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REFUSE COLLECTION VEHICLE

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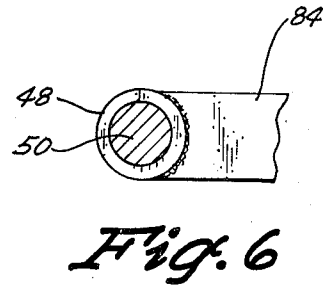
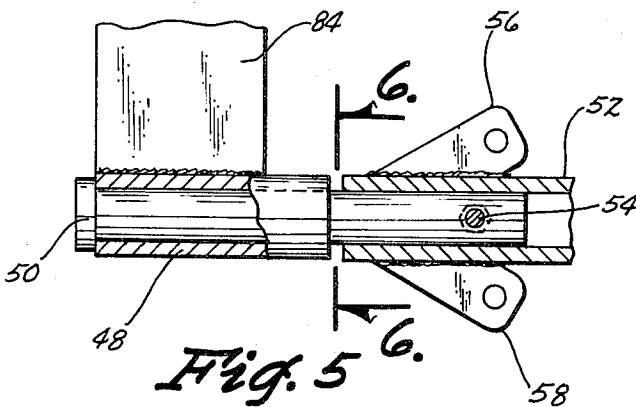
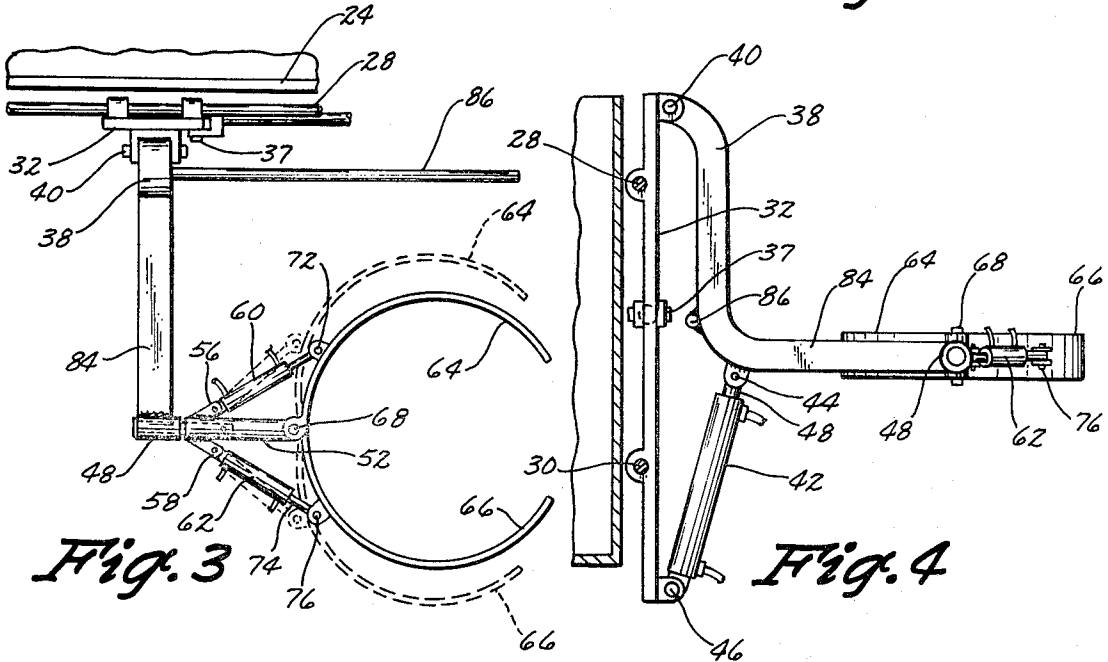
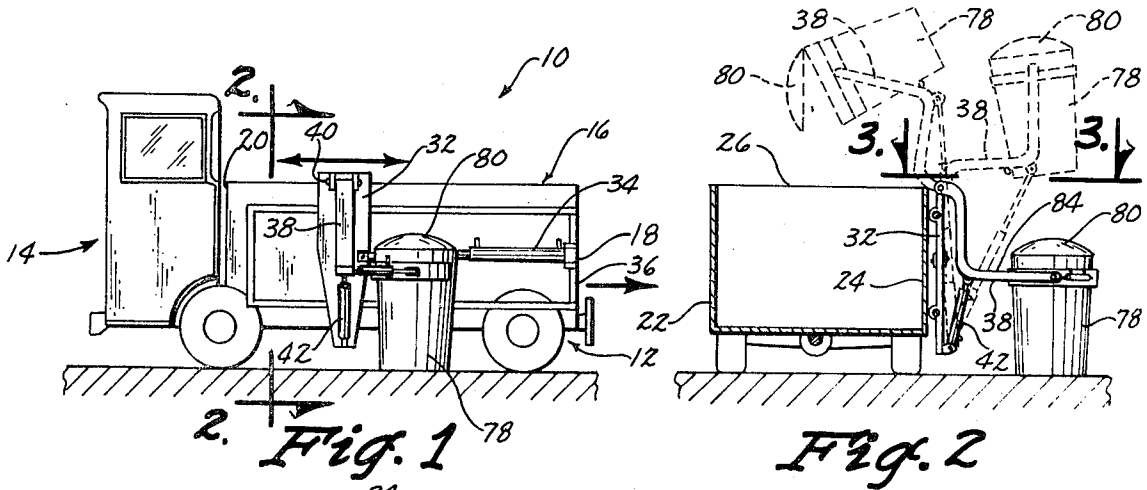


Fig. 6

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REFUSE COLLECTION VEHICLE

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2 Claims

ABSTRACT OF THE DISCLOSURE

A refuse collection vehicle including a lifting arm means which is movably mounted at one side thereof adapted to raise a refuse receptacle from a position adjacent one side of the vehicle to a dumping position over the box of the vehicle. The lifting arm means is longitudinally movably mounted at one side of the vehicle and includes means for detachably connecting the refuse receptacle thereto.

A principal object of this invention is to provide a refuse collection vehicle including a refuse receptacle lifting arm means movably mounted thereon.

A further object of this invention is to provide a refuse collection vehicle including a lifting arm means movably mounted thereon adapted to detachably receive a refuse receptacle.

A further object of this invention is to provide a refuse collection vehicle including a lifting arm means adapted to move a refuse receptacle from a position laterally of the vehicle to a position over the box portion of the vehicle.

A further object of this invention is to provide a refuse collection vehicle including a receptacle lifting arm means which is longitudinally movably mounted at one side of the vehicle.

A further object of this invention is to provide a refuse arm means which is longitudinally movably mounted at one side of the vehicle.

A further object of this invention is to provide a refuse collection vehicle having a lifting arm means mounted thereon which is adapted to be detachably pivotally secured to a refuse receptacle.

A further object of this invention is to provide a refuse collection vehicle including a lifting arm means adapted to raise a refuse receptacle in a vertical position.

A further object of this invention is to provide a refuse collection vehicle which is adapted for use in confined areas.

A further object of this invention is to provide a refuse collection vehicle which is economical of manufacture, durable in use and refined in appearance.

These and other objects will be apparent to those skilled in the art.

This invention consists in the construction, arrangements, and combination of the various parts of the device, whereby the objects contemplated are attained as hereinafter more fully set forth, specifically pointed out in the claims, and illustrated in the accompanying drawings in which:

FIG. 1 is a side elevational view of the refuse collection vehicle;

FIG. 2 is a sectional view as seen along lines 2—2 of FIG. 1, the broken lines indicating the dumping position of the lifting arm means and refuse receptacle;

FIG. 3 is an enlarged sectional view as seen along lines 3—3 of FIG. 2;

FIG. 4 is a fragmentary end view of the lifting arm means;

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FIG. 5 is a fragmentary sectional view of a portion of the lifting arm means; and

FIG. 6 is a sectional view as seen along lines 6—6 of FIG. 6.

The refuse collection vehicle of this invention is generally designated by the reference numeral 10 and includes a wheeled frame means 12 having a cab 14 and a box 16 provided thereon. The vehicle 10 is powered by suitable engine and transmission means which do not form a part of this invention. Box 16 has a rearward end 18, forward end 20, opposite sides 22 and 24 and an open upper end 26.

A pair of guide rods 28 and 30 are secured to side 24 by any convenient means and are vertically spaced as best illustrated in FIG. 4. Rods 28 and 30 extend horizontally along the side 24 of the vehicle 10 and have a vertically disposed support 32 horizontally slidably mounted thereon. A hydraulic cylinder means 34 is connected at its base end to a bracket 36 and is connected at its other end to the support 32 by a pin 38. Hydraulic cylinder 34 is adapted to move the support 32 forwardly on the rods 28 and 30 when the rod of the cylinder is extended and is adapted to move the support 32 rearwardly with respect to the vehicle 10 when the cylinder rod thereof is retracted. The hydraulic cylinder means 34 is of the double acting type and is connected to a suitable source of hydraulic fluid under pressure and a suitable control means for operating the same.

A lifting arm 38 is pivotally connected at its upper end to the upper end of support 32 by a pin 40 and is generally L-shaped as viewed in FIG. 4. A hydraulic cylinder means 42 is pivotally connected to the lifting arm 38 at 44 and is pivotally connected to the lower end of the support 32 at 46. Hydraulic cylinder means 42 is of the double acting type and is fluidly connected to a source of hydraulic fluid under pressure and a suitable control means for operating the same. The extension of the rod 48 of the hydraulic cylinder 42 causes the lifting arm 38 to be moved from the position seen in solid lines in FIG. 2 to the position indicated by broken lines in FIG. 2. The retraction of the rod 48 obviously causes the lifting arm 38 to be moved from the position illustrated by broken lines in FIG. 2 to the position illustrated by solid lines in FIGS. 2 and 4.

A collar 48 is welded to the outer end of lifting arm 38 and has a shaft 50 rotatably mounted therein and which extends laterally thereof as illustrated in FIG. 5. Collar 52 is secured to the rod 50 by means of a bolt means 54 extending therethrough so that the collar 52 is free to rotate with respect to the collar 48. Collar 52 has a pair of oppositely disposed ears 56 and 58 secured thereto having hydraulic cylinders 60 and 62 pivotally connected at one end thereto respectively. A pair of movable jaws 64 and 66 are pivotally connected to the outer end of collar 52 by a pin 68. The cylinder rod 70 of hydraulic cylinder 60 is pivotally connected to jaw 64 at 72 while the rod 74 of hydraulic cylinder 62 is pivotally connected to jaw 66 at 76. The hydraulic cylinders 60 and 62 are also fluidly connected to a suitable source of hydraulic fluid under pressure and a suitable control means for operating the same. The extension of the rods 70 and 74 from their respective cylinders causes the jaws 64 and 66 to be moved towards each other from the position illustrated by broken lines in FIG. 3 to the position illustrated by solid lines in FIG. 3. Conversely, the retraction of the rods 70 and 74 into their respective cylinders causes the jaws 64 and 66 to be moved away from each other. Jaws 64 and 66 are adapted to detachably receive a refuse receptacle 78 therebetween as illustrated in FIGS. 1 and 2. Receptacle 78 is maintained between the jaws 64 and 66 by operating the cylinders 60

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and 62 to close the jaws 64 and 66 around the receptacle 78 adjacent the upper end thereof. Receptacle 78 includes a cover 80 which is pivotally secured thereto.

In operation, the vehicle 10 is driven to the desired collection site wherein one or more of the receptacles 78 would be located. The lifting arm means 38 would normally be positioned in the position illustrated in FIG. 4 and the cylinders 60 and 62 would be operated to move the jaws 64 and 66 away from each other to permit the receptacle 78 to be positioned therebetween. When the receptacle 78 is positioned between the jaws 64 and 66, the cylinders 60 and 62 are operated to close the jaws 64 and 66 around the receptacle 78 to firmly maintain the same therebetween. The hydraulic cylinder 42 is then operated to cause the lifting arm 38 to be raised from the position illustrated by solid lines in FIG. 2 to the position illustrated by broken lines in FIG. 2. The pivotal connection between the collar 52 and the lifting arm 38 causes the receptacle 78 to be maintained in a substantially vertical position during a large portion of the dumping cycle so that the bottom of the receptacle will not swing out and hit a building or the like when the vehicle is being used in confined areas such as an alley or the like. When the horizontal portion 84 of lifting arm 38 reaches approximately a 45 degree angle with respect to the ground, the trip bumper 86 which extends laterally from the lifting arm 38 engages the side of the receptacle 78 to limit the pivotal movement of the receptacle 78 with respect to the lifting arm 38 so that the receptacle 78 will be moved to a dumping position upon the continued pivotal movement of the lifting arm 38 as illustrated in FIG. 2.

An extremely important feature of this invention is the ability of the vehicle to longitudinally move the lifting arm means and its associated structure longitudinally along the side of the box by means of the hydraulic cylinder means 34. The ability of the lifting arm 38 to be moved longitudinally of the vehicle permits the receptacle 78 to be dumped in different portions of the box 16 as the box becomes filled with refuse.

Thus it can be seen that a unique refuse collection vehicle has been provided which effectively and conveniently permits the dumping of refuse thereinto. The vehicle of this invention may be used in confined areas and permits the refuse to be dumped into the box in various positions as the box becomes filled. The vehicle of this invention also provides a convenient means for raising and lowering a refuse receptacle with respect thereto to permit the dumping of the refuse therefrom in a convenient and economical fashion. Therefore, it can be seen that the device accomplishes at least all of its stated objectives.

Some changes may be made in the construction and arrangement of my refuse collection vehicle without departing from the real spirit and purpose of my invention, and it is my intention to cover by my claims, any modified forms of structure or use of mechanical equivalents which may be reasonably included within their scope.

I claim:

1. A refuse collection vehicle, comprising,
 - a powered wheeled frame means having rearward and forward ends and opposite sides,
 - a refuse box on said frame means having an open upper end,
 - a lifting arm means movably mounted at one side of said box adapted to have a refuse receptacle secured thereto,
 - a first power means connected to said lifting arm means adapted to move said lifting arm means from a first position to a second position, said refuse receptacle being positioned laterally of said one side of said box when said lifting arm means is in its first position

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and being positioned over the open upper end of said box in a dumping position when said lifting arm means is in its second position,

said lifting arm means including a support at said one side of said box, an arm member pivotally secured at one end to said support and extending downwardly therefrom and thence outwardly therefrom,

said first power means being connected to said arm member,

said refuse receptacle being operatively pivotally connected about a horizontal axis to the outwardly extending portion of said arm member, said horizontal axis being transverse to the longitudinal axis of the outwardly extending portion of said arm member,

said arm member having a trip bumper means extending transversely therefrom which is in the pivotal path of said refuse receptacle and adapts to engage said refuse receptacle to cause said refuse receptacle to be substantially inverted when said lifting arm means is in its second position.

2. A refuse collection vehicle, comprising,
a powered wheeled frame means having rearward and forward ends and opposite sides,

a refuse box on said frame means having an open upper end,

a lifting arm means movably mounted at one side of said box adapted to have a refuse receptacle secured thereto,

a first power means connected to said lifting arm means adapted to move said lifting arm means from a first position to a second position, said refuse receptacle being positioned laterally of said one side of said box when said lifting arm means is in its first position and being positioned over the open upper end of said box in a dumping position when said lifting arm means is in its second position,

said lifting arm means including a support at said one side of said box, an arm member pivotally secured at one end to said support and extending downwardly therefrom and thence outwardly therefrom,

said first power means being connected to said arm member,

said refuse receptacle being operatively pivotally connected about a horizontal axis to the outwardly extending portion of said arm member, said horizontal axis being transverse to the longitudinal axis of the outwardly extending portion of said arm member,

a pair of movable jaw members pivotally mounted about a horizontal axis at the outer end of said outwardly extending portion of said lifting arm means, said horizontal axis being parallel to the longitudinal axis of said frame means,

said movable jaw members being hydraulically powered and adapted to grasp and extend around the refuse receptacle from one side thereof below the upper end thereof so that the area above the upper end of the refuse receptacle is open to permit refuse to be inserted thereinto when said lifting arm means is in its first position and to permit refuse to be dumped therefrom when said lifting arm means is in its second position.

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