

[54] REFUSE PACKER BODY

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2,934,226	4/1960	Dempster et al.	214/82
2,557,003	6/1951	Laurin	214/82
2,865,286	12/1958	Newell	214/82 X
2,912,128	11/1959	Kamin	214/82
2,996,202	8/1961	Neyland	214/82
3,094,227	6/1963	Dempster et al.	214/82
3,137,400	6/1964	Tapp et al.	214/82
3,161,305	12/1964	Ferrari et al.	214/82
3,207,336	9/1965	Boeck et al.	214/82

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[51] Int. Cl. B65f 3/00
[58] Field of Search 214/83.3, 82, 510, 514;
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[57] ABSTRACT

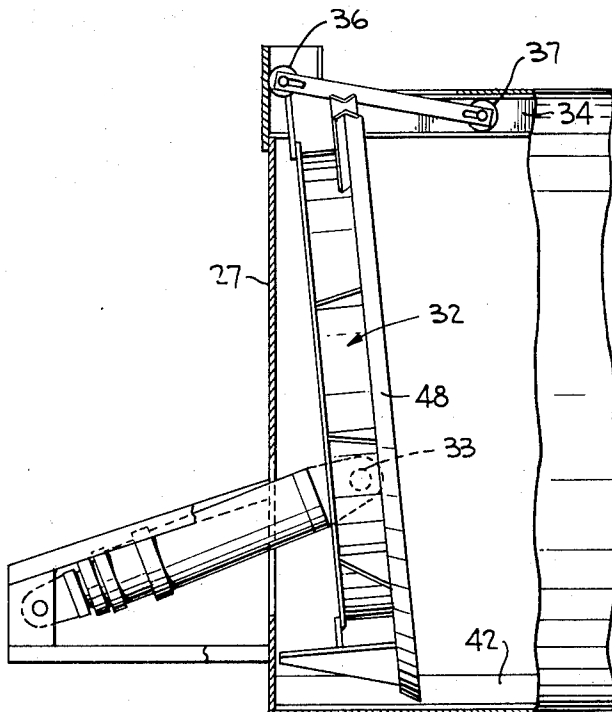
Refuse packer body for the accumulation and compaction of refuse has a tilting packer blade that permits the over-all length of the packer body to be shortened and the center of gravity of the loaded body to be moved forward.

10 Claims, 6 Drawing Figures

[56] References Cited

UNITED STATES PATENTS

2,643,014	6/1953	Colcagno	214/82 UX
3,465,458	9/1969	Wagner	214/82 X



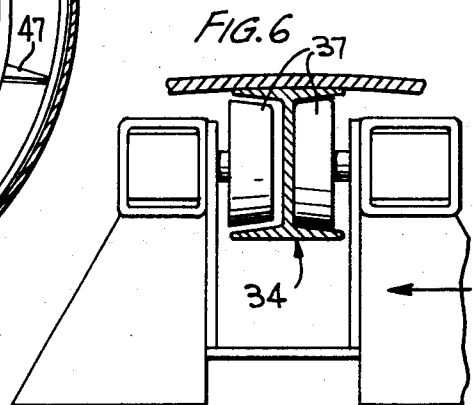
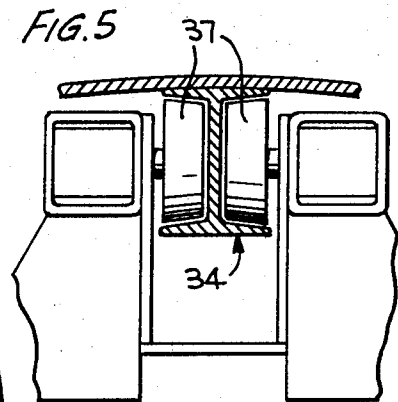
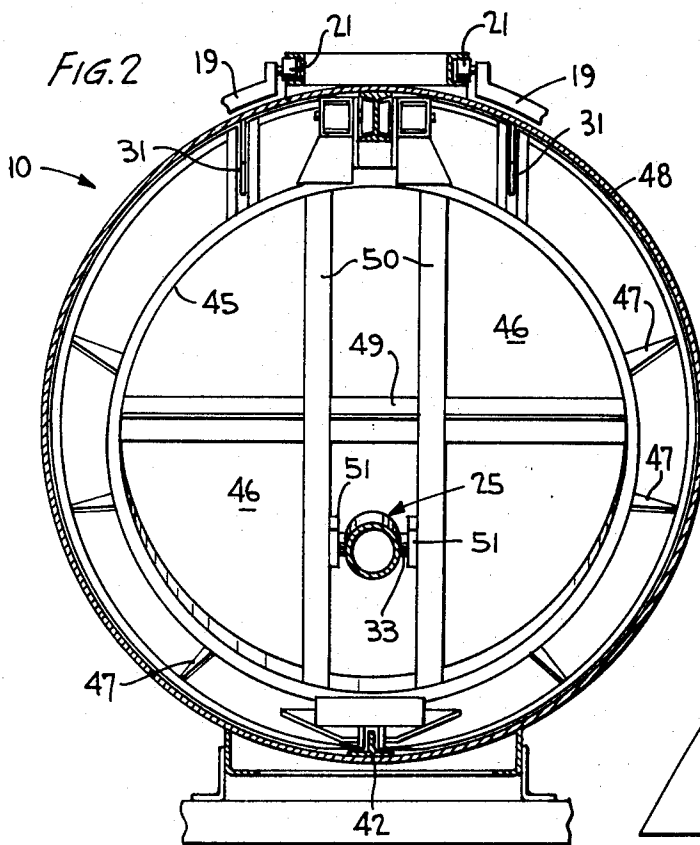
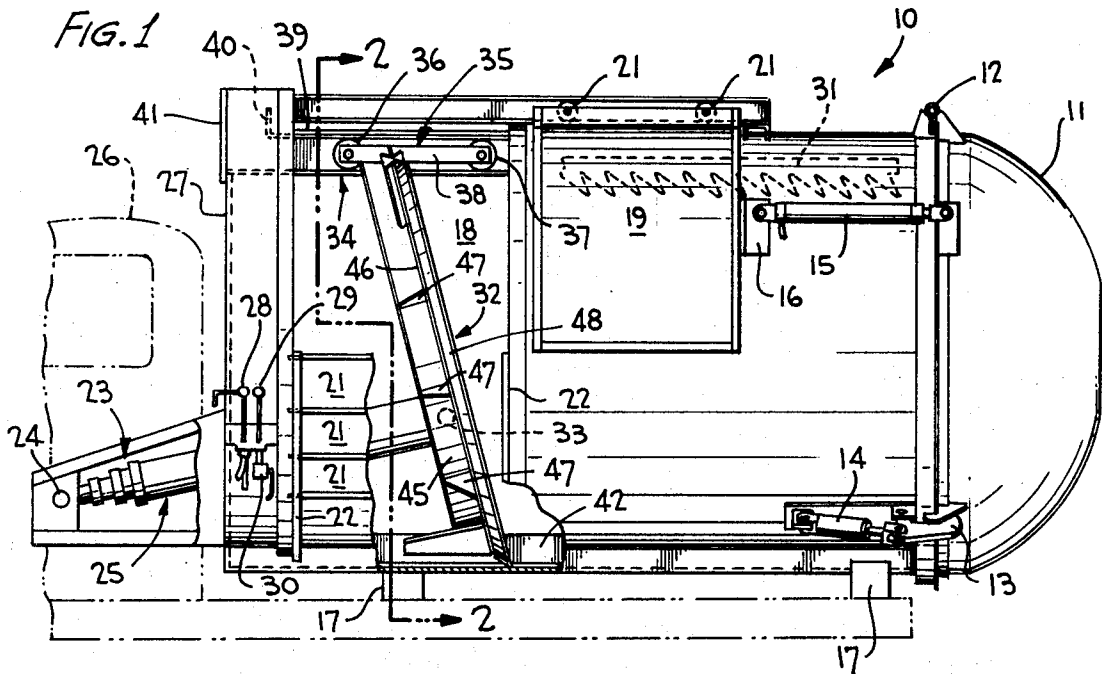


FIG. 4

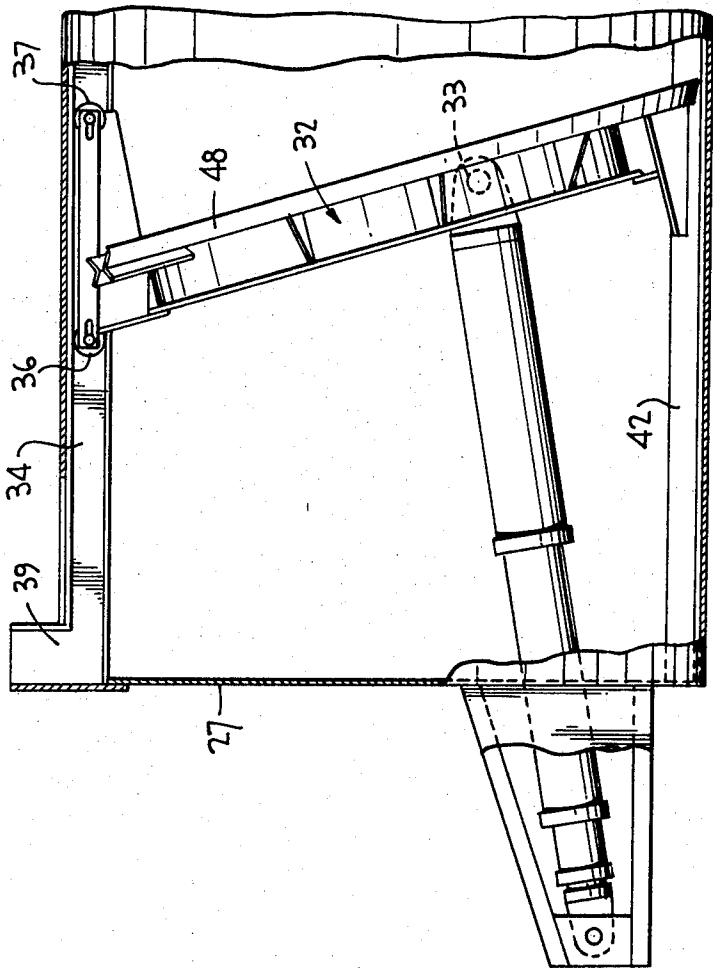
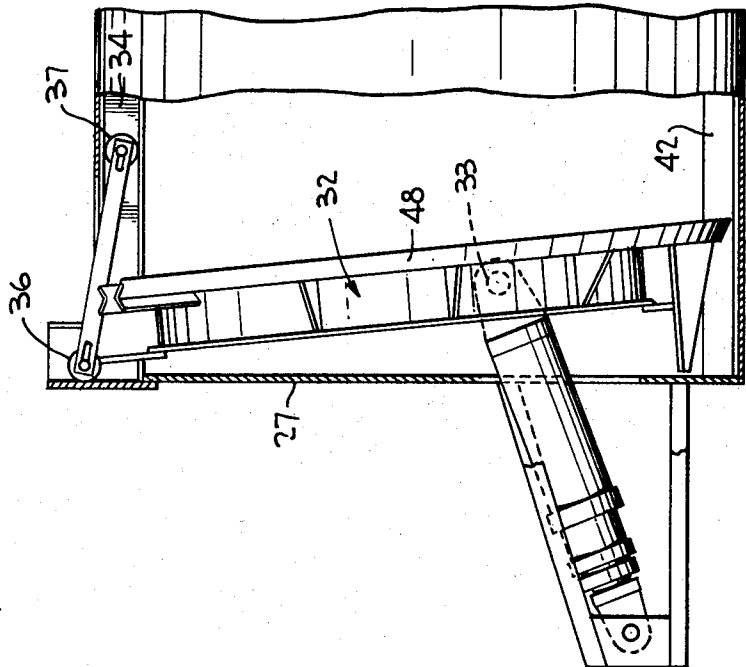


FIG. 3



REFUSE PACKER BODY

BACKGROUND OF THE INVENTION

The present invention relates to refuse packer bodies of the side-loading type having a packer blade which compacts refuse periodically between the loadings.

Refuse packer bodies of a similar variety to that of this invention which preceded this invention are of a cylindrical type mounted on a standard truck chassis with a hydraulically driven packer blade. The side-loading doors are adjacent the cab end of the refuse packer body and the hydraulic cylinder has one end mounted adjacent the cab. The packer blade itself has its lower end tilted in a fixed angle to not only compress the refuse but give it a simultaneous lifting component of force. The rear of the body is closed by a dome-shaped tailgate which can be opened by means of hydraulic cylinders to permit the compacted load to be shoved from the body onto a city dump or other similar final resting place for the refuse.

SUMMARY OF THE INVENTION

In accordance with the present invention, a unique new refuse packer body has been invented. Instead of the old packer blade always maintaining a constant vertical angle, the new tilting packer blade is provided which is suspended only from the top portion of the body. The new blade is adapted to be retracted in a minimum space such that in its retracted position it is substantially vertical and thus occupies a minimum space but as it is actuated rearwardly to perform a packing function the blade tilts to an optimum angle for compacting the refuse and simultaneously forcing it in an upward direction as well as a rearward direction. Further, the hydraulic cylinder used to actuate the packer blade is mounted in the lower portion of the body and adapted to project forward into the cab between the driver and passenger seat, thus saving additional space. This saving of longitudinal space permits a standard truck chassis to be used in mounting the body and permits maximum utilization of the space provided by such chassis. As an important addition, this arrangement permits the center of gravity of the load to be moved forward on the chassis thus tending to alleviate the chronic problem of overloaded rear wheels.

Many objects and advantages of the present invention will become apparent from the following description taken in connection with the accompanying drawings.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a elevational view of the refuse packer body with portions thereof broken away for illustration purposes;

FIG. 2 is a transverse cross-sectional view taken on the line 2—2 of FIG. 1 showing especially the packer blade;

FIG. 3 is a view showing the packer blade in the fully retracted position;

FIG. 4 shows the blade in a packing position after it has been operated by the hydraulic piston;

FIG. 5 is a detailed view of the roller and I-beam arrangement when it has been cocked to the side-by-side loading.

With reference to FIG. 1, there is shown therein a main body 10 closed at one end by rear door 11 suspended at the top by rear door hinge 12 and latched at the bottom by two latches 13 (one on each side) actuated by latch cylinders 14 associated one with each latch. The rear door is opened by means of two rear door opening cylinders 15 (one on each side) which are hydraulically actuated to open the door but permit the door to close by gravity. The rear door opening cylinders 15 are mounted on bracket stops 16.

Four mounting plates 17 (two on each side) are welded to main body 10 to enable it to be affixed to the chassis of the truck 26 on which it is mounted.

At the front of the main body 10 is located a refuse receiving opening 18, one on each side of the body, which is closed on each side by a top door 19 arched to conform generally to the curvature of the main body and suspended from rollers 20 at the top for permitting longitudinal movement to open and

close the top door. The refuse receiving opening 18 is closed at the bottom by bottom door panels 21 which are guided for arcuate movement along the surface of main body 10 by flange members 22 fixed to said main body. Both the top door and bottom door panels are one of a number of different types which may be used as is well known in the industry.

Projecting from the front of main body 10 is a hydraulic cylinder bearing assembly 23 having a pivot member 24 about which four-stage telescoping hydraulic cylinder 25 pivots. It is noted that the hydraulic cylinder bearing assembly 23 projects into the cab of truck 26 at a position between the driver and passenger seat thus permitting the main body 10 to have its main body front surface 27 just to the rear of the cab of truck 26. Adjacent the front is located valve handle 28 having two positions for actuating the telescoping hydraulic cylinder to a rearward and forward position, respectively, plus a middle neutral position with a spring biased return (not shown) to the middle position. Valve handle 28 is cross-linked to a companion valve handle on the opposite side, the cross-linking not being shown. Adjacent the front is another valve handle 29 which is utilized to actuate the two latching cylinders 14 and by changing the position of selector valve 30 to actuate the two rear door opening cylinders 15.

On the inside of the main body in the upper portion are two longitudinally extending alligator teeth plates 31 having rearwardly extending teeth so that refuse can be packed to the rear of the main body 10 while being restricted from toppling downward through being held by the alligator teeth.

Affixed by means of a pivot to the rear end of the four-stage telescoping hydraulic cylinder is a packer blade 32. It is to be noted that the pivot connection 33 between the cylinder and the packer blade is located approximately one-third the distance from the bottom of the packer blade to its top and in the position shown has approximately a 15° angle from the vertical. The packer blade 32 is suspended at the top from a horizontal I-beam 34 affixed to the top of the main body 10 through means of a suspension assembly 35 welded to the top of the packer blade. The suspension assembly has two front suspension rollers 36 and two rear suspension rollers 37 which are mounted in two parallel box beams 38 which are shown in a horizontal position that is inclined approximately 75° to the packer blade. The rear suspension rollers 37 lie in a vertical plane approximately vertical to the lower edge of the rear portion of the packer blade in its normal packing position as shown in FIG. 1 whereas the front suspension rollers lie in a vertical plane just forwardly of the top frontal portion of the packer blade. As is shown in FIG. 1, the top flange 39 of I-beam 34 is cut at its front portion approximately a distance of 5 inches from the front and has a 3-inch vertical flapped guide bar 40 welded thereto. The front of the I-beam is closed off by a flat stop plate 41. The bottom portion of the main body 10 has an inverted tee guide welded in a longitudinal direction for guiding the bottom portion of the packer blade. As best seen in cross-sectional view of FIG. 2, the packer blade is a welded assembly formed in an elliptical shape so that when it is slanted 15° to the vertical it will substantially fill the cylindrical main body 10. The suspension rollers 36 and 37 are cantilevered from bearing mounts on box beams 38 and have beveled edges mating the degree of bevel of the I-beam along which they roll and having their inner faces separated an amount just sufficient to permit the web of the I-beam to pass therebetween. At the top of the packer blade are provided two alligator teeth receiving slots having angles welded to the side thereof to permit the alligator teeth to be led therebetween with approximately 3/8-inch clearance and will accommodate the teeth even though they may be partially bent. At the bottom portion of the packer blade is provided a guide slot to receive the inverted tee guide 42 with approximately an 1/8-inch clearance to prevent the packer blade from swinging sideways even though it provides no vertical support. The packer blade is rigidified by means of a circular ring 45 welded to a packer plate 46 and which is supported by a number of triangular gussets 47. Circular ring 45 and triangular gussets 47

are welded to the front base of the packer plate 46. About the periphery of packer plate 46 is welded an edge ring 48 which gives a bottom clearance of about one-fourth inch. Also a horizontal rib 49 and two vertical ribs 50 are welded to packer plate 46 to further rigidify it. The horizontal and vertical ribs terminate at the inner periphery of circular ring 45 and the two vertical ribs 50 have mounted thereon mounting plates 51 for receiving the pivot connection 33.

FIG. 3 best shows the blade when it is in its retracted position with the blade pivoted about rear suspension rollers 37 to assume a steep position whereby it is only at approximately a 6° angle to the vertical, thus shortening the frontal area needed to house the packing blade in its retracted position.

This type of packer is known as a side-loader and the front portion is referred to as cab end. The blade moves when retracting from the 15° angle to the 6° angle by pivoting about rear suspension rollers 37 so that the front suspension rollers 36 move in a vertical direction through the cut-away portion of top flange 39 and the bottom portion of the blade moves forward while the top portion is substantially stationary. This tilting blade arrangement permits the horizontal length of the packer body to be shortened since less space is needed to house the packer blade in its retracted position. The refuse packer illustrated can accommodate approximately 10 cubic yards in a body approximately 6 feet in diameter with a shortened longitudinal length on a standard truck chassis. The shortening of the body length by the tilting blade arrangement is especially valuable since it shifts the center of gravity of the load forward, thus reducing the load on the usually overloaded rear axle.

The hydraulic pressures used are approximately 1,300 pounds per square inch and the hydraulic fluid is applied under pressure usually from a pump attached to a power takeoff from the truck transmission.

As can best be seen in FIGS. 5 and 6, the interrelationship between the two front suspension rollers 36 and two rear suspension rollers 37 with the I-beam 34 is very important. The spacing between the left and right rollers is just sufficient to clear the web. The normal sidewise clearance is shown in FIG. 5 although it is to be noted the rollers will normally rest on either the top or bottom flange, the spacing between the diameter of the roller and the top and bottom flanges is approximately one sixty-fourth of an inch. It is important that with such small clearances that even when the blade is cocked under side loading as shown in FIG. 6, the roller will contact and rub on the web before the one sixty-fourth inch of diametrical clearance has been used up. This prevents the rollers from locking between the upper and lower flanges of the I-beam which would create substantial problems for the suspension system since the rollers never can contact the top and bottom flange simultaneously. Also, there is nothing in the lower portion of the main body to jam up or cause unusual cleaning difficulties since the only thing exposed is the simple inverted tee guide which is substantially maintenance free.

In operation, the refuse packer body of this invention would be driven to the place or places where the refuse is to be collected. There, with the rear door latched in the closed position and one of the side doors being opened with the packer blade in its fully retracted position, the refuse would be placed through the side opening into the body and after sufficient amount of refuse has been placed there it is forced to the rear of the body and compacted. This is accomplished by the hydraulic cylinder which upon being actuated pushes the packer blade from its retracted position to its packing position. The first movement is such that the lower portion of the packer blade pivots forward to its normal packing position while the top portion remains substantially stationary. During this pivoting action the forward supporting wheels are being moved downward to come to rest on the bottom flange of the overhead I-beam and when it contacts the bottom flange, the further movement does not substantially change the tilting angle of the packer blade which then proceeds to further push the refuse to the rear at the same time giving a lifting com-

ponent to the rearward movement to force it all of the way to the rear of the truck as far as it will go until it contacts any refuse that has already been compacted. At this time the hydraulic fluid is switched so that the cylinder is actuated to reciprocate the blade back to a retracted position. Upon being fully retracted, additional refuse would be loaded into the side openings and then compacted until the entire body is filled with compacted refuse or else all refuse has been collected. Then the truck moves the compacted refuse to the dump where the rear door is unlatched and moved to the fully opened position following which the packer blade is actuated to eject the entire load onto the dump. Afterwards, the rear door is lowered and latched to the closed position and the truck proceeds to collect additional refuse.

While one embodiment of the invention has been specifically described, the invention may be embodied in numerous other forms without departing from the spirit or essential characteristics thereof. The present embodiment is therefore to be considered in all respects illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than by the foregoing description and all changes which come within the meaning and range of the equivalency of the claims are therefore intended to be embraced therein.

What is claimed is:

1. A refuse packer comprising:

- an elongated body having a first end and a second end adapted to receive refuse therein,
- a refuse receiving opening on the side of said body adjacent said first end,
- an overhead track extending along the longitudinal axis of said elongated body,
- an overhead support assembly carried by said overhead track for guided movement therealong,
- a tilting packer blade supported from said overhead assembly arranged for reciprocal action within said body having a retracted position and a packing position,
- said packer blade, overhead support assembly and overhead track cooperating so that said packer blade assumes a first steep angle when in its retracted position adjacent said first end and tilts to a second steep angle which is less steep than said first angle, when being moved in its packing position, said packing position extending from said retracted position toward said second end, and
- a power means for reciprocating said packer blade within said body between said retracted position and said packing position.

2. A refuse packer as defined in claim 1 wherein said power means comprises a multistage telescoping hydraulic cylinder pivotally mounted at one end to said packer blade and pivotally mounted at the other end to a support means projecting forward from the lower said body portion of said first end of said body, said support means being adapted to fit between the driver and passenger seat of a truck chassis.

3. A refuse packer as defined in claim 1 wherein said packer blade is rigidly suspended from said overhead support assembly which assembly comprises a first roller means and a second roller means, said first and second roller means being carried by said overhead track when in the packing position, said first roller means being disposed in tandem relationship with said second roller means with said first roller means being closer to said elongated body's first end and said second roller means being closer to said elongated body's second end, and when said packer blade is in the retracted position said first roller means is disposed above said overhead track while said second roller means remains on said track.

4. A refuse packer as defined in claim 3 wherein said overhead track is an I-beam having two tapered flanges and a web connecting the two flanges and wherein each of said roller means comprises two tapered rollers straddling said I-beam between said flanges with the spacing between the rollers being just slightly more than the thickness of said web and the diameter of the rollers being just slightly less than the spacing

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between said flange but so dimensioned that upon side loading the rollers will rub on said web before they jam between the two tapered flanges.

5. A refuse packer as defined in claim 4 wherein said I-beam has a portion of its top flange removed adjacent the first end of said elongated body so as to permit said first roller means to rise up from said track and thus permit said packer blade to tilt to a more vertical angle when in the retracted position.

6. A refuse packer as defined in claim 5 wherein said power means comprises a multistage telescoping hydraulic cylinder pivotly mounted at one end to the lower half of said packer blade and pivotly mounted at its other end to a support means projecting outward from the lower portion of said first end of said body with said support means being adapted to fit between the driver and passenger seat of the cab of a truck chassis when the elongated body is mounted on said chassis.

7. A refuse packer as defined in claim 6 wherein the packer blade is at an angle of about 6° from the vertical when in a

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retracted position and about 15° from the vertical when in a packing position.

8. A refuse packer as defined in claim 7 wherein said elongated body has a longitudinally extending toothed member affixed on the inside at the top to prevent the packed refuse from tumbling down when the packer blade is retracted and said packer blade has a complementary slot at its top for accommodating said toothed member.

9. A refuse packer as defined in claim 8 wherein said elongated body has a longitudinally extending guide member affixed on the inside to said body for guiding said packer blade to limit said blades transverse swinging with said packer blade having a slot at its lower portion to accommodate said guide member.

10. A refuse packer as defined in claim 9 wherein the sole support for said packer blade is that provided by said roller assembly.

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