June 18, 1963 G. R. DEMPSTER ET AL 3,094,227

COMPACTION BODIES

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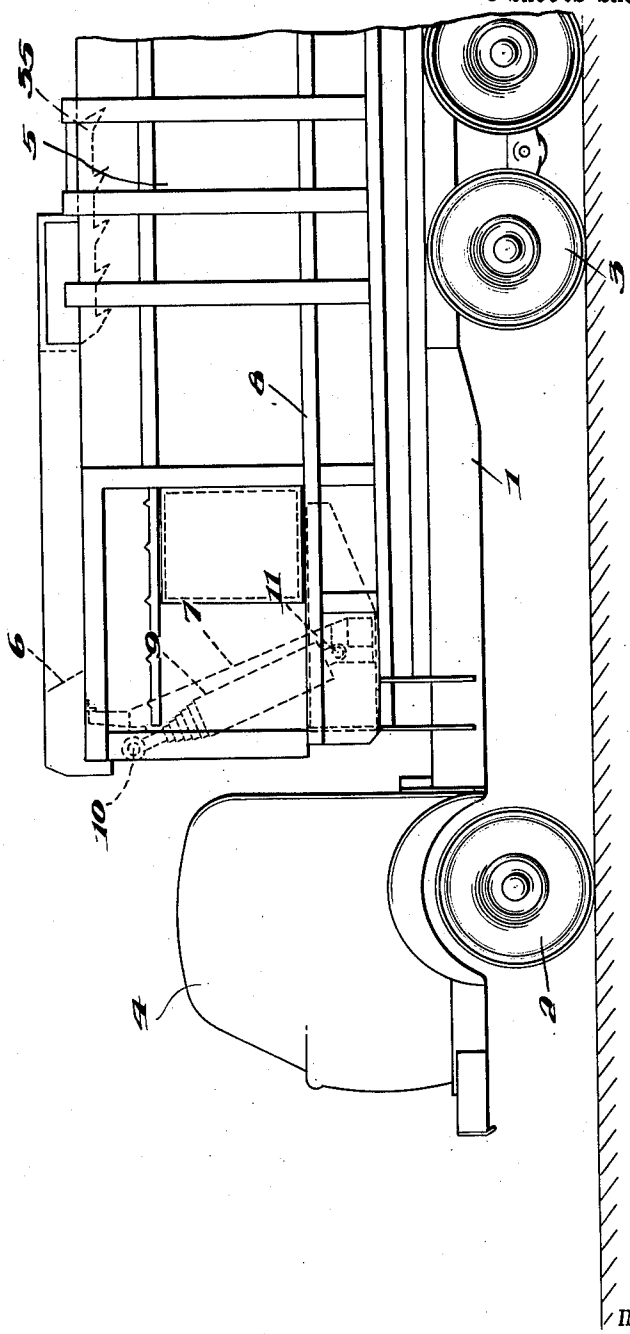



Fig. 1.

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Fig. 2.

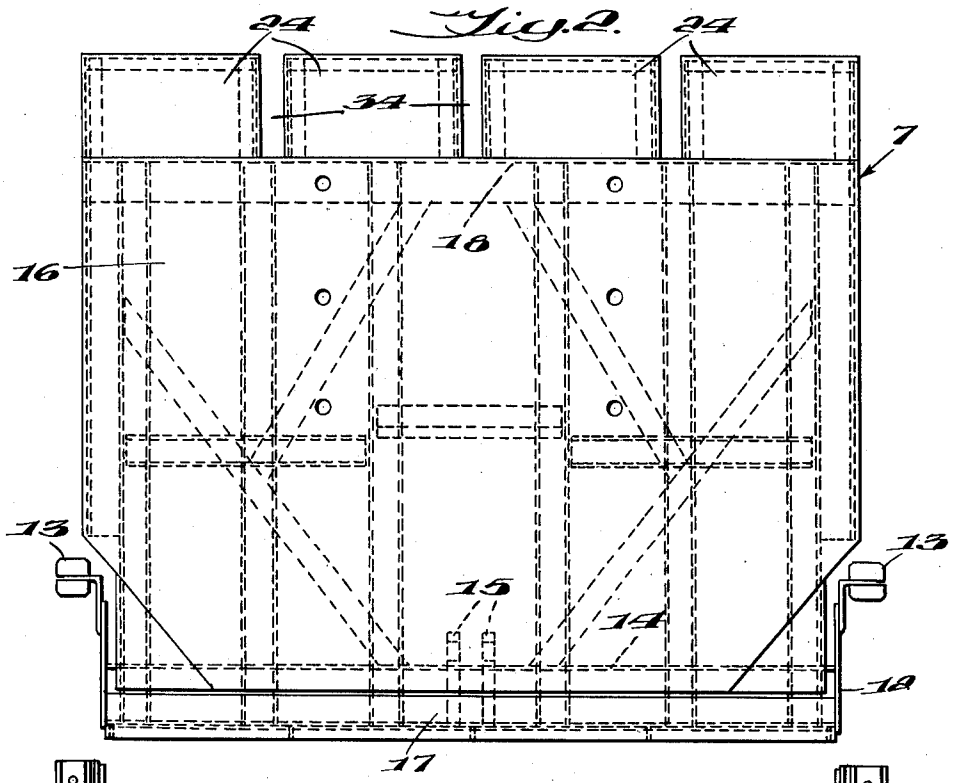
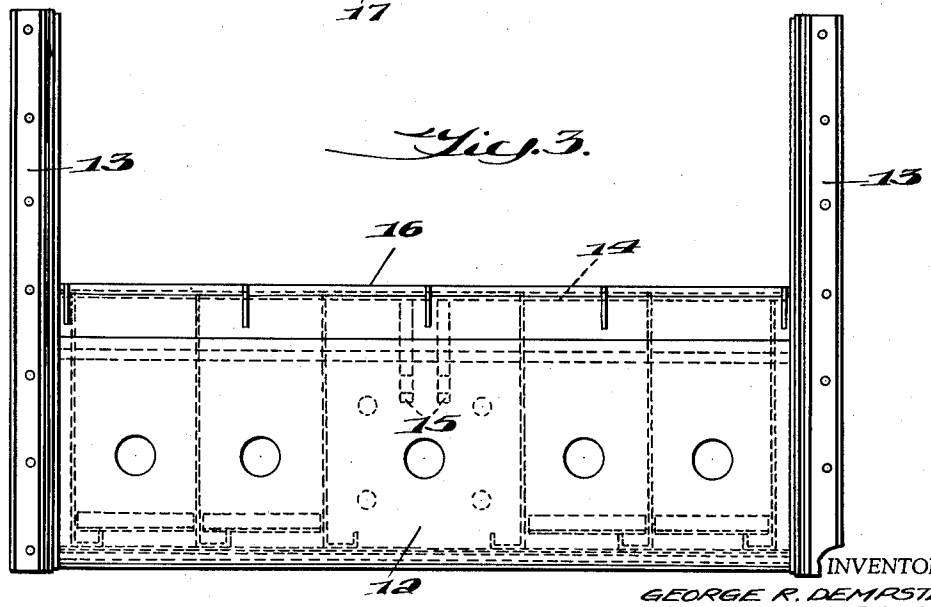



Fig. 3.




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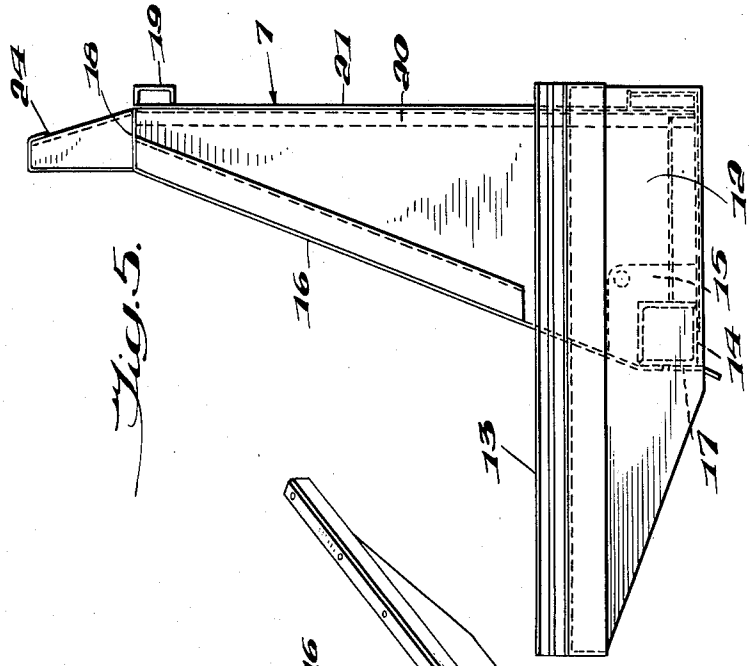


Fig. 5.

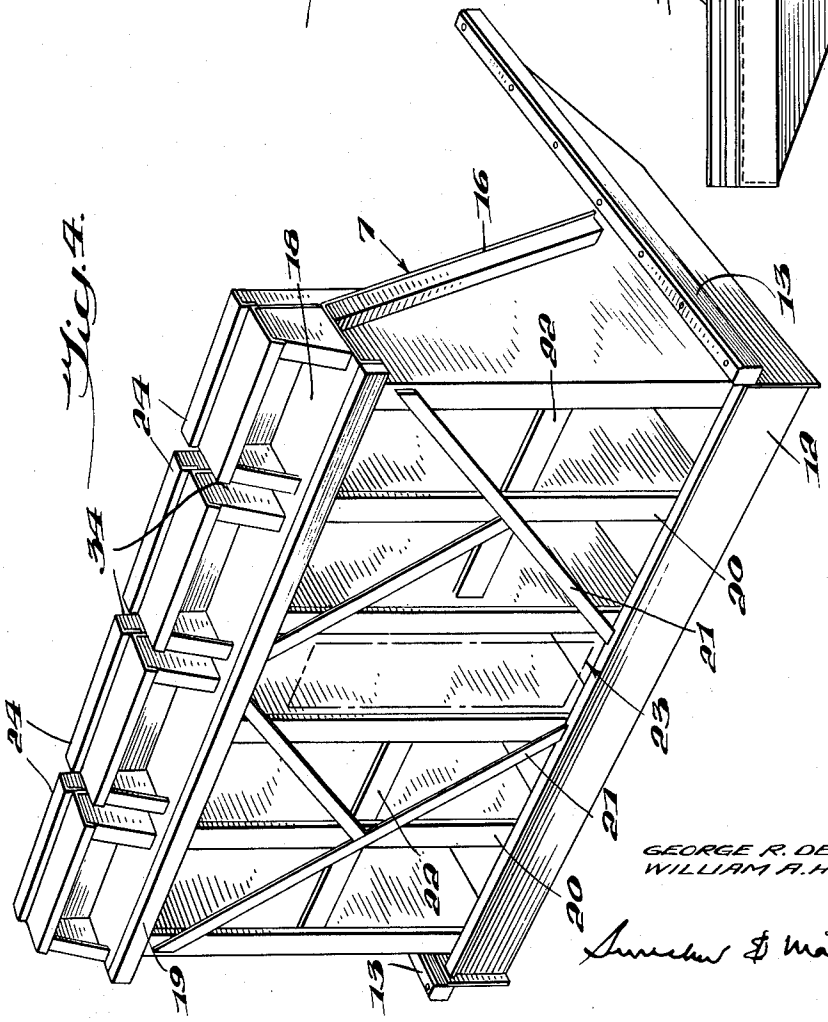


Fig. 4.

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Fig. 6.

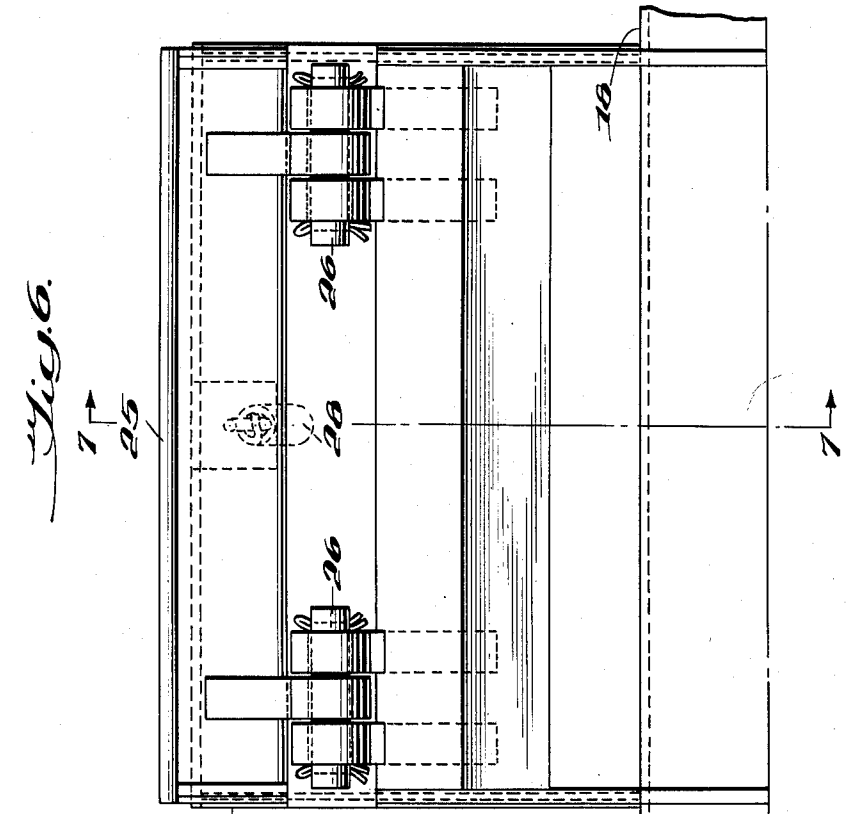
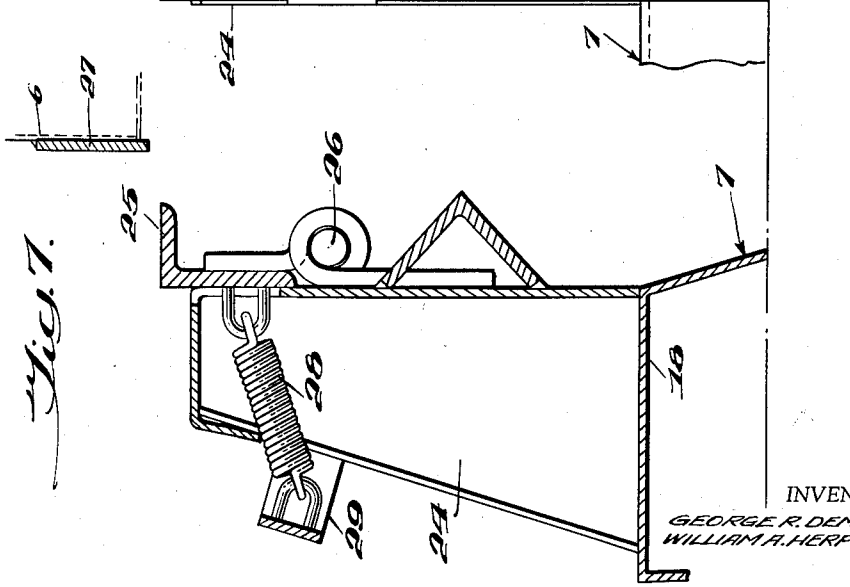



Fig. 7.




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United States Patent Office 3,094,227 Patented June 18, 1963



3,094,227

# COMPACTION BODIES

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2 Claims. (Cl. 214—82)

This application is a continuation-in-part of our prior application for Compaction Bodies, Serial No. 728,970, filed April 16, 1958, now Patent No. 2,951,600, granted September 6, 1960.

This invention relates to improvements in compaction bodies and more particularly to such vehicle bodies as are adapted for use in collecting refuse, such as garbage, trash, etc., and transporting the same to a point of dumping.

In compaction bodies of the type described, it has been the practice heretofore to use a compaction head operatively mounted in the body for reciprocating movement lengthwise relative thereto, for compacting the material collected in the body during the accumulation thereof and for discharging such material at the point of dumping. Usually, the compaction head is operated by a double-acting hydraulic cylinder such, for example, as a telescopic cylinder that will cause the desired reciprocating movement of the compaction head. An example thereof, as used heretofore, is illustrated in Herpich et al. Patent No. 2,800,234, granted July 23, 1957.

With the aforesaid construction as built heretofore, the operating cylinder is connected at one end with the compaction head and at its opposite end with the vehicle body at the top of the body, from which point of mounting it extends downwardly to the point of connection with the head. This disposition of the cylinder does not permit complete cross bracing across the face of the compaction head. Thus, the packer head is materially weakened by reason of the disposition of the cylinder with respect thereto. Moreover, experience has shown that material can wedge between the packer crown and the top of the body, resulting in collapse of the packer assembly, starting at the extreme upper face and progressing downwardly.

One object of this invention is to overcome these objections and to improve the construction of the compaction mechanism in the body.

Another object of the invention is to improve the construction of the packer head and the mounting of the power cylinder with respect to the body, so as to provide an effective operation and a sturdy and rigid compaction head which will not permit of the possibility of collapse in service.

These objects may be accomplished, according to one embodiment of the invention, by providing a compaction head operatively mounted in a vehicle body for reciprocating movements lengthwise relative thereto, to receive refuse at one face of the head when it is in one extreme position and to compact the refuse in the body when the head is moved to an opposite extreme position. A hydraulic cylinder preferably is connected with the head for causing said reciprocating movements thereof. The power cylinder is connected at one end with the head and at the opposite end with a portion of the body.

It is desirable that the power cylinder should not extend in the head throughout a substantial portion of the height thereof. Consequently, the point of connection of the cylinder with the body is lowered so as to be disposed appreciably below the top of the body. Thus, the cylinder does not interfere with the cross bracing of the head and the latter can be constructed so sturdy as to prevent the possibility of collapse in service. Additional strength



is given across the packer crown, due to the continuous cross bracing at such point.

This embodiment of the invention is illustrated in the accompanying drawings, in which:

FIG. 1 is a side elevation of a motor vehicle, showing the compaction body applied thereto;

FIG. 2 is a face view of the packer head removed;

FIG. 3 is a bottom plan view;

FIG. 4 is a perspective view of the packer head;

FIG. 5 is an end elevation thereof;

FIG. 6 is a detail elevation, showing the mounting of a deflection angle thereon; and

FIG. 7 is a cross section therethrough, on the line 7—7 in FIG. 6.

The invention is shown in FIG. 1 as applied to a motor vehicle of the character comprising a vehicle chassis, generally indicated at **1**, with front and rear wheels **2** and **3**. The vehicle preferably is power operated and self-propelled through the usual driving mechanism controlled by an operator in a cab **4**, which may also enclose the engine, according to some forms of vehicles.

Mounted on the chassis **1** is a compaction body, generally indicated at **5**, and which is shown as an elevated enclosed structure with suitable means such, for example, as discharge doors at the rear thereof, for discharging the refuse therefrom. A filling opening is usually provided in the top of the body, which is indicated generally at **6** in FIG. 1, to facilitate dumping of the refuse into the body. Suitable side doors may be used also, if desired.

Operatively mounted in the body **5** is a packer head, generally indicated at **7**, adapted for reciprocating movement lengthwise of the body between the position shown in dotted lines in FIG. 1 and a selected position in the rear portion of the body, according to the quantity of refuse therein. Guide channels **8** are provided on opposite sides of the body **5** open to the interior thereof for guiding the rectilinear movements of the packer head.

A hydraulic cylinder is shown at **9**, preferably of the telescopic type and double-acting, for reciprocating the packer head **7** lengthwise of the body. The upper end portion of the cylinder **9** is pivotally connected at **10** with the body, while the lower end portion thereof is pivotally connected at **11** with the packer head **7**, disposing the cylinder **9** in an oblique position and so disposed relative to the packer head as to cause rectilinear movements thereof in the body.

Referring to FIGS. 2 to 5, the construction of the packer head **7** is illustrated as including a base section **12** provided with shoes, generally indicated at **13**, at opposite ends of the packer head, which shoes ride in the guide channels **8** in the body. An example of the operation of such mechanism and more detailed illustration of the structure thereof is shown in our prior application for Compaction Bodies, now Patent No. 3,049,250, granted August 14, 1962.

The base section **12** includes a transversely extending box girder **14** that extends substantially throughout the length of the head **7**. Connected with this transverse girder **14** are bearing plates **15**, to which the pivot **11** at the lower end of the cylinder **9** is connected.

The face plate **16** extends upward from the box girder **14** and is turned downward along the face thereof, with a depending lower end section **17** forming a continuation of the face plate on the packer head. The face portion, that is indicated at **17** in FIG. 5, and the adjacent portion at the face of the girder **14** provide a vertical face near the bottom of the packer head, which has a tendency to compact the material near the bottom of the body **5** instead of deflecting it upwardly along an inclined face on the packer. In actual loading tests, it has been found that the vertical portion of the packer face near the bottom adds considerably to the efficiency of the packer body.

The lower edge portion of the section **17** forms a lip that rides on the bottom of the body and maintains a close fitting relation thereto.

The upper end of the face plate **16** terminates appreciably below the top of the packer head and is provided with an intermediate cross member **18** that extends all the way across the upper portion of the packer head **7** in continuous fashion, but spaced downwardly an appreciable distance below the top. This upper section may also be braced at the opposite side from the face plate **16** as by welding or otherwise securing a channel member **19** thereon.

As shown in FIG. 4, the side of the packer head opposite the face plate **16** is sturdily formed of upright sections **20** and diagonal bracing **21**, as well as horizontal bracing **22**. Only a relatively small area, generally indicated at **23** in FIG. 4, need be left open for the power cylinder **9**, which open area extends only from the region of the head above the base **12** to a point spaced downwardly from the cross members **18** and **19**, permitting the latter to extend continuously along the head from one end thereof to the other.

The upper edge portion of the packer head is provided by box assemblies, generally indicated at **24**, spaced along the member **18** and may be welded or otherwise secured thereto. The spacing of the box assemblies **24** along the length of the packer head **7**, as shown in FIGS. 2 and 4, leaves open spaces **34** between the respective assemblies sufficiently wide to receive therebetween the teeth of combs, usually provided in the top of the compaction body **5** (see FIG. 1) to retain the load and to keep it from falling back in the body. These teeth **35** are usually welded to the roof of the body and extend downward therein. The spaces **34** between the members **24** afford sufficient clearance for the teeth as the packer head is reciprocated lengthwise of the body.

A deflection angle may be used on the upper edge of the packer head to cause the liberation of material clamped between the head and the body at the edge of the filling opening **6**. An example of the use of such an angle has been set forth in our prior application, Serial No. 728,970, filed April 16, 1958.

As shown in FIGS. 6 and 7, each of the box assemblies **24** is provided with a deflection angle member **25**, pivotally supported at **26** on the packer face of the assembly. The angle **25** is so disposed with respect to the packer head that it will have a shearing relation with a shear bar **27** mounted on an edge of the filling opening **6**, as the packer head **7** is reciprocated in the body.

The deflection angle **25** is mounted on the hinges **26** for freedom of swinging movement with respect to the connected assembly **24** under control of a tension spring **28** that extends from the angle member **25** to a bracket assembly **29** mounted on the opposite wall of the assembly **24**.

As set forth in our patent application, Serial No. 728,970, the main purpose of this hinged deflection angle **25** is to make it practically impossible to wedge the packer head **7** so tightly in the body that it cannot be moved forward relative to the body toward the cab **4**. The double-acting hydraulic cylinder **9**, as presently used, is provided with greater force while it is being extended than during the contraction movement of the cylinder. In the event that the packer were not provided with a hinged



deflection angle, it would be possible to wedge materials so tightly between the top of the packer head in the roof of the body that the packer head could not be moved to its full forward position. However, by the use of the hinged deflection angle **25**, this could not occur because no matter how tightly the materials may be wedged between the top of the angle and the roof of the body when the movement of the packer head forward is started, the angle **25** shifts relative to its pivot and immediately frees the material. This releases the packer head so that it can be moved forward freely by the action of the hydraulic cylinder **9** without any possibility of it being wedged tightly in the body.

This action of the hinged deflection angle is claimed in our aforesaid application, Serial No. 728,970.

While the invention has been illustrated and described in one embodiment, it is recognized that variations and changes may be made therein without departing from the invention as set forth in the claims.

We claim:

1. In a compaction body of the character described, the combination of an elongated body portion adapted to receive refuse therein, said body portion having spaced rows of teeth depending from the top thereof, a packer head of substantial thickness front to rear and having a rear face portion and movably mounted in the body portion for compacting refuse therein, said packer head having a shelf-like structural member mounted atop thereof and spaced below the top of the body portion, box assemblies mounted on said shelf-like structural member and spaced apart in longitudinal alignment, the spaces between said assemblies being alinged with said rows of teeth, said assemblies having upright rear faces in upward extension of said rear face portion of said packer head.

2. A packer head having a rear face portion for use in an elongated body portion to move in said body portion compact refuse therein, said packer head being of a length substantially equal to the width of said body portion and having trapezoidal sides with its upper ends shorter than its lower ends, a structural shelf-like member mounted on said upper ends of the packer sides, inverted U-shaped boxes mounted longitudinally in aligned spaced relation on said shelf-like member, said boxes having rear walls in upward extension of the rear face portion of said packer head, a cross brace extending across the upper end of the front of said packer head and adjacent the front edge of said shelf-like member, the spaces between said boxes providing clearance for teeth suspended from the top of said body portion.

**References Cited** in the file of this patent

UNITED STATES PATENTS

| | | |
|---|---|---|
| 2,627,987 | Northeim | Feb. 10, 1953 |
| 2,630,928 | McCombs | Mar. 10, 1953 |
| 2,693,890 | Bridge | Nov. 9, 1954 |
| 2,741,375 | Backes | Apr. 10, 1956 |
| 2,800,234 | Herpich et al. | July 23, 1957 |
| 2,832,488 | Kamin | Apr. 29, 1958 |
| 2,876,918 | Kling | Mar. 10, 1959 |
| 2,889,944 | Clark et al. | June 9, 1959 |
| 2,912,128 | Kamin | Nov. 10, 1959 |
| 2,951,600 | Dempster et al. | Sept. 6, 1960 |