

Sept. 21, 1965

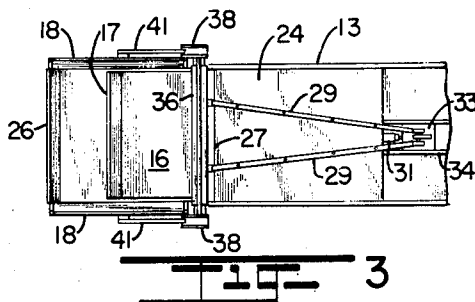
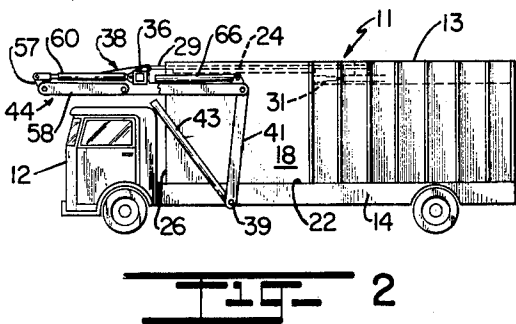
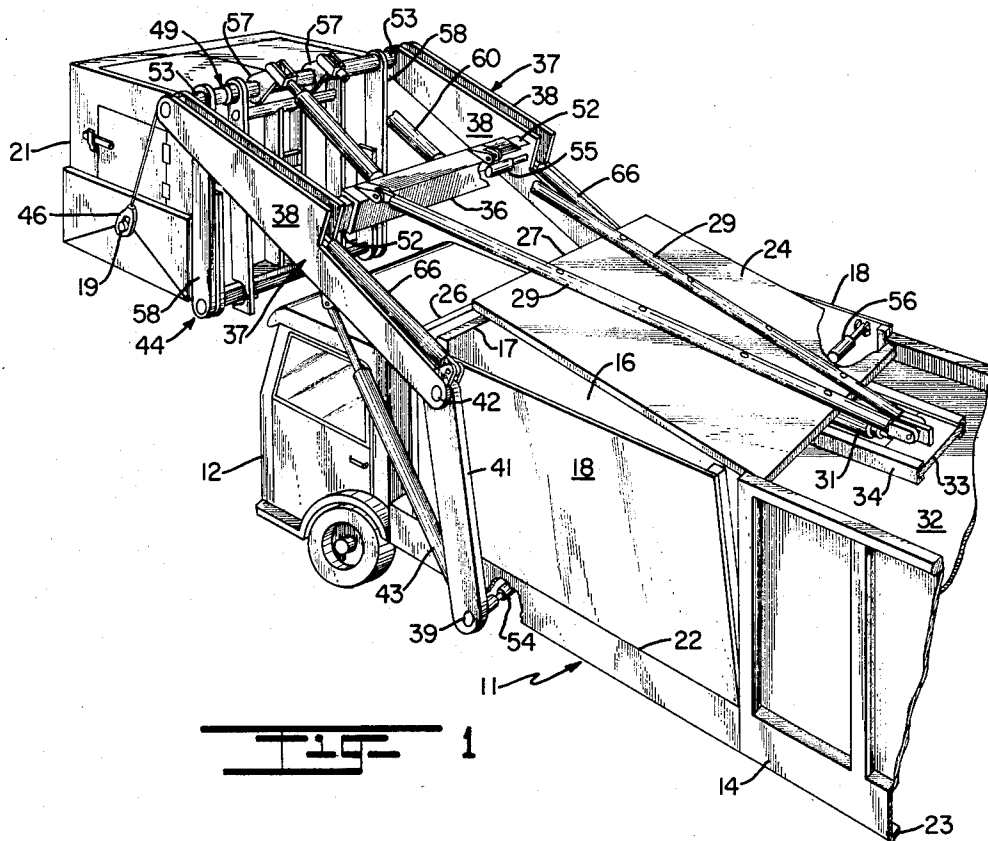
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3,207,345

CONTAINER DUMPING MECHANISM

Filed Nov. 8, 1963

3 Sheets-Sheet 1



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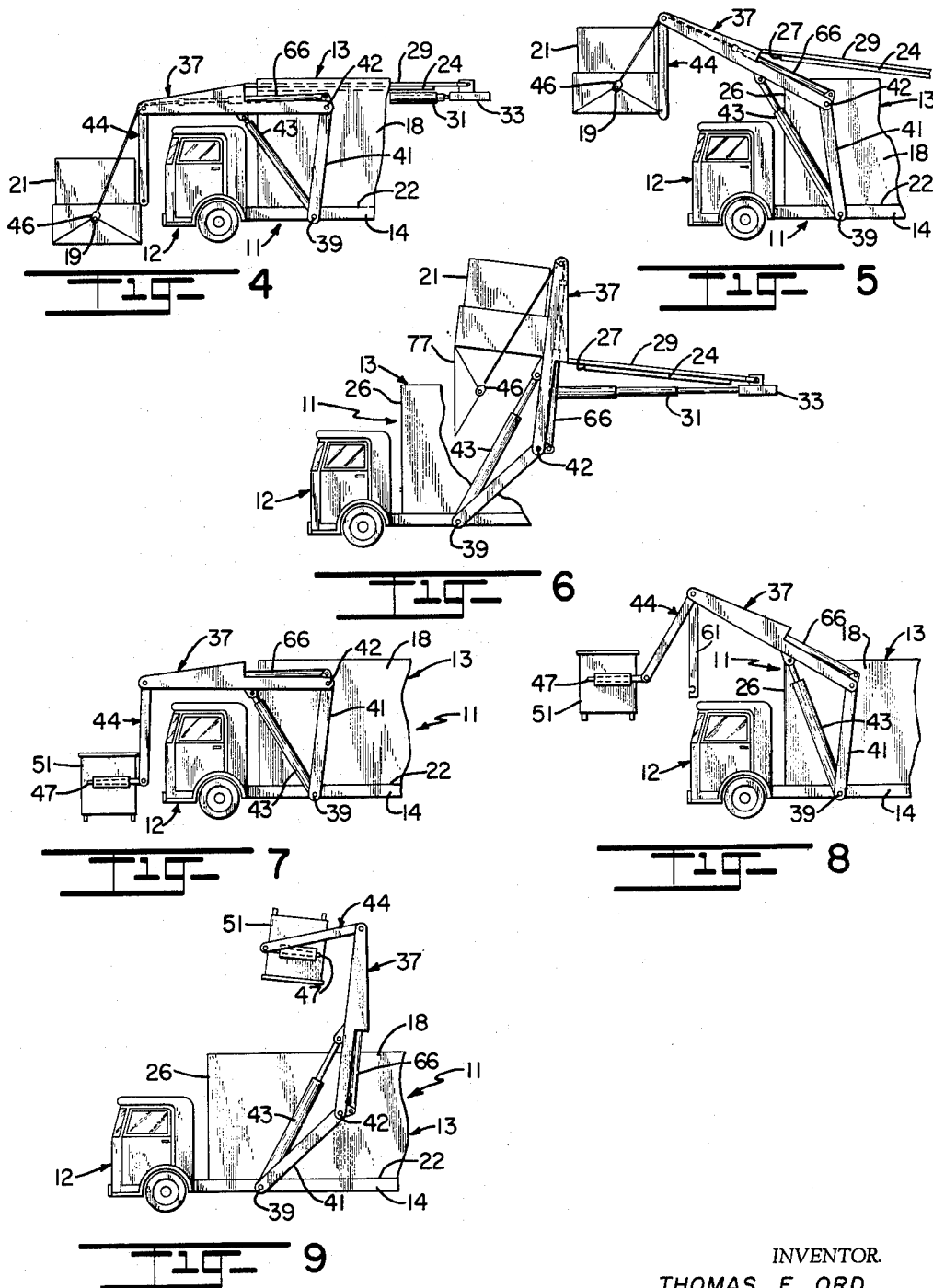
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CONTAINER DUMPING MECHANISM

Filed Nov. 8, 1963

3 Sheets-Sheet 2



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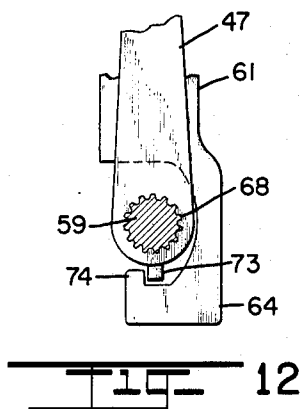
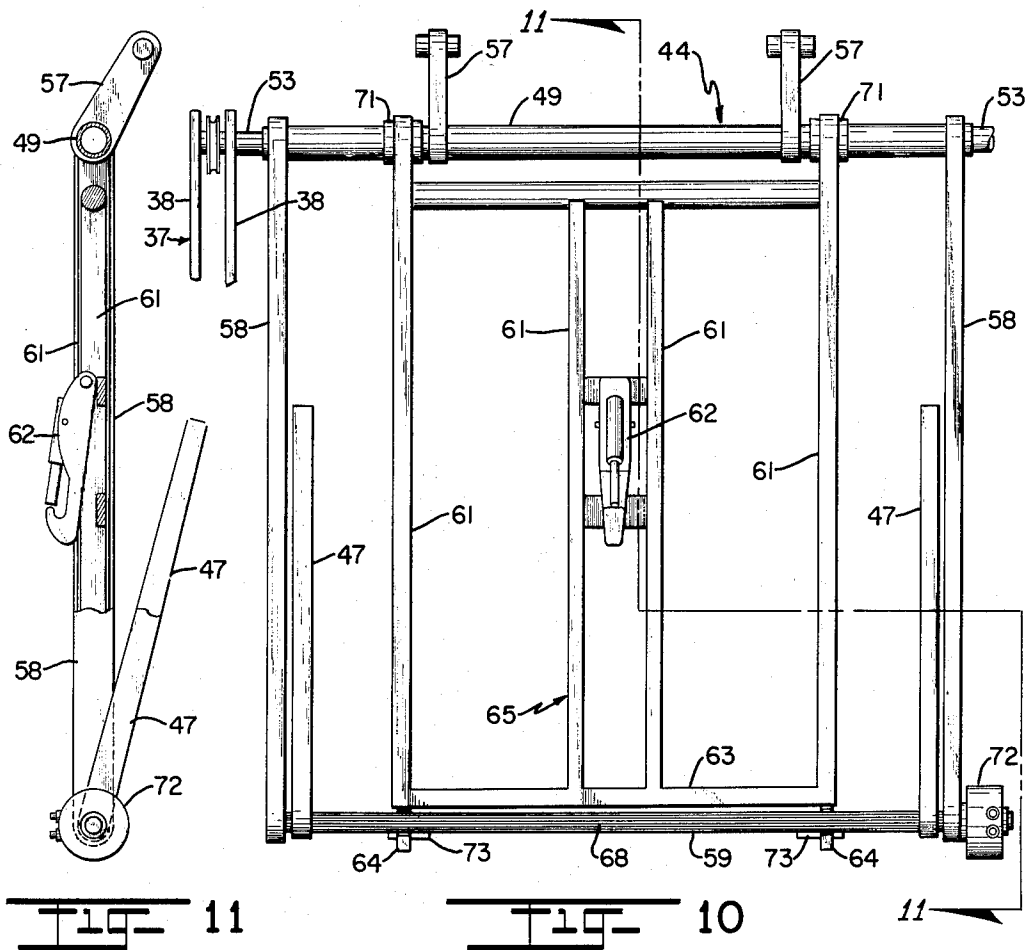
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CONTAINER DUMPING MECHANISM

Filed Nov. 8, 1963

3 Sheets-Sheet 3



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CONTAINER DUMPING MECHANISM

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12 Claims. (Cl. 214—302)

The present invention relates to a loader and carrier mechanism that is particularly adapted to load and carry trash received from various types of presently used refuse containers. Insofar as the system provides facility for handling of bottom dump collector units, this application is a continuation in part of an earlier application, Serial No. 178,834, filed March 12, 1962.

While the present embodiment of the invention incorporates some of the beneficial features of the previous disclosure, the present mechanism has additional features that are provided to satisfy specific additional objectives.

These additional objectives which, accordingly, should be considered as supplementary to the objectives set forth in the original application include the provision of additional mechanisms to facilitate the handling of various types of top dumping refuse containers.

A further specific object is to provide a single mechanism that is adaptable to handle and dump either bottom dump containers or various existing top dump containers interchangeably.

It is a further object of the present invention to provide such adaptable features in a structure providing the required mechanisms within load and road width limitations.

Another object of this invention is to provide improved hoist and dumping mechanisms of relatively simplified construction.

A further object of this invention is to provide an improved carrier closure mechanism.

Another object of the invention is to provide hoisting and container positioning mechanisms of simplified construction and operational design.

A specific object of the present invention is the provision of a hoist mechanism for use with refuse containers which provides clearance between the hoist elements and the vehicle cab for the convenient through passage of operator and helper personnel while involved in container engaging operations.

Further objects and advantages of the present invention will be apparent from the appended description and drawings, in which

FIG. 1 is a perspective illustration showing the assembled relation of parts in a preferred embodiment of the invention,

FIG. 2 is a side elevation in partial section showing the travel-carry position for the hoist mechanisms,

FIG. 3 is a top plan view specifically illustrating some of the features of the top carrier closure assembly,

FIGS. 4, 5 and 6 are partial side elevations showing step processes in the hoisting and dumping cycle for bottom dump type refuse containers,

FIGS. 7, 8 and 9 are partial side elevations illustrating step processes in the hoisting and dumping cycle for top dump type refuse containers,

FIG. 10 is a front elevation illustrating the specific mechanisms of a preferred embodiment of a head frame,

FIG. 11 is a side elevation along the line 11—11 of FIG. 10, and

FIG. 12 is an enlarged elevation showing the features of a lock mechanism utilized in a preferred embodiment of the invention.

Briefly stated, the present invention provides a refuse container handling system and mechanism which is adaptable to engage, hoist, position and dump conventional existing types of either bottom dump or top dump refuse collection containers. The mechanism incorporates load engaging and hoisting components and further

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provides for the alternate handling of refuse containers of small size or of a size that is too large for handling with conventional equipment without exceeding load width highway regulations. Main features of the present embodiment of the invention, in addition to the reciprocally movable hoist arms and reciprocal side walls of the van carrier are embodied in the head frame construction and in the top receptacle closure mechanism.

The head frame is of modified construction as compared to that shown in the previously filed patent application, inasmuch as the present head frame provides fork arms for use in connection with top dumping containers in addition to a hook, hoist, and lock mechanism used for bottom dump containers. Power rotation and frame interlock members are also provided for separate operation to assure proper and independent operation of either the bottom or top dump features. The top closure mechanism is cooperatively integrated with the hoist arm lifting arrangement whereby the top receptacle opening for the van carrier will be securely and automatically closed whenever the hoist arms are in their lowered or travel-carry positions and will be open for the receipt of trash materials whenever the hoist arms are raised to the respective container dumping positions.

A preferred embodiment of the invention which incorporates the beneficial features of the present objects is shown in the accompanying figures. FIGURE 1, which illustrates the cooperative assembly of such preferred embodiment, provides an overall illustration of the relative positioning and operation of the main components of this embodiment. This figure shows the mechanisms of this invention applied to and carried on a conventional type van carrier vehicle 11, which preferably is of the cab forward type, providing a cab 12 and a closed van body 13 on the vehicle frame 14. As in the previous embodiment, the van body 13 is provided with a forward receptacle opening 16 for the receipt of trash materials. The unit further provides a sliding packer plate 17 which is movable from a forward position toward the rear of the van body 13 as necessary to push the received trash materials and compact them toward the rear of the vehicle.

As in the previous embodiment, movable side walls 18 are provided adjacent the front receptacle 16 so that the dump pins 19 of conventional dump containers 21 will not interfere with the van sides during the dumping operations. The movable side walls illustrated in the present embodiment are pivotally movable about a lower hinge point 22 which is on the frame 14 and in position above a lower guide channel 23 for the packer plate 17.

A major component that is closely allied to the receptacle opening 16 and movable side walls 18 is the top closure assembly. This top closure is simply a moving door 24 which can be moved away from a forward closed position in which the receptacle opening 16 is fully closed by reason of a tight and secure engagement between the door, the movable side walls 18 and a front wall 26 of the van carrier. As the door is opened, it moves rearwardly and upwardly out of engagement with such elements until the front edge 27 of the door 24 is beyond the rear limit of the receptacle opening 16. This movement pattern for the door 24 is obtained by mounting and supporting the door on the tension arms 29 of the hoist frame raising mechanism. As illustrated, this mechanism includes a telescoping hydraulic cylinder 31 which is mounted on the top 32 of the van body 13 to move a guide block 33 reciprocally along guide channels 34 as the hydraulic cylinder 31 is extended or retracted. The force of such hydraulic action is transmitted by means of the tension arms 29 to a cross frame 36 disposed between the opposed hoist arms 37. With this arrangement, extension of telescoping cylinder 31 not only opens the door 24 but also raises

hoist arms 37 about the lower pivot mounts 39. This cooperative operation of the door closure, the hoist arms 37 and the telescoping closure cylinder 31 is very beneficial, since it is well to maintain the receptacle opening closed at all times that the vehicle is traveling from site to site, and it is also desirable to have the hoist arms 37 in lowered position at such times.

This beneficial conjoint result is automatically obtained, since positioning of the hoist arms in the travel-carry position as shown in FIG. 2, or in the head frame down position, as shown in FIGS. 4 and 7, will leave the door 24 closed. Extension of the cylinder 31 to move the hoist arms 37 to their raised position as shown in FIGS. 6 and 9 will move the door 24 to a fully open and out of the way position so that the trash materials may be dumped into the receptacle opening 16.

The hoist arms 37 are of modified construction as compared to that shown in the previous application. The present hoist arm assembly is a two-piece structure, inclusive of the side arms 38 and the lower crank arms 41. As illustrated, the crank arms 41 and side arms 38 are pivotally secured each to each by use of the pivot pins 42. The relative angular position of the crank arm to side arm assembly is determined by the extension of the side arm cylinders 43. In the travel-carry position this cylinder 43 is retracted; while in the dump position, as shown in FIGS. 6 and 9, the cylinder 43 is extended. This modified type of hoist arm assembly has been found to be advantageous inasmuch as it provides full clearance for the cab 12 so that personnel may move freely in and out of such cab. It further makes it possible to obtain adequate clearance above the top of the cab 12 for all components as even large collection containers are being moved to the various hoisting and dumping positions. Clearance past the top of the cab in the hoisting operations illustrated in FIGS. 5 and 8 would be difficult without such two-part assembly.

It should further be noted that this assembly provides satisfaction of an additional beneficial objective, inasmuch as clearance is available between the front of the cab and the head frame assembly 44 so that an operator or helper may pass between the container and the vehicle cab when the hoist unit is being engaged to or being disengaged from either bottom dump or top dump containers. Inasmuch as customers often prefer to locate their collection containers against building walls or dock facilities, this provision of clearance eliminates the necessity for the operator to walk entirely around the back of the vehicle or through the cab when it is desired to engage the cable hooks 46 of a bottom dump hoisting apparatus or to adjust the forks 47 of the top dump hoisting mechanism.

It should further be noted that the hoist arm assemblies 37 in the present embodiment are in part similar to those of the earlier application, since they are reciprocally movable along the lower pivot mounts 39 to provide adequate clearance past the movable side walls 18 when the walls are in their outwardly extended position. This reciprocal movement feature is also incorporated in the construction of the cross arm 36 and in the construction and assembly of the head frame pivot mount assembly 49. At the cross arm 36 the box structure of such cross arm allows the elements 52 to slide reciprocally as the hoist arms 37 are extended or retracted.

In similar manner, the top tube frame 49 provides for reciprocal movement of the pivot stubs 53, which are received within the interior of the tube structure 49. As the hoist arms 37 are moved outwardly to obtain clearance past the moving side walls 18, the stub pivots 53 will move outwardly with respect to the tube frame 49. The outward reciprocal movement at the lower pivot mounts 39, at the box frame 36 and at the pivot mount assembly or tube frame 49 is all accomplished by operation of the hydraulic cylinders 54 and 55 placed respectively at the lower pivot mount 39 and at the cross arm 36. The movable side walls 18 are extended and retracted by op-

eration of the hydraulic cylinders 56. These extension cylinders are all retracted when the particular refuse containers have been replaced at the collection point, and thereafter the carrier may travel along roads and highways and without exceeding road width limitations.

The mechanisms which make it possible to handle either bottom or top dump containers 21 or 51 are predominantly embodied in the new and modified construction for the head frame 44. The features of this construction are most fully shown in FIGS. 10 and 11, but the operation thereof is also illustrated in FIGS. 1 and 4 through 9. This structure comprises a top pivot mount or tube frame 49 that is rigidly attached to the operator arms 57 and to outer frame pieces 58. With this construction, extension of the head frame cylinders 60 will cause a corresponding movement of the operator arms 57, the tube 49 and the outer frame pieces 58. A lower rotatable shaft 59 on the outer frame pieces 58 completes a box frame construction which provides support for two alternate collection container handling assemblies.

A first assembly or moving frame 65, which is mounted by means of bearings 71 on the tube 49 for ordinarily free pivotal movement is essentially made up of four vertically disposed stringers 61. All of the stringers 61 provide rigid frame strength while the inwardly disposed stringers 61 support a dump hook 62. Stringers 61 are joined together at their lower extremity by a cross piece 63 to complete a moving frame 65. The free pivotal movement of the assembled moving frame 65 is limited in one direction by the lower stops 64. These stops 64 are operatively on a side of the moving frame 65 opposite the dump hook 62. Accordingly, when the dump hook 62 is engaged to a collection container, this moving frame 65 will in effect be held for movement with the outer frame structure 58 by action of the dump hook 62 and by the side walls of the collection container itself. Accordingly, this moving frame 65 will move through a dumping pattern as defined by the cooperative extension and retraction of the head frame cylinders 60, of the hoist arm cable cylinders 66.

The head frame structure 44 further provides mechanism for engaging and dumping top dump type collection containers. This mechanism includes fork arms 47 which are mounted on the lower shaft 59 and which are adapted for rotational movement therewith. Reciprocal movement along the shaft 59 is possible through provision of splines 68. In the use of these fork arms 47, the head frame 44 is lowered to a pick-up position as shown in FIGURE 7. Thereafter the fork arms 47 are rotated to a near horizontal position through actuation of a rotary actuator 72 or other powered mechanism. At the same time, the fork arms 47 may be moved reciprocally and laterally along the splines 68 to accommodate and engage arm receiving sockets or shoulders on the sides of presently existing types of top dump containers 51. After the arms 47 are properly engaged with the top dump container, the head frame 44 and hoist arms 37 will be raised through an elevating cycle as illustrated in FIGURES 7, 8 and 9 to bring the top dump container 51 into position above the receptacle opening 16 of the van 13. Cooperative operation of the head frame cylinders 60 and of the rotary actuator 72 thereafter moves the head frame and the carried top dump container 51 through a required dumping cycle.

This dumping cycle, as shown in FIGURES 8 and 9, requires elevation of the head frame 44 away from the gravitational position maintained by the freely hanging, moving frame 65. With the moving frame 65 out of the way, it is possible for the top dump container 51 to be rotated rearwardly by action of the rotary actuator 72. The top dump container 51 is moved to the inverted position illustrated in FIGURE 9 to discharge the contents of such container into the open receptacle 16. The described divergent movement of the main head frame com-

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ponents and the separate moving frame 65 is ordinarily accomplished by gravitational forces acting against the moving frame. It should be obvious, however, that the desired result can be obtained by power means applied to energize such divergent movement pattern. Such movement pattern is, in fact, in part controlled in the present embodiment of the invention, inasmuch as divergent movement is prevented when the dump hook 62 on the moving frame 65 is engaged with the bail of a bottom dump type container.

The divergent movement is also controlled through provision of a catch element 73 on the shaft 59 which engages with the stops 64 disposed on the bottom of the cross piece 63. As shown in FIGURE 12, the catch 73 engages a lip 74 on stop 64 when the fork arms 47 are in a vertical or aligned position. Conversely, when the fork arms 47 are moved to their forwardly and horizontally disposed position by energization of the rotary actuator 72, the catch and lip 73 and 74 will be disengaged to free the moving frame 65. The subsequent gravitational movement of such moving frame 65 is, of course, of benefit in the dumping cycle of top dump containers, since it opens a through passage between the side frame elements 58 for the reverse dumping movement of top dump containers.

The actual dump cycles when the present embodiment of the invention is being used with various types of collection containers will perhaps be more fully understood after re-reference to the diagrams of sheet 2. FIGURES 4, 5 and 6 illustrate a typical dump cycle for a bottom dump type container 21. In FIGURE 4 of these illustrations the hoist arms 37 are in lowered position, and the head frame 44 has been moved outwardly through actuation of the head frame cylinders 60. When the head frame 44 is in its lowered position in front of the truck cab 12, cable cylinders 66 are extended so that the cable hooks 46 may be engaged to the dump pins 19 of the bottom dump container 21. As a next step, the cable cylinders 66 are retracted, and the cable moves inwardly to raise and elevate the bottom dump container until a bail (not shown) on the side of the receptacle 21 engages the dump hook 62. Thereafter, the head frame 44 (inclusive of moving frame 65) and the collection container 21, will move together as a unit through an elevating arc to the point of refuse discharge. FIGURE 5 illustrates an intermediate position in such raising arc.

In FIGURE 5 it will be noted that the hoist arm cylinders 43 are extended to change the angle between the side arms 37 and the crank arms 41. This change in angle allows the head frame 44 and the refuse container 21 to clear the front and top of the vehicle cab 12 as the hoist arm assembly 37 is rotated about its lower pivot 39 by action of the telescoping cylinder 31. Extension of the cylinder 31, of course, energizes a corresponding opening movement for the top closure door 24. When the telescoping hoist cylinder 31 is fully extended, the container 21 will be in position above the receptacle opening 16 of the van 13. Thereafter, the cable cylinder 66 will be extended, and such extension of the cable will allow the bottom 77 of the container to fall downwardly so that the accumulated rubbish in the container 21 will be completely discharged.

Subsequent steps in the return cycle of operations require, first, a retraction of the cable cylinder 66 and cooperative retraction of telescoping cylinder 31 and hoist arm cylinders 43 until the container 21 is again in position in front of the vehicle but elevated above the supporting ground. When in this position, the dump hook 62 is disengaged from the bail, and the cable cylinder 66 is subsequently extended to lower the collection container to the ground in position as desired by the customer. As previously set forth, this position can be tight up against a building or other structure, since the driver-operator has an open passage between the head frame 44 and the vehicle so that he can easily detach the cables from the box.

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The dumping cycle for a top dump type container has in part been previously explained, but a quick review is possible in connection with a further description of FIGURES 7, 8 and 9. FIGURE 7 shows the hoist arms 37 and the head frame 44 in desired position with the fork arms 47 extended forwardly into engagement with receptacles on the top dump container 51. In the position shown in FIGURE 8, hoist arm cylinder 43 has been partially extended, and a corresponding extension of telescoping cylinder 31 (not shown) has again raised the hoist arms 37 and head frame 44 to a position which clears the cab structure. The fact that the moving frame 65 hangs gravitationally in such operation is illustrated, and it should be noted that the hoist arm cylinders 43 must be capable of providing sufficient extension for the attainment of proper clearance between the top of the cab 12 and the downwardly hanging moving frame 65. As shown in this figure, the fork arms 47 should preferably be arranged for rotation to an angle of greater than ninety degrees in the forward direction so that the container 51 may be maintained in substantially level position as it moves through its required dumping pattern. This requirement is of special importance where the materials being collected in the containers are of a spillable nature. When the hoist arms 37 have moved rearwardly so that the container 51 is substantially positioned over the receptacle opening 16, cooperative actuation of frame cylinders 60 and rotary actuator 72 may be used to move the top dump container 51 into an inverted position directly above the receptacle opening 16. After the contents have been completely dumped by operation of such inverting facility, a reverse rotation of the actuator 72 will initiate a return cycle.

The fact that the disclosed system provides a mechanism for handling either top dump or bottom dump collection containers is of primary importance. The further fact that the system is capable of handling existing types of bottom dump and top dump containers is of added importance. These special handling capabilities are of considerable importance at the present time, since the handling of trash and refuse becomes more difficult with the passage of time, increases in population and the consequent remote location of municipal dump facilities.

The remote location of dump facilities and the high cost of labor makes it imperative to reduce the frequency of required trips to and from the municipal dump. The frequency of required trips can be reduced through provision of a larger carrier van that is adapted to receive collected materials from a number of collection containers. Efficient collection operations, however, further require that the carrier van be adapted to handle both large and small types of collection containers. Actual operations in different cities has further shown that it is difficult for a disposal contractor to confine his services to only a single class of large or small manufacturing or processing customers. Accordingly, if equipment is purchased and provided for the handling of large containers, points of call must be established throughout the full municipal territory for such equipment. At the same time other customers having small collection containers must now be serviced by a different type of equipment which in effect covers the same trade territory.

The fact that the equipment presently disclosed is capable of handling both large and small collection containers of either the top dump or bottom dump type makes it possible for the disposal contractor to more efficiently apply and use a single carrier in a smaller designated area of the entire municipal territory. Where a full load may be picked up indiscriminately from large or small or bottom or top dump containers, the van may be more readily filled, and, accordingly, the overall travel distance of collection operations may be reduced. The consequent reduction in labor and travel mileage represents a considerable saving over present systems and materially contributes to the greater overall efficiency

of the present system. When this more efficient concept further makes it possible for operator-contractors to continue to use collection containers that might otherwise make the handling equipment so large as to exceed highway width limitations, it is believed that a significant advantage is presented.

Other advantages inherent in the present disclosure may be embodied in mechanisms incorporating different features of structure and mechanism. All such modifications of the present invention as come within the scope of the hereunto appended claims are considered to be a part of this invention.

I claim:

1. Apparatus for handling refuse collection containers and for receiving and dumping the materials collected therein comprising a frame support, a van carrier on said frame providing an enclosure adapted to receive refuse materials, said van carrier further providing a receptor opening for the introduction of said materials, hoist arms on said frame support, container engaging means on said hoist arms, a cross arm positioned between said hoist arms, a hoist arm raising and lowering mechanism, tension arms interconnecting the cross arm of said hoist arms and said raising and lowering mechanism, a door member for selectively closing off said receptor opening when said van carrier is being moved along streets and highways and for movement to an out of way position when it is desired to discharge materials into said receptor opening, and means joining said door to said tension arms for movement therewith whereby said receptor opening will be opened when said hoist arms are raised.

2. Apparatus for handling refuse collection containers and for receiving and dumping the materials collected therein comprising a frame support, a van carrier on said frame providing an enclosure adapted to receive refuse materials, said van carrier further providing a receptor opening for the introduction of said materials, hoist arms on said frame support, container engaging means on said hoist arms, a cross arm positioned between said hoist arms, a hoist arm raising and lowering mechanism, inclusive of a hydraulic cylinder mounted on top of said van carrier and extending away from said receptor opening, tension arms interconnecting the cross arm of said hoist arms and said hydraulic cylinder, a door member for selectively closing off said receptor opening when said van carrier is being moved along streets and highways and for movement to an out of way position when it is desired to discharge materials into said receptor opening, and means joining said door to said tension arms for movement therewith whereby said receptor opening will be opened when said hoist arm raising and lowering mechanism is raised and will be closed when said hoist arm raising and lowering mechanism is lowered.

3. Apparatus for the handling of refuse collection containers and for receiving and dumping the materials collected therein comprising a frame support, a personnel cab on said frame support, a van carrier on said frame in position behind said cab providing an enclosure adapted to receive refuse materials, said van carrier further providing a receptor opening at the cab end thereof for the introduction of said materials, hoist arms on said frame support, a cross arm positioned between said hoist arms, a hoist arm raising and lowering mechanism, and a head frame on the free end of said hoist arms for engaging said refuse containers, said head frame being pivotally movable to positions aligned with said hoist arms and nested therebetween when in a travel-carry position and alternately extending outwardly and downwardly therefrom in position in front of said cab and spaced therefrom a distance adequate to provide a through passage and walkway for operator personnel between said cab and head frame.

4. Apparatus for the selective handling of bottom dump and top dump refuse collection containers and for re-

ceiving and dumping the materials collected therein comprising a frame support, a van carrier on said frame providing an enclosure adapted to receive refuse materials, said van carrier further providing a receptor opening for the introduction of said materials, hoist arms on said frame support, a hoist arm raising and lowering mechanism, a head frame on the free end of said hoist arms for pivotal movement with respect thereto, said head frame being inclusive of a box frame component for engaging said top dump refuse containers and a moving frame component normally useful when handling said bottom dump containers and adapted for selectively independent movement to an out of way position with respect to said box frame component when top dump containers are being handled by said apparatus.

5. Apparatus for the selective handling of bottom dump and top dump refuse collection containers and for receiving and dumping the materials collected therein comprising a frame support, a van carrier on said frame providing an enclosure adapted to receive refuse materials, said van carrier further providing a receptor opening for the introduction of said materials, hoist arms on said frame support, a hoist arm raising and lowering mechanism, a head frame on the free end of said hoist arms for pivotal movement with respect thereto, said head frame being inclusive of a box frame component, normally useful for engaging said top dump refuse containers, a moving frame component adapted for selectively independent movement with respect to said box frame component, and a dump hook on said head frame for engaging elements of conventional bottom dump containers when disposed against said head frame for holding said box frame and moving frame components together and against such bottom dump containers for conjoint movement when it is desired to raise and move conventional bottom dump containers through a dumping cycle.

6. Apparatus for the selective handling of bottom dump and top dump refuse collection containers and for receiving and dumping the materials collected therein comprising a frame support, a van carrier on said frame providing an enclosure adapted to receive refuse materials, said van carrier further providing a receptor opening for the introduction of said materials, hoist arms on said frame support, a hoist arm raising and lowering mechanism, a head frame on the free end of said hoist arms for pivotal movement with respect thereto, said head frame being inclusive of a box frame component, a moving frame component normally useful when handling said bottom dump containers and adapted for free gravitational movement with respect to said box frame component, top dump container engaging means on said head frame, and means for moving said container engaging means through said head frame and past the free moving frame.

7. Apparatus for the selective handling of bottom dump and top dump refuse collection containers and for receiving and dumping the materials collected therein comprising a frame support, a van carrier on said frame providing an enclosure adapted to receive refuse materials, said van carrier further providing a receptor opening for the introduction of said materials, hoist arms on said frame support, a hoist arm raising and lowering mechanism, a head frame on the free end of said hoist arms for pivotal movement with respect thereto, said head frame being inclusive of a box frame component, a moving frame component adapted for free gravitational movement with respect to said box frame component, means on said head frame for receiving bottom dump containers, top dump container engaging means on said box frame, and rotary means for moving said engaging means through a container engaging and dumping cycle whereby a top dump container engaged by said engaging means will be moved through the box frame component of said head frame to an inverted refuse discharging position

above the receptor opening of said van carrier when said rotary means is actuated.

8. Apparatus for the selective handling of bottom dump and top dump refuse collection containers and for receiving and dumping the materials collected therein comprising a frame support, a van carrier on said frame providing an enclosure adapted to receive refuse materials, said van carrier further providing a receptor opening for the introduction of said materials, hoist arms on said frame support, a hoist arm raising and lowering mechanism, a head frame on the free end of said hoist arms for pivotal movement with respect thereto, said head frame being inclusive of a box frame component, a moving frame component adapted for selectively independent movement with respect to said box frame component, means on said head frame for engaging bottom dump containers, a rotatably mounted shaft on said box frame component, fork arms on said shaft for rotation therewith, and hydraulic means for selectively energizing such rotation to move said fork arms through a container engaging and dumping cycle whereby a top dump container engaged by said fork arms will be moved through the box frame component of said head frame to an inverted refuse discharging position above the receptor opening of said van carrier.

9. Apparatus for the selective handling of bottom dump and top dump refuse collection containers and for receiving and dumping the materials collected therein comprising a frame support, a van carrier on said frame providing an enclosure adapted to receive refuse materials, said van carrier further providing a receptor opening for the introduction of said materials, hoist arms on said frame support, a hoist arm raising and lowering mechanism, a head frame on the free end of said hoist arms for pivotal movement with respect thereto, said head frame being inclusive of a box frame component, a moving frame component adapted for selectively independent movement with respect to said box frame component, means on said moving frame for engaging bottom dump containers, a rotatable shaft at the lower end of said box frame component, fork arms on said shaft for reciprocal movement therealong to facilitate engagement of said arms with top dump containers of varying size, said fork arms being rotatable with said shaft at all reciprocal positions, and power means for rotating said shaft, fork arms and containers engaged thereby through a container engaging and dumping cycle whereby a top dump container engaged by said fork arms will be moved through the box frame component of said head frame to an inverted refuse discharging position above the receptor opening of said van carrier.

10. Apparatus for the selective handling of bottom dump and top dump refuse collection containers and for receiving and dumping the materials collected therein comprising a frame support, a van carrier on said frame providing an enclosure adapted to receive refuse materials, said van carrier further providing a receptor opening for the introduction of said materials, hoist arms on said frame support, a hoist arm raising and lowering mechanism, a head frame on the free end of said hoist arms for pivotal movement with respect thereto, said head frame being inclusive of a box frame component, a moving frame component adapted for selectively independent movement with respect to said box frame component, means on said moving frame for selectively engaging bottom dump containers, a rotatably mounted shaft on said box frame component, fork arms on said shaft for rotation therewith adapted for selective engagement with top dump containers, hydraulic means for selectively energizing such rotation to move said fork arms through a container engaging and dumping cycle whereby a top dump container engaged by said fork arms will be moved through the box frame component of said head frame to an inverted refuse discharging position above the receptor

opening of said van carrier, and a lock element on said rotary shaft for alternately and selectively holding said box frame and moving frame components for conjoint movement.

11. Apparatus for handling refuse containers and for receiving and dumping materials collected therein comprising a frame support, a van carrier on said frame, a bottom, a top, front and back walls on said van carrier, a pivotally movable side wall cooperatively arranged with said bottom, top, front and back to provide an enclosure adapted to receive refuse materials, said van carrier further providing a receptor opening adjacent said pivotally movable side wall for the introduction of said materials, a top closure for selectively closing said receptor opening, lower pivot mounts on said support, hoist arms on said pivot mounts adapted for pivoting and reciprocal movement with respect to said mounts, means for connecting refuse containers to said hoist arms, means for forcibly rotating said hoist arms about said pivot mounts to raise and lower said arms and the refuse containers supported thereby, means for dumping said containers, means for moving said hoist arms reciprocally along said pivot mounts to provide necessary and otherwise inadequate clearance for rotational movement of said hoist arms past the side wall of said van carrier when in its outwardly pivoted position, and means actuated with said hoist arms for opening said top closure when the refuse containers are elevated to the dumping position.

12. Apparatus for handling refuse containers and for receiving and dumping materials collected therein comprising a frame support, a van carrier on said frame, a bottom, a top, front and back walls on said van carrier, a pivotally movable side wall cooperatively arranged with said bottom, top, front and back to provide an enclosure adapted to receive refuse materials, said van carrier further providing a receptor opening adjacent said pivotally movable side wall for the introduction of said materials, a top closure for selectively closing said receptor opening, lower pivot mounts on said support, hoist arms on said pivot mounts adapted for pivoting and reciprocal movement with respect to said mounts, means for connecting refuse containers to said hoist arms, an upper cross member interconnecting said hoist arms for conjoint movement to alternate positions of use, means for forcibly rotating said hoist arms about said pivot mounts to raise and lower said arms and the refuse containers supported thereby, means for dumping said containers, means for moving said hoist arms reciprocally outwardly along said pivot mounts and with respect to said upper cross member to adjust the clearance between said hoist arms for rotational movement of said hoist arms past the side wall of said van carrier when in its outwardly pivoted position, and means actuated with said hoist arms for opening said top closure when the refuse containers are elevated to the dumping position.

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