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Engebretsen

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[54] **COMPACTOR WITH YIELDABLE RECEPTACLE**

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[52] **U.S. Cl.** ..... **100/229 A,** 100/290, 308/3.6, 312/319

[51] **Int. Cl.** **B30b 15/00,** B30b 1/18

[58] **Field of Search** ..... 100/229 A, 229 R, 290; 312/341, 350, 319, 332; 308/3.6, 3.8

[56] **References Cited**

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[57] **ABSTRACT**

A compactor which includes a housing and a ram mounted in the housing for vertically reciprocal movement and a refuse receiving drawer which is slidable into and out of the housing between a compacting position beneath the ram and a noncompacting position outwardly of the housing. The drawer is resiliently mounted with respect to the housing to permit the drawer to move a small distance vertically when compacting forces exerted by the ram exceed a certain amount so that this excess load is transferred from the drawer slides to the base of the housing.

10 Claims, 7 Drawing Figures

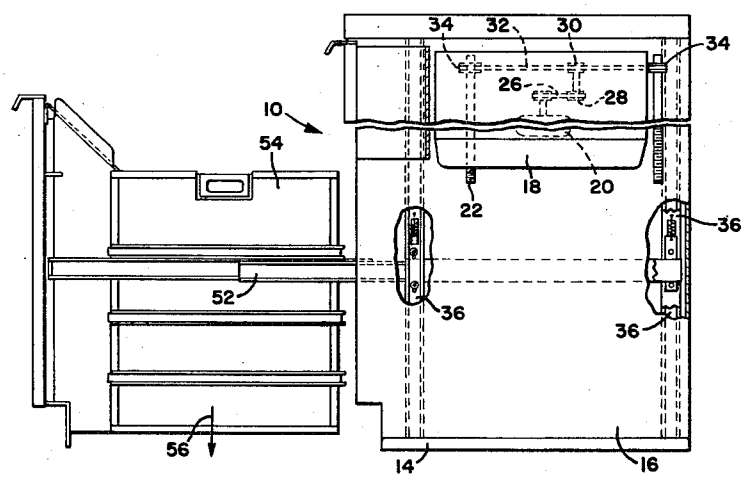


FIG-1

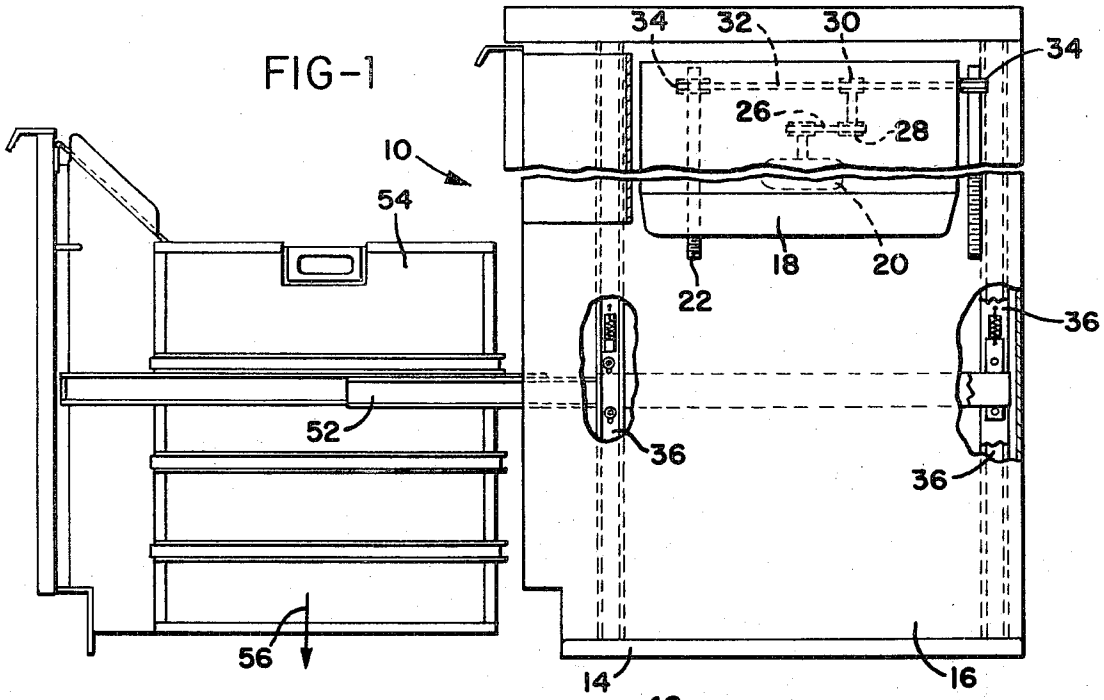


FIG-2

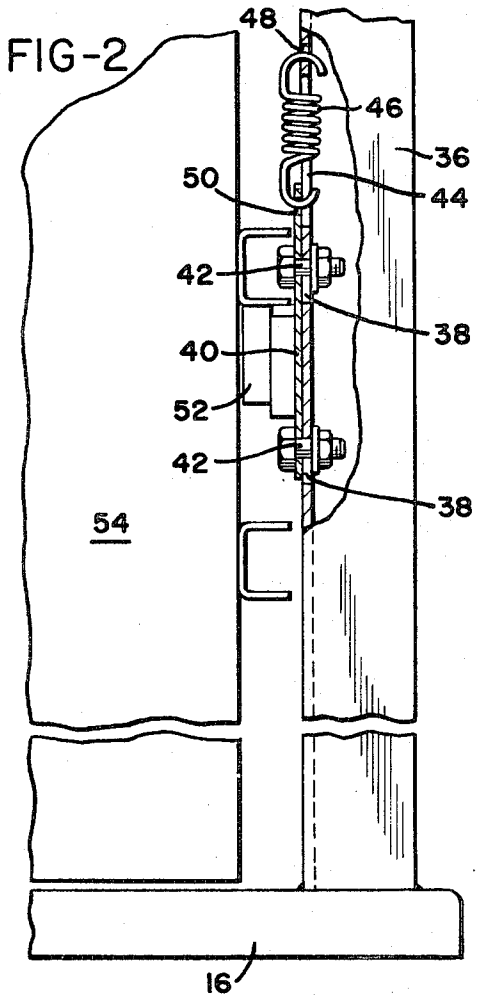


FIG-3

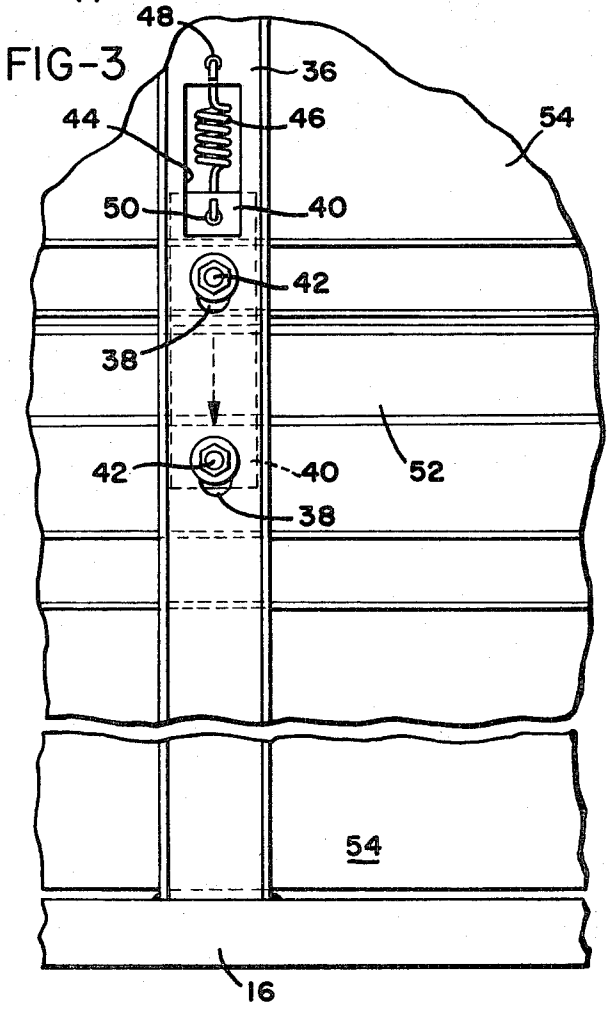


FIG-4

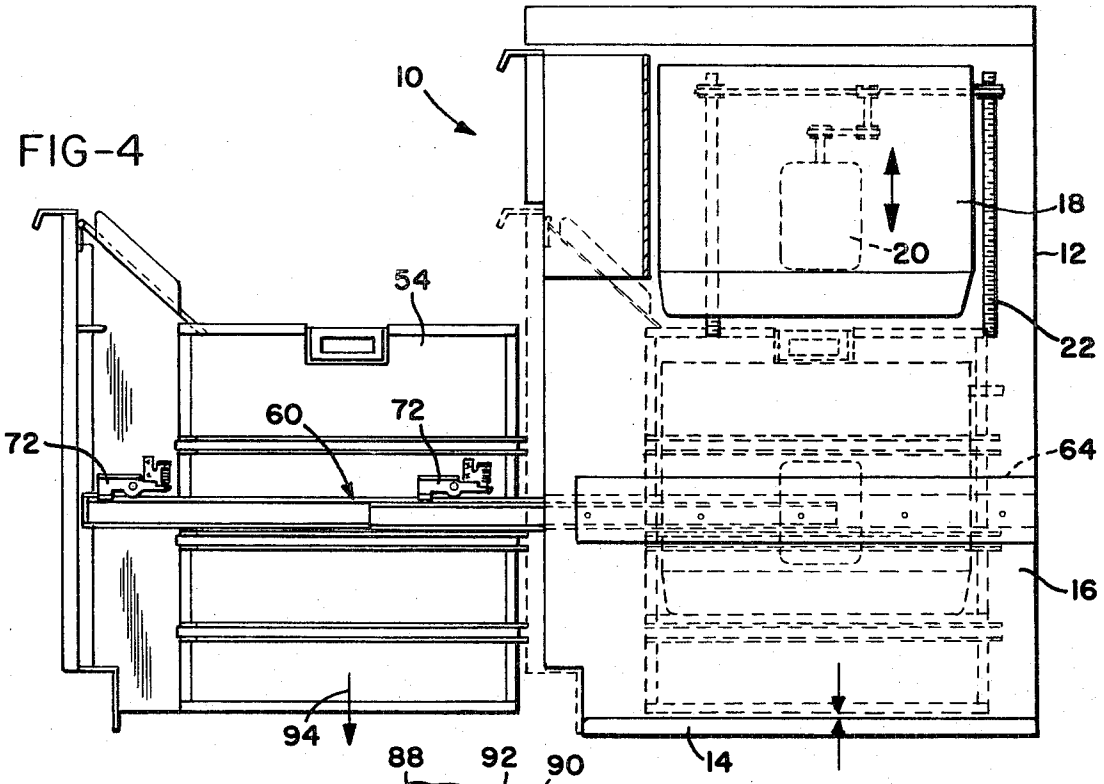


FIG-5

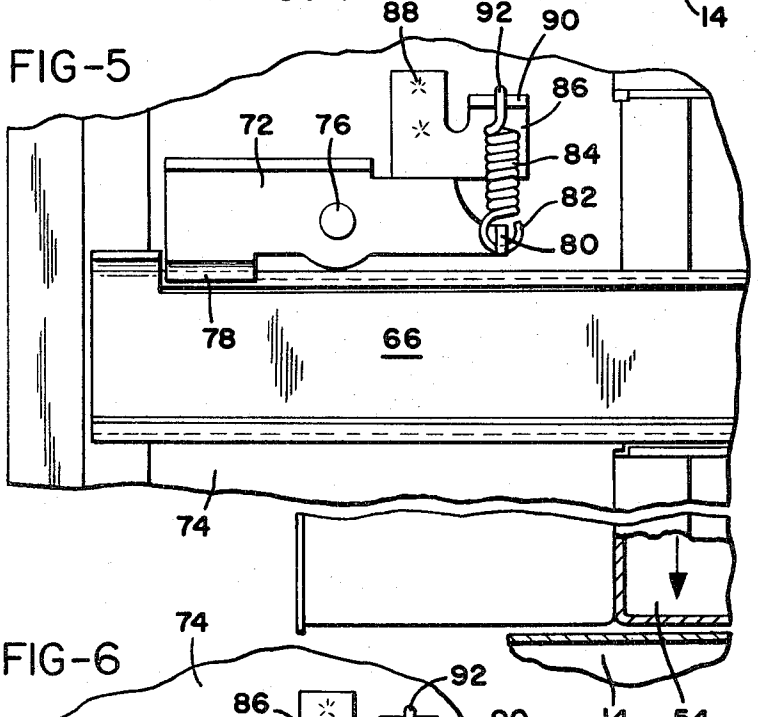


FIG-6

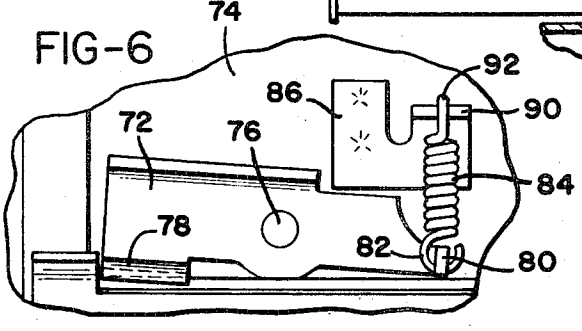
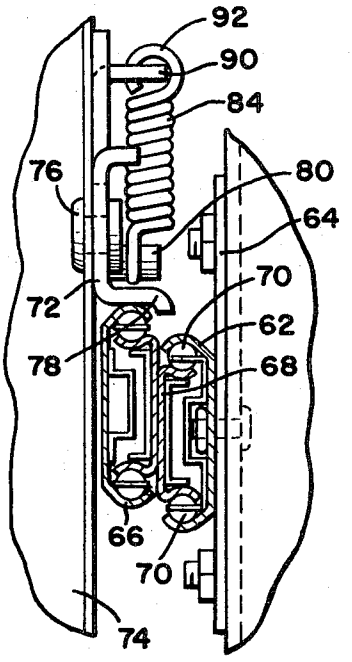


FIG-7



COMPACTOR WITH YIELDABLE RECEPTACLE

CROSS REFERENCE TO RELATED APPLICATION

COMPACTOR AND DRIVE ASSEMBLY, Ser. No. 194,891, filed Nov. 2, 1971, now U.S. Pat. No. 3,734,009 which issued May 22, 1973.

BACKGROUND OF THE INVENTION

In the above noted, related application a compactor is disclosed which is intended primarily, although not exclusively, for home use. The compactor comprises a ram mounted in a housing for vertically reciprocal movement and a refuse receptacle, in the form of a drawer. The drawer or receptacle, is slidable from a noncompacting position outside the housing to a compacting position within the housing beneath the ram, so that the ram may be lowered into the drawer and compact waste material deposited therein to reduce the volume thereof.

The use of a drawer as the refuse receptacle provides many advantages, including the fact that access to its interior is greatly facilitated by the fact that the drawer is freely movable from its compacting position to a position outside of the housing. While the use of a drawer freely slidable into and out of the housing is therefore, advantageous, it will be apparent that severe forces may be imposed on the slides of the drawer during a compacting stroke of the ram.

SUMMARY OF THE INVENTION

A compactor in accordance with the present invention includes a drawer slidable into and out of the compactor housing and a ram mounted in an upper position of the housing and movable into the drawer when the latter is positioned within the housing to compact waste materials therein. The drawer is provided with means for permitting it to yield under the force of the ram to transfer excess compacting forces from the drawer slides to the base of the compactor housing.

In a preferred embodiment of the invention the housing mounted portions of the drawer slides are not rigidly fixed to the housing but are mounted on spring loaded carrier plates slidably attached to the structural uprights of the housing. Bolts pass through the mounting plates and are received in slots in the uprights and coil springs urge the plates upwardly. Therefore, when compacting forces are exerted on the drawer, the tension of the coil springs is overcome and the mounting plates slide downwardly with the bolts riding in the slots in the uprights.

In a second embodiment of the invention the refuse receiving drawer is provided with spring loaded brackets mounted on its opposite side walls. A portion of each of the brackets engage the drawer slides and coil springs are provided to insure that the weight of the drawer is ordinarily carried by the slides.

Specifically, the brackets are pivotally attached to the drawer and are provided with outwardly projecting flanges which rest on the drawer slides. Coil springs are also attached to the sides of the drawer and to outwardly projecting lugs on the brackets. With this construction the brackets will pivot against spring tension, lowering the drawer until its bottom rests on and is supported by the base of the housing.

In either case, when the forces exerted by the ram on the drawer exceed a predetermined amount, spring tension is overcome and the drawer is allowed to move downwardly a small amount until the bottom thereof contacts the base of the compactor housing, thereby transferring the compacting forces to the base of the compactor housing.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a side view of a compactor, with portions removed for clarity, illustrating features of the present invention;

FIG. 2 is an enlarged end view of a portion of FIG. 1;

FIG. 3 is an enlarged side view of a portion of the structure of FIG. 1;

FIG. 4 is a side elevational view showing the waste receiving receptacle in its compacting and noncompacting positions;

FIG. 5 is a view of a portion of the structure shown in FIG. 4;

FIG. 6 is a view showing the bracket pivoted from the position shown in FIG. 5 of the drawings; and

FIG. 7 is an end view, with parts in section, of the drawer slide mechanism and associated compactor structure.

DESCRIPTION OF THE PREFERRED EMBODIMENTS

As seen in FIG. 1 of the drawings, a compactor **10** in accordance with the present invention comprises a housing **12** having a base **14** and opposed side walls, one of which is shown at **16.** A ram **18** is mounted within the housing and includes a self-contained motor **20** for driving the ram upwardly and downwardly within the housing along stationary jack screws **22.**

The specific drive mechanism for the ram forms no part of the present invention and for a detailed description thereof reference may be had to the above noted, related applications. Suffice to say, the motor **20** drives a sprocket **24** which, through a belt **26,** drives a sprocket **28,** which in turn powers sprocket **30** which is wrapped by a drive chain **32.** The drive chain **32** is trained about sprockets **34** which threadably engage the stationary jack screws **22** and cause the ram to move upwardly and downwardly within the housing.

The housing **12** also includes uprights **36** adjacent each of its four corners. Each of the uprights **36,** as perhaps better seen in FIGS. **2** and **3,** is provided with a pair of vertically spaced slots **38.** Slide carrier plates **40** are slidably mounted on each of the uprights **36** by means of bolts **42** passing through openings formed in each of the carrier plates and the slots **38** in the uprights **36** and secured in place by nuts, washers, etc.

Each of the uprights is provided with a substantially rectangularly shaped opening **44** formed therethrough above the slots **38.** Coil springs **46** are received in the openings **44** with an upper end hooked through an aperture **48** formed through the uprights **36** and a lower end hooked through an aperture **50** formed through each of the carrier plates **40.**

Attached to each of the carrier plates **40** by means of bolts, welding or the like are drawer slides, indicated in their entirety by the numeral **52.** The slides **52** in turn, slidably support the drawer **54** for movement between the noncompacting position shown in FIG. **1** of the drawings and a compacting position wherein the open

top of the drawer is positioned beneath the ram **18** to receive the ram therein on a downward compacting stroke of the ram.

With the above construction it will be apparent that refuse may be deposited in the open top drawer **54** when it is in the noncompacting position seen in FIG. **1** of the drawings. Thereafter, the drawer is slidably moved on the drawer slides **52** to a compacting position within the housing with the open top of the drawer situated beneath the ram **18.** The motor **20** is then energized, causing the ram to move downwardly along the stationary jack screws **22** to compress refuse deposited in the drawer **54.**

As the ram moves downwardly the forces imposed on the drawer will overcome the spring tension of the springs **46,** allowing the drawer **54** to shift downwardly a short distance, as indicated by the arrow **56** in FIG. **1** of the drawings, permitting the drawer **54** to bottom on the base **14** so that the compacting forces are transferred from the drawer slides **52** to the base of the compactor.

In this way, although the drawer **54** is freely slidable into and out of the housing, the forces exerted on the drawer slides are never allowed to exceed some predetermined amount, thereby avoiding damage to the slide mechanism.

Turning now to FIGS. **4–7** of the drawings, a second preferred embodiment of the invention will be described. As seen in FIG. **4** of the drawings, a compactor **10,** as in the previous embodiment, includes a housing **12** having a base **14** and opposed side walls **16.** Additionally, a ram **18** having a self-contained motor **20** is mounted within the housing for movement along jack screws **22** in the manner described previously with respect to FIGS. **1–3** of the drawings. Additionally, the refuse receiving receptacle or drawer **54** is mounted for sliding movement into and out of the housing between a noncompacting position beneath the ram, as shown in dotted lines, and a noncompacting position shown in solid lines.

In this embodiment the drawer **54** is supported for slidable movement by means of the drawer slide assemblies referenced in their entirety by the numeral **60.** Each slide assembly **60** includes, as best seen in FIG. **7** of the drawings, a stationary slide **62** fixed to a plate member **64** extending along and attached to opposed side walls of the housing in any suitable manner. A moveable slide **66** is associated with the fixed slide **62** for slidable movement relative thereto by means of a bearing unit **68** which includes a plurality of bearings **70.**

A bracket **72** is pivotally attached to each of the side walls **74** of the drawer **54** by means of a rivet or the like **76.** Each bracket **72** includes an outwardly projecting leg **78** turned downwardly at its outer end and adapted to rest on the upper surface of a movable slide **66.** At its opposite end each bracket **72** is provided with an outwardly projecting lug **80** adapted to be engaged by one end **82** of a coil spring **84.**

A second bracket **86** is also attached to each side wall **74** of the drawer by means of welding or the like **88** and a lug **90** projects outwardly from the body of the bracket **86** to receive an upper end **92** of the spring **84.**

The bottom wall of the drawer will normally be spaced from the base **14** of the housing by some small amount to provide clearance between the drawer bottom and the housing base during sliding movement of the drawer. However, when the motor **20** for the compacting ram is energized and the ram begins to move downwardly, the forces imposed on the drawer, which are initially carried by the drawer slides **60,** are transferred by the yielding pivotal movement of the bracket **72** to the base **14** of the housing.

Thus, as best seen in FIG. **6** of the drawings, downward forces on the drawer above some predetermined amount will overcome the tension of the springs **84** and permit the brackets to pivot about the points **76** and allow the drawer to move downwardly in the direction indicated by the arrow **94** in FIG. **4** of the drawings until the bottom wall of the drawer **54** contacts the base **14** of the housing.

As a result, forces exerted on the drawer slides are never allowed to exceed some predetermined amount, as regulated by the tension of the springs **84,** and forces in excess of this amount are automatically transferred from the drawer slides to the base of the compactor housing.

While the forms of apparatus herein described constitute preferred embodiments of the invention, it is to be understood that the invention is not limited to these precise forms of apparatus, and changes may be made therein without departing from the scope of the invention.

What is claimed is:

1. A compactor comprising:
a. a compactor housing,
b. a ram mounted in said housing for vertically reciprocal movement therein,
c. a slidably mounted refuse receiving drawer,
d. means supporting said drawer for translational movement between a compacting position beneath said ram and a noncompacting position displaced outwardly of said compacting position, and
e. means in engagement with said drawer supporting means for permitting limited yielding movement of said drawer under compacting movement of said ram sufficient to relieve compacting forces from said drawer supporting means.

2. The compactor of claim **1** wherein:
a. said supporting means includes opposed drawer slides.

3. The compactor of claim **2** wherein said means for permitting yielding movement comprises:
a. resilient means permitting limited vertical movement of said drawer with respect to said housing in response to forces exerted in said receptacle by said ram.

4. The compactor of claim **3** further comprising:
a. slide carrier plates,
b. means attaching said drawer slides to said carrier plates,
c. means slidably mounting said carrier plates to said housing for limited vertical movement with respect thereto, and
d. said resilient means resisting sliding movement of said carrier plates with respect to said housing.

5. The compactor of claim **3** further comprising:
a. bracket members having portions engaging said slides,
b. means pivotally mounting said bracket members on said drawer, and
c. said resilient means resisting pivotal movement of said brackets with respect to said drawer.

6. The compactor of claim 1 wherein:
a. said housing includes a top, a base and opposed uprights extending between said top and base,
b. said drawer has opposed side walls, an open top and a bottom wall,
c. bracket members are pivotally mounted on outer surfaces of said drawer side walls,
d. said drawer supporting means includes opposed drawer slides mounted on said uprights,
e. portions of said brackets spaced from the pivotal connections thereof engage said drawer slides, and
f. spring members are attached to and extend between said drawer and said brackets and yieldably maintain said drawer bottom wall and said housing base in spaced relationship to each other.

7. A compactor comprising:
a. a compactor housing having a top, a base and opposed uprights extending between said top and said base,
b. a ram mounted in said housing for vertically reciprocal movement toward and away from said base,
c. a plurality of slide carrier plates,
d. means mounting said carrier plates on said uprights for slidable movement therealong,
e. means resiliently urging said carrier plates upwardly with respect to said uprights,
f. substantially horizontally extending drawer slides attached to said carrier plates and extending between said uprights, and
g. an open top drawer slidably supported on said drawer slides for sliding movement between a compacting position beneath said ram and a noncompacting displaced from said compacting position.

8. A compactor comprising:
a. a compactor housing,
b. a ram mounted in said housing for vertically reciprocal movement therein,
c. a refuse receiving receptacle,
d. opposed drawer slides slidably supporting said receptacle for movement between a compacting position beneath said ram and a noncompacting position displaced outwardly of said compacting position,
e. slide carrier plates,
f. means attaching said drawer slides to said carrier plates,
g. means slidably mounting said carrier plates to said housing for limited vertical movement with respect thereto,
and
h. resilient means resisting sliding movement of said carrier plates with respect to said housing and permitting limited yielding movement of said receptacle under compacting movement of said ram sufficient to relieve compacting forces from said drawer slides.

9. The compactor of claim 8 wherein said mounting means comprises:
a. vertically extending slots formed in portions of said housing, and
b. bolt members extending through said carrier plates and said slots.

10. A compactor comprising:
a. a compactor housing,
b. a ram mounted in said housing for vertically reciprocal movement therein,
c. a refuse receiving drawer,
d. drawer slides supporting said drawer for translational movement between a compacting position beneath said ram and a noncompacting position cantilevered outwardly of said compacting position and supported by said slides, and
e. spring means attached to said drawer slides and permitting limited yielding movement of said drawer slides with respect to said housing under compacting movement of said ram sufficient to relieve compacting forces from said drawer slides.

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