LOADING APPARATUS FOR REFUSE COLLECTION TRUCKS

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1 Claim. (Cl. 214-360)

Generally, the present invention relates to novel improvements in apparatus wherein containers that are filled with trash, refuse and so on, may be bodily elevated, thereupon having their contents dumped into a truck body, and thereafter be returned to ground level for future use.

More particularly, the present invention contemplates an apparatus wherein containers of the character under consideration may be elevated from the ground, thereafter tilted, and thereupon up-ended so as to have their contents discharged or dumped by gravity into the forward compartment of a refuse collection truck body. An apparatus of this type is disclosed in United States Patent No. 3,001,655 that was granted on September 26, 1961, and the present invention contemplates a number of improvements over that disclosure. The aforesaid patent and the instant application have been assigned to the same assignee.

The modern conventional system of refuse collection is well known, and it is not considered necessary to elaborate thereon. Briefly, refuse containers that may or may not be mounted on casters for mobility are customarily stationed at various points for the deposit therein of trash, garbage, and other discard material. When such a container has been partially or entirely filled, the usual practice is to attach it to an elevating and dumping mechanism, said mechanism serving to discharge the container contents into what is called the loading compartment of a collection truck body. These truck bodies usually have an opening in the top wall thereof through which the container contents are deposited, and are equipped with a packer blade and operating mechanism therefor. After the contents of a plurality of containers have been deposited into the loading compartment, the packer blade is mechanically activated to push the accumulated mass of material into what is termed the storage compartment of the truck body, as distinguished from the loading compartment thereof.

Inasmuch as the present invention is not concerned with the packer blade nor its operating mechanism, no reference thereto will be made hereinafter, nor do the drawings that accompany this specification include any illustration thereof.

Primarily though not exclusively, the present invention is directed to novel and improved apparatus with respect to a side loading type of refuse collection vehicle. The "side loading" technique as understood in this art, contemplates a refuse container and means for depressing the contents thereof into a forward loading compartment of the vehicle from the side thereof rather than from the rear.

Prior art mechanisms designed to attain these side loading operations have been prone to frequent breakdowns, with consequent need for repairs, vexation, collection delay, and so on. Among the principal reasons for these breakdowns and malfunctions, the inclusion of spring operated mechanisms in the prior art equipment may be mentioned. Frequently, trash containers of the type under consideration, particularly when filled to capacity, are heavy and as can be surmised, wherefore the spring operated mechanisms aforesaid are placed under tremendous strain. In consequence, the effectiveness of them deteriorates rapidly, and more often than not, when an above average heavy container is being loaded, the springs break under the strain.

To this end, the instant invention teaches a hydraulically operable apparatus that is not only devoid of springs, but also dispenses with the cable mechanism included in the patent disclosure. The hydraulic system for controlling the operations of the present apparatus is simple, and includes a conventional control valve mounted on the truck body near the cab thereof, and on the same side whereon the apparatus is mounted.

Included in the apparatus is a rack provided with means for releasably attaching and locking a container thereto. The rack is pivotally connected at its two upper corners to a vertically movable or elevator frame. A pair of spaced perpendicular guide rails is rigidly secured to the truck body side walls, and the elevator frame is provided with roller assemblies that ride in said rails. A pair of horizontally spaced chains have their normally lower ends anchored to lugs provided on the elevator frame, and have their normally upper ends anchored to the truck body. The chains are of the sprocket type although they do not operate as sprocket chains. Instead, each chain in trained over a smooth surfaced roller that is rotatably supported in a clevis rigid with the upper end of a piston projecting upwardly from a vertically disposed hydraulic cylinder, as will appear. The cylinders are included in the hydraulic system aforesaid, and raisings and lowerings of the elevator frame and its associated rack are effected by movements of the pistons, the rollers, and said chains, responsive to manipulations of the system control valve.

A pair of dump arms have their upper ends rotatably mounted on stub shafts. These shafts are supported at each end in an appropriate bracket affixed atop the truck body, and are adapted to have their free lower end portions engage in roller sockets affixed to the rack, when in its upward movement, said rack reaches a determined plane above ground level.

The dump arms are operable by a pair of cylinders also included in the hydraulic system. These cylinders have upwardly projecting pistons that have pivotal connections with said dump arms, and are adapted to swing them accurately upwardly about their rotatable mounting on the stub shafts. In other words, when the elevator frame aforesaid, the rack associated therewith, and the refuse container locked to the rack in unison fashion arrive at the plane wherein the dump arms are engaged by the roller sockets of said rack, the pistons of said cylinder are adapted to first tilt, and then gradually invert the container thereby to discharge the contents thereof into the loading compartment of the truck body. The dump arm actuating cylinders are also operable in response to manipulations of the hydraulic system control valve. Emptied containers are returned to ground level for future use by a reversal of the loading procedure, as will be explained.

Complimentary means are provided on conventional trash containers for cooperation with the apparatus aforesaid, similar means being also disclosed in the patent aforesaid.

A preferred embodiment of the improved apparatus contemplated by the present invention is illustrated on three sheets of drawings that accompany this specification. It is believed that these drawings, and the detailed description with reference thereto that follows, present an adequate and comprehensive disclosure of the invention.

In said drawings:

FIGURE 1 is a side elevational view of a typical refuse collection truck equipped with a side loading apparatus
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constructed in accordance with the concepts of the present invention;

FIGURE 2 is an end elevational view of an exemplary rear container having side and end channel brackets welded thereto for cooperation with mechanisms included in the apparatus of the invention;

FIGURE 3 is what will be termed a rear side elevational view of said container;

FIGURE 4 is what will be termed a forward side elevational view of said container;

FIGURE 5 is an enlarged horizontal sectional view taken on the line 8—8 of FIGURE 2;

FIGURE 6 is a similar view taken on the line 6—6 of FIGURE 2;

FIGURE 7 is a side elevational view, on an enlarged scale, of a fragmentary portion of the FIGURE 1 presentation, this view illustrating in broken lines the disposition of the container of FIGURES 2 through 4 relatively to the loading apparatus prior to initiation of an elevating and dumping cycle;

FIGURE 8 is a vertical sectional view taken on the line 8—8 of FIGURE 7, this view also demonstrating in broken lines the cycle of elevating, tilting, and then dumping a trash-laden container in accordance with the principles of the invention;

FIGURE 9 is a fragmentary horizontal plan view, partly in section, taken as indicated by line 9—9 of FIGURE 8;

FIGURE 10 is a fragmentary end elevational view, partly in section, taken as indicated on the line 10—10 of FIGURE 9;

FIGURE 11 is a fragmentary view on an enlarged scale, taken on the line 11—11 of FIGURE 7;

FIGURE 12 is a vertical sectional view on an enlarged scale taken on the line 12—12 of FIGURE 7;

FIGURE 13 is a similar view continued upwardly to the top of the truck body, and demonstrating certain elements in raised or elevated disposition;

FIGURE 14 is a vertical sectional view illustrating the pivotal relationship and connection between the elevator frame and the rack frame;

FIGURE 15 is a front side elevational view of the elevator frame whereon to the container supporting rack frame is pivotally mounted;

FIGURE 16 is a vertical sectional view illustrating the mounting details of the rollers wherever the sprocket chains are trained;

FIGURE 17 is an elevational view of a composite container lock bar and handle;

FIGURE 18 is an enlarged vertical section taken on the line 18—18 of FIGURE 17; and

FIGURE 19 is a schematic view of the principal components of the hydraulic system for effecting the contemplated operations of the apparatus.

Prior to entering into a detailed description of the invention and its mode of operation, some of the conventional equipment and elements that appear in the drawings will be described briefly, and identified by means of alphabetical reference characters.

Thus with reference particularly to FIGURE 1, the representative refuse collection truck there shown is designated A, and includes a body B and a cab C. Generally, though not necessarily, trucks of this type have closed tops wherein however, and appropriately sized opening is provided for the discharge therethrough into the loading compartment, of the refuse material dumped from the containers. The body B includes a front wall D and side walls E, only that side wall E wherein the apparatus of the invention is mounted being shown. A fragmentary portion of the bottom wall or floor F is shown to define with the top wall G of the body, the loading compartment H. The discharge opening is designated O, and usually though not necessarily, may be reinforced by a surrounding depending flange as shown. Vehicles of the character briefly described are well known and it is not deemed requisite to further elaborate thereon, it being noted however, that the loading apparatus of the present invention may be mounted on most of the present day trucks in this category.

With reference particularly to FIGURES 2 through 4, a typical container of the type wherewith the present invention is concerned is designated K. Generally thought not necessarily, containers of this type are mounted on casters L for mobility, and are either open at the top to provide with hinged lids. The exemplary container K selected for illustration is an open top type, and includes what will be termed a forward side wall M, and end walls N.

In order to condition conventional containers such as K for use with the apparatus hereinafter to be described, a pair of horizontally spaced co-planarly disposed lugs are rigidly attached to the forward side walls M thereof. Designated 24, these lugs are channel-shaped and have their leg segments 26 welded to the wall M, and said segments are disposed in a horizontal plane as shown, reference being had in this connection also to FIGURES 5 and 6. Rigidly attached to each end wall N is a channel-shaped lug 25, the opposed lugs being co-planarly disposed at a determined plane above ground level, this being true likewise of the lugs 24. The leg segments 30 of the lugs 28 are disposed in a vertical plane, and have their ends welded to the container walls N, as suggested particularly in FIGURE 5.

The loading apparatus of the present invention is generally designated by the numeral 32, and is illustrated as being mounted on the right side wall E of the truck body B, as viewed in the drawings. Broadly, the apparatus 32 includes trash container engaging mechanism generally indicated at 34, container hoisting and lowering mechanism generally indicated at 36, container tilting and inverting mechanism generally indicated at 38, and stationery as well as movable elements associated with said mechanisms as will appear.

Among the major components of the apparatus 32 is a pair of horizontally spaced perpendicularly disposed guide rails 40. The guide rails 40 are of channel configuration in cross section, and are rigidly secured to the outer face of the truck body side wall E by means of welding as shown, or in any other manner. The guide rails 40 extend downwardly below the truck body B as shown, their lower extremities being connected by a crossbar 44.

The trash container engaging mechanism 34 is supported by the guide rails 40 for movements from a lowered position to an elevated position and vice versa, by means of two pairs of spaced guide roller assemblies, as will appear. The mechanism 34 includes as its major components an elevator frame generally designated 48, and a rack frame similarly designated 50.

The elevator frame 48 appears per se in FIGURE 15, and as there shown, is substantially of rectangular configuration. It is comprised of a pair of horizontally spaced channel members 52 that are connected at the bottom by a transversely extending bar 54, and thereabove by a plurality of diagonal braces 56. The ends of the bar 54 and the adjacent ends of the braces 56 are welded to the channel members 52, and centrally of the frame, the diagonal braces are welded to one another. The illustrated and described elevator frame 48 is thus of lightweight yet sturdy construction, but it will be understood that the precise structural composition thereof is not critical.

Each of the channel members 52 includes a pair of leg segments 58 integral with a connecting or web segment 60. A rectangular opening 62 is formed in each of the web segments 60, and rectangular lugs 64 extend into said openings, are welded to the surfaces of the web segments defining said openings, and project rearwardly from said web segments as shown particularly in FIGURES 9 and 14.
Welded or otherwise rigidly secured to the leg segments 58 of the two channel members 52 are bifurcated hinge brackets 66 of the configuration shown. These brackets serve to pivotally support the rack frame 50 in a manner and for a purpose that will be explained hereinafter.

Mentioned hereinafter were two pairs of spaced guide roller assemblies. Each of these assemblies includes a roller 65 rotatably mounted on a pin 70. One end of the pin 70 is projecting into a supporting block 72 that is welded, as shown particularly in FIGURE 9, to the web portion 60 of one of the spaced channel members 52 of the elevator frame.

The container engaging and supporting rack frame 50 is substantially rectangular as shown. It is comprised of bars and plates integrated by welding or otherwise to provide a sturdy though light weight structure. The structural elements include an upper bar 74, a lower bar 76, a left end front face plate 78 (as viewed in FIGURE 7), a right end front face plate 80, an intermediate front face plate 82, and four spaced upright plates designated 84, 86, 88 and 90. It is to be observed that the two spaces 92, defined by the plates 84 and 86 and the plates 88 and 90 respectively, are wide enough to facilitate entry thereinto of the container lugs 24, as demonstrated particularly in FIGURE 7 by broken lines.

Rigidity with the rack frame 50, is a pair of end plates each mounted in contiguousity by the numeral 94. The configuration of the end plates 94 is illustrated on an enlarged scale particularly in FIGURES 10 and 14. As there shown, each end plate 94 includes a main body portion 96, and a hanger segment 98 projecting laterally therefrom at its upper end. Formed in the upper end of the main body portion 96 is a vertical recess 100, said recess defining what will be termed a hook segment 102. As illustrated, the upper ends of the recess 100 merge acutely into the top marginal edge of said main body portion 96 as indicated at 104, thus facilitating entry into said recess of a channel-shaped container lug 28.

A space plate 106 is welded to the inner face of each hanger segment 93, and said segment and spacer plate are provided with concentric circular openings in alignment with similar openings provided in the bifurcated segments 108 of the hinge brackets 66. Numerals 110 designate hinge pins that extend through said openings, whereby the rack frame 50 is pivotally supported from the elevator frame, as should be manifest particularly in view of FIGURE 14.

The container hoisting and lowering mechanism 36 includes as its major components, a pair of chains 112, a pair of smooth surfaced rollers 114, and a pair of hydraulically cylinders 116. The normally lower ends of the chains 112 (FIGURE 12) are anchored to the elevator frame 48 via the adjustable arrangement with respect to the plates 64 indicated at 118 in FIGURES 9, 12, 13 and 14. The opposite, or normally upper ends of the chains 112, are anchored to the truck body side wall E in any appropriate manner, as suggested at 120 in FIGURES 12 and 13, where they are illustrated as being anchored to a cross bar 119 that is welded to said side wall E.

The two rollers 114 are preferably fabricated of steel. Each roller is rotatably mounted on a pin 121 that is supported in a clevis 123 rigid with the upper end of a piston 122. The pistons 122 project upwardly from, and are operable by, the pair of hydraulic cylinders 116. These cylinders are pivotally supported from suitable brackets 124 that are secured to the crossbar 44. It will be observed that although the cylinders 116 are perpendicularly disposed, they are free to deviate slightly from the perpendicular, inasmuch as the brackets 124 comprise their only fixed supporting means.

As clearly illustrated in the drawings, that portion of each chain 112 intermediate its anchored ends is trained over one of the pair of rollers 114. Inasmuch as the anchorage of one end of each chain 112 as indicated at 120 is stationary, upward movements of the pistons 122 will result in corresponding unison movements of the elevator frame 48 and the rack frame 50.

The container tilting and inverting mechanism 38 includes a pair of dump arms each adapted to extend into what will be termed a dump arm socket assembly 124. A container K has reached a certain plane in the course of its hoisting, as will further be clarified. These dump arms are generally designated 126, and each includes integrally: a journal portion 128, a main body 130, and a depending arm proper 132 that terminates in a rounded preferably semicircular end 134.

Mounted on the top leg segment of an angle member 136 that is rigid with the upper end of the side wall E, are two pairs of spaced brackets 138, each pair of said brackets serving to support a stub shaft 140. The journal portions 128 of the dump arms 126 are not fixed to the stub shafts 140, but are rotatably secured thereon. Preferably, a collar 142 is adhesively affixed to each stub shaft, whereby the vertical alignment between the depending arms 132 and the dump arm socket assemblies (to be described), may be maintained.

The mechanism 38 also includes a pair of what will be termed dump cylinders 144. These are conventional hydraulic cylinders, each having a piston 146 that terminates at its projecting upper end in a clevis 148. Each clevis 148 is pivotally connected by a pin 150 to the free end portion of an actuator plate 152, the opposite end of said plate being rigid with the main body 130 of one of the dump arms 126, as clearly shown particularly in FIGURE 11. Each dump cylinder 144 is pivotally supported at its lower end in a suitable bracket 154 that is affixed to the side wall E of the truck body.

The previously mentioned dump arm socket assemblies are generally designated 156, and are affixed to the end plates 94 of the rack body portion 96 as indicated at 158, thus facilitating entry into said recess of a channel-shaped container lug 28.

Although the hereinabove described pivotal connections between the elevator frame 48 and the rack frame 50 would generally be adequate for handling containers K filled with customary refuse, the present invention provides means adapted to facilitate the handling of containers filled with heavier than customary refuse. In other words and with attention directed particularly to FIGURES 9 and 15, it will be remembered that bifurcated hinge brackets 66 are welded or otherwise secured to both leg segments 58 of the rack frame channel members 52. The outer hinge brackets have pivotal connections with the end plates 94, as hereinbefore described.

Each of the two inner hinge brackets 66 however, have pivotal connections as indicated at 168 with the free ends of blocks 170 that are welded to the upper bar 74 of said rack frame.

With attention directed especially to FIGURES 17 and 18, numeral 172 designates generally an improved locking device whereby with containers K may be releasably locked to the rack frame 50, as will appear. The components of the locking device 172 include upper and lower round stock bars designated 174 and 176 respec-
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4. tively, and coplanarly disposed intermediate round stock bars 178 and 180. As viewed in FIGURE 17, the right hand ends of the bars 174 and 180 are rigidly connected by a vertical plate 182 that is welded to said ends of the bars 174 and 180. The left hand ends of the bars 174 and 180, together with the right hand end of the bar 178, are rigidly connected by a second vertical plate 184. Furthermore, the bar 178 is rigidly connected to the plate 154 by means of a diagonal brace 186. The free end of the bar 176 terminates in a downturned handle segment 188. It is noted that the lower portion of the plate 154 is offset from the main body thereof as indicated at 190, so that as best seen in FIGURE 14, the device 172 may be shifted horizontally without interference by the lower bar 76 of the rack frame 34.

15. As shown particularly in FIGURE 7, the lower bar 176 of the locking device is slidable supported in a pair of spaced circular brackets 192 welded to the underside of the bar 76. The bars 174 and 180 are each slidable disposed in aligned circular openings 194 provided therefor in the vertical plates 88 and 90 of the rack frame. The bar 176 is slidable disposed in aligned circular openings 196 provided therefor in the vertical plates 84 and 86. It should thus be apparent that the entire locking device 172 that appears in FIGURE 17, is slidable supported for manual horizontal reciprocations thereof in the container rack frame 50 by means of the handle segment 188.

In the interest of clarity, the conduits leading to and from the hydraulic cylinders have been omitted in the main views of the drawings. The hydraulic system is schematically presented in FIGURE 19, where it is seen to include a reservoir, a pump, the pair of hoisting cylinders 116, the pair of dump cylinders 114, the control valve CV, and the conduits that connect these various components of the system in operative relationship. With the engine of the truck A in operation, the pump operates continuously, so that hydraulic pressure is always available. When the control valve CV is in the neutral position, the hydraulic fluid simply circulates, as is understood. The control valve CV is appropriately mounted on the front wall D of the truck body in proximity to the loading apparatus, as shown in FIGURES 1 and 7. With this arrangement, the operator, after sliding the device 172 into locking position as will be explained, can readily manipulate the control levers of said valve.

45. The reservoir, the pump, and the control valve form per se no part of the present invention, wherefore they are shown more or less diagrammatically. The valve CV is conventional, and comprises what is known as a fully actuated plunger type hydraulic unit, widely employed in the operation of loaders, stackers, and similar hydraulically operable industrial equipment. A valve of this type operates efficiently at pressures up to at least 1400 p.s.i., the pressures within the valve being equalized or balanced so that the unit will not become "locked" in any one position. However, when a control lever is released, it automatically returns to a neutral or hold position, so that loads cannot be dropped or shifted as their direction changes. For convenience in the description of operations to follow, the lever for controlling the action of the hoisting cylinders 116 is identified in the drawings by the letter h, and the lever for controlling the action of the dumping cylinders 144 is identified by the letter d.

50. Operation

Although it is believed that the manner wherein the invention attains its objectives should be apparent from the foregoing description and the drawings, a brief explanation will be given.

Thus, assuming that it were desired to dispose of the contents of a refuse-filled container K, the operator would maneuver the vehicle A into loading position, with the rack frame 50 approximately alongside the forward side 75 wall M of said container. Thereupon, he would properly manipulate the lever h of the control valve CV to lower the container engaging mechanism 34 a short distance below the normal position it occupies when not in use. More clearly stated, the mechanism 34 would be lowered to a plane wherein the top edges of the hook segments 102 would lie just below the container lugs 28.

Thereupon, with the locking device 172 moved rightwardly (as viewed in FIGURES 1 and 7) via the downturned handle segment 188, the container K would be pushed into proper position, with the hook segments 102 beneath the lugs 28, and the lugs 24 extending into the spaces 92 between the upright plates 84 and 86 near the left end, and the upright plates 88 and 90 near the right end of the rack frame 50.

15. Thereupon, the operator would push the locking device 172 leftwardly until the plate 182 engaged against the upright plate 99, thus propelling the bars 178 and 180 through the lugs 24 of the container. Thus it should be apparent that the container K would be temporarily locked in a position wherein its forward wall M would lie parallel to the rack frame 50, and would remain so locked until released.

Next, the operator would properly manipulate the lever d of the control valve to effect the concurrent rise of the pistons 112 of the hoisting cylinders 116. As the pistons 112 rise, they elevate the rollers 114. Inasmuch as the chains 112 are trained over said rollers, and have their normally upper ends anchored at 120, the normally lower ends of said chain would also rise, thus causing the elevator frame 48, the thereto connected rack frame 50, and the container K to be hoisted in unison. The hoisting operation is facilitated by the guide rollers 68 riding in the perpendicularly guide rails 40, as should be understood.

During the initial upward movement, the hook segments 102 of the end plates 94 would engage in the end lugs 20 of the container, the rounded entrance edges 64 leading into the recesses 100 serving to facilitate this action.

As the upward movement of the container continued, the semicircular extremities 134 of the depending dump arms 132 would first enter the sockets 166 of the assemblies 156. Thereupon the upper portions of said arms would extend through said sockets 166, as the marginal edges of each arm 132 ride along the peripheries of the rollers 158. When the mechanism 34 reaches a plane wherein the upper bar 74 of the rack frame is approximately co-planar with the top wall G of the truck body, the major portions of the dump arms 132 will have been extended through and be located in the socket assemblies 156. At this point, the operator would manipulate the control lever h to the neutral position. Consequently, further upward movement of the pistons 112 would be arrested, so that the mechanism 34 and the thereto locked container K would be held stationary. At such times, the horizontally aligned pivotal connections 110 and 168 would lie in a plane a short distance above the truck body top wall G, as shown by broken lines in FIGURES 8 and 13.

It will be remembered that the dump arms 126 are freely rotatable about their respective supporting shafts 140, and inasmuch as their depending arms 132 extend through the sockets 166 of the rack frame, any movements of said dump arms would automatically effect a corresponding movement of the rack frame 50 and the container locked thereto, said frame being free except for the aforesaid pivotal connections 110 and 168 thereof with the elevator frame 48.

With the lever h released, the operator would properly manipulate the control lever d thereby activating the dump cylinders 144 to effect the simultaneous elevation of their pistons 146. As the pistons 146 move upwardly, the rack frame 50 and the thereto locked container K, would be caused to swing about the pivot pins 110 and 168 in an arcuate path toward the opening O above the loading
compartment H of the truck body. Consequently the container K would first be tilted and thereafter upended, so that the contents thereof would discharge by gravity into said compartment, all as visually presented by means of broken lines in FIGURE 8.

It is noted that the pivotal mountings of the cylinders 144 in the brackets 154 facilitate the arcuate and simultaneous upward travel of the pistons 146, in conjunction with the pivotal connections of them with the actuator plates 152 that are rigid with the main body portions 130 of the dump arms 126.

Following the discharge of the container contents, the operator would simply reverse the described steps of manipulating the control levers 0 and 0, in consequence whereof the emptied container would be returned to its former ground level position, as is believed evident without the necessity of describing the operation in detail.

When the container has reached ground level, the operator would grasp the handle 188 and shift the locking device 172 rightwardly, thus unlocking said container with respect to the lugs 24, as should now be understood. Thereupon the control lever 0 would be properly manipulated whereby to lower the mechanism 34 independently of the now partly released and ground container K, until the hook segments 102 are free of the end lugs 25.

The thus entirely fixed and empty container would next be pulled away from the truck A, and stationed in the desired location for the future deposit therein of refuse. As a precautionary measure against the loss thereof, the operator would next shift the locking device 172 leftwardly to at least approximately the position thereof illustrated in FIGURE 7. Following this procedure, the operator would once more manipulate the control lever 0 to effect the elevation of the mechanism 34 to the FIGURE 1 status thereof, whereupon he would seat himself in the cab C, and drive the vehicle A toward another refuse container for a repetition of the procedure described.

What is claimed is:

1. In a loading apparatus for refuse collection truck bodies, said apparatus including an elevator frame and a rack frame having its upper end portion pivotally connected to the elevator frame, said rack frame being substantially rectangular and including an upper and a lower bar connected by a first and a second pair of horizontally spaced upright plates, each pair of said plates defining a space wide enough to facilitate entry thereinto of one of a pair of horizontally spaced coplanarly disposed channel-shaped lugs provided on a refuse container, the first and second pair of upright plates being provided with horizontally aligned circular openings at a lower level, the second pair of upright plates being furthermore provided with horizontally aligned circular openings at an upper level, and a pair of spaced circular brackets rigidly secured to the underside of the rack frame lower bar aforesaid;

2. a horizontally reciprocable device for releasably locking the refuse container to the rack frame, said device comprising:

3. an upper round stock bar;

4. a lower round stock bar terminating at one end in a down-turned handle segment for manually reciprocating the device;

5. a pair of coplanarly disposed intermediate round stock bars;

6. a first vertical plate connecting one end of the upper bar and one end of one of said intermediate bars;

7. a second vertical plate connecting the opposite end of the upper bar, one end of the other of said intermediate bars, and the handle segment opposed end of the lower bar; and

8. a diagonal brace connecting the last recited intermediate bar and the second vertical plate;

9. the lower portion of said second plate being offset from the main body thereof, said upper bar being slidably supported in the spaced circular openings provided at an upper level in the second pair of rack frame upright plates, said pair of intermediate bars being slidably supported in the spaced circular openings provided at a lower level in the first and second pairs of rack frame upright plates, said lower bar being slidably supported in the aforesaid pair of spaced circular brackets secured to the underside of the rack frame lower bar.

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