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A. W. NELSON

3,454,174

REFUSE TRUCK

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FIG. 1

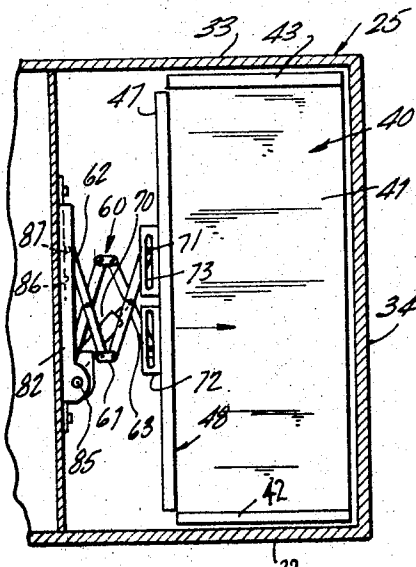
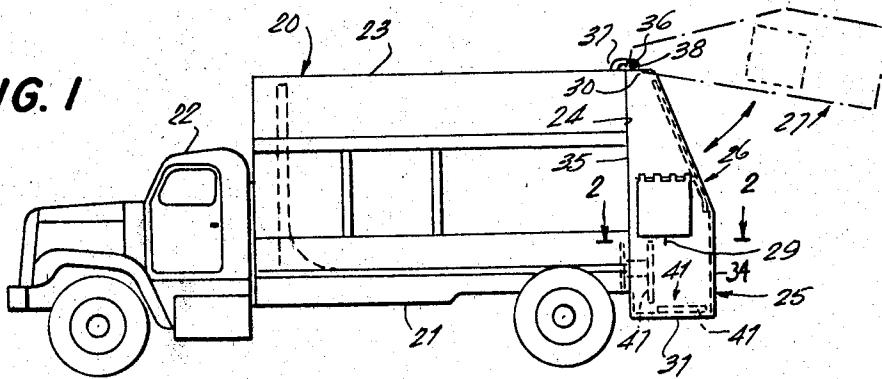


FIG. 2

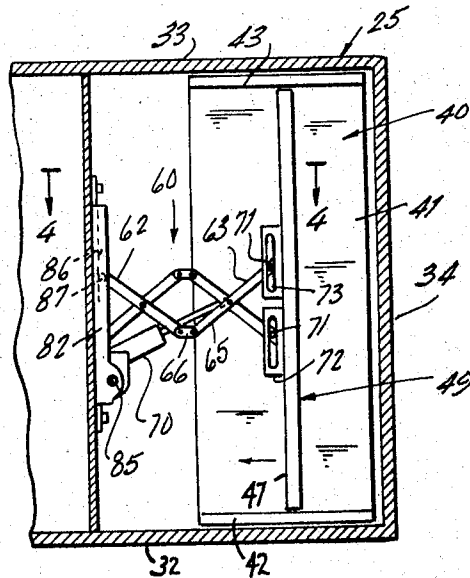


FIG. 3

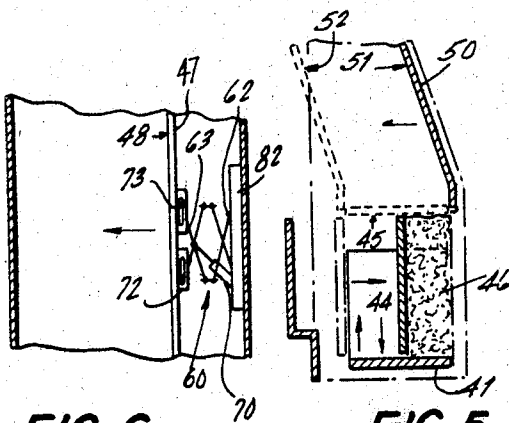


FIG. 4

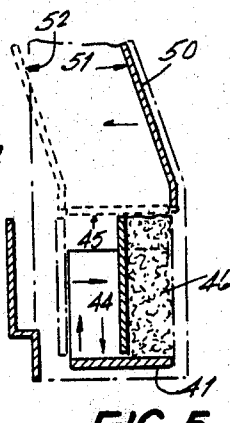


FIG. 5

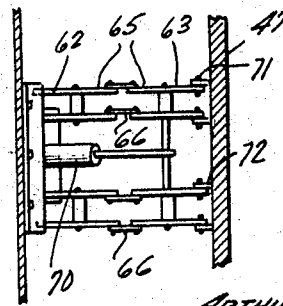


FIG. 6

INVENTOR.
ARTHUR W. NELSON

BY
Friedman & Goodner
ATTORNEYS

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3,454,174

REFUSE TRUCK

Arthur W. Nelson, 276 Long Island Ave.,
Wyandanch, N.Y. 11798

Continuation-in-part of application Ser. No. 442,702,
Mar. 25, 1965. This application Aug. 24, 1966, Ser.
No. 574,599

Int. Cl. B66f 3/00; B66f 9/06

U.S. Cl. 214—83.3

2 Claims

ABSTRACT OF THE DISCLOSURE

A refuse having a movable refuse compacting element actuating assembly movably connected to the compacting element, said assembly comprising a lazytongs linkage system having forward and rearward ends, said rearward end connected to the compacting element and said forward end connected to the truck, and hydraulic means associated with the truck and movably connected to the linkage system, said hydraulic means adapted to impart motion to the linkage system which is translated thereby into forward or rearward motion of the compacting element.

This application constitutes a continuation in part of my application Ser. No. 442,702, filed Mar. 25, 1965, now Patent No. 3,355,044, for a Refuse Truck.

This present invention relates to a refuse truck having a hopper provided with a compacting element and in particular to means for actuating said compacting element.

Conventional refuse trucks are provided with hoppers having a compacting element actuable by hydraulic means. The compacting element is generally located in the lower end of the hopper. Uncompacted refuse loaded into the hopper is compacted by the compacting element and transported from the hopper into the refuse storage body of the truck. In a given hopper it is desirable to accommodate as large a quantity of refuse as the dimensions of the hopper will allow without interfering with either the compacting element or the hydraulic means for actuating the compacting element. Conventional hydraulic means require generous volumes of hopper space, thereby limiting the space available for uncompacted refuse. Accordingly, it is desirable to reduce the hopper volume needed to accommodate the hydraulic means, thereby increasing the uncompacted refuse charge that can be handled by a given hopper.

An object of the present invention is to provide a compact space-saving actuating means for actuating compacting elements of refuse trucks.

Other objects and many of the attendant advantages of this invention will be readily appreciated as the same becomes better understood by references to the following detailed description when considered in connection with the accompanying drawings in which like reference numerals designate like parts throughout the figures thereof and wherein:

FIGURE 1 is a side elevation view of a refuse truck showing the relative location of the actuating means pursuant to the present invention.

FIGURE 2 is a top view of the actuating means taken substantially along the line 2—2 of FIGURE 1 illustrating the actuating means in the contracted position.

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FIGURE 3 is a top view similar to FIGURE 2 illustrating the actuating means in the expanded position.

FIGURE 4 is a side elevation view of the actuating means taken substantially along the line 4—4 of FIGURE 3.

FIGURE 5 is partial diagrammatic view of a refuse truck hopper having a compacting element.

FIGURE 6 is a schematic view of actuating means shown in FIGURE 2.

Referring now to the drawings wherein like reference characters designate like or corresponding parts throughout the several views, there is shown in FIGURE 1 a refuse truck 20 which includes a chassis 21. A cab 22 is mounted on the front end of the chassis. A refuse storage body 23 mounted on the rear end of the chassis adjacent to the cab 22 is provided with an open end 24 remote from the cab 22. A tail gate hopper 25 is pivoted to the body 23 and disposed to cover and uncover the opening 24.

The hopper 25 is a substantially rectangular container having its longitudinal axis oriented in the vertical position. The hopper 25 comprises a top wall 30, a bottom wall 31 opposing the top wall, opposing left 32 and right 33 side wall extending between the top and bottom walls, a rear wall 34 enclosing the end of the hopper 25 remote from the body 23, and a partial front wall 35 enclosing the end of the hopper adjacent to the body 23. The front wall 35 forms an opening through which compacted refuse may be transported from the interior of the hopper 25 to the interior of the body 23. The top wall 30 is provided with a pivot hinge 36. A complementary pivot hinge 37 connected to the top of the body 23 mates with the pivot hinge 36. A pivot pin 38 engages the hinges 36 and 37 to hold the hopper 25 in place with capacity for turning movement on the body 23. The hopper 25 is adapted to be held in either a lowered position 26 so that refuse may be loaded in the hopper and transported therefrom into the body 23, or a raised position 27 so that refuse contained in the body may be unloaded therefrom. The side walls 32 and 33 are each provided with hopper loading means comprising opposing movable covers 29 pivoted to the side walls and disposed to cover and uncover side refuse loading openings in the side walls. The covers are adapted to be held in either a covering or uncovering position by means well known in the art. In operation, the covers 29 are held in the uncovering position thereof to allow refuse to be loaded through the openings into the hopper 25, and in the covering position thereof when the truck is in motion. It should be understood, of course, that the hopper may be provided with movable covers to conceal refuse loading opening otherwise located, as for example, openings described in my application Ser. No. 442,702, filed Mar. 25, 1965, now Patent No. 3,355,044.

As best shown in FIGURES 1, 2 and 3, the tail gate hopper 25 is provided with elevator means 40 comprising a substantially rectangular movable platform 41 having left 42 and right 43 opposing side walls extending upwardly from the platform 41 and substantially normal thereto. The elevator is in the form of a U-shaped receptacle within which refuse is loaded, compacted and transported. The elevator has a lowered position 41 to which it is moved to allow uncompacted refuse to be loaded and compacted therein, and a raised position 45 to which it is moved to allow the compacted refuse 46 to be discharged therefrom into the storage body 23 of the

truck. The elevator is adapted to be cyclically moved from the lowered position 44 thereof to the raised position 45 thereof and returned therefrom to the lowered position 44 thereof by actuating means associated with the truck that are well known in the art. It should be understood, of course, that the hopper may be provided with elevator means similar to the elevator means hereinbefore described, as for example, elevators described in my application Ser. No. 442,702, filed Mar. 25, 1965, now Patent No. 3,355,044.

The hopper 25 is provided with compacting means 47 comprising a substantially rectangular member or element movable between the side walls 42 and 43 of the elevator 40 when the elevator is in the lowered position 44 thereof. The element 47 has a forward position 48 to which it is retracted to allow uncompact refuse to be loaded into the elevator 40, and a rearward position 49 to which it is forcibly projected to compact refuse loaded into the elevator. The element 47 is adapted to be cyclically moved from the retracted position 48 thereof to the projected position 49 thereof and returned therefrom to the retracted position thereof by actuating means 60 associated with the truck which will hereinafter be more fully described.

The hopper 25 is provided with discharge means 50 comprising a substantially rectangular member or element movable between the side walls 42 and 43 of the elevator 40 when the elevator is in the raised position 45 thereof. The element 50 has a rearward position 51 to which it is retracted until the elevator having a compacted load of refuse 46 thereon is moved to the raised position 45 thereof, and a forward position 52 to which it is forcibly projected to discharge the compacted refuse from the elevator 40 into the interior of the storage body 23. The element 50 is adapted to be cyclically moved from the retracted position 51 thereof to the projected position 52 thereof and returned therefrom to the retracted position 51 thereof by actuating means associated with the truck that are well known in the art. It should be understood, of course, that the hopper may be provided with a discharge member similar to the discharge member hereinbefore described, as for example, discharge members described in my application Ser. No. 442,702, filed Mar. 25, 1965, now Patent No. 3,355,044.

As best shown in FIGURES 2, 3 and 4, the truck is provided with a hydraulically operated actuating assembly 60 for actuating the compacting element 47. The assembly comprises a lazytongs linkage system 61 having one end 62 thereof supported by the truck 20 and the other end 63 thereof movably connected to the compacting element 47. Hydraulic means 70 associated with the truck 20 are adapted to impart motion to the linkage system 61 which transmits ramming motion 62 to the compacting element 47.

The lazytongs system 61 is of a pantograph type of linkage system including long linkage members 65 and short linkage members 66 so connected by means of a plurality of pivots that the linkage system is extensible to a maximum length substantially equal to the combined length of two of its long members 65 pivoted end to end, and is retractable to a minimum length substantially equal to the length of one of its short members 66. The lazytongs linkage system 61 has a forward end 62 and a rearward end 63. The rearward end 63 is connected to the compacting element 47 by means of a series of ramming brackets 72 mounted on the compacting element. The brackets 72 are provided with slots 73 which slidably receive pivot members 71 carried by the rearward end 63. The forward end 62 is movably connected to the truck 20 and supported thereby by means of a pedestal 82 preferably mounted on the chassis 21 of the truck. The pedestal 82 is provided with an anchoring pivot pin 85 which interconnects one side of the forward end 62 to the pedestal 82 and slide ways 86 to slidably receive pivot members 87 carried by the other side of the forward end 62. The supporting pedestal 82 is also provided with a hydraulically operated piston assembly. The assembly 83 in-

cludes a reciprocable piston 84 having one end thereof movably connected to the linkage system 61 to impart motion thereto. Piston motion is translated by the linkage system 61 into forward and rearward motion of the compacting element 47.

It should be understood that although the linkage system, as shown in FIGURE 4, comprises a plurality of lazytongs interconnected to act as a single assembly, and a plurality of ramming brackets are provided to interconnect the compacting element to the lazytongs assembly, a single lazytongs associated with a single bracket connected to the compacting element would suffice for compacting some refuse loads. It is to be understood that the number of lazytongs and brackets used will depend on the type of refuse being compacted and the degree of compacting required. Additionally, the words "forward" and "rearward," as used in describing the linkage assembly and motion thereof, are used in reference to the location of the pedestal—"forward" meaning toward the pedestal and "rearward" meaning away from the pedestal. The pedestal may be located in the hopper of the truck, as shown in FIGURE 6, such that forward motion of the compacting element would correspond to motion towards the rear of the truck and rearward motion of the compacting element would correspond to motion towards the front of the truck. Rearward motion of the compacting element in all cases corresponds to compacting motion.

It should be understood, of course, that the foregoing disclosure relates to only a preferred embodiment of the invention and that it is intended to cover all changes and modifications of the example of the invention herein chosen for the purpose of the disclosure, which do not constitute departures from the spirit and scope of the invention.

I claim:

1. In a refuse truck comprising a chassis having a front end and a rear end, a cab mounted on the front end, a refuse storage body having an open end mounted on the rear end of the chassis, a tail gate hopper having a refuse loading opening therein pivoted to the body and disposed to cover and uncover the open end thereof, and a movable refuse compacting element in said hopper, a compacting element actuating assembly movably connected to said compacting element, comprising, in combination, a lazytongs linkage system having forward and rearward ends, said forward end connected to the truck and said rearward end connected to the compacting element, and hydraulic means associated with the truck adapted to impart motion to the linkage system, said motion being translated by the linkage system into forward or rearward motion of the compacting element.

2. In a refuse truck comprising a chassis having a front end and a rear end, a cab mounted on the front end, a refuse storage body having an open end mounted on the rear end of the chassis, a tail gate hopper having a refuse loading opening therein pivoted to the body and disposed to cover and uncover the open end thereof, and a movable refuse compacting element in said hopper, a compacting element actuating assembly movably connected to said compacting element, comprising, in combination, a lazytongs linkage system having forward and rearward ends, said forward end connected to the truck and said rearward end connected to the compacting element, and hydraulic means associated with the truck adapted to impart motion to the linkage system, said motion being translated by the linkage system into forward or rearward motion of the compacting element, said compacting element actuating assembly further including a ramming bracket mounted on the compacting element, said rearward end of the linkage system slidably connected to the bracket, a supporting pedestal mounted on the truck, said forward end of the linkage system movably connected to the pedestal and supported thereby, and said hydraulic means being a hydraulically

operated piston assembly including a piston having one end thereof movably connected to the linkage system to impart motion thereto which is translated thereby into forward or rearward motion of the compacting element.

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5 ALBERT J. MAKAY, *Primary Examiner.*

U.S. Cl. X.R.

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