

PATENT SPECIFICATION (11)

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(54) A REFUSE COLLECTOR

(71) We, MURCO ENVIRONMENTAL LIMITED, a company organised under the laws of the Republic of Ireland, of Commons Road, Cork, Ireland, do hereby declare the invention, for which we pray that a patent may be granted to us, and the method by which it is to be performed, to be particularly described in and by the following statement:—

The present invention relates to refuse collectors.

There are many types of refuse collectors in general commercial use. The majority of refuse collectors are of the rear-loading type which are discharged by rearward tipping. One of the problems with such refuse collectors is to pack and consolidate the refuse. This has been achieved by providing a refuse collector of the rear-loading type which may be tipped in a forward direction at various times during the loading operation and then finally discharged by rearward tipping. During operation the body of the refuse collector is raised vertically thus raising the rearward door and causing the refuse to fall in the refuse collector body and to consolidate somewhat under its own weight. It has however, generally been found necessary to provide some form of positive compaction of the refuse load. One of the ways used is to provide a powerful feed screw. The feed screw rotates slowly in a trough in the base of a loading hopper compressing the refuse through an opening and forcing it into the refuse collector body. The feed screw and portion of the loading hopper are so arranged that when it is desired to empty the refuse collector body by rearward tipping the feed screw and portion of the loading hopper pivot away from the refuse container body to allow the refuse to be discharged. This latter type of refuse collector is normally mounted on the chassis of a truck or the like vehicle. These refuse collectors are it will be appreciated, relatively expensive to manufacture.

The present invention is directed towards providing an improved construction of refuse collector.

According to the invention there is provided a refuse collector comprising: a base chassis; a loading hopper on the base chassis, the loading hopper having an entrance for the reception of refuse, a feed screw mounted in the loading hopper; a main container body pivotally mounted on the base chassis so that it can be raised over the loading hopper to empty the main container body; and means for closing the entrance to the hopper when the main container body is raised.

The invention is diagrammatically illustrated by way of example in the accompanying drawings in which:—

Figure 1 is a partially cut-away side view of a refuse collector according to the present invention, and

Figure 2 is a view similar to Figure 1 showing the refuse collector in the raised position.

Referring to the drawings there is provided a refuse collector indicated generally by the reference numeral 1 comprising: a base chassis 2 of a trailer having ground engaging wheels 3, a drawbar 4 and a supporting height adjustable screw jack 6. A loading hopper 7 is mounted on the base chassis 2. A worm screw 8 is mounted by means of a plate 9 in the loading hopper 7. The worm screw 8 is driven through a gear box 10, a drive shaft 11, a variable length drive shaft 12 from the power take-off of a tractor (not shown). The loading hopper 7 is provided with an entrance 14 and an exit 15 which communicates with a main container body 16. The main container body 16 is manufacture from sheet metal and is of a welded construction. The main container body 16 is pivotally mounted on each side of the base chassis 2 by hinge pins 17 of conventional construction. A hydraulic tipping ram 18 pivotally mounted at 19 on the base chassis 2 and on the main container body 16 at 20 controls the pivoting of the

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main container body 16 about the hinge pins 17.

A door 21 is pivotally mounted at 22 on the container body 16. The door 21 comprises a pair of side walls 23 and an end wall 24 which forms an entry chute indicated generally by the reference numeral 25. A hand rail 26 is mounted on each of the side walls 23. A trap door 29 is pivotally mounted at 30 on the loading hopper 7. The trap door 29 engages a catch or lug 31 on the end wall 24.

A step 32 is hinged at 33 on bars 34, only one of which is illustrated. Each bar 34 is connected by a link mechanism, not shown, to the main container body 16 whereby as the main container body 16 is raised the step 32 retracts below the base chassis 2. A hand brake 35 of conventional construction is provided. The variable length drive shaft 12 is connected to the power take-off of a tractor or other power source (not shown) for example a hydraulic or electric motor mounted on the base chassis, and the hydraulic tipping ram 18 is connected by means of a hydraulic pipe 36 to the hydraulic system of the tractor. An electrical coupling 37 and wiring 38 are provided for electrical services including emergency cut out.

In operation, with the refuse collector body 1 in the position illustrated in Fig. 1 refuse is dumped through the entry chute 25 into the loading hopper 7 where it impinges against the rotating worm screw 8. The worm screw 8 forces the refuse against the side walls of the loading hopper 7, out the exit 15, and into the main container body 16. As the quantity of refuse builds up in the main container body 16 the refuse is compressed by the worm screw 8 and the refuse in the main container body 16 is compacted. When it is desired to empty the main container body 16 the tipping ram 18 is operated causing the main container body 16 to pivot rearwards about the hinge pins 17. As the main container body 16 pivots upwards it pivots over the exit 15 of the loading hopper 7 and the weight of the end door 21 and entry chute 25 causes the end door 21 to hang vertically thus pivoting it away from the loading hopper 7. Simultaneously, the catch 31 comes out of engagement with the trap door 29 which pivots downwards to close the entrance 14 of the loading hopper 7. Accordingly, the refuse in the container body 16 is not allowed to spill over the screw 8 and the refuse is readily discharged.

An alternative embodiment of the invention envisages the use of a trailer chassis similar to that hereinbefore described which is operated by electricity from a separate power source. It will be appreciated that this embodiment of the invention will be particularly suitable for use in hotels and

like institutions where the refuse collector is a permanent or semi-permanent fixture and that the worm screw may be driven by an external power source such as an electric motor.

An alternative embodiment of the invention envisages the use of an alternative chassis construction so arranged that the rear wheels of the towing tractor can pass underneath the drawbar. This substantially reduces the turning circle of the vehicle.

It is also envisaged that various safety devices may be provided to prevent the likelihood of overload on the worm screw, and that a hydraulic motor drive driven from a hydraulic pump on the tractor or other power source can be used in place of the variable length drive shaft.

It will be appreciated that the refuse container body according to the present invention may be readily mounted on a vehicle chassis.

WHAT WE CLAIM IS:—

1. A refuse collector comprising: a base chassis; a loading hopper on the base chassis, the loading hopper having an entrance for the reception of refuse; a feed screw mounted in the loading hopper; a main container body mounted on the base chassis so that it can be raised over the loading hopper to empty the main container body; and means for closing the entrance to the hopper when the main container body is raised.

2. A refuse collector as claimed in Claim 1, in which the means for closing the entrance to the hopper is a trap door pivotally mounted on the loading hopper and releasably engaging a catch on the main container body, whereby as the main container body is tipped the trap door disengages from the catch and covers the entrance to the loading hopper.

3. A refuse collector as claimed in Claim 1 or Claim 2, in which the feed screw is so arranged as to deliver refuse upwardly into the main container body.

4. A refuse collector as claimed in any preceding Claim, in which the feed screw is driven by a hydraulic or electric motor mounted on the base chassis.

5. A refuse collector as claimed in any preceding Claim, in which the base chassis forms part of a tractor or vehicle chassis.

6. A refuse collector substantially as described herein with reference to and as illustrated in the accompanying drawings.

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main container body 16 about the hinge pins 17.

A door 21 is pivotally mounted at 22 on the container body 16. The door 21 comprises a pair of side walls 23 and an end wall 24 which forms an entry chute indicated generally by the reference numeral 25. A hand rail 26 is mounted on each of the side walls 23. A trap door 29 is pivotally mounted at 30 on the loading hopper 7. The trap door 29 engages a catch or lug 31 on the end wall 24.

A step 32 is hinged at 33 on bars 34, only one of which is illustrated. Each bar 34 is connected by a link mechanism, not shown, to the main container body 16 whereby as the main container body 16 is raised the step 32 retracts below the base chassis 2. A hand brake 35 of conventional construction is provided. The variable length drive shaft 12 is connected to the power take-off of a tractor or other power source (not shown) for example a hydraulic or electric motor mounted on the base chassis, and the hydraulic tipping ram 18 is connected by means of a hydraulic pipe 36 to the hydraulic system of the tractor. An electrical coupling 37 and wiring 38 are provided for electrical services including emergency cut out.

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