Oct. 11, 1966 S. M. JACKSON ETAL 3,277,850

REFUSE DISPOSAL APPARATUS

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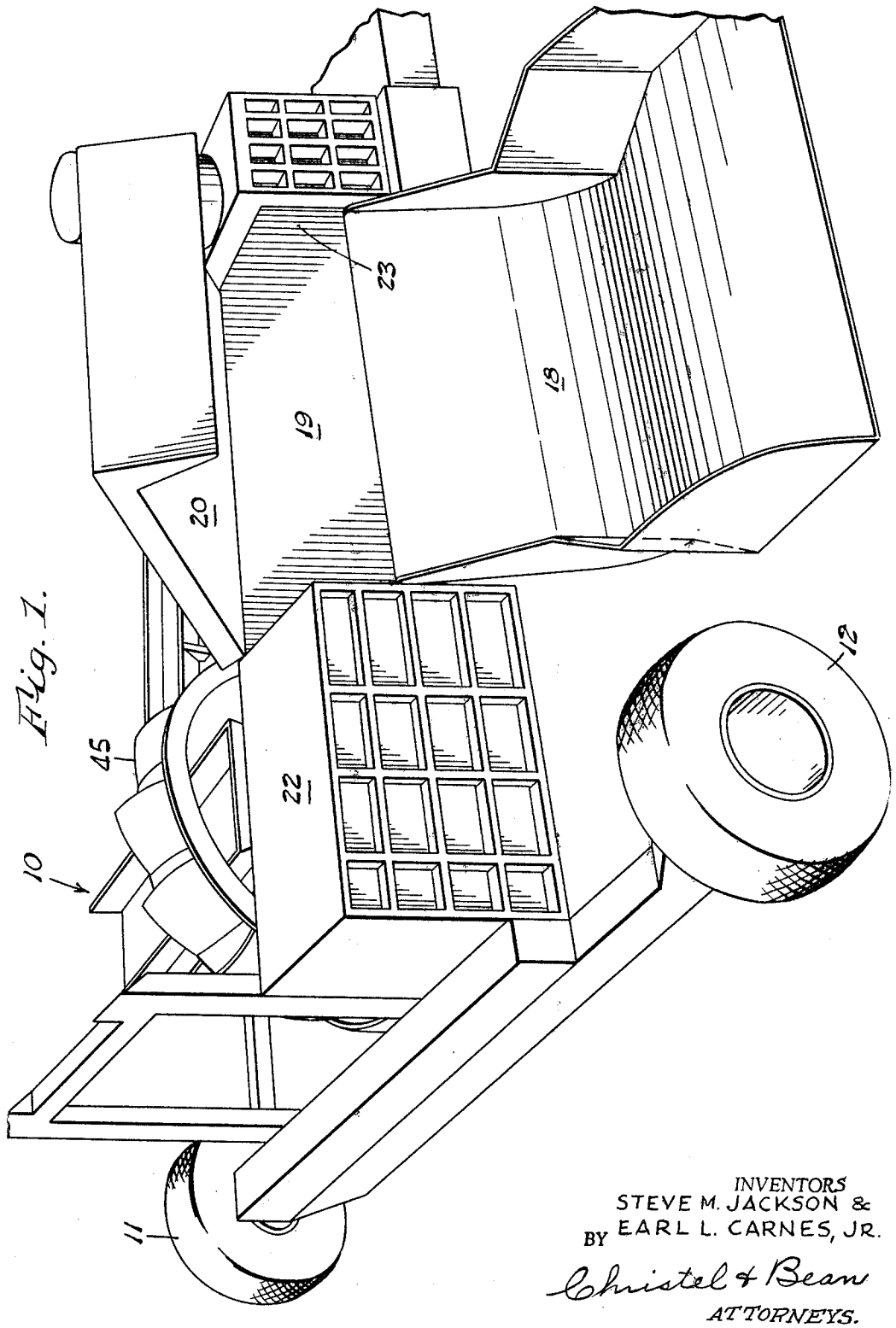


Fig. 1.

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REFUSE DISPOSAL APPARATUS

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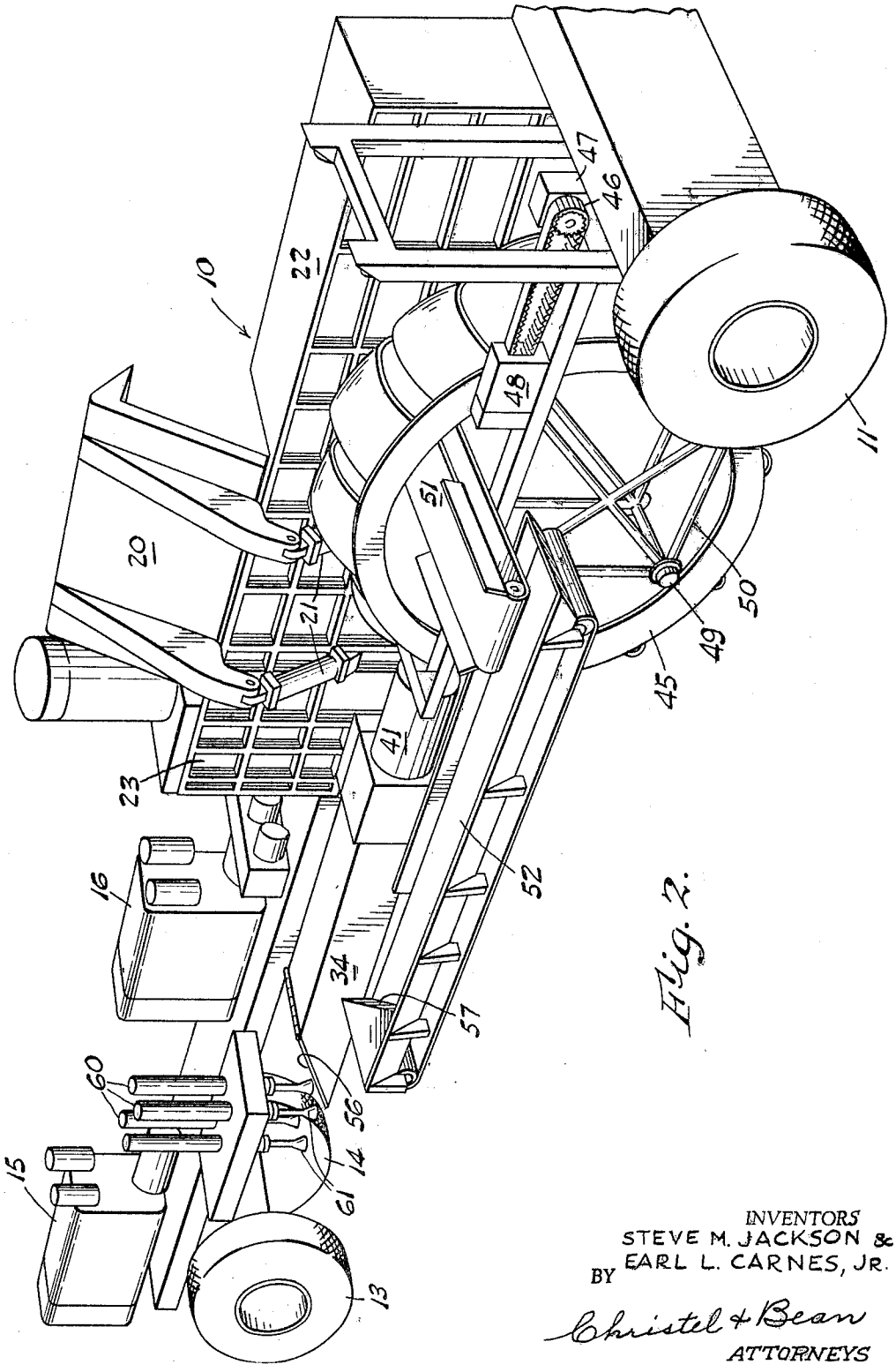


Fig. 2.

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REFUSE DISPOSAL APPARATUS

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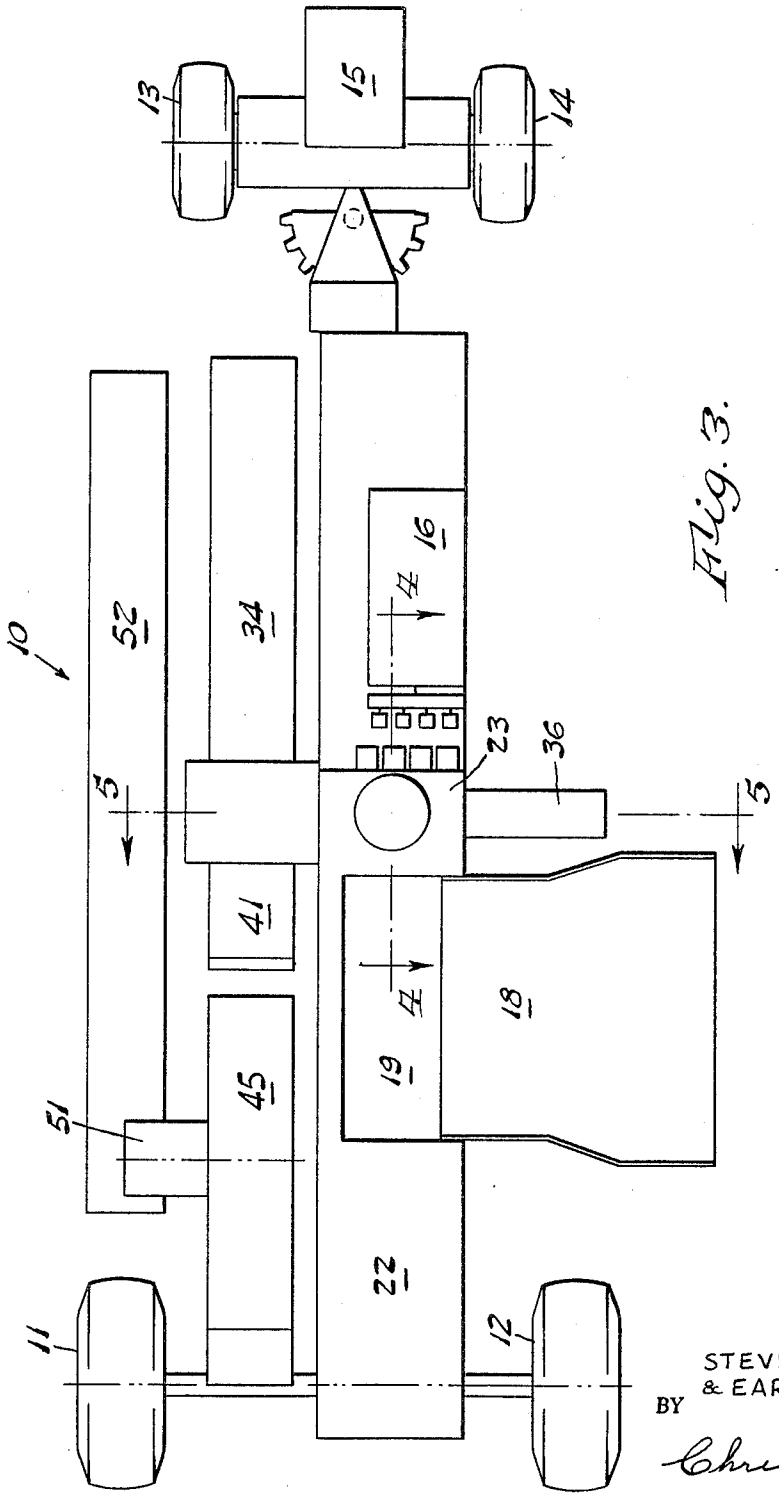


Fig. 3.

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REFUSE DISPOSAL APPARATUS

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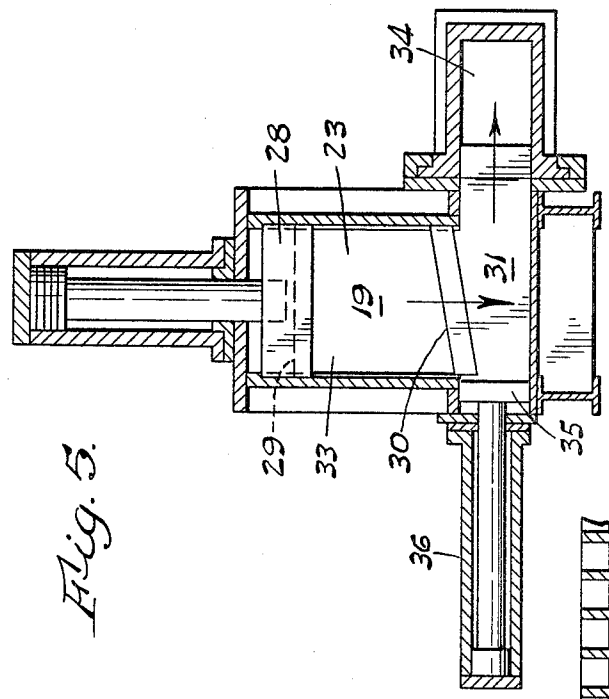


Fig. 5.

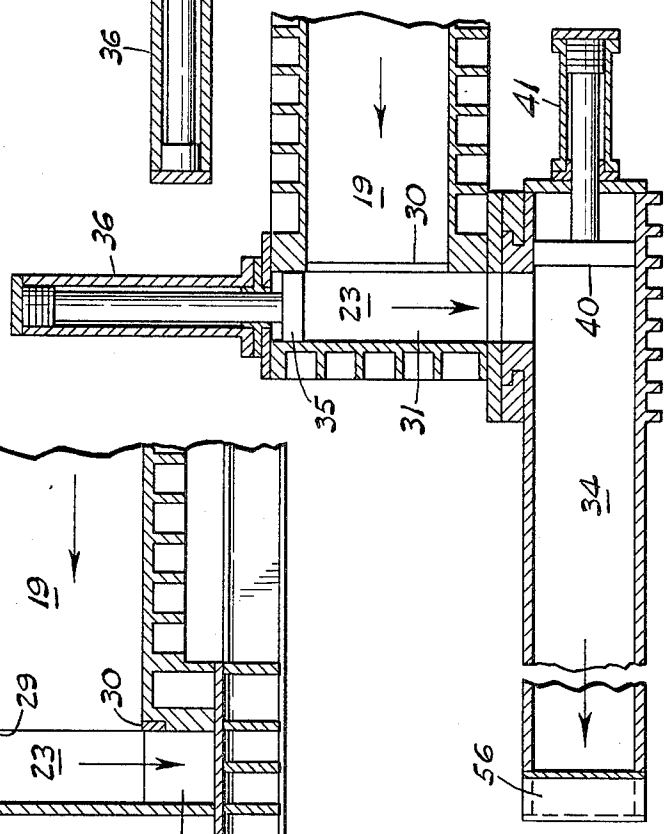


Fig. 6.

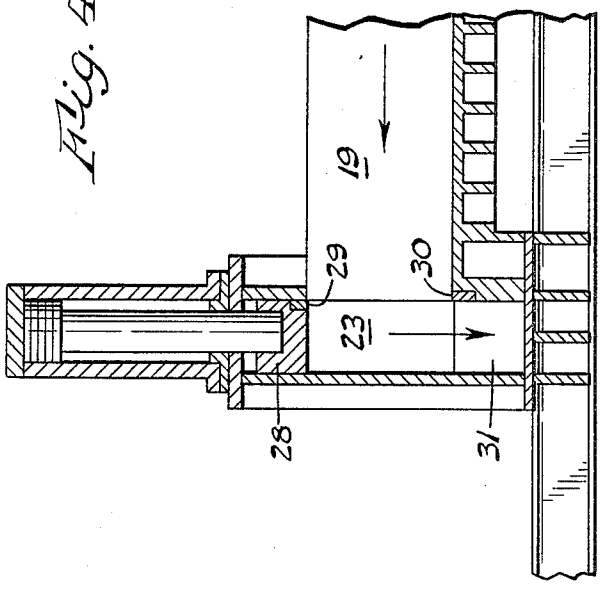


Fig. 4.

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REFUSE DISPOSAL APPARATUS

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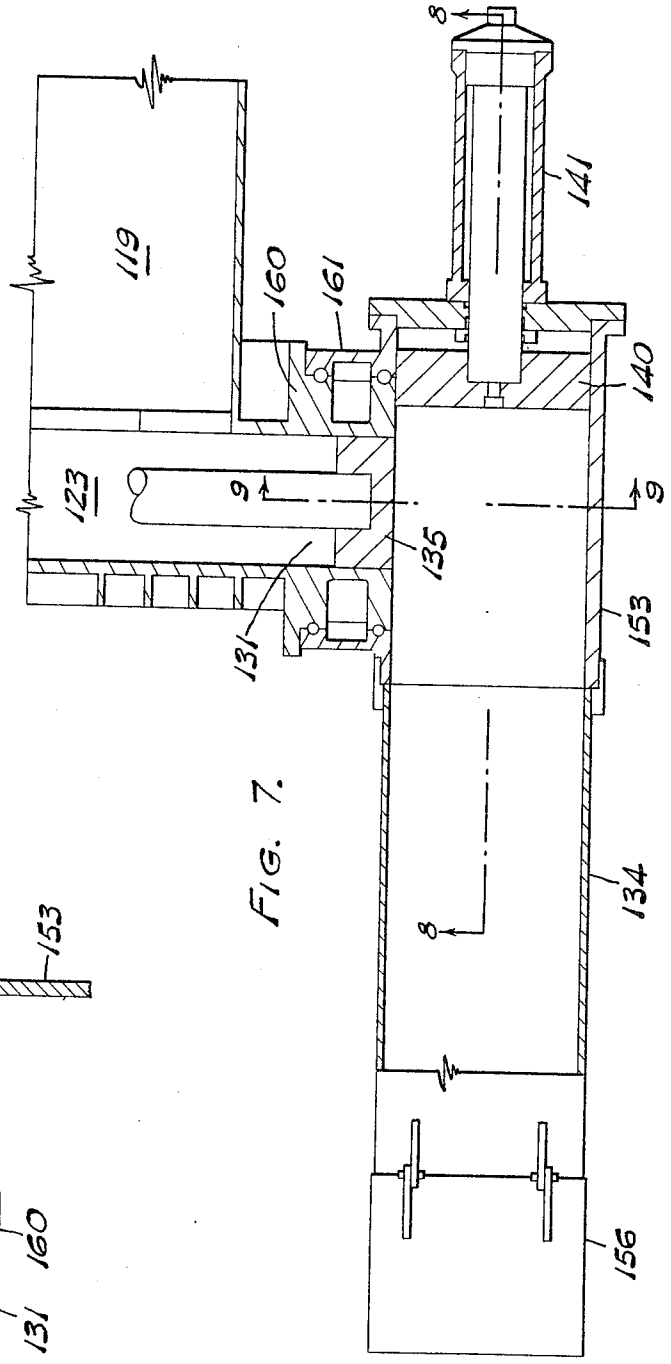


FIG. 7.

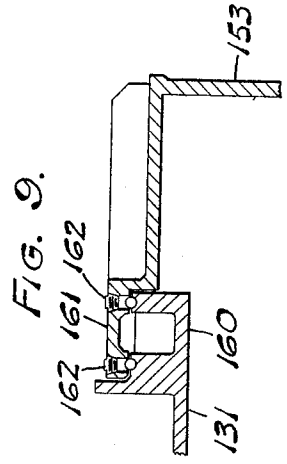


FIG. 9.

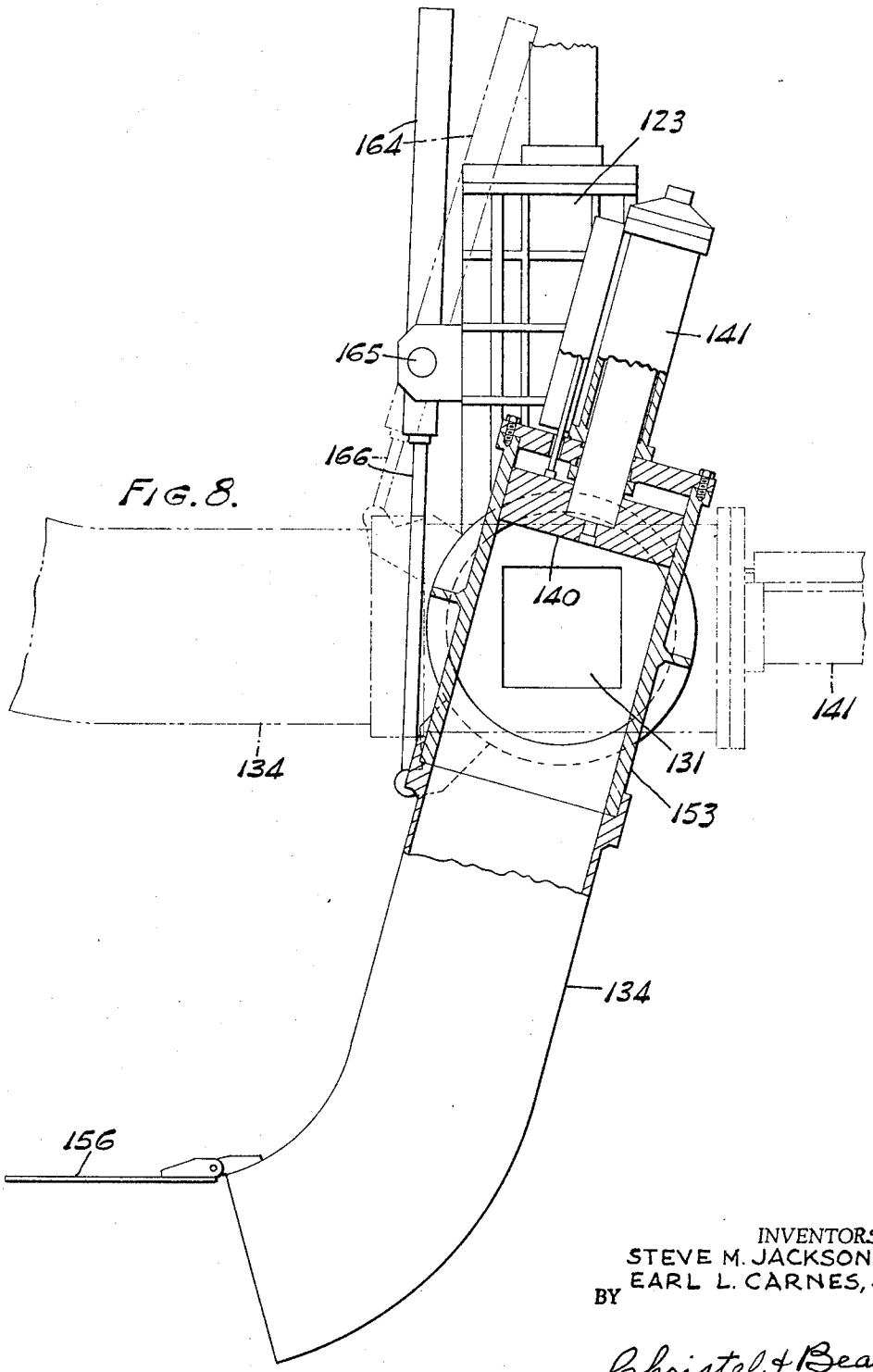
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REFUSE DISPOSAL APPARATUS

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FIG. 8.



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United States Patent Office 3,277,850
Patented Oct. 11, 1966

3,277,850

REFUSE DISPOSAL APPARATUS

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Filed Oct. 4, 1965, Ser. No. 496,246
9 Claims. (Cl. 111—14)

This is a continuation-in-part of our pending application Serial No. 321,781, filed November 6, 1963, and now abandoned.

This invention relates to refuse disposal and more particularly to a mobile apparatus for receiving refuse, compacting the same, and continuously burying the compacted refuse while maintaining the same under continuous compacting pressure.

Vehicular apparatus for receiving and compacting refuse is well known in the prior art. In apparatus of this type the compaction vehicle generally receives the refuse from containers or from other vehicles and compacts the same in the general shape of the vehicle body, and when the vehicle body has received and compacted a full load of refuse it dumps the same as a large cylinder of compacted material at a desired receiving point or station. The present apparatus represents a substantial departure from and improvement over apparatus of the foregoing type and other refuse handling and disposal apparatus of the prior art.

It may be noted here that the type of refuse dealt with in the compaction vehicles of the prior art referred to in the foregoing paragraph is generally garbage or the like which compresses to a moderate degree and because of its nature tends to maintain its compressed condition after the usual compaction plate moves away from the refuse. Accordingly, successive charges of garbage may be inserted by withdrawing the compaction plate from compressed garbage, inserting additional garbage between the compressed garbage and the compaction plate, and repeatedly recompressing the material in the vehicle as additional charges are introduced. The present apparatus is intended particularly for handling trash as distinguished from garbage. This trash is relatively light and usually dry and is susceptible of compaction to a very high degree. That is, it reduces many times in volume under compaction. However, the nature of trash is such that it does not maintain its compacted condition if the compacting pressure is withdrawn. Trash is relatively springy by nature and thus tends to re-expand substantially if the compacting force is withdrawn.

In the present apparatus successive charges of trash or like material are received from collection vehicles or other sources and are then automatically or semi-automatically compacted by means of apparatus generally resembling baling press apparatus.

It is an important feature of the apparatus of the present invention that the trash from its initial compaction is maintained under continuous compacting pressure throughout the operation of the present apparatus and until the trash is ultimately disposed of in tightly compacted form as will presently appear. The apparatus of the present invention is constructed and arranged to move along the ground at the site where the refuse is to be deposited and includes trenching means adjacent to its forward end which forms a continuous trench along the ground in which compacted trash from the apparatus is continuously deposited as the apparatus moves forward.

The apparatus is further so arranged that the earth removed by the trenching apparatus is conveyed within or upon the apparatus to a more rearward portion thereof where it is continuously deposited in the trench directly upon the compacted material which is being deposited in the bottom of the trench. The arrangement is such that

the earth is deposited upon the compacted refuse virtually as the same is being deposited in the bottom of the trench so that the refuse is substantially immediately covered and is not exposed at any time.

The final disposition of the compacted trash in the operation of the present apparatus is effected in such manner that the earth being re-deposited and the conduit from which the compacted trash issues cooperate to form what may be considered as a final compacting chamber so that compacting force is exerted against the trash continuously throughout the several compacting stages and even after it has been discharged from the apparatus proper and when it has reached its ultimate position in the trench.

Numerous general advantages are attained by employing the refuse disposal method disclosed herein and the apparatus provided for performing such method. The use of the apparatus of the present invention in automatically or semi-automatically performing the entire refuse disposal process from the point where the refuse is received by the apparatus to the point where the refuse has been thoroughly compacted and buried in the ground, is performed substantially without manual labor. One or two operators who control the operation of the apparatus are all that is required.

Furthermore, the land employed in disposing of the trash is used efficiently because of the high degree of compaction thereof and the trenching, refuse depositing, and the earth refilling operation of the apparatus is such that the land is left virtually unscathed and may substantially immediately be employed for various other purposes. Also, by adjusting the depth of trenching and the operation of the refuse depositing portion of the apparatus, several layers of compacted refuse may be buried throughout a given tract of land by repeating the trenching and burying operation at less depth than a preceding trenching and burying operation.

The refuse disposal procedure which results from employment of the apparatus of the present invention is more sanitary and is safer from hygienic standpoints by reason of the fact that the refuse is handled entirely mechanically and without the necessity for operatives being in close contact with or adjacent to the trash or other refuse from the point where it is deposited in the apparatus from a collecting vehicle or the like to the end of the operation when the trash is deposited in the trench and the trench is refilled thereover. Depositing earth fill over the compacted refuse which is discharged into the bottom of the trench is accomplished in such manner that the earth fill is deposited over the refuse virtually as the refuse is deposited in the bottom of the trench so that exposure of the refuse to the atmosphere, to vermin and rodents, and otherwise, is kept to a minimum and is substantially non-existent, as will appear.

Many other advantages which are inherent in the construction and operation of the apparatus of the present invention and the related method of trash disposal will become apparent to those skilled in the present art from a consideration of the representative form of the apparatus which is illustrated in the drawings and described in detail in the following specification.

However, it is to be understood that this representative embodiment is by way of example only and that numerous mechanical, hydraulic and electrical modifications may be made in the construction and operation of the representative apparatus without departing from the principles and teachings of the invention, the scope of which is not limited otherwise than as defined in the appended claims. The initiation and control of the various operating components, such as the filling hopper, the several compacting rams, and the like, may be under the manual control of an operator or may occur in automatic or

semi-automatic sequence, within the purview of the invention and by mere application of the skill of those versed in the mechanical arts.

In the drawings:

FIG. 1 is a fragmentary perspective view taken from the left front corner of one form of the apparatus of the present invention;

FIG. 2 is a general perspective view of the apparatus of FIG. 1 taken from the right front corner;

FIG. 3 is a somewhat schematic top plan view of the apparatus;

FIG. 4 is a fragmentary cross sectional view taken approximately on the line 4—4 of FIG. 3;

FIG. 5 is a fragmentary cross sectional view taken approximately on the line 5—5 of FIG. 3;

FIG. 6 is a fragmentary cross sectional view taken on generally horizontal planes principally through a transverse final compacting chamber and a delivery chute member;

FIG. 7 is a view similar to FIG. 6 but showing a modified final compacting and trash disposing structure;

FIG. 8 is a cross sectional view taken as indicated by the line 8—8 of FIG. 7 with the final trash conduit in a lowered position; and

FIG. 9 is a fragmentary cross sectional view taken as indicated by the line 9—9 of FIG. 7.

Like characters of reference denote like parts throughout the several figures of the drawings and reference will first be had to the general perspective views, FIGS. 1 and 2, in which the numeral **10** designates generally an automotive vehicle having front ground-engaging drive wheels **11** and **12** and rear ground-engaging drive wheels **13** and **14**. A power plant designated generally by the numeral **15** is located at the rear of the vehicle and provides power for driving the four ground wheels **11** through **14** and in the present instance a second power plant **16** is provided for operating various other instrumentalities of the vehicle by means of hydraulic pumps driven by power plant **16**, as will appear later herein.

Referring particularly to FIGS. 1 and 3, the numeral **18** designates a pivoted hopper for receiving refuse. Hopper **18** is shown in FIG. 1 in a position adjacent to the ground where a refuse collecting vehicle may dump refuse in the nature of trash thereinto or wherein the hopper may otherwise receive trash or similar waste material. The hopper **18** pivots upwardly as by hydraulic power means to discharge its contents into a receiving area or charging box **19** which is open at the top and at the upper portion of the left-hand side of the apparatus.

After refuse has thus been deposited in the charging box **19** a cover member **20** shown in raised position in FIGS. 1 and 2 is pivoted downwardly as by the hydraulic cylinders designated **21** in FIG. 2 to close and complete the charging box **19**. If desired the outer end of hopper **18** may pivot upwardly to form a retaining wall at the outer end of the hopper before the hopper proper pivots upwardly to empty into charging box **19**.

With the charging box **19** thus closed a generally square piston moves to the right, as viewed in FIG. 1, from a hydraulic cylinder mechanism **22** to compact the refuse in the charging box **19** and move the same toward and into a generally rectangular chamber **23** which is disposed rearwardly of charging box **19** and in effect comprises an extension of the rear end of charging box **19**. The degree of movement of this piston lengthwise through the charging box **19** is variable and achieves a desired degree of compaction of the portion of the refuse which is moved into chamber **23**.

At this point in the cycle of disposal operation the portion of the refuse which has been moved into chamber **23** is sheared from the portion of refuse remaining in charging box **19**. Referring particularly to FIGS. 4 and 5, a ram **28** moves downwardly through chamber **23** and a shear knife **29** carried thereby coacts with a stationary shear knife **30** which is located at the bottom of

chamber **23** along the plane which divides chamber **23** from charging box **19**.

Thus the refuse which has been moved into chamber **23** is sheared from the remaining charge in charging box **19** and is compacted into a lower chamber **31**. It will be noted that the lower stationary shear knife **30** is inclined as shown in FIG. 5 and accordingly the lower surface of charging box **19**, that is the bottom wall thereof, is similarly inclined and the piston which moves through charging box **19**, such piston being designated **33** in FIG. 5, is likewise inclined across its bottom edge.

Referring now more particularly to FIGS. 4, 5 and 6, it will be noted from FIG. 4 that the chambers **23** and **31** in fact comprise a single continuous rectangular space. It will further be noted from FIG. 6 that the end of chamber **31** opens freely into a conduit **34**. Thus at the beginning of a period of operation when the system is empty of refuse there will be a limited degree of compaction effected by movement of ram **28** downwardly through chamber **23** due to the open end of chamber **31**.

However, as operation continues the downward movement of ram **28** against refuse chamber **23** will campact the same into chamber **31** against the resistance of previously compacted refuse in conduit **34**. After ram **28** reaches its lower limit of movement it remains in lowered position to form a top wall for chamber **31** during a final compacting and refuse transferring step which will now be described.

A piston **35** operated by a hydraulic cylinder **36** moves horizontally through chamber **31** in a transverse direction to move refuse therein into conduit **34** as clearly shown in FIGS. 5 and 6. Here again, at the beginning of a period of operation when conduit **34** is empty the compaction effected by ram **35** will be limited but as conduit **34** is filled with compacted trash such trash will in effect form a wall across conduit **34** whereby only a portion of the interior of conduit **34** immediately adjacent to chamber **31** will be open to receive further trash which will be compacted into this space by ram **35**.

The confined character of the space in the leading end of conduit **34** against which ram **35** acts is due in large part to the confinement at the discharge end of conduit **34** wherein the compacted trash is ejected into a confined space defined by the sides and bottom of the trench, compacted trash in the trench, and earth which has been refilled over the discharge end of conduit **34**.

After ram **35** has moved horizontally (downwardly as viewed in FIG. 6) to a position where it closes the opening made in the wall of conduit **34** by chamber **31**, a further ram **40** operated by hydraulic cylinder **41** operates to push the compacted refuse just received from chamber **31** along conduit **34** a distance slightly greater than the width of chamber **31** as viewed in FIG. 6. Successive charges of compacted refuse are thus moved along conduit **34** in what amounts to a continuous extrusion which emerges from conduit **34** at the left-hand end thereof as viewed in FIG. 6. Here again it may be emphasized that the action of ram **40** in conduit **34** represents a further and continued compaction of the trash due to the confined nature of the outlet end of conduit **34** as described in the preceding paragraph.

The further disposition of the compacted refuse will presently be described more fully. Reference will now be had to FIG. 2 in which the numeral **45** designates a trench digging wheel which, apart from its location and its general environment and cooperation with respect to the other elements of the present apparatus, is conventional in construction and operation, including the usual means for raising and lowering the same.

It will be noted that the trenching wheel **45** is disposed toward the forward end of the apparatus but behind the front wheels **11** and **12** thereof. Thus, the front wheels **11** and **12** will operate on solid ground ahead of the trenching wheel and, as will appear later herein, the

rear wheels 13 and 14 traverse the ground after the trench has again been filled with earth.

In FIG. 2 the numeral 46 designates a link belt drive from a hydraulic motor 47 to a transmission casing 48 which includes an output shaft and drive pinion (not shown) which engages an internal gear within trenching wheel 45 to rotate the same. Trenching wheel 45 is mounted for rotation about a frame 50, the trenching wheel 45 having internal rim portions which rotate on antifriction rollers 49.

The earth removed from the trench by the usual peripheral diggers of the trenching wheel 45 discharges downwardly from these diggers adjacent to the top center of their rotative movement in the usual manner and falls to a conveyor 51 which conveys the earth transversely and deposits the same on a longitudinally extending conveyor 52 which carries the earth to a more rearward point along the longitudinal extent of the apparatus, all as shown in FIG. 2.

Referring now particularly to FIGS. 2 and 6, the conduit 34 includes a receiving portion 53 which is pivoted to the general fixed baling or compacting structure of the apparatus for selective rotary movement on a horizontal transverse axis extending substantially centrally through the lower baling chamber 31 of the apparatus. In FIG. 6 the numeral 54 designates a mounting ring fixed to the rigid structure of the apparatus and receiving portion 53 has a flange formation 55 rotatably associated with ring 54. Thus, the conduit 34 may be pivotally lowered into the trench formed by trenching wheel 45 until its bottom edge is substantially in engagement with the bottom of the trench.

Since the discharge end of conduit 34 is cut off at approximately a 45° angle, such discharge end will extend substantially vertically when the conduit 34 is in an average lowered position. A cover member 56 which is normally closed by gravity will be pushed open by compacted refuse discharged from the open end of conduit 34 as the ram 40 progressively moves the compacted refuse through conduit 34. Thus, the compacted refuse extruding from the discharge end of conduit 34 is forced against refuse deposited in the trench and the refuse emerges from conduit 34 substantially as a continuous column of compacted material. Cover 56 will overlie this discharging material adjacent to the point of emergency from conduit 34 and earth fill being returned to the trench over cover 56 completes a closed compaction chamber in the trench into which the material issuing from conduit 34 is compacted.

Still referring particularly to FIG. 2, conveyor 52 includes a deflecting block 57 which deflects earth from the rear portion of conveyor 52 laterally to fall into the trench and the proportions are such that this falling earth is deposited over the middle or lower portion of the upper side of the inclined conduit 34 which substantially occupies the width of the trench. Accordingly, the earth slides down the upper surface of conduit 34 and onto the cover member 56 which is moving along the top of the emergent compacted refuse.

Thus the earth fill is practically in place over the refuse before the same would otherwise be exposed rearwardly of cover 56 and the effect is that the refuse is safely covered without any period during which it is exposed to the surrounding atmosphere or to access by rodents, insects or the like. Thus the ultimate in hygiene, sanitation, health safety and cleanliness is provided.

In FIG. 2 the numeral 60 designates a plurality of vertically mounted hydraulic cylinders which reciprocate tamping bars 61. As the apparatus moves along the reciprocating tamping bars follow the deposit of the compacted refuse and the return of the earth fill to the trench from the conveyor 52 and compact the earth.

Reference will now be had to the structure illustrated in FIGS. 7, 8 and 9 which disclose a slightly modified form of the discharge portion of the apparatus. For convenience parts corresponding to similar parts in the embodiment of FIGS. 4, 5 and 6 are designated by reference numerals 100 higher. Thus the charging box is designated 119 in FIG. 7, the chamber to which the material passes from charging box 119 is designated 123, and the end portion of chamber 123 which is adjacent to the discharge conduit is designated 131. The ram which transfers and compacts material into the discharge conduit is designated 135, the head end of the discharge conduit is designated 153 and the discharge conduit per se is designated 134. The ram which operates lengthwise of the portion 153 of discharge conduit 134 is designated 140 and the hydraulic cylinder which operates the same is designated 141.

Referring to FIGS. 8 and 9, the rigid portion of the compacting structure adjacent to the discharge conduit includes an annular formation 160 and the receiving portion 153 of discharge conduit 134 has a companion annular formation 161 which fits about the formation 160. The annular formations 160 and 161 have pairs of cooperating ball races and antifriction balls may be introduced thereinto through openings which are normally closed by threaded plugs 162 as shown in FIG. 9.

Referring to FIG. 8, it will be noted that the discharge end of conduit 134 is curved in this embodiment to facilitate movement of compacted trash to discharge the same generally horizontal to the trench. The measured member at the end of discharge conduit 134 is designated 156. As shown in FIG. 8 a hydraulic cylinder 164 is pivoted to the fixed structure of the machine as at 165 and has a piston rod 166 which is pivoted at its outer end to discharge conduit 134 for moving the same from the horizontal inoperative position shown in dot and dash lines in FIG. 7 to any desired lowered position in the trench, as shown, for instance, in full lines in FIG. 7.

It will be noted that the chamber 131 which emerges into the receiving portion 153 of discharge conduit 134 is smaller than the receiving portion 153 so that material from chamber 131 may move freely into receiving portion 153 in various angular positions of the discharge conduit 134.

In operation of the controls which determine forward movement of the vehicle, care is taken to limit such forward movement to a degree which will maintain compacting pressure against the trash in the discharge conduit and in the trench adjacent to the discharge conduit. Hydraulic pressure responsive means may be connected with hydraulic cylinders 41 and 141, responsive to predetermined minimum and maximum pressures therein. By such means, when the pressure in cylinder 41 or 141 is below a predetermined degree forward movement of the vehicle will be prevented, thus assuring a predetermined minimum compacting pressure in discharge conduit 34 or 134, as the case may be, before the vehicle moves along the ground. Further, when pressure in hydraulic cylinder 41 or 141 exceeds a predetermined degree, the pressure responsive means causes forward inching movement of the vehicle to lower such pressure to within the desired range.

What is claimed is:

1. Refuse disposal means comprising a wheeled vehicle including trenching means at one side of said vehicle adapted to form a continuous trench as the vehicle moves along the ground, a horizontally extending refuse receiving chamber extending longitudinally of said vehicle and accessible at the opposite side of said vehicle for the introduction of refuse thereinto, ram means movable longitudinally in said chamber to compact refuse therein toward an end of said chamber, a second chamber disposed below said end of said chamber, ram means movable vertically in a plane dividing said end of said chamber from the chamber proper to shear a compacted portion of refuse in said chamber end from the remainder and compact the same into said second chamber and ram means movable in said second chamber transversely of said vehicle for

acting against successive charges of compacted refuse in said second chamber to further compact the same and discharge the compacted refuse in longitudinal alignment with said trench.

2. Refuse disposal means comprising a wheeled vehicle including trenching means at one side of said vehicle adapted to form a continuous trench as the vehicle moves along the ground, a horizontally extending refuse receiving chamber extending longitudinally of said vehicle and accessible at the opposite side of said vehicle for the introduction of refuse thereinto, ram means movable longitudinally in said chamber to compact refuse therein toward an end of said chamber, a second chamber disposed below said end of said chamber, ram means movable vertically in a plane dividing said end of said chamber from the chamber proper to shear a compacted portion of refuse in said chamber end from the remainder and compact the same into said second chamber, and ram means movable in said second chamber transversely of said vehicle for acting against successive charges of compacted refuse in said second chamber to further compact the same and discharge the compacted refuse in longitudinal alignment with said trench, each of said ram means maintaining its advanced position during the operation of the succeeding ram means to form a wall of the succeeding chamber during the advance stroke of said succeeding ram means whereby said material is maintained under continuous compression throughout the compacting operation.

3. Refuse disposal apparatus comprising a vehicle and power means for moving the same along the ground, trenching means at the forward end of said vehicle adapted to form a trench in the direction of movement of the vehicle with said vehicle straddling the trench, said vehicle having refuse receiving means, compacting means for compressing successive charges of refuse, and an inclined discharge chute extending downwardly from the compacting means to the bottom portion of said trench, for discharging refuse into said trench, said vehicle including transfer means for continuously receiving earth from said trencher and depositing the same in said trench over the lower portion of said chute whereby compacted material issues from said chute into a confined space defined by the bottom and sides of said trench and said deposited earth.

4. Refuse disposal apparatus comprising a vehicle and power means for moving the same along the ground, trenching means at the forward end of said vehicle adapted to form a trench in the direction of movement of the vehicle with said vehicle straddling the trench, said vehicle having refuse receiving means, compacting means for compressing successive charges of refuse, and discharge chute means for receiving refuse from said compacting means, said discharge chute means being pivoted adjacent to said compacting means for movement from a generally horizontal idle position to a depending position for delivering successive compressed charges of compacted refuse into the bottom of said trench, said vehicle including transfer means for continuously receiving earth from said trencher and depositing the same in said trench over the discharge end of said chute and whereby compacted material issues from said chute into a confined space defined by the bottom and sides of said trench and said deposited earth.

5. Refuse disposal apparatus comprising a vehicle and power means for moving the same along the ground, trenching means at the forward end of said vehicle adapted to form a trench in the direction of movement of the vehicle with said vehicle straddling the trench, said vehicle having refuse receiving means, compacting means for compressing successive charges of refuse, and discharge chute means for receiving refuse from said compacting means, said discharge chute means being pivoted adjacent to said compacting means for movement from a generally horizontal idle position to a depending position, a ram member movable in said discharge chute past the receiving portion thereof and toward the discharge end thereof for delivering successive compressed charges of compacted refuse into said trench, said vehicle including transfer means for continuously receiving earth from said trencher and depositing the same in said trench over the discharge end of said chute whereby said ram member compresses said refuse toward and into a closed space defined at one end by previously discharged refuse, at the sides and bottom by said trench, and at the top by earth deposited over the discharge end of the chute.

6. Refuse disposal means comprising a wheeled vehicle including trenching means at one side of said vehicle adapted to form a continuous trench as the vehicle moves along the ground, a horizontally extending refuse receiving chamber extending longitudinally of said vehicle and accessible at the opposite side of said vehicle for the introduction of refuse thereinto, ram means movable longitudinally in said chamber to compact refuse therein toward an end of said chamber, a second chamber disposed below said end of said chamber, ram means movable vertically in a plane dividing said end of said chamber from the chamber proper to shear a compacted portion of refuse in said chamber end from the remainder and compact the same into said second chamber, ram means movable in said second chamber transversely of said vehicle for acting against successive charges of compacted refuse in said second chamber to further compact the same, an inclined discharge chute for receiving material from said second chamber and extending downwardly to the bottom of said trench, and a ram member movable in said discharge chute past the receiving portion thereof and toward the discharge end for delivering compacted material into said trench in a compressed state.

7. Refuse disposal means comprising a wheeled vehicle including trenching means at one side of said vehicle adapted to form a continuous trench as the vehicle moves along the ground, a horizontally extending refuse receiving chamber extending longitudinally of said vehicle and accessible at the opposite side of said vehicle for the introduction of refuse thereinto, ram means movable longitudinally in said chamber to compact refuse therein toward an end of said chamber, a second chamber disposed below said end of said chamber, ram means movable vertically in a plane dividing said end of said chamber from the chamber proper to shear a compacted portion of refuse in said chamber end from the remainder and compact the same into said second chamber, ram means movable in said second chamber transversely of said vehicle for acting against successive charges of compacted refuse in said second chamber to further compact the same, an inclined discharge chute for receiving material from said second chamber and extending downwardly to the bottom of said trench, and a ram member movable in said discharge chute past the receiving portion thereof and toward the discharge end for delivering compacted material into said trench in a compressed state, each of said ram means maintaining its advanced position during the operation of the succeeding ram means to form a wall of the succeeding chamber during the advance stroke of said succeeding ram means whereby said material is maintained under continuous compression throughout the compacting operation.

8. Refuse disposal means comprising a wheeled vehicle including trenching means at one side of said vehicle adapted to form a continuous trench as the vehicle moves along the ground, a horizontally extending refuse receiving chamber extending longitudinally of said vehicle and accessible at the opposite side of said vehicle for the introduction of refuse thereinto, ram means movable longitudinally in said chamber to compact refuse therein toward an end of said chamber, a second chamber disposed below said end of said chamber, ram means movable vertically in a plane dividing said end of said

chamber from the chamber proper to shear a compacted portion of refuse in said chamber end from the remainder and compact the same into said second chamber, ram means movable in said second chamber transversely of said vehicle for acting against successive charges of compacted refuse in said second chamber to further compact the same, an inclined discharge chute for receiving material from said second chamber and extending downwardly to the bottom of said trench, and a ram member movable in said discharge chute past the receiving portion thereof and toward the discharge end for delivering compacted material into said trench in a compressed state, said discharge chute being pivoted adjacent to said second chamber for movement from a generally horizontal idle position to a depending discharge position extending into said trench.

9. Refuse disposal means comprising a wheeled vehicle including trenching means at one side of said vehicle adapted to form a continuous trench as the vehicle moves along the ground, a horizontally extending refuse receiving chamber extending longitudinally of said vehicle and accessible at the opposite side of said vehicle for the introduction of refuse thereinto, ram means movable longitudinally in said chamber to compact refuse therein toward an end of said chamber, a second chamber disposed below said end of said chamber, ram means movable vertically in a plane dividing said end of said chamber from the chamber proper to shear a compacted portion of refuse in said chamber end from the remainder and compact the same into said second chamber, ram means movable in said second chamber transversely of said vehicle for acting against successive charges of compacted refuse in said second chamber to further compact the same, an inclined discharge chute for receiving material from said second chamber and extending downwardly to the bottom of said trench, and a ram member movable in said discharge chute past the receiving portion thereof and toward the discharge end for delivering compacted material into said trench in a compressed state, each of said ram means maintaining its advanced position during the operation of the succeeding ram means to form a wall of the succeeding chamber during the advance stroke of said succeeding ram means whereby said material is maintained under continuous compression throughout the compacting operation, said discharge chute being pivoted adjacent to said second chamber for movement from a generally horizontal idle position to a depending discharge position extending into said trench.

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