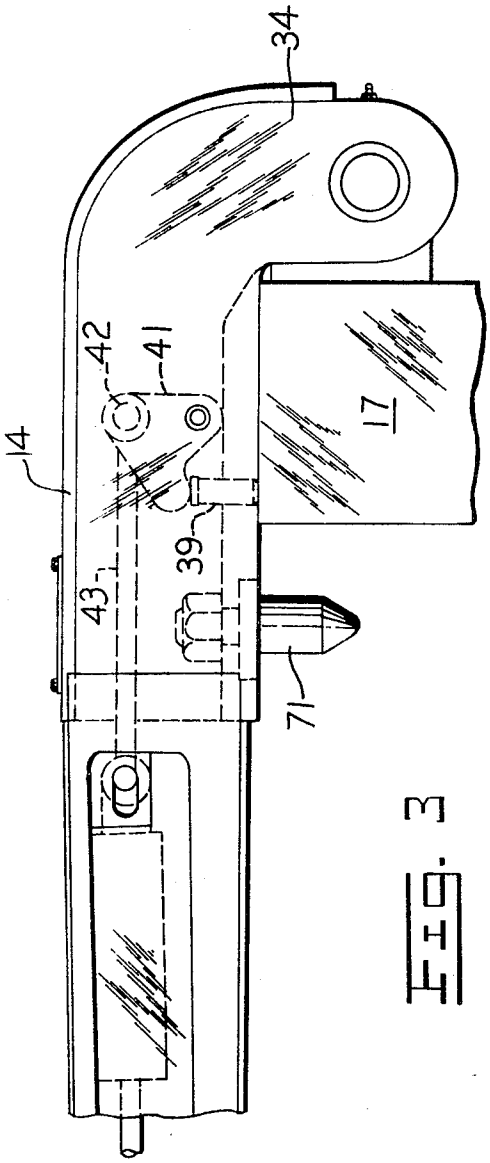

Fig. 3

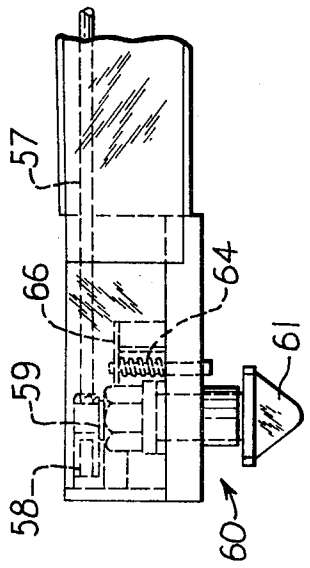

Fig. 5

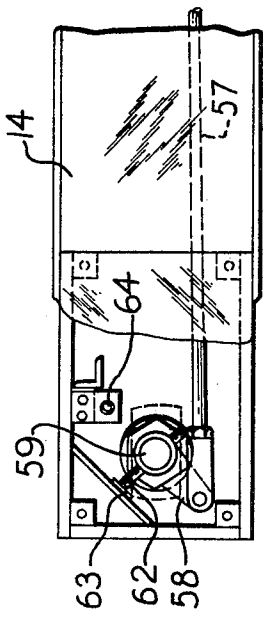

Fig. 4

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Filed Oct. 16, 1967 6 Sheets-Sheet 4

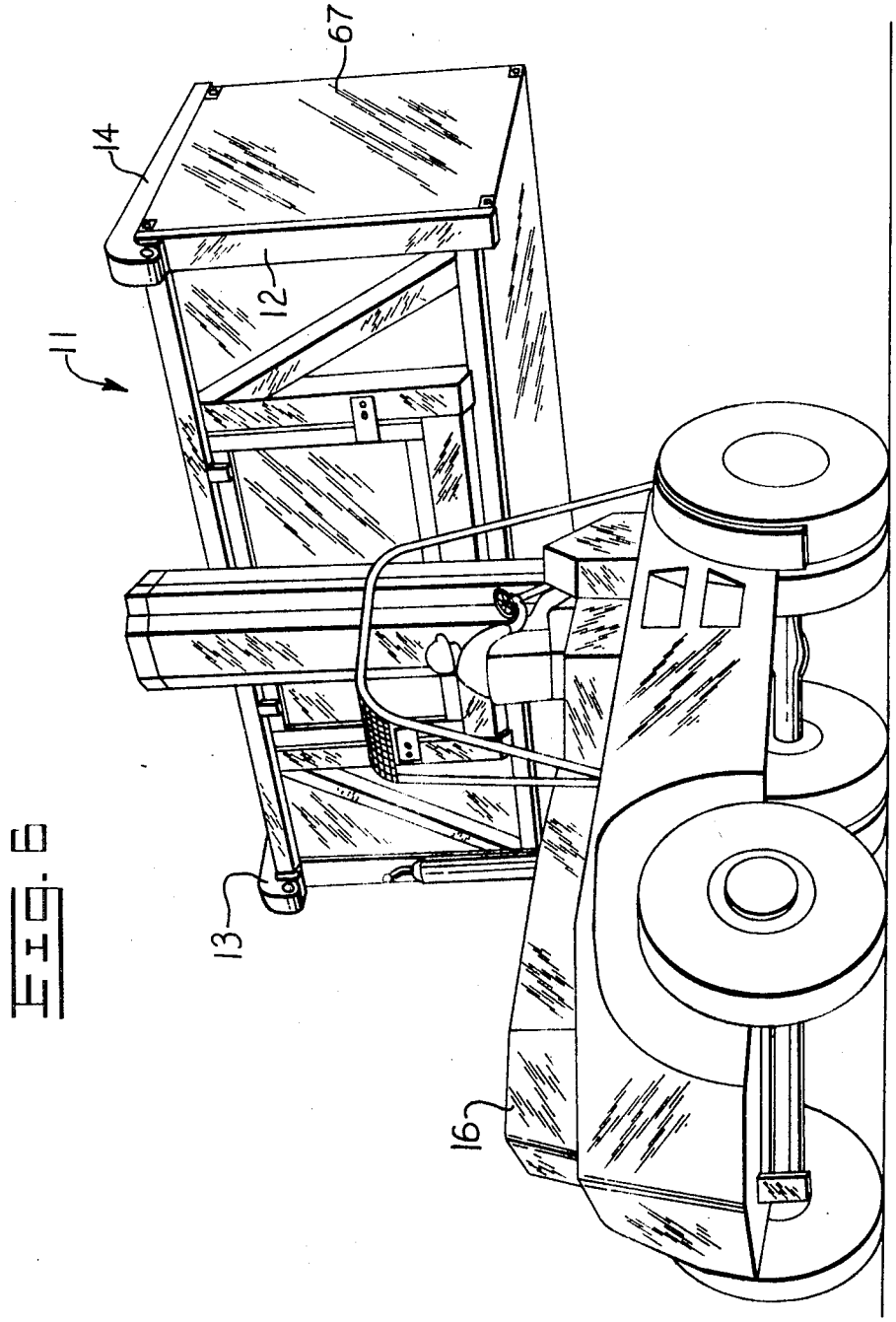

FIG. 6

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ANTIRACKING CONTAINER LIFT FRAME

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Fig. 7

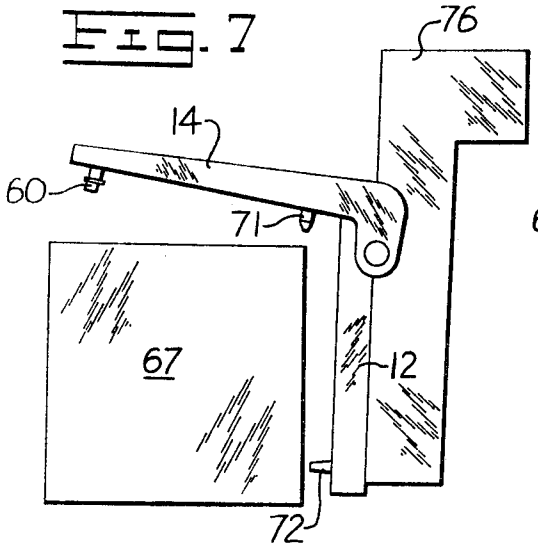

Fig. 8

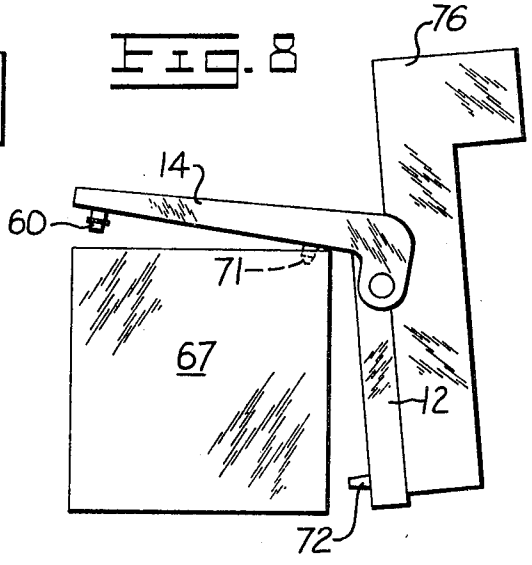

Fig. 9

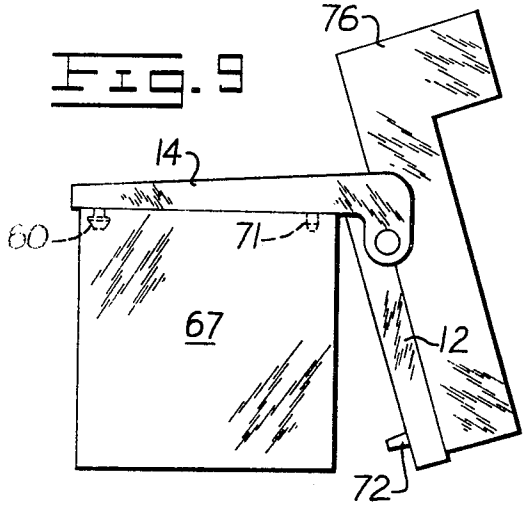

Fig. 10

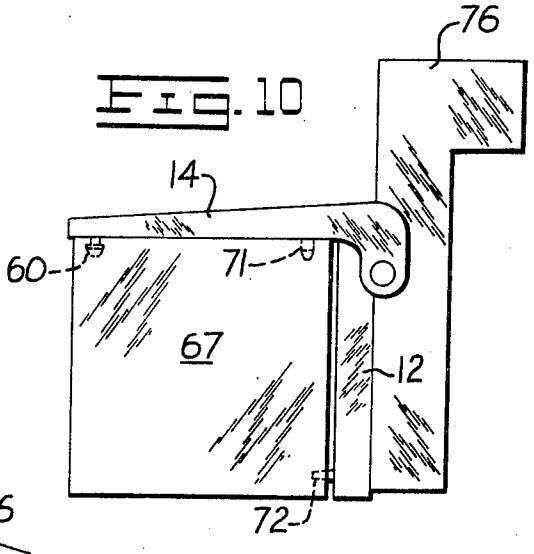

Fig. 11

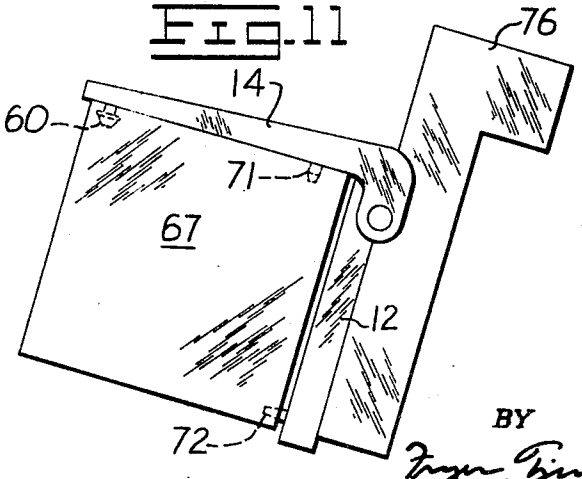

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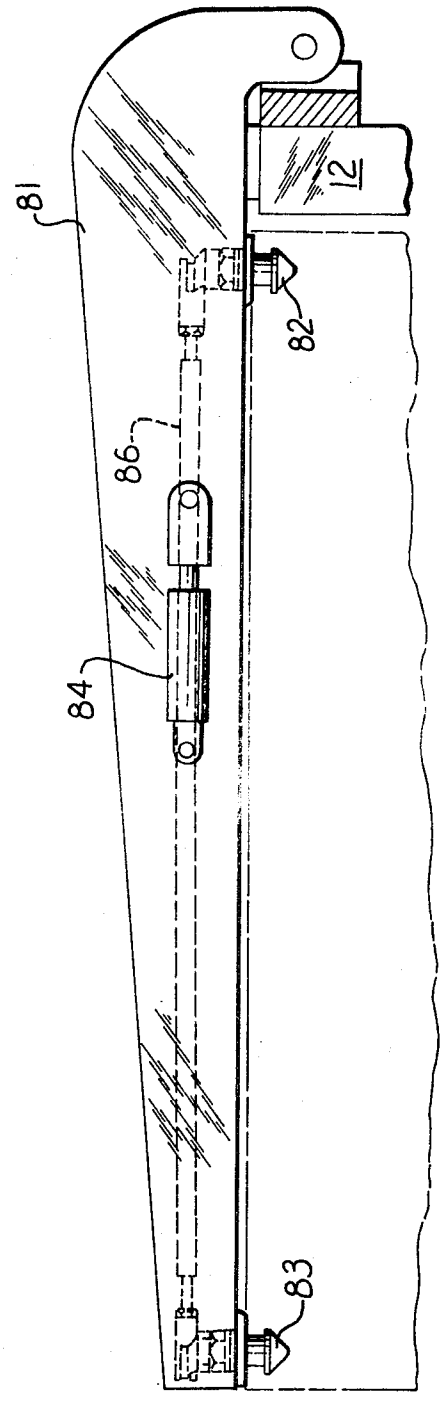
FIG. 5



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United States Patent Office 3,514,002 Patented May 26, 1970

3,514,002

ANTIRACKING CONTAINER LIFT FRAME

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Filed Oct. 16, 1967, Ser. No. 675,635
Int. Cl. B66f 9/18
U.S. Cl. 214—621 5 Claims

ABSTRACT OF THE DISCLOSURE

A frame for lifting and moving large transportation containers is provided. The lift frame is adapted for easy attachment and detachment to large size fork trucks. A vertical frame is provided with fittings at each lower corner suitable for mating with the lower corner fittings of the container. Transversely extending supporting and clamping arms are fitted to the upper corners of the frame. These transverse supporting and clamping arms have latching means at the outer ends thereof which latching means are adapted to engage the upper corner fittings of the container distant from the lift truck. Additional container engaging means are provided at the inner portion of the transverse support arms, which means engage the upper inboard fittings of the container.

When properly positioned the lift frame of the invention engages the described corner fittings of a cargo container whereby said container may be lifted and moved by said truck.

Background of the invention

The present invention relates to lift frames for cargo containers and more specifically to lift frames suitable for attaching to a fork lift truck.

Large fully enclosed cargo containers in lengths of twenty to thirty, and even forty feet, have been finding increasing favor with the transportation industry. Such containers constructed completely of metal, metal and wood, or of metal and fiberglass form cargo units susceptible to efficient cargo handling in that they may be rather easily transferred from truck to train and from train to ship and vice versa. Such containers also protect the cargo from theft and also present units which may be stacked and stored in outdoors locations while fully protecting the cargo therein from weather. Thus requirement for warehouse space in reduced during transshipment.

Further, although the cargo containers are of relatively large size, their regular shape and uniform size eases the problem of calculating correct cargo space for a given amount of cargo. Also the fully enclosed containers when lashed down on flatbed trailers or rail cars, may be readily transported from place to place.

Due to their standard size, i.e., nominally 8 ft. by 8 ft. by multiples of 10 ft., for instance 10, 20, 30 and 40 ft., such containers have been found to be extremely valuable for cargo shipments necessitating transportation by different means during their journey from shipping point to destination. Thus, in any one trip, a cargo container might travel first by truck, then by rail and then by truck to its ultimate destination. Or, for instance, it might travel by truck, by ship and thence by rail to its final destination. It will be realized that when shipment involves passage on various types of transporting means, transfer and transshipment of the containers is necessitated.

The transfer of such cargo containers from one means of transportation to another obviously necessitates the unloading of the containers from one means of transportation, then transporting and reloading of the container on another means of transportation. The transshipment of the cargo containers obviously requires some means of movement. Since the containers when loaded with cargo may reach weights up to 50,000 pounds in the case of 20 ft. containers, and even up to 75,000 pounds in the case of 40 ft. containers, it will be realized that the transshipment thereof presents quite a problem. Prior art devices for lifting and loading such cargo containers includes cranes and derricks of various forms, straddle lift carriers and lift trucks of one sort or another.

Most prior art devices, whether working from a crane, straddle carrier or truck, utilize a lift frame generally suspended from some overhead device by means of cable or chain to lift the cargo containers. As stated before, the dimensions of such cargo containers have been standardized. In addition the corner fittings on such containers have also been standardized whereby hooks and shackles of specified dimensions will suitably engage said containers. A twist lock of a safety type has been designed and standardized for use on the corner fittings of such containers. The standard corner fittings, twist lock latching means and the container dimensions are set forth in a publication of the United States of America Standards Institute. The Institute is located at 10 E. 40th St., New York City, N.Y. The publication is entitled "Specifications for Freight Containers," and is designated MH 5.1–1962. The publication may be secured from the above noted organization, which publication completely describes the standardized cargo containers, standardized corner fittings, and the standardized twist lock latch means for use therewith.

In any event, prior art cargo container lifting devices have proven to be rather cumbersome and inefficient. For instance the crane devices suffer from the defect that they are restricted in their area of operation, since they work either from fixed towers or on rails. The straddle carrier type of container lift devices, while having more freedom of movement than the crane devices, must straddle the cargo container completely before it can lift and move it.

To date the most efficient means for loading and unloading cargo containers resides in the use of wheeled lift trucks adapted to move up to the side of a cargo container which is then lifted and transported utilizing the mast common to such vehicles. Cargo container transshipment by means of lift trucks is potentially the most efficient in point of time and in freedom of movement of all prior art devices utilized for such purposes.

The principal drawback in the use of lift trucks for transshipment of cargo containers resides in the fact that the lift truck must operate from one side of the cargo container. If the lift truck utilizes the four corners of the cargo container facing it along one vertical side, the problems of twisting and racking of the cargo container become of great concern. It will be appreciated that if the cargo container is picked up from one side thereof, the great weights involved, as noted above, place great loading forces upon the cargo container frame whereby severe twisting and racking thereof may occur. In overhead type of lift devices, i.e., cranes and straddle carriers, the upper four corners of the cargo container are generally utilized as the lift point whereby the entire container is suspended directly below the lift mechanism. Racking and twisting problems are therefore greatly reduced by these transshipping devices.

SUMMARY OF THE INVENTION

The present invention provides a lift frame for cargo containers which is adapted for use on fork lift trucks, but in addition provides the advantages of overhead suspension discussed above. The lift frame of the present invention, when fitted to a fork lift truck, lifts the cargo

container at the two outboard upper corners thereof as well as the two bottom corners in closest proximity to the lift truck, while further positioning and stabilizing is obtained by pins engaging the two upper inboard corners of the container. By lifting, supporting, and stabilizing the cargo container at the noted six positions, any racking and twisting thereof is virtually eliminated. In addition since the frame is adapted for use on a fork lift vehicle, the container may be lifted and carried from place to place in the shortest possible time and in the most efficient manner.

It is therefore an object of the invention to provide a device whereby cargo containers may be lifted and transported by fork lift truck means.

It is a further object of the invention to provide a container lift frame that supports the cargo container from the four upper corners thereof as well as from the two lower corners in closest proximity to the lift truck.

It is yet another object of the invention to provide a container lift frame that prevents racking and twisting of the cargo container.

It is still another object of the invention to provide a cargo container lift frame that may be quickly and simply placed on, or removed from, a standard fork lift vehicle.

Further objects and advantages of the invention will be apparent from a review of the following specification, claims, and drawing which comprises:

FIG. 1, an isometric view of the frame of the invention shown in position on a fork carriage (in phantom), mast (in phantom), and lift truck (in phantom);

FIG. 2, an isometric partly cut-away view of one of the support and clamping arms as pivoted to the lift frame and immediately therebelow an isometric view of a corner of a standardized container;

FIG. 3, an elevation of the inner end of the support arm taken along lines A—A in FIG. 2;

FIG. 4, a plan view of the outer end of the support arm taken along the lines B—B in FIG. 2;

FIG. 5, an elevation of the outer end of the support arm taken along the lines C—C in FIG. 2.

FIG. 6, an isometric view of the lift frame of the invention in position on a lift truck and showing a container clamped therein and raised off the ground;

FIGS. 7, 8, 9, 10 and 11, schematic views of the lift frame of the invention and a lift truck mast showing the sequence of operation in clamping onto and lifting a cargo container; and

FIG. 12, an elevation of an alternate form of support and clamping arm for use on the frame of the invention.

As most clearly shown in FIG. 1 of the drawing, the lift frame **11** of the invention comprises a vertical frame portion **12** having two outwardly extending support and clamping arms **13** and **14** pivoted at the upper corners thereof. The entire lift frame **11** is removably mounted on the fork carriage **15** which is conventionally attached to the mast structure of a lift truck **16**.

The vertical frame **12** is of a rectangular configuration fabricated from heavy steel box beams. Two box beams **17** and **18** form the upright outer members thereof, while similar beams **19** and **21** form the upper and lower cross members of the frame respectively. Inward of end beams **17** and **18** are placed two additional vertical beams **22** and **23** which are welded at their respective ends to cross beams **19** and **21**, as are the end beams **17** and **18**. Vertical beams **22** and **23** are of sufficient distance apart so that a standard fork lift frame will just fit therebetween.

Diagonal bracing members **24** and **26** are further welded to the lower corners of the frame **12** and to the junctions where vertical beams **22** and **23** meet upper cross beam **19**. Depending lugs **27** and **28** are welded to the inner side of upper cross beam **19** which lugs are adapted to fit over the upper cross beam of the fork carriage **15**. Swivelling keeper plates **29** and **31** are bolted

to the back side of vertical beams **22** and **23** at a point approximately midway between cross beams **19** and **21**. Keeper plates **29** and **31** may be swivelled to the horizontal position whereby they are adapted to fit behind the side vertical beams of fork carriage **15**. Removable pins (not shown) pass through keeper plates **29** and **31** and from thence into vertical beams **22** and **23** to retain the keeper plates in the horizontal position whereby the entire lift frame **11** is securely mounted on fork carriage **15** of fork lift truck **16**.

If it is desired to remove lift frame **11** from the fork lift truck, the pins are simply removed from keeper plates **29** and **31** whereby they may be swivelled into the vertical position in back of vertical beams **22** and **23**. The entire lift frame **11** may then be easily removed from the fork carriage of the lift truck **16** by suitably lowering the carriage **15** to disengage lugs **27** and **28**. Similarly, lift frame **11** may be remounted on the fork lift frame of the lift truck **16** by simply engaging the fork carriage **15** under the lugs **27** and **28** and thereafter resecuring keeper plates **29** and **31** behind the vertical end beam of the fork lift frame.

Heavy lugs **32** and **33** are welded to the vertical frame **12** at the upper back corners thereof. Each of support and clamping arms **13** and **14** terminate in downwardly extending gooseneck portions **34** and **36** which are journaled to receive pivot pins **37** and **38**, which in turn are horizontally journaled into lugs **32** and **33** respectively.

Before terminating in the goosenecks **34** and **36**, support and clamping arms **13** and **14** pass over the upper corner of vertical frame **12** whereby they are limited in their downward pivot to form an angle of 90° with vertical frame **12**. However, since support and clamping arms **13** and **14** are pivoted at pins **37** and **38**, it will also be readily apparent that they are capable of being moved in an upward arc away from frame **12**. Of course it will be also apparent that due to the force of gravity, support and clamping arms **13** and **14** will continually rest against the top of vertical frame **12** unless they are moved upwardly therefrom by means which will hereinafter be described.

Each of support and clamping arms **13** and **14** are identical in construction. For purposes of simplicity the construction of the arms will be discussed in relation to arm **14** only. However, it should be understood that the mechanism associated therewith and therein is identical with that associated with support and clamping arm **13**. As is more clearly illustrated in FIGS. 2, 3 and 4 of the drawing, support and clamping arm **14** comprises an elongated box-like structural member fabricated from suitable steel sections. The arm extends outwardly beyond upright frame **12** a distance sufficient to entirely span across the top of a standardized cargo container on the shorter dimension thereof. For a standardized cargo container this dimension is nominally 8 ft., wherefore support and clamping arms **13** and **14** extend beyond upright frame **12** that distance.

A hole is drilled in the lower inboard portion of arm **14** just above the underlying upper surface of vertical frame **12**. An arm raising and lowering pin **39** is slidingly positioned within the hole. A cam **41** is pivotably secured to lugs welded to the upper surface of the lower wall of the box-like arm **14**. A lobe of cam **41** bears against the upper surface of pin **39**, while a pin **42** journaled into the upper portion of cam **41**, retains the end of a rod **43** extending rearwardly through the interior of arm **14**.

The other end of rod **43** is pivotably secured by means of a pin **44** to an extension of hydraulic jack cylinder **46**, which is retained internally within arm **14** some distance outward from pin **39**. Hydraulic cylinder **46** and its associated rod **47** together comprise a hydraulic jack **48**, which when suitably actuated, raises arm **14** up from vertical frame **12** and in addition manipulates a twist locking pin which will hereinafter be described.

Rod **47** of jack **48** is secured at the end distant from

cylinder 46 by a pin 49 which rides in slots 51 formed into depending brackets 52 welded to the undersurface of the upper portion of arm 14. Pin 49 is free to move forwardly and backward to the extent of slot 51. Similarly pin 44 is slidingly secured in slot 53 formed into depending brackets 54 which are welded to the undersurface of the upper portion of arm 14. Pin 44 is free to slide forwardly and backwardly to the extent of slot 53.

It will be noted from the construction as described above, that hydraulic jack 48 is semi-floating; that is, cylinder 46 thereof is free to slide forwardly and backwardly to the extent permitted by slot 53. Similarly rod 47 is permitted to move forwardly and backwardly to the extent of slot 51. It should be noted that slot 51 is of a length approximately three times the length of slot 53.

Two hydraulic lines 56 are suitably secured to one of the side surfaces of arm 14 and at their one end pass through holes into the interior of arm 14 and from thence are yieldingly secured to conventional intake and exhaust ports in the head and rod end of hydraulic cylinder 48. At their other end hydraulic lines 56 are suitably secured as by quick disconnect couplings to supply and exhaust hydraulic lines (not shown) on lift truck 16.

Hydraulic jack 48 is a double acting jack whereby the hydraulic lines 56 may alternatively act as input or exhaust lines to the cylinder 46. Hydraulic fluid pressurized by pumps commonly associated with lift truck 16 and controlled by valves manipulated by the truck operator is supplied into hydraulic lines 56 through the aforementioned connection.

An extension 57 of piston rod 47 and pivotally attached thereto by pin 49 extends outwardly along the length of the interior of arm 14 and is pinned at its other end to a lever 58 (see FIG. 4). Lever 58 is in turn rigidly affixed to the upper end of shaft 59 which forms the central portion of standardized twist lock 60. Details of construction of such a twist lock (safety type) may be found in the United States of America Standards Institute document MH 5.1–1962, "Specifications for Freight Containers," previously referred to above.

Standardized twist lock 60 has its latching head 61 depending below the end of arm 14. When dropped through the slotted top opening in a standardized corner fitting (one of which is illustrated at 65 in FIG. 2) of a cargo container (the cargo container standardized corner fittings are also shown and described in the above-referred to United States of America Standards Institute publication) and rotated 90° into the position shown in FIG. 5, locking head 61 will be locked into the corner fitting of the cargo container. When rotated 90° from the position shown in FIG. 5, locking head 61 may be removed through the slotted opening in the corner fitting of a standardized cargo container. The position of locking head 61 is controlled by rotating lever 58 and shaft 59 to which it is attached. Thus when piston rod extension 57 is moved to the fully extended position, lever 58 forces locking head 61 into the locked position. On the other hand, when piston rod extension 57 is retracted, lever 58 forces the locking head into the unlocked position whereby twist lock 60 can be inserted or removed from the standardized corner fitting of a cargo container.

A switch actuator pin 62 is rigidly affixed to lever 58 at right angles thereto. Pin 62 is of such a length that when twist lock 60 is moved into the locking position, i.e., locking head 61 is at right angles to the slotted opening in the container corner fitting, its end will contact the spring of a microswitch 63. The microswitch spring 63 closes the switch which records the fact by a light on the operator's console. Suitable wiring (not shown) connects the microswitch to the operator's console on the lift truck 16. Thus when twist lock 60 is in the locked position, this fact will be apparent to the operator of the lift truck.

A twist lock position indicator is also positioned near the extremity of arm 14. More specifically a pin 64 is positioned vertically to pass through a hole in the bottom of the outer portion of arm 14. The pin 64 is retained by suitable means within the hole in the bottom of arm 14. However, at the same time it is permitted to move up and down freely therein. The lower end of pin 64 depends a short distance below the bottom surface of arm 14 but terminates at a distance considerably less than that to which the locking head 61 of twist lock 60 extends below the arm 14.

The upper end of pin 64 terminates somewhat short of an actuating spring of microswitch 66. However, pin 64 is so positioned that when the lower end thereof contacts the upper surface of a cargo container, it will be forced in the upward direction whereby the upper end of said pin depresses the spring of microswitch 66 to establish electrical contact. This electrical signal is transmitted through suitable wiring circuits (not shown) to the console of the lift truck 16 whereby a light thereon is lit. It will be understood that due to the relative positions of pin 64 and twist lock 60, it is impossible to depress the pin until twist lock 60 is located within the interior of the corner fitting of a cargo container. Once located within the corner fitting of a cargo container, the upper surface of said container will then bear against the bottom of pin 64 forcing it upward to achieve electrical contact within microswitch 66. Thus the electrical signal put out by microswitch 66 indicates to the lift truck operator that twist lock 60 is in the proper position within the corner fitting of cargo container 67.

As is shown in FIGS. 2 and 3, a fixed pin 71 is positioned on the bottom surface of arm 14 a short distance outwardly of pin 39. Pin 71 is positioned so that it will fit into the upper slot of a standard corner fitting of a standardized cargo contained in the upper corner thereof which will be closest to vertical frame 12. Fixed pin 71 and twist lock 60 are positioned at suitable distances on the undersurface of support arm 14 such that both pins may be positioned in the upper corner fittings of the opposite sides of a cargo container 67.

As is shown most clearly in FIG. 1, another set of pins 72 and 73 are positioned in the lower corners of each end of vertical frame 12. Pins 72 and 73 have a configuration similar to that of 71, however, instead of depending in the vertical position, they are positioned horizontally out from frame 12. Fixed pins 72 and 73 are positioned on lift frame 11 such that they may be inserted into the side of the lower corner fittings of a standardized cargo container.

It will be recognized that there are another pair of pins on support and clamping arm 13 corresponding to the pins 60 and 71 on support and clamping arm 14.

FIGS. 7 through 11 of the drawing illustrate in a schematic manner how a container lift frame of the present invention is fitted to a cargo container and how the cargo container is thereafter lifted and transported by the lift truck. As is shown in FIG. 7, the lift truck approaches the container 67 with the support and clamping arms in the raised position. The lift arms are placed into the raised position by the lift truck operator directing hydraulic fluid into the rod end of hydraulic cylinder 48. This causes rod 47 to retract into cylinder 46 whereby pin 49 is drawn to the extreme right-hand side of slot 51. This in turn rotates lever 58 to insure that twist lock head 61 is in the unlocked position. As additional hydraulic fluid is forced into the rod end of cylinder 46, the increased volume and pressure forces cylinder 46 to slide leftwardly whereby pin 44 is forced to the extreme left-hand end of slot 53. This action in turn forces rod 43 to rotate cam 41 in the counterclockwise direction. The lobe on cam 41 is thereby forced against the end of pin 39 which in turn is forced down against the upper surface of vertical frame 12. By reaction the support and clamping arm is forced into the raised position as shown in FIG. 7.

With the left arms **13** and **14** in the raised position the operator then approaches cargon container **67**.

Placing the lift truck mast **76** in the forward tilt position, the operator then lowers pin **71** and its corresponding pin on the other support and clamping arm down into the upper inboard corner fittings of the cargo container **67**. The operator can accomplish this visually from his position atop lift truck **16**.

Having positioned the pins in the upper inboard corners of the cargo container fittings, the operator then tilts mast **76** further forward to thereby lower twist locks **60** into the upper outboard corners of cargo container **67** (see FIG. 9). The operator will know when pins **60** are positioned in the upper outboard fittings of container **67** through actuation of pin **64** previously referred to. An appropriate light will go on on his control console indicating that twist lock **60** is in position in the upper outboard fittings of container **67**.

The indication that the pins **60** are in position allows the operator to then direct hydraulic fluid into the head end of hydraulic jack **48**. Hydraulic pressure in the head end of hydraulic jack **48** will first cause hydraulic cylinder **46** to shift rightwardly whereby pin **44** and associated rod **43** will shift to the right causing cam **41** to rotate in the clockwise manner. The lobe of cam **41** will thereby be removed from the top of pin **39**.

Secondly, as more hydraulic fluid is forced into the head end of hydraulic jack **48**, the internal piston and its associated rod **47** will be forced leftwardly whereby pin **49** will be driven to the left-head extremity of slot **51**. Rod extension **57** associated with pin **49** will thereby be forced leftwardly to rotate lever **58** which in turn forces locking head **61** on twist lock **60** into the locked position. On reaching the locked position, pin **62** will actuate the spring arm of the microswitch. As previously described, a signal will be sent to the operator's console whereby he will receive a positive indication that the twist locks **60** are in the locked position.

With the twist locks locked into the upper outboard corners of container **67** and the pins **71** positioned in the upper inboard corners of container **67**, the lift truck operator then moves the truck forward while moving mast **76** into the vertical position. At this point pins **72** and **73** are thereby forced into the lower inboard corner fittings of container **67**. At the same time, since cam pressure has been removed from pin **39**, support and clamping arms **13** and **14** will rotate relative to vertical frame **12** permitting engagement of pins **72** and **73** just described.

Having engaged all pins inthe described fixed corner fittings of container **67**, the lift truck operator then tilts mast **76** into the backward position whereby container **67** is picked up by lift frame **11**. Frame **11** and clamped container **67** may then be raised on mast **76** and transported wherever desired by lift truck **16**. (Note FIG. 6).

When desiring to deposit container **67**, the sequence of operations just described is reversed whereby container **67** will be unclamped from lift frame **11**.

Utilizing the lift frame **11** as described above, cargo containers may be quickly and efficiently picked up and moved from place to place even when fully loaded. The clamping and unclamping operations are conducted in a minimum amount of time. Further since the cargo container is supported and held at six positions as indicated previously, racking and twisting of even fully loaded containers is virtually eliminated.

FIG. 12 illustrates a support and clamping arm somewhat modified from clamping arm **14** previously described. This alternate form of clamping arm **81** is fitted to vertical frame **12** in exactly the same way as previously described with respect to arms **13** and **14**. However, modified support and clamping arm **81** is permitted to ride on the top of vertical frame **12** under the influence of gravity, i.e., there is no positive means associated therewith for forcing the arm **81** into the raised position.

In addition modified arm **81** has a twist lock **82** depending therefrom in a position identical with fixed pin **71** previously described with respect to arm **14**. Twist lock pin **82** is identical in construction with twist lock pin **60** previously described. In addition a twist lock pin **83** depends from the lower portion of arm **81** at the outer end thereof. Twist lock **83** is identical in construction with twist lock **60** previously described in respect to arm **14**.

A double acting hydraulic cylinder **84** is affixed to arm **81** midway between locks **82** and **83**. A locking rod **86** is suitably connected to the rod end of hydraulic piston **84** and at either of its extremities to levers (not shown) for the actuation of twist locks **82** and **83**. When twist locks **82** and **83** are positioned in the upper outboard and inboard corner fittings of a cargo container, hydraulic cylinder **84** is actuated to move locking rod **86** which in turn forces twist locks **82** and **83** into the locked position.

With corresponding twist locks on a corresponding arm of a lift frame it will be obvious that pins will be locked into the upper corner fittings of a cargo container at the four corners thereof. By this means a cargo container can be lifted by its upper four corners without the necessity of utilizing lower pins, such as **72** and **73** previously described.

While a preferred embodiment of the invention has been shown and described, those skilled in the art may make minor variations without departing from the spirit of the invention and the scope of the appended claims.

What we claim is:

1. A load lifting apparatus comprising:

a frame adapted for attachment to a fork lift truck,

a pair of support arms pivotally mounted on said frame,

said frame having a top portion, said arms being supported on said top portion in horizontal extended positions, said arms each being provided at its extended end portion with a depending rotatable locking and load bearing pin, single hydraulic means carried by said arms for sequentially rotating said pins to first positions and for pivoting said arms from their horizontal extended positions to raised vertically inclined positions,

said arms each being provided with a depending load-engaging pin adapted for registration with a load,

said means being actuatable to pivot said arms from inclined vertical positions to horizontal extended positions, to register said locking pins in engagement with the load, and then to rotate said locking pins to second positions, whereby said pins are lockingly engaged on the load,

said frame supporting said arms in their horizontally extended positions upon lifting of the load by the fork lift truck.

2. The structure as recited in claim **1**, wherein said means includes a cam pivotally mounted on each of said arms and adapted upon pivotal motion to apply arm pivoting pressure against said frame, a hydraulic jack connected to a respective cam, a piston reciprocably mounted within each hydraulic jack and operatively connected to a locking pin, a first and a second source of hydraulic fluid operatively associated with said jacks, said pistons and said jacks being sequentially reciprocated upon supply of hydraulic fluid from said first source to said jacks, whereby said locking pins are rotated to said first positions and said cams are pivoted to apply arm pivoting pressure, said jacks and said pistons being sequentially reciprocated upon supply of hydraulic fluid from said second source, whereby said cams are pivoted to remove arm pivoting pressure and said

locking and load bearing pins are pivoted to said second positions.

3. The structure as recited in claim 2, and further including:

means carried by said arms for limiting reciprocation of said pistons.

4. The structure as recited in claim 3, and further including:

means carried by said arms for limiting reciprocation of said jacks.

5. The structure as recited in claim 1, wherein said arms are stopped against the top portion of said frame when said arms are in horizontal extended positions.

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