

[54] BASE ASSEMBLY FOR A COMPACTOR

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[58] Field of Search 100/229 A, 214; 248/19; 53/124 B; 141/73, 80

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[57]

ABSTRACT

In a compactor in which a ram is mounted for reciprocating movement to compact material deposited in the compactor, supporting structure is provided for resisting forces placed upon the base of the compactor during compacting strokes of the ram. The supporting structure includes a flat base member having a supporting structural channel attached thereto by welding and a sheet member which extends over the channel and is attached to the base member on opposite sides of the channel. This construction places the sheet member under tension in resisting the compacting forces exerted by the ram and prevents buckling of the base member. Preferably the sheet member and the channel are assembled first and this unit is then attached to the base member by, for example, spot welding the upper flange of the channel and edges of the sheet member to the base member. To permit the upper flange of the channel to be attached to the base member in this manner, the sheet member covering the channel is provided with openings through which a welding electrode may be inserted to attach the channel to the base member.

11 Claims, 6 Drawing Figures

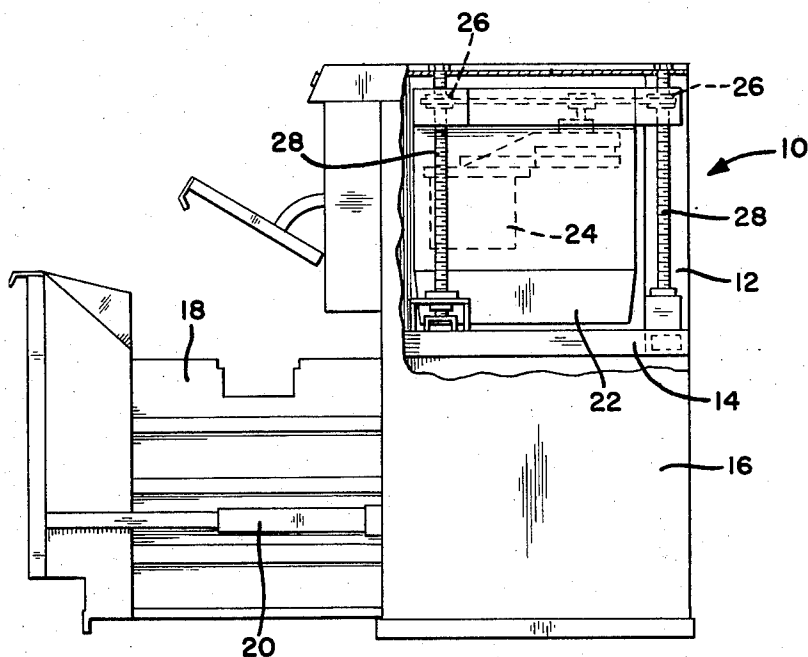


FIG-1

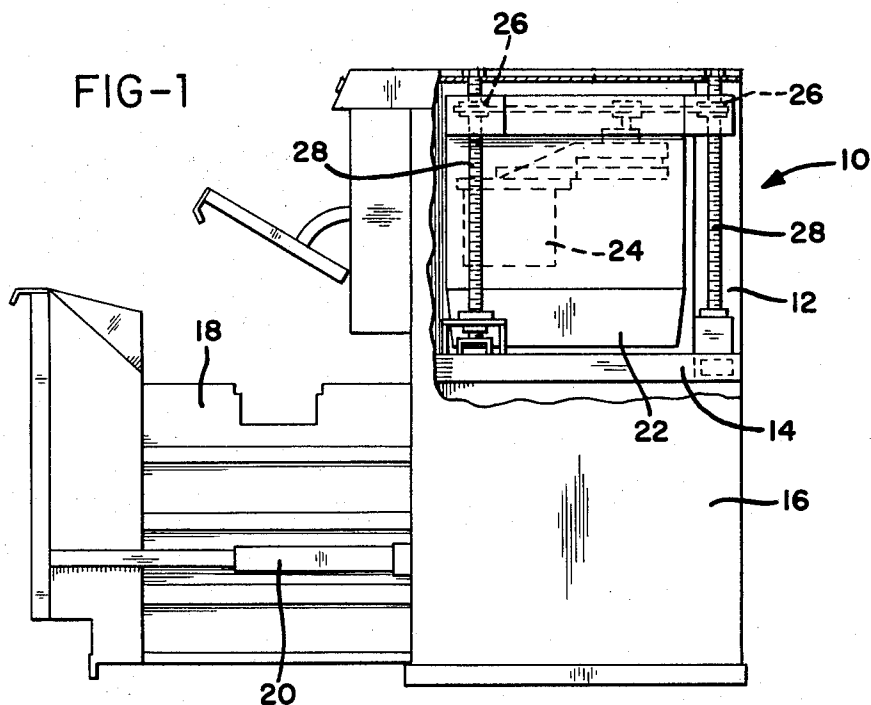


FIG-3

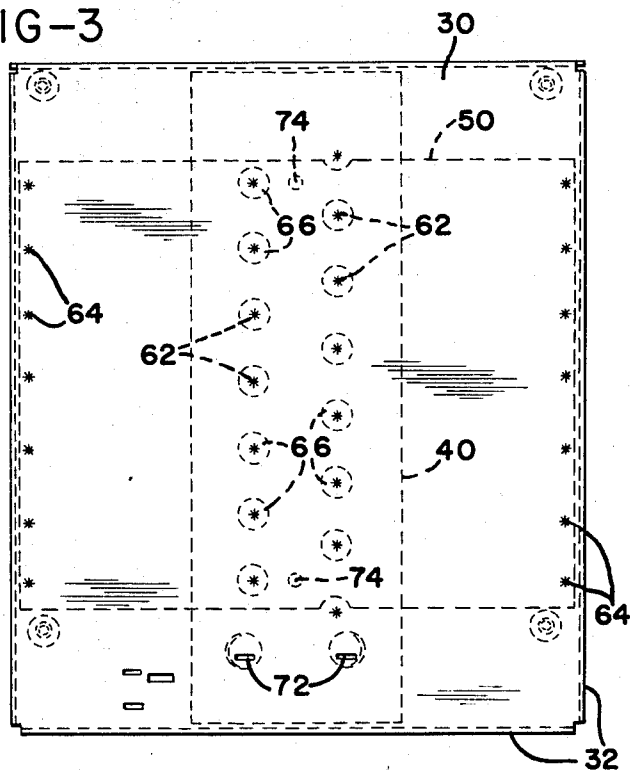


FIG-2

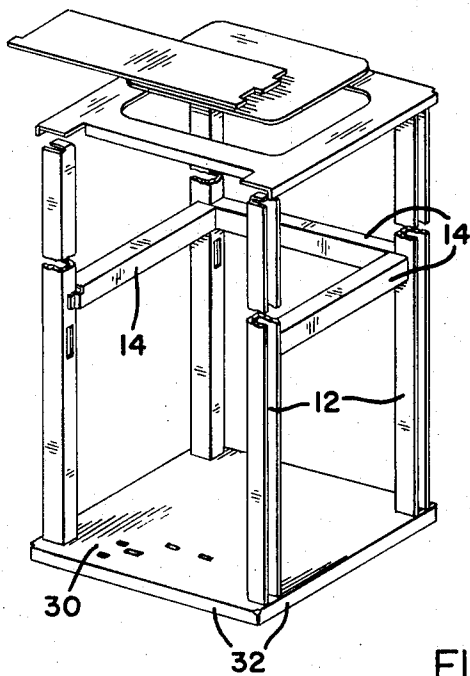
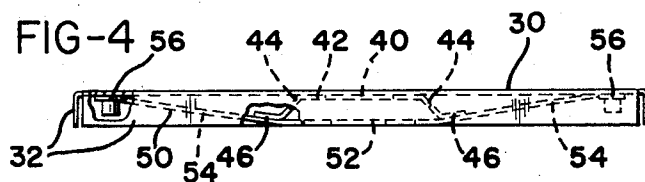
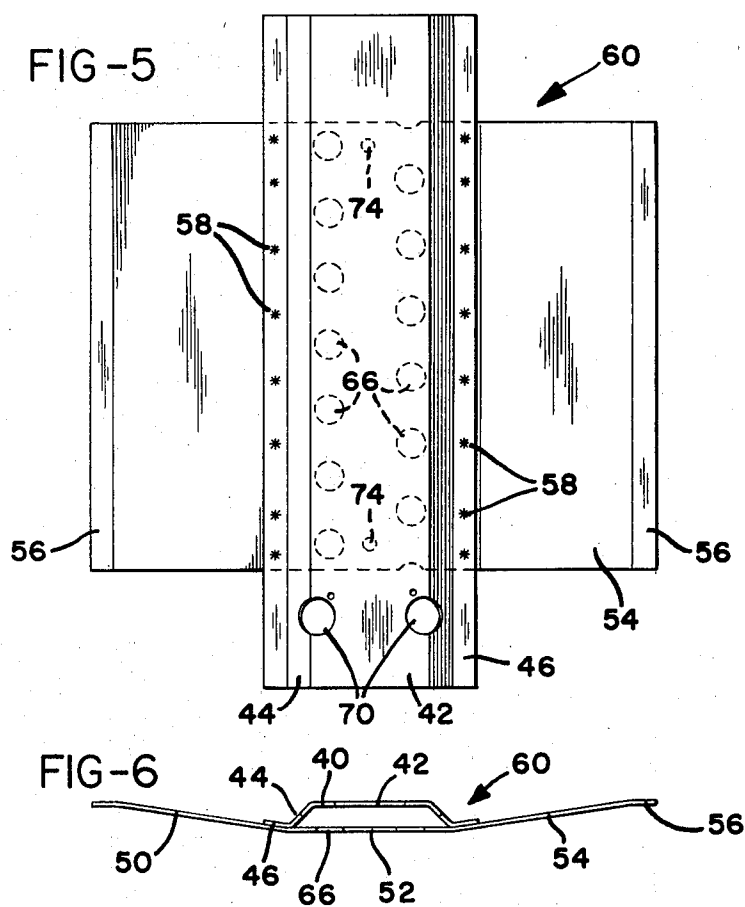


FIG-4





BASE ASSEMBLY FOR A COMPACTOR

BACKGROUND OF THE INVENTION

During normal operation the compaction forces exerted by the compacting ram on the material being treated are necessarily relatively high. This in turn imposes stresses on the compactor structure itself, particularly the compactor base structure since the greater part of the ram force is generally dissipated directly against the base. Generally the compactor base is formed as a plate-like member with the plane thereof disposed substantially perpendicular to the direction of movement of the compacting ram. In this arrangement substantial base deflection may be encountered during compaction. If this amount of deflection is great enough permanent deformation of the base can result.

While one possible solution to the base deformation problem might appear to be the utilization of a relatively heavy cast base member, perhaps with integrally formed reinforcing ribs, such structure would add appreciably to the cost and weight of the compactor. Although a structural member extending across the bottom of the base member would provide base rigidity along one base direction, i.e. front to back or side to side, such support is required in both directions if the base is to resist deformation from any possible arrangement of the material being treated.

SUMMARY OF THE INVENTION

In accordance with the present invention a compactor is provided with supporting structure in which the forces exerted by the ram are resisted by a combination of tension and compression members acting in cooperation with the base of the compactor. These members include a sheet member and a structural channel interposed between the sheet member and the base of the compactor.

As a result, what may be termed a trussed configuration is provided, with the webs of the channel not only providing resistance to deflection, but also serving to space the sheet member away from the surface of the base member whereby the sheet member is placed under tension to resist compaction forces.

Specifically, a channel is provided having an upper flange portion, a pair of web portions extending downwardly and outwardly from the upper flange portion and a pair of lower flange portions extending upwardly and outwardly from lower edges of the web portions. The sheet-like tension member includes a central portion, a pair of upwardly and outwardly extending side portions extending from the central portion and a pair of outwardly extending edge portions projecting from opposite longitudinal edges of the side portions.

The lower flange portions of the channel are preferably spot welded to the side portions of the sheet-like tension member and this unit is then attached to the base member by spot welding the upper flange portion of the channel and the edge portions of the tension member to the bottom surface of the base member.

To provide access for so attaching the upper flange portion of the channel to the bottom surface of the base member, a series of openings are formed through the central portion of the sheet or tension member at those locations where it is desired to spot weld or otherwise attach the channel to the base member. With the edge

portions of the tension member also spot welded to the base member adjacent opposite edges thereof, a trussed configuration is provided wherein the upper flange portion of the channel and the base itself are placed in compression and the sheet member and flanges of the channel are placed in tension by compaction forces exerted against the base member. This arrangement of the base is particularly adapted to resist the forces exerted during a compacting stroke of the ram.

Although the invention is described in terms of a compactor having a vertically moving ram, the trussed structure disclosed may be employed opposite the ram in a horizontally disposed or other compactor arrangements.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is an elevational view showing a compactor in which the present invention finds application;

FIG. 2 is a perspective view of the framework of a compactor;

FIG. 3 is a top view of the compactor base member and support structure;

FIG. 4 is an end view thereof;

FIG. 5 is a plan view of a sub-assembly of the present invention; and

FIG. 6 is an end view thereof.

DESCRIPTION OF THE PREFERRED EMBODIMENT

While the support structure of the present invention is capable of use in various types of compactors, for purposes of illustration the invention will be described in connection with a vertically arranged compactor of the type shown in application Ser. No. 194,891, filed Nov. 2, 1971, and assigned to the assignee of this application.

Thus as seen in FIG. 1, a compactor 10 may include a compactor housing having vertically extending structural members 12 interconnected by horizontal structural members 14 and covered by panels, as at 16. A drawer-like receptacle 18 is slidable on drawer slides 20 into the out of the compactor between a compacting position beneath a ram 22 and the non-compacting position disposed outwardly of the housing shown in FIG. 1 of the drawings.

The ram 22 may be provided with a self-contained motor 24 which, through a drive chain, drives sprockets 26 rotatably mounted on the ram and movable along stationary threaded jack screws 28. The drive mechanism does not form a part of the present invention and for a more complete description of a suitable drive system reference may be had to the above noted application Ser. No. 194,891. Regardless of the specific ram drive utilized, it will be seen that as the ram moves downwardly it will compress material received in the receptacle 18.

The forces imposed on the receptacle 18 by the compacting stroke are preferably transferred through any suitable means to the bottom of the compactor to relieve the load from the slides 20. For example, spring means may be provided between either the slides 20 and the receptacle 18 or between the slides 20 and the compactor framework itself as described in copending application Ser. No. 244,454, filed Apr. 17, 1972, and assigned to the assignee of the present invention.

The base of the compactor, as better seen in FIG. 2 of the drawings, preferably includes a substantially flat base member 30 having downwardly extending sides 32 about the periphery thereof with the vertically extending structural members 12 attached to the base member in any suitable manner. As noted above, while a vertically oriented compactor is described for purposes of illustration, the present invention is adapted for use in other than vertically oriented compactors, such as horizontal, for example. Thus, the term base or base member refers not only to the bottom of a vertically oriented compactor, but to that portion of a compactor, however oriented, opposite the compacting ram.

It will be apparent from an inspection of FIG. 2 that with the major plane of the base member substantially perpendicular to the direction of movement of the ram during a compacting stroke, substantial deflection forces are imposed on the base member 30 during a compacting stroke.

To resist these forces structural support for the base member is provided in accordance with the present invention by securing to the bottom of the base member the substantially trussed configuration best seen in FIGS. 3 through 5 of the drawings.

The unit making up this truss assembly consists of a structural channel 40 having an upper flange portion 42, web means, including a pair of downwardly and outwardly extending web portion 44, and lower flange portions 46 extending upwardly and outwardly from lower edges of the web portions 44. The unit also includes a sheet-like tension member 50 having a substantially flat central portion 52, a pair of upwardly and outwardly extending side portions 54 and a pair of edge portions 56.

As best seen in FIG. 5 of the drawings, the channel member 40 is attached to the sheet member 50 by means such as a series of spot welds 58. This sub-assembly 60 is then attached to the base member 30 by a series of spot welds 62 joining the upper flange portion 42 of the member 40 to the lower surface of the base member 30 and a second series of spot welds 64 joining the edge portions 56 of the member 50 to the lower surface of the base member 30 adjacent opposite edges thereof.

To allow the completed assembly which includes the members 40 and 50 to be attached to the base member 30, a series of openings 66 are formed through the central portion 52 of the member 50 at positions substantially aligned with the points at which the member 40 is to be attached to the base member 30.

Additional openings 70 will also be seen in FIG. 5 of the drawings formed through the upper flange portion 42. These openings permit access to tabs formed on another element of the compactor, not part of the present invention and not shown, which are received through the slots 72 formed in the base member 30 and permit these tabs to be bent over. Openings 74 will also be noted extending through the upper flange portion 42 and these openings serve as locating holes to receive pins on a fixture utilized in assembling the members 40 and 50.

As can be probably best appreciated from inspection of FIG. 4 of the drawings, the attachment of the members 40 and 50 to the lower surface of the base member 30 results in an assembly which acts much like a truss. Thus, the member 40 extending, for example, from front to back of the base member 30, acts not only as

a beam to resist deflection of the base member in one direction, but also serves to space the member 50 from the member 30 so that the member 50 is placed under tension and resists deflection of the base member 30 in a direction at right angles to the member 40. The sheet member 50 in this arrangement also prevents deformation of the channel 40 under compaction forces by holding the webs 44 in this predetermined angular position.

By spot welding the members 40 and 50, not only to each other but also to the base member 30, a rigid structure is provided which acts as a unit to resist the substantial forces imposed by the ram during compacting strokes thereof.

While the form of apparatus herein described constitutes a preferred embodiment of the invention, it is to be understood that the invention is not limited to this precise form of apparatus, and that changes may be made therein without departing from the scope of the invention.

What is claimed is:

1. In a compactor including a housing, a receptacle received in said housing, and a compacting ram movable to compact material received in said housing, means for resisting compacting forces of said ram comprising:

- a. a base member opposite said ram,
- b. an elongated structural member extending across said base member in reinforcing relationship thereto,
- c. said structural member including web means extending outwardly away from said base member, and
- d. a tension member attached to said base member on one side of said structural member, extending over said structural member in spaced relation to said base member and attached thereto on the opposite side of structural member.

2. The compactor of claim 1 wherein said structural member includes:

- a. flange means extending angularly from said web means thereof.

3. The compactor of claim 1 wherein:

- a. said structural member includes an upper flange portion in engagement with said base member, and

- b. said web means includes a pair of web members extending away from opposite edges of said upper flange portion.

4. The compactor of claim 1 further comprising:

- a. means for attaching said structural member to said base member.

5. The compactor of claim 4 further comprising:

- a. means for attaching said tension member to said structural member.

6. The compactor of claim 4 wherein:

- a. said tension member comprises a sheet member.

7. The compactor of claim 6 further comprising:

- a. means defining openings through said sheet member substantially in alignment with said means attaching said structural member to said base member.

8. The compactor of claim 1 further comprising:

- a. means for attaching said tension member to said structural member.

9. The compactor of claim 1 wherein:

- a. said tension member comprises a sheet member.

10. In a compactor including a housing, a receptacle received in said housing, and a compacting ram movable to compact material received in said housing, means for supporting said receptacle against compacting forces exerted by said ram comprising:

- a. a base member including a substantially flat plate section and downwardly extending sides extending from said plate section about the periphery thereof,
- b. an inverted channel supporting said base member and including an upper flange portion, a pair of downwardly extending flange portions projecting from opposite longitudinal edges of said upper web portion and a pair of lower flange portions projecting outwardly from lower edges of said web members,
- c. a sheet-like tension member having a substantially flat central portion, a pair of upwardly and outwardly sloping side portions extending from opposite longitudinal edges of said central flat portion

and a pair of outwardly projecting edge portions extending from outer longitudinal edges of said side portions,

- d. means attaching said lower flange portions of said structural member to said side portions of said sheet-like tension member,
- e. means attaching said edge portions of said sheet-like tension member to said base member along opposite edges thereof, and
- f. means attaching said upper flange portion of said structural member to said base member at locations spaced inwardly of said opposite edges of said base member.

11. The compactor of claim 10 further comprising:
a. means defining a plurality of openings through said central portion of said sheet-like tension member in substantial alignment with said means attaching said upper flange portion of said structural member to said base member.

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