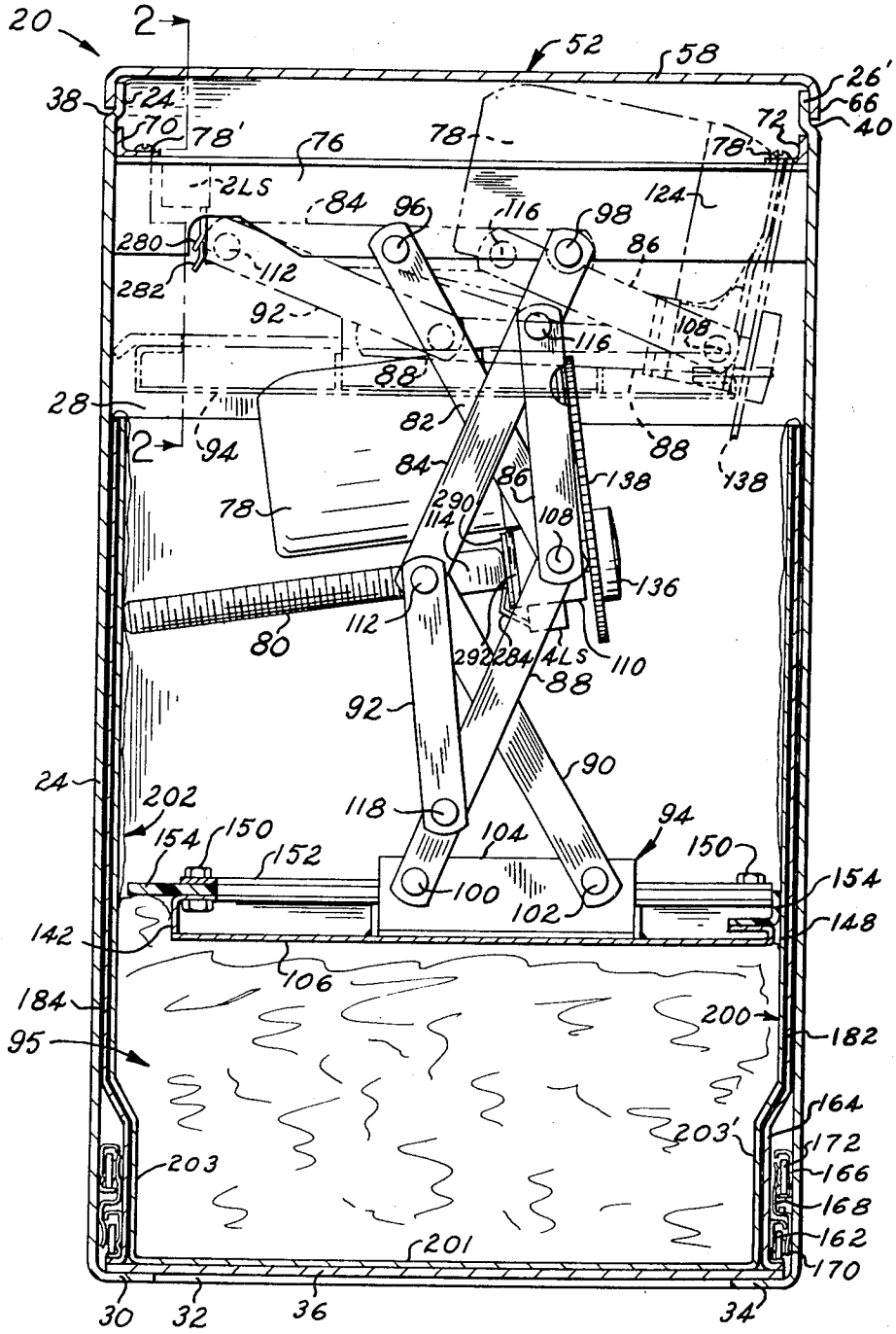

20
2
52
58
26'
66
40
38
24
70
78'
76
78
72
78
2LS
84
96
116
98
124
280
112
86
282
92
108
116
88
28
82
88
2
94
84
86
138
138
78
290
114
108
136
80
112
292
284
4LS
110
88
92
90
24
202
118
94
154
150
104
150
152
154
100
102
142
148
106
184
200
95
182
164
203'
172
203
166
168
162
201
170
30
32
36
34

FIG. 1

United States Patent [19]

Moon

[11] **3,717,091**

[45] **Feb. 20, 1973**

[54] REFUSE COMPACTOR

[76] Inventor: **Jerry W. Moon,** 2735 Alveston, Bloomfield Hills, Mich. 48013

[22] Filed: **Nov. 24, 1971**

[21] Appl. No.: **201,930**

Related U.S. Application Data

[62] Division of Ser. No. 148,879, June 1, 1971.

[52] **U.S. Cl.**.....**100/53,** 100/229 A, 200/44

[51] **Int. Cl.** **B30b 1/10**

[58] **Field of Search** .....200/42, 44; 70/185, 211, 53; 100/229 A

[56] **References Cited**

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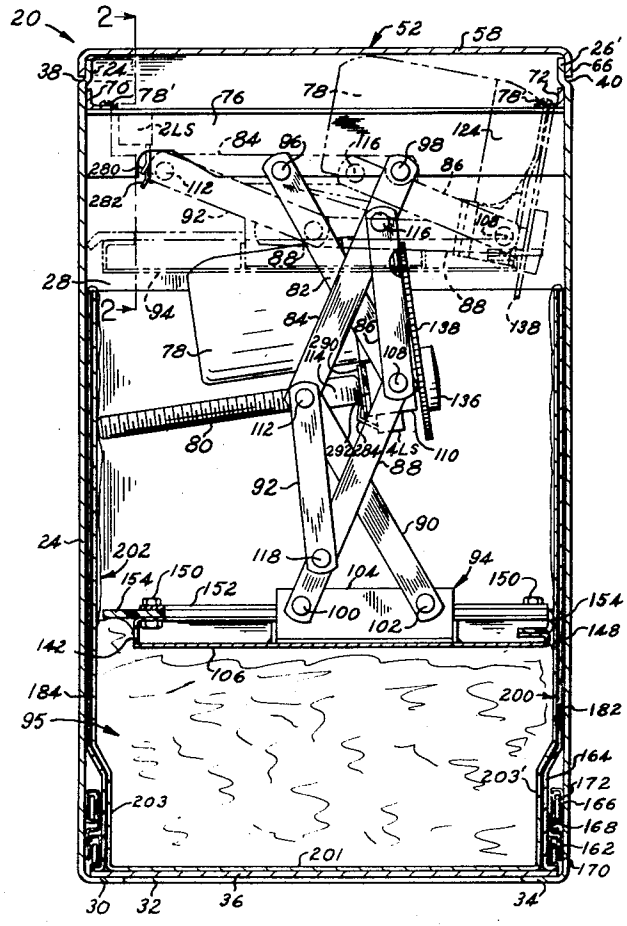
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Primary Examiner—Billy J. Wilhite
Attorney—Barnes, Kisselle, Raisch & Choate

[57] **ABSTRACT**

A refuse compactor including a receptacle removably contained within a cabinet wherein refuse is compacted by a ram to a fraction of its normal volume. The refuse is compacted within a specially constructed bag supported by the receptacle and cabinet, permitting the compacted refuse to be removed as a wrapped package for convenient and tidy disposal. The ram includes a refuse-compressing platen actuated through a toggle linkage to which force is applied by a single screw driven by an electric motor coupled to the screw through a reduction drive. The screw and its motor drive train are carried as a unit by the toggle linkage and move bodily therewith to provide a very compact and high ratio force multiplication system of reliable and inexpensive construction. Additional features relating to control circuitry, a safety lock, and bag, receptacle and drawer construction are also disclosed.

1 Claim, 17 Drawing Figures



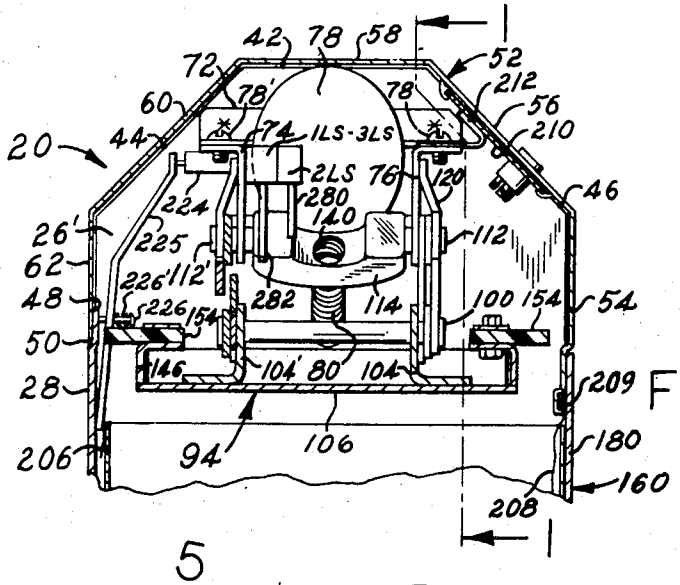


FIG. 2

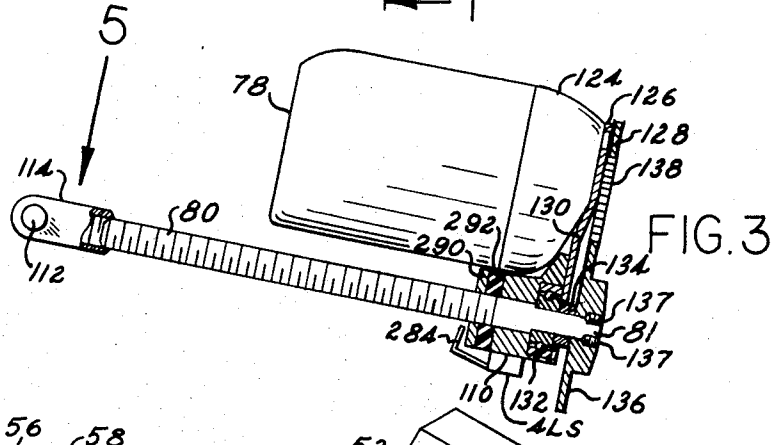


FIG. 3

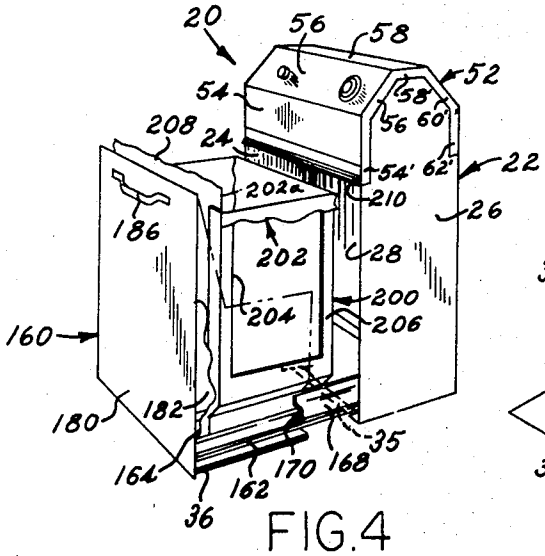


FIG. 4

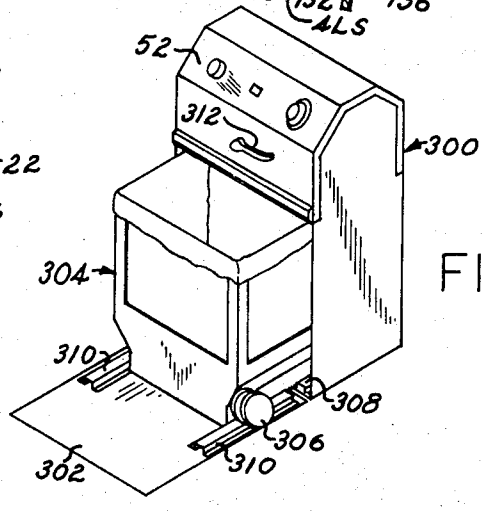


FIG. 7

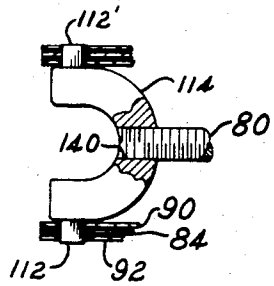


FIG. 5

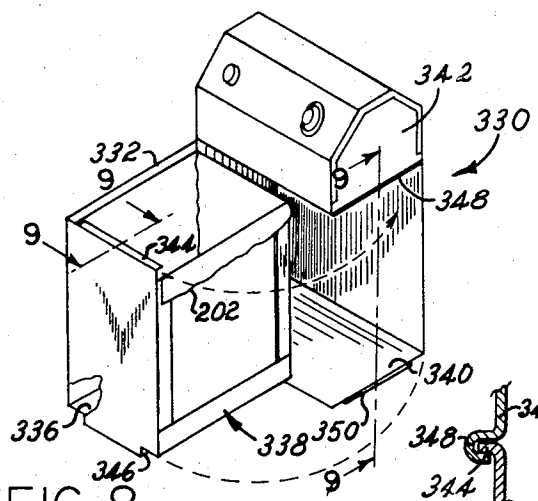


FIG. 8

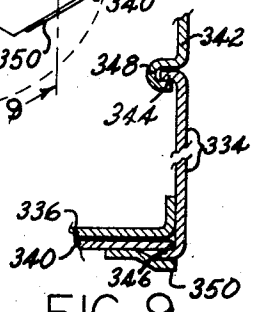


FIG. 9

FIG. 6

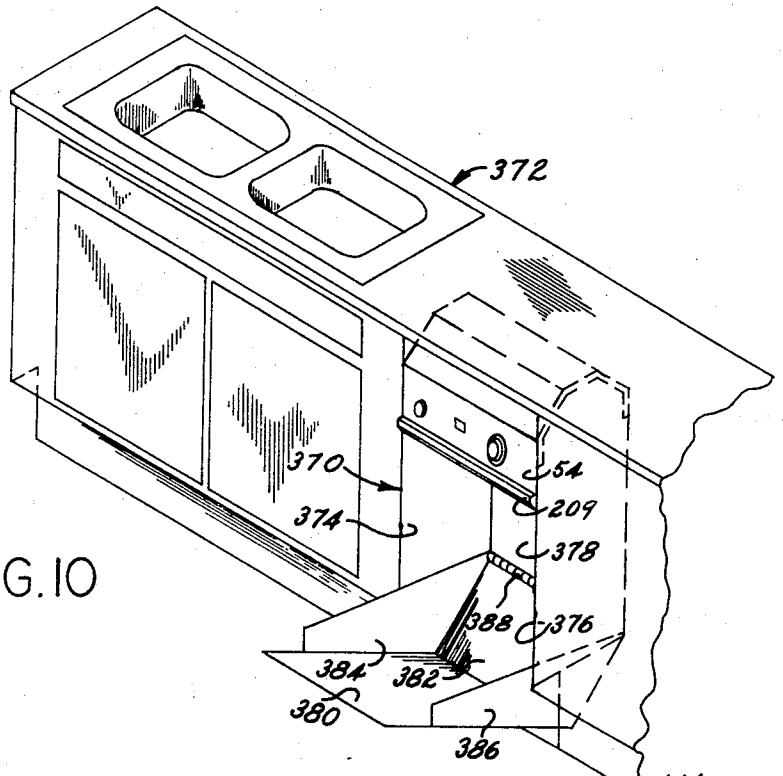


FIG. 10

FIG. 11

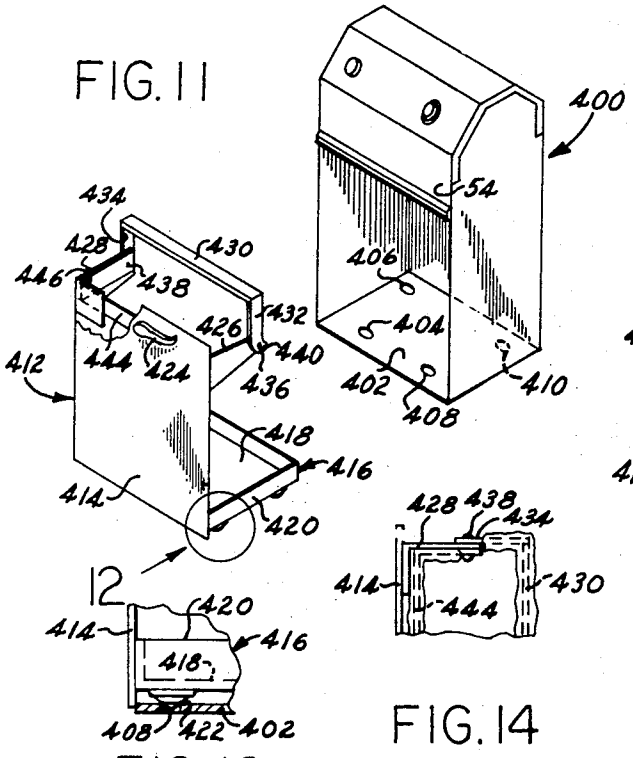


FIG. 12

FIG. 14

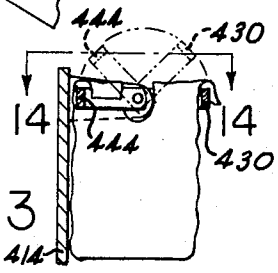


FIG. 13

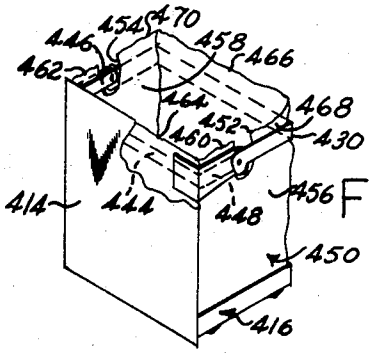


FIG. 15

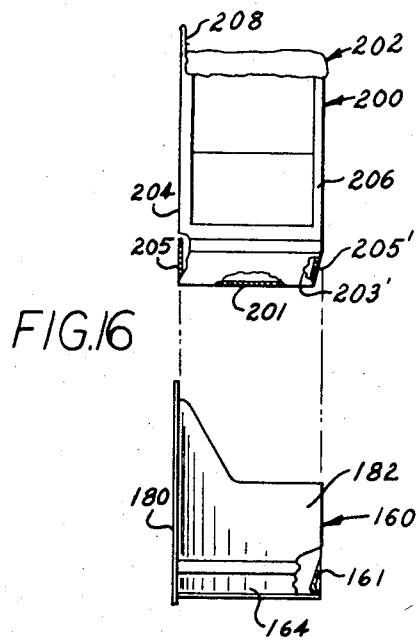
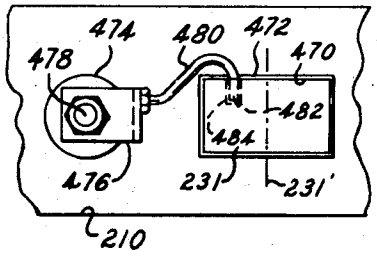

208
202
200
206
204
205
205'
203'
201
182
180
160
161
164

FIG. 16

FIG. 17


474
480
472
478
470
482
484
476
231
231'
210

REFUSE COMPACTOR

This is a division of application, Ser. No. 148,879, filed June 1, 1971.

This invention relates to an apparatus for crushing, breaking, smashing and/or compacting all types of material and, more particularly, to a domestic refuse compactor which may be installed in a kitchen cabinet structure or provided as a free-standing domestic appliance.

One of the greatest problems facing the world today is solid waste pollution. Previous mechanisms proposed to deal with this problem have fallen short in the areas of cost, cleanliness, odor prevention, size, weight, compaction performance and convenience of removal of compacted material. The shortcomings of such prior art mechanisms have apparently prevented their widespread use in homes, restaurants, business, industry, recreation and other areas of modern life where such equipment is sorely needed.

Accordingly, an object of the present invention is to overcome these shortcomings by providing a solid waste compactor which is technically superior and adaptable to large size industrial and commercial use and yet sufficiently economical when constructed on a smaller scale for domestic use in the home and/or garage where the greatest need exists.

Another object of this invention is to provide a solid waste crusher and compactor having a high ratio of compaction which operates at a variable rate for maximum performance and efficiency.

A further object is to provide such a compactor which is trouble free in use yet simple and low in cost to operate and maintain, which is physically undemanding in all phases of its use and operation and adjustable in force to suit various consumer needs.

Still another object is to provide such a compactor which is fast in operation, free of odors, easy to clean, lightweight, easy to move, and sufficiently compact so that it can be placed in crowded rooms or garages but having a relatively high capacity in the amount of refuse it can receive and hold before emptying.

A further object is to provide such a compactor having a removably mounted receptacle and bag arrangement which permits easy removal and transport of compacted material without dirtying the hands or allowing spillage when removed to storage or a pick-up point.

In general, this invention, as it pertains to trash and garbage compaction, comprises an attractive cabinet which also serves as a housing for a removable receptacle and as a frame for containing the compaction force loads within the unit. The cabinet has a sliding drawer or tilting bin which is located for front access to receive the trash receptacle and provides storage for trash in compacted form which is several times the volume of such material in its uncompacted state. An electrically driven, extensible quadruple five-bar linkage compacting mechanism is housed within the cabinet directly above the drawer or bin. The compacting mechanism carries a pressure platen and operates to raise and lower the platen with increasing force toward the lower end of the down stroke where most compacting force is needed. The trash is compacted within a refuse bag retained by the receptacle, resulting in a disposable package of an easy size to handle, and this is achieved in a complete machine which is no larger than presently used large wastebaskets.

Automatic controls are provided which can be selectively set to either reverse the downtravel of the ram when it reaches a preset load regardless of the height of the trash, or to lock the drive in static position at said peak load or at any desired position so as to hold pressure on the material. The ability to hold peak pressure against the material further improves the compaction ratio and also enables the pressure platen to serve as a hermetic seal for for the open upper end of the bag, thereby restricting the availability of oxygen and thus slowing odor-producing decay and preventing the air circulation which otherwise might transmit odors. This "hold" feature also denies fruit flies and other pests access to the material being processed.

The refuse bag is preferably a heavy, leakproof bag which receives the uncompacted trash and in which the trash is stored both prior and subsequent to being compacted. The upper edges of the bag are folded inwardly prior to the last "load" or "charge." This forms a tight seal on the compressed block of refuse material after the unit has compressed the bag with the edges folded in. The bag will hold several days' average accumulation of household trash and wastepaper, cartons, cans, bottles and garbage, in the instance of the home use version, before it needs to be emptied. The fold-and-seal feature makes open storage of the "blocks" feasible while awaiting pickup, thus eliminating the need for trash containers.

The removable receptacle which holds the refuse bag is a combination frame and tray which can serve as a carrying basket. The top edge of this basket along the rear and both sides thereof holds the bag with a simple fold of the bag over the top edges of the basket which preferably are constructed as pivoted carrying handles. The drawer front and the cabinet when closed together clamp the upright front edge of the bag therebetween to hold the bag open at the front. Upon opening of the drawer or bin, the top rails of the basket provide handles for easily lifting out the basket with the block of compacted material therein and for carrying it to the storage area where the bag is removed and left to await pickup.

Net compaction results are greatly improved by avoiding the disruption of packed material after compressing, a common fault of existing compactors. Because of the very high compaction force developed, objects in the bag being compacted tend to nest and interlock and hold each to the other, which reduces the tendency of the objects to "spring back" to their original volume. Spring-back is further avoided by the unique feature of maintaining peak pressure on the material until ready to place the next charge of loose material into the bag in the bin. Recycling, if desired, to renew peak holding pressure further improves overall compaction ratio. The compacted material when left under compacting pressure for a period such as over night will continue to gradually and slightly further compress and will take a semi-permanent set sufficient to resist spring-back.

Another unique feature is a tray or pan which forms the bottom of the basket and serves to catch any liquid leaking from the bag, thereby keeping the cabinet clean and preventing spillage when emptying. The basket can then rinsed in the sink or yard, if necessary, prior to installing a new bag. Bag installation into the basket is simplified because the basket is light weight and easily

handled, and thus is readily placed on a table or counter, eliminating the need for the user to stoop down in order to reach down into a bin which can be loaded only at floor level. The basket with the empty bag installed is then slipped into the waiting drawer in the cabinet.

The cabinet is light enough for a woman to easily move and clean. There are no hidden recesses to collect foreign material and make cleaning difficult. Operation is simple, safe and foolproof.

Another feature of this invention is easy and low-cost maintenance and service. All electrical and mechanical parts of the power unit are mounted as a module on one bracket which is readily accessible and easily lifts out of the cabinet as a single lightweight unit. This exposes all wiring and operating parts for visual inspection or repair and allows the power and control assembly to be worked on at eye level on a table or bench. The power and control assembly or module is completely functional when removed from the cabinet and thus operational checkout can be performed prior to reinstallation in the cabinet. The inconvenience and very high cost of house calls by service men can be reduced or eliminated by transporting the entire compactor appliance to a service center, if service is needed. Alternatively, only the power unit may be disassembled from the cabinet merely by removing four screws with a common screw driver for service on site or at a service center, with quick replacement by another module available as another option.

Other objects, features and advantages of the present invention will become apparent from the following detailed description taken in conjunction with the accompanying drawings wherein:

FIG. 1 is a vertical sectional view taken on the line 1—1 of FIG. 2 of a refuse compactor constructed in accordance with the present invention, the extended and retracted positions of the compacting mechanism being shown in solid and broken lines, respectively, in FIG. 1.

FIG. 2 is a fragmentary vertical sectional view taken on the line 2—2 of FIG. 1 showing the compacting mechanism in raised position.

FIG. 3 is a side elevational view of the motor and drive structure of the compacting mechanism shown by itself with portions broken away and portions shown in center section for greater clarity.

FIG. 4 is a perspective view of the refuse compactor of FIGS. 1–3 illustrating the refuse receptacle and associated slide-mounted drawer in open position.

FIG. 5 is a fragmentary plan view looking in the direction of the arrow 5 in FIG. 3 illustrating the yoke trunnion for connecting the lead screw drive to the compacting linkage mechanism.

FIG. 6 is a schematic wiring diagram of the compactor control circuit of the present invention.

FIG. 7 is a perspective view of a second embodiment of a refuse compactor also constructed in accordance with the present invention illustrating a roller-mounted receptacle cooperating with a downwardly pivoting front door of the cabinet, the unit being shown in open position with the receptacle partially inserted into the cabinet.

FIG. 8 is a perspective view of a third embodiment of the refuse compactor of the present invention wherein the receptacle is carried on an outwardly swinging portion of the cabinet made up of a front panel and side panel interconnected by a bottom panel adapted to support the receptacle for swinging movement thereon.

FIG. 9 is a fragmentary sectional view taken on lines 9—9 of FIG. 8 with the swinging door in closed position and interlocked by edge flanges with the right side and bottom of the cabinet.

FIG. 10 is a fragmentary perspective view illustrating a fourth embodiment of a refuse compactor in accordance with the present invention installed in nested relation in a kitchen cabinet structure and having a bin-type swinging front and bottom panel unit for receiving and supporting the trash receptacle.

FIG. 11 is an exploded perspective view of a fifth embodiment of the refuse compactor of the present invention illustrating a modified receptacle thereof removed from the cabinet.

FIG. 12 is a fragmentary vertical elevation of the portion circled in FIG. 11.

FIG. 13 is a semischematic fragmentary vertical sectional view illustrating the receptacle of FIG. 11 with a refuse bag suspended therein with its edges folded down over the pivoted handle and clamp members of the receptacle.

FIG. 14 is a fragmentary horizontal section taken on line 14—14 of FIG. 13.

FIG. 15 is a simplified perspective view of the receptacle of FIGS. 11–14 illustrating the refuse bag inserted therein prior to folding the edges of the bag over the handle and clamp of the receptacle.

FIG. 16 is an exploded side elevational view of the receptacle and drawer of FIG. 4 with the drawer slides omitted.

FIG. 17 is a fragmentary plan view of a key lock and mechanical interlock associated with a stop-start rocker-type control switch, as viewed from the inside of the control panel of the unit shown in FIGS. 1 and 2.

Referring in more detail to FIGS. 1 and 4, a first embodiment of a refuse compactor in accordance with the present invention is designed as a free-standing unit in which a sheet metal cabinet 22 (FIGS. 1 and 4) serves as the enclosure for the trash receptacle and compacting mechanism, as the structural framework which mounts all the working parts of the compacting mechanism housed therein and as the stress-absorbing container for resisting the compacting force exerted on refuse compacted by the unit. Cabinet 22 is made up of a pair of upright parallel side walls 24 and 26 fixed along their rear edges by full length joints to a rear wall 28, the side and rear walls preferably being welded or die formed integral with one another. The lower edges of walls 24, 26 and 28 are turned inwardly to form flanges 30, 32 and 34 respectively (FIG. 1) and a cross bar 35 is welded to the front ends of flanges 30 and 34 to brace the bottom front of the cabinet (FIG. 4). A flat bottom wall 36 of a drawer, described in more detail hereinafter, is substantially coextensive with the length and width dimensions of cabinet 22 and is adapted to rest on flanges 30, 32 and 34 in the closed position of the drawer.

Side walls 24 and 26, as well as drawer bottom wall 36, provide the primary frame members of the cabinet for taking the reaction stresses developed during trash compaction effected by power extension of the compacting mechanism, and hence these members are

preferably constructed of relatively heavy gauge sheet metal, such as 12-gauge steel. Side walls **24** and **26** are bent inwardly as indicated at **38** and **40** (FIG. **1**) to form a cover-receiving appliance offset along their upper three edges **42**, **44**, **46**. As best seen in FIGS. **2** and **4**, the upper ends of walls **24** and **26**, in addition to being offset, are each beveled at the corners to form a horizontal uppermost central edge **42** (FIG. **2**) extending for about a third of the width of the side wall, and two **45** degree downwardly sloping rear and front edges **44** and **46**. Rear wall **28** terminates at an upper edge **48** (FIG. **2**) which extends horizontally from side to side about one inch above the elevation of bends **38** and **40**, rear wall **28** likewise being bent inwardly at **50** at the elevation of bends **38** and **40**.

A removable cover **52** (FIGS. **1**, **2** and **4**) forms the top wall of cabinet **22** and consists of a vertical front panel **54**, a rearwardly sloping and suitably apertured control panel **56**, a horizontal top panel **58**, a forwardly sloping rear panel **60** and a vertical rear panel **62**, each of these panels having right angle flanges **54'**, **56'**, **58'**, **60'**, **62'**, respectively, at their side edges (FIG. **4**) which are dimensioned to slip closely over inwardly offset portions **24'** and **26'** of the upper edges of the side walls of the cabinet. Cover **52** may be detachably fastened to the side walls by simple sheet metal screws (not shown).

The compacting mechanism of compactor **20** is best seen in FIGS. **1–3** and **5** and is detachably mounted to the upper ends of side walls **24** and **26** so as to nest in its retracted position within the upper confines of cabinet **22**. Referring to FIGS. **1** and **2**, a pair of right angle brackets **70**, **72** are welded to the inner surface of walls **24** and **26**, respectively, near the upper edges thereof to form a strong support for a pair of parallel, horizontally extending right angle beams **74**, **76**. The horizontal upper flanges of beams **74** and **76** abut the undersides of brackets **70**, **72** and are secured by four screws **78** which extend vertically and have their slotted heads exposed above the mounting brackets. Beams **74** and **76** are spaced horizontally apart as shown in FIG. **2** to permit nesting of an electric motor **78** and associated drive train components of the compacting mechanism when the same is in its retracted position shown in broken lines in FIG. **1** and in solid lines in FIG. **2**.

The compacting mechanism comprises an extensible linkage herein illustrated by way of a preferred example as a system of two identical extensible linkages laterally spaced from one another fore and aft of the cabinet. Front beam **76** serves as the fixed anchor for one linkage set and rear beam **74** serves as the fixed anchor for the other linkage set. Each of the front and rear sets of linkages consists of two identical five-bar linkages wherein the fifth bar of each linkage consists of a variable length element which is common to both of the five-bar linkages; i.e., a threaded screw **80** shown by way of a preferred example herein, for bidirectionally applying force to the linkage to extend and retract the same. The upper five-bar linkage of the front set thus consists of beam **76**, two substantially equal length cross links **82** and **84**, a stabilizer link **86** and screw **80**. The lower five-bar linkage of the front set likewise consists of screw **80**, two substantially equal length cross links **88** and **90**, a stabilizer link **92** and a platen assembly **94** which serves as the movable ram for applying compaction force to refuse **95** contained within the receptacle of compactor **20**. Links **82** and **84** are pivotally mounted at **96** and **98** to beam **76** to provide a first set of fixed pivot points and an anchorage for the linkage. Links **88** and **90** are pivoted at their lower ends at **100** and **102** respectively to a right angle bracket **104** which in turn is welded to flat bottom plate **106** of the platen assembly **94**. Pivots **100** and **102** thus also have a fixed spacial relation relative to one another, but move up and down with platen assembly **94** in response to contraction and extension of the linkage assembly. The adjacent ends of links **82** and **88** and the lower end of stabilizer link **86** are interconnected in common pivotal relation by an axle stud **108** threadably secured to a right-hand trunnion (as viewed in FIG. **1**) in the form of a bearing block **110** in which screw **80** is journalled. The adjacent ends of links **84** and **90**, as well as the upper end of link **92**, likewise are journalled by a common pivot stud **112** secured to a left-hand trunnion **114**. The upper end of stabilizer **86** is pivoted by a stud **116** to link **84** slightly below pivot **98**, and similarly the lower end of stabilizer link **92** is pivoted by a stud **118** to link **88** slightly above pivot **100**.

The crossed links **82** and **84** and **88** and **90** thus form a toggle linkage operating from a fixed, first pivot means at **96** and **98** to raise and lower a second pivot means (platen assembly **94**) as a result of force applied through the variable length, third pivot means comprising pivots **108** and **112** carried on the screw trunnions. Links **92** and **86** together with links **84** and **88** form a parallelogram linkage for stabilizing the direction of travel of platen assembly **94** so that it moves through a vertical path of travel while being maintained generally in parallel relation with beams **76** throughout its travel from the fully extended position thereof shown in solid lines in FIG. **1** to the retracted position thereof shown in broken lines in FIG. **1** (and in solid lines in FIG. **2**). The rear linkage set is identical to the front linkage set and therefore those elements of the rear set which appear in the drawings are indicated by the same reference numerals raised by a prime and the description thereof not repeated, it being understood that upper pivot **98'** of the rear set is secured to rear beam **74** in fore and aft alignment with pivot **98**. Pivot **96** is a shaft which extends through both beams **76** and **74** to serve both sets of linkages. Likewise, the lower pivots **100** and **102** are shafts which extend through and are secured by brackets **104** and **104'** to plate **106** as best seen in FIG. **2**.

The fixed pivots **98** and **98'** are preferably short stud shafts in order to provide clearance therebetween to allow the motor assembly to retract into the space between beams **74** and **76**. Studs **98** and **98'** are additionally supported by outboard bearing brackets **120** and **120'** (shown only in FIG. **2**) which are welded at their upper ends to the associated beams **76** and **74** and bent downwardly and outwardly to provide balanced support for pivot studs **98** and **98'**.

As best seen in FIG. **3**, the drive for the compacting mechanism consists of electric motor **78** which is preferably a conventional reversible universal AC-DC fractional horsepower motor, such as that used for portable drills, having a conventional gear reduction unit encased in a die-cast housing **124** attached to the

front end of the main motor housing with an output shaft 126 protruding therefrom to which is affixed a drive sprocket 128. Motor 78 and associated gear reduction unit 124 are cantilever mounted on a rigid bracket 130 which in turn is secured at its lower end to bearing block 110. Block 110 has a bearing cavity in its right-hand face containing a ball bearing assembly 132 through which a reduced diameter extension 81 of shaft 80 is journalled. Bracket 130 thus serves as a retainer for bearing 132. A thrust collar 134 is mounted between the inner face of bearing 132 and the inner face of a large diameter chain sprocket 136 which in turn is suitably fixed, as by set screws 137, to a reduced diameter extension 81 of shaft screw 80 to rotatably drive screw 80. This shaft journal arrangement thus provides a bearing adapted to take radial thrust as well as axial thrust forces in both directions of the axis of screw 80. Motor 78 is drivingly connected to sprocket 136 by suitable link chain 138 trained over sprockets 128 and 136.

The left-hand trunnion of the drive mechanism is best seen in FIGS. 2 and 5 and consists of the semicircular yoke 114 having an internally threaded bore 140 threadably receiving lead screw 80 therethrough. Pivot studs 112 and 112' are fixed to the opposite ends of yoke 114, and thus are spaced to the left of bore 40 as viewed in FIGS. 2 and 5. This arrangement allows screw 80 to be shortened, thereby keeping the path of travel of the left-hand end of the screw generally within the confines of the path of travel of platen assembly 94 and clear of cabinet side 24.

Platen assembly 94 has a left side wall 142 (as viewed in FIG. 1), front and rear walls 144 and 146 (FIG. 2), and a right side wall 148 (as viewed in FIG. 1). Right wall 148 is recessed centrally thereof to provide clearance for block 110 in the retracted position of the compacting mechanism. Each of the walls 142, 144, 146 and 148 has an inturned horizontal flange on which is mounted by means of fasteners 150 and retaining strips 152 a rectangular wiper 154. Wiper 154 has a large central aperture so as to be clear of the toggle mechanism in its retracted position and protrudes horizontally outwardly around the upper edge of platen assembly 94 so as to have a light wiping contact with the inner surface of refuse bag 202 suspended in the receptacle or basket 200. Preferably wiper 154 is constructed of rubber or other suitable flexible and resilient material so that such wiping contact is maintained should the platen assembly 94 move horizontally in the plane of the drawing as viewed in FIG. 1 a short distance, for example, one inch during its twelve inches of vertical travel, between its retracted and extended positions. Wiper 154 also will accommodate whatever slight horizontal movement fore and aft of the unir may occur due to tolerance stack-up in the linkage as well as whatever installation misalignment may result from manufacturing tolerance variations. Wiper 154 thus serves to keep loose, small pieces of trash or refuse from moving up around the side edges of platen 106 as it descends during a compacting stroke.

Compactor 20 has a front-opening drawer assembly 160, best seen in FIG. 4, wherein the drawer is shown in open position out in front of cabinet 22. Drawer 160 may be mounted for approximately horizontal sliding movement between its open position, as shown in FIG. 4, and its closed position, as shown in FIG. 2, by a pair of conventional drawer slides, such as disclosed in U.S. Pat. No. 3,537,390. Each of the slides thus may comprise a track 162 affixed to an indented portion 164 of the right side wall of drawer 160 (FIG. 1), a track 166 fixed to the inner surface of wall 26, and a roller carrier 168 having journalled thereon rollers 170 and 172 which roll in tracks 162 and 166 respectively.

Drawer 160 is made up of a front panel 180 joined at its lower edge to horizontal bottom wall 36, the joint between front wall 180 and bottom wall 36 being reinforced by side walls 182 and 184 (FIGS. 1, 4 and 16). Right-hand side wall 182 is shown in solid lines in FIGS. 4 and 16 fragmentarily and the complete outline of side wall 182 is indicated by broken lines in FIG. 4. Left-hand side wall 184 is the same as right-hand wall 182. Drawer 160 is provided with a handle 186 for pulling the drawer open and pushing it shut, and a suitable latch may be provided if desired to lock the drawer in closed position. Preferably the tracks of the drawer slides are mounted at a slight incline (rearwardly downwardly) of approximately 2° to insure that the drawer is gradually lowered as it is pushed in and when it is closed, bottom wall 36 rests on flanges 30 and 34 of the side walls so that the drawer slides do not carry the compression force exerted by the compacting mechanism.

Receptacle 200 is preferably constructed in the form of an open rectangular framework to serve as a lightweight basket for receiving the paper refuse bag 202 therein. Basket 200 has an imperforate bottom panel 201 (FIG. 16) enclosed on all four sides by relatively short, upright left and right side walls 203, 203' and front and rear walls 205, 205', respectively, to form a liquid-tight drip pan at the bottom of the basket. Basket 200 has four upright corner posts, two posts 204 at the front and two posts 206 at the rear. The upper ends of the front and rear posts are connected by side cross pieces and the two rear posts are connected at their upper ends across the back of the basket by another cross piece (not shown). However, there is no cross piece at the front between the upper ends of the front posts 204 in order to facilitate removal of bag 202 after the same has been filled with compacted trash and hence has a tendency to bulge slightly outwardly. The basket as illustrated herein is thus made of an open framework, preferably of metal, but also may be made of suitable plastic materials in order to make the basket lightweight and easy to handle.

Basket 200 is dimensioned to seat flat on bottom wall 36 of drawer 160 and is just slightly smaller than the interior space defined laterally between the side walls of cabinet 22, and fore and aft by rear wall 28 of the cabinet and front wall 180 of drawer 160 when the drawer is in closed position. Thus, in accordance with one feature of the present invention, it is these side walls of the drawer and cabinet which are relied upon to restrain expansion of paper bag 202 when trash is being compacted therein, rather than the structure of the basket itself. Basket 200 is not fastened to drawer 160, but rather merely rests loosely on bottom wall 36 thereof with the front uprights 204 of the basket adjacent the inner surface of panel 180. To assist in a snug seating of basket 200 in drawer 160, the rear wall 205' of the integral drip pan of the basket is inclined rear-

wardly and upwardly (FIG. 16) at a locking angle of about 5°. Drawer **160** is provided with a matching short rear wall **161** likewise inclined to form a light friction locking relationship when basket **200** is fully inserted downwardly into drawer **160**, the basket being readily released as soon as the basket is lifted slightly upwardly in drawer **160**.

Preferably bag **202** is a suitable refuse bag made of heavy paper lined with plastic or other liquid-tight material having upper side and rear edges which protrude above the upper side and rear edges of basket **200** and which can be folded downwardly thereover as shown in FIGS. 4 and 16 to thereby removably suspend the bag in the basket. As shown in FIG. 4, bag **202** is provided with preslits or cuts **202***a* formed at the front corners of the bag so that front edge **208** of the bag may be left standing upright when the side and rear edges of the bag are folded down. Thus when drawer **160** is pushed closed, edge **208** of the bag will be clamped upright between the upper edge of panel **180** of the drawer and a sponge rubber clamping strip **209** (FIGS. 2 and 4) affixed to cabinet **22** at an elevation just high enough to clear the upper end of the basket. This insures that bag **202** is not dragged down by the friction of wiper **154** as trash is being compacted in the bag.

Compactor **20** is provided with a control circuit shown schematically in FIG. 6 for operation by control switches mounted on a control panel **210** (FIG. 2). Panel **210** is affixed by a bracket **212** to front beam **76** so that all the switches and electrical circuitry are removable as a unit or module with the compacting mechanism. Front panel **56** of cover **52** is apertured as required to accommodate the controls provided on panel **210** so that the exterior actuators or knobs of the controls protrude through panel **56** for access by the operator.

The control circuitry includes a pair of main motor energizing leads **220** and **222** connected across a suitable source of current, such as **110** volt or **220** volt AC. A safety interlock switch **224** (mounted on rear beam **74** as seen in FIG. 2) is connected in series in lead **220**, as is a conventional circuit breaker **226** which may be of the automatically resetting or manual resetting type. Interlock switch **224** is operated by a lever **225** (FIG. 2) pivoted clockwise on a pin **226** against the bias of a spring **226'** when its lower arm **225'** is pressed against wall **28** by the rear upper edge of basket **200** as drawer **160** is pushed into its fully closed position. One set **228** (the "stop" set) of contacts of a commercially available rocker-type, three-position "start-stop" switch **230** is connected by the "stop" jumper of switch **230** when in neutral and "start" positions to lead **220'** and a lead **232** which in turn is connected to the parallel leads **234–234'** and **236–236'–236''**. The other ("start") set of contacts **238** of switch **230** and a limit switch **1LS** are connected in series in lead **234**, and a second limit switch **2LS** and the coil of a relay **1CR** are connected in series in lead **236**. A lead **240** is connected at one end to the junction of leads **234** and **236''** and at the other end to one terminal of a field winding **242** of motor **78**. A set of normally closed contacts **2C2** and a lead **244** connect the other terminal of winding **242** to one terminal **246** of the armature winding **248** of motor **78**. The other terminal **250** of winding **248** is connected by a set of normally closed contacts **2C3** and lead **252** to one terminal **254** of another field winding **256** of motor **78**. The other terminal of winding **256** is connected to lead **222**.

A reversing lead **258** is connected between terminal **243** of winding **242** and terminal **250** of winding **248** and an associated reversing lead **260** is connected between terminal **254** of winding **256** and terminal **246** of winding **248**. Lead **258** has a normally open set of contacts **2C4** and a "hold-cycle" switch **262** in series therein, and lead **260** has a set of normally open contacts **2C5** connected in series therein.

A relay energization circuit is connected across leads **236''** and **222** and comprises a lead **264** connected to lead **236'** between limit switch **2LS** and relay coil **1CR** and in series with three sets of contacts connected in parallel with one another between lead **264** and a lead **266**. These three sets of contacts consist of a normally open set of relay contacts **1C1** closed by energization of coil **1CR** in response to a given value of excess current flowing through lead **236**, a normally open set of contacts **2C1** closed by energization of a relay coil **2CR** connected in series in lead **266**, and a limit switch **4LS**. Another limit switch **3LS** is connected in series with coil **2CR** and lead **266**. Thus coil **2CR** when energized closes contacts **2C1**, **2C4** and **2C5** while simultaneously opening contacts **2C2** and **2C3**. Commercially available arc suppressors **270**, **272** and **274**, such as those sold under the trademark THYRECTOR by General Electric, are connected respectively in parallel across motor windings **242**, **248** and **256**.

The operation of the compactor **20** will be understood from the following description of the control circuit for the compactor. First the basket **200** with the empty refuse bag **202** installed therein is placed in position in drawer **160** and then drawer **160** closed. The last increment of movement of the drawer into closed position closes interlock switch **224**. Operation of the machine is then controlled by manipulating start-stop switch **230** and cycle switch **262**. Start-stop switch **230** is a rocker-type switch with a maintained "stop" position, a neutral position and a momentary "start" position. As is well understood in the art, switch **230** has a wide-angle, V-shaped operating knob or rocker **231** (FIG. 17) pivotable about an axis **231'** extending parallel to panel **210**. The rocker is stable in a middle, neutral position wherein contacts **228** are held closed and contacts **238** are open. When the "stop" side of rocker **231** is depressed, rocker **231** is pivoted clockwise, thereby opening contacts **228**. The rocker will remain latched in the depressed stop position. If the "start" side of rocker **231** is depressed, while it is either in the "stop" or "neutral" position, rocker **231** will be pivoted counterclockwise, thereby first unlatching the rocker and allowing contacts **228** to be closed and then closing contacts **238** as the rocker reaches the other limit of its travel. However, rocker **231** must be held by finger pressure to keep it in "start" position, and it will return to the middle neutral position if such pressure is removed.

To start a compacting cycle of machine **20**, the operator presses switch **262** to either the "cycle" or "hold" position. If switch **262** is pressed to the "cycle" position (closed) and then the operator depresses the "start" side of switch **230** and holds it down for about two seconds, contacts **238** are thereby closed so that

power can flow to the motor windings via lead 220, switch 224, breaker 226, contacts 228, lead 232, contacts 238, switch 1LS, leads 234 and 240, winding 242, contacts 2C2, lead 244, winding 248, contacts 2C3, winding 256 and lead 222. This energizes motor 78 to rotate clockwise, causing lead screw 80 to rotate and begin drawing pivots 108 and 112 toward one another to thus begin extending the compacting mechanism on its downstroke from the completely retracted position shown in phantom in FIG. 1. As the left-hand trunnion 114 begins to move downwardly away from the actuating arm 280 (FIG. 2) of limit switches 2LS and from the adjacent actuating arm 282 of a combined double throw unit containing limit switches 1LS and 3LS, the sequential positions and differing lengths of these arms first causes switch 2LS to close, establishing an enabling shunt around contacts 238 and switch 1LS relative to the motor windings. The next slight downward movement of trunnion 114 causes limit switch 3LS to close, and the further slight downward movement then causes limit switch 1LS to open. Motor energizing current now flows through lead 236, switch 2LS and coil 1CR so that the operator can now release pressure from the "start" side of switch 230, allowing its spring to open contacts 238 without thereby de-energizing the motor.

Continued downward movement of the compacting mechanism causes platen 106 to engage and compress the trash or refuse downwardly in bag 202. When the mechanism in its downstroke encounters a given upper limit of resistance from the compressed trash, correlated to a given maximum value of current draw by motor 78, this amount of current causes coil 1CR to close its contacts 1C1, thereby energizing relay coil 2CR via lead 264, contacts 1C1, lead 266 and switch 3LS. Energization of relay coil 2CR closes contacts 2C1 which provides a hold-in shunt around contacts 1C1 coil 2CR. Energization of coil 2CR also simultaneously closes contacts 2C4 and 2C5 while opening contacts 2C2 and 2C3, thereby reversing the power connections to armature winding 248 and thus reversing the direction of rotation of motor 78. The compacting mechanism will now be driven on its upstroke to return to the retracted position thereof.

As trunnion 114 approaches the end of its upstroke, it will sequentially engage the aforementioned switch arm 282 of limit switch 1LS–3LS and arm 280 of switch 2LS to sequentially close switch 1LS, then open switch 3LS and then open switch 2LS. The closure of switch 1LS conditions the circuit for the next cycle. The opening of switch 3LS de-energizes relay coil 2CR to thus close contacts 2C2 and 2C3 and open contacts 2C4 and 2C5 to return the motor connections to the clockwise or the down direction. However, by the time it takes the relay coil 2CR to effect this action, switch 2LS will have been opened, de-energizing motor 78 so that it stops in the full-up position of the compacting mechanism (bearing in mind that contacts 238 are still open).

Thus, upon completion of one cycle as described above, the initially loose fill of trash will have been compacted in bag 202 and platen 106 returned to its fully retracted position so that it is clear of the top of basket 200. Drawer 160 can now be opened for receiving another load of uncompacted trash. The compacting cycle then can be repeated by the operator again pushing start switch 230 as described above.

At any time desired, typically after each loading, unless an immediate reloading is desired, or at the end of a day's use, after say two or three loads of trash have been successively compacted in bag 202, compactor 20 can be conditioned for tighter "setting" of the trash. To do this, the operator merely pushes the rocker of hold-cycle switch 262 to the "hold" position in which it maintains the switch contacts open. The operator then pushes start button 230 to begin the downstroke portion of the compacting cycle. The first half of the sequence described above is repeated; i.e., motor 78 is energized in the clockwise direction to drive pressure platen 106 downwardly until the resistance of the trash being compacted reaches the aforementioned upper limit, thereupon causing relay contacts 1C1 to be closed by the current sensing coil 1CR. This again energizes relay coil 2CR to thus open the contacts 2C2 and 2C3 and close contacts 2C4 and 2C5, thereby disabling the "downstroke" connections to winding 248 and making the "upstroke" connections thereto. However, since switch 262 is in its "hold" or open position, the reversing circuit is still disabled and hence the motor is stopped rather than being energized in the reverse direction. The compacting mechanism will thus be stopped a the maximum pressure point in its downstroke and will remain at this position because of the very high force multiplication ratio between the motor armature and compacting linkage; that is, the force exerted upwardly by the compacted trash on platen 106 is not sufficient to overcome the resistance of the lead screw 80 and associated drive train components. The mechanism thus is effectively locked down at the normal reversing point in its cycle, thereby maintaining full pressure on the compacted load until such time as the operator, say after breakfast the next morning, actuates switch 262 to the "cycle" position. The motor then will be energized in the reverse direction to retract and shut off the compacting mechanism, thereby completing the full cycle of downstroke and upstroke.

In the event that the amount of trash in bag 202 is insufficient to create a resistance force equal to said given current draw value prior to completion of a full downstroke of platen 106, and thus insufficient to cause a pressure trip reversal of the compacting mechanism, the compacting mechanism will continue to drive platen 106 downwardly until it is fully extended. This will cause left-hand trunnion 114 to travel all the way in on screw 80 until it strikes the actuating arm 284 of limit switch 4LS mounted on bearing block 110 (FIG. 1) to thereby close the switch. This will energize relay coil 2CR even through contacts 1C1 are still open due to motor current not having risen to the setting of coil 1CR. Closure of switch 4LS thus will effect reversal of the motor to reverse rotation of drive screw 80. As trunnion 114 starts to move away from block 110, switch 4LS will reopen, but the now closed contacts 2C1 will hold relay 2CR "in" to enable the upstroke to be completed as described above.

It is to be understood that limit switches 1LS, 2LS and 3LS may be either a compound switch with internal phasing driven from a single actuator, or two or more independent switches and external actuators

phased to provide proper sequencing. Also, the circuit arrangement described by way of example in FIG. 6, while presently preferred, may be varied as to components and arrangement to accomplish the function intended.

In the event that switch 4LS should malfunction, trunnion 114 will continue to be drawn toward block 110 until it engages a metal plate 290 (FIG. 3) which is adhesively secured to a rubber bumper 292, which in turn is adhesively secured to block 110. As bumper 292 is compressed, it will increase the load on motor 78 until motor current reaches the aforementioned predetermined reversing value, thereby causing relay 1CR to close contacts 1C1 to thereby energize the reversing relay to reverse the direction of rotation of the motor. Although switch 4LS could be eliminated, and bumper 292 relied upon to effect full stroke reversal of the compacting mechanism, it is preferred to use limit switch 4LS for this purpose to reduce the wear on the bumper and to rely on the bumper only as a malfunction safety device.

FIG. 7 illustrates a second embodiment 300 of a refuse compactor also constructed in accordance with the present invention in which the construction differs from compactor 20 only with regard to the drawer and basket arrangement. Compactor 300 has a fixed bottom wall (not shown) corresponding to the drawer bottom 36 of compactor 20, which is secured in stationary relation to flanges 30 and 34 of the cabinet side walls. Front panel 302, instead of being part of a drawer, is hinged along its lower edge to the front edge of the bottom wall of the cabinet so as to pivot about a horizontal axis between a horizontal down position (as shown in FIG. 7) to an upright position in which panel 302 closes the front of the cabinet. With this arrangement, a modified basket 304 may be constructed similar to basket 200 described previously except that four rollers 306 are added, two of the rollers being rotatably mounted on each side of the drip pan portion of the basket which are adapted to roll on two parallel guide tracks 308 mounted on the side edges of the cabinet bottom wall and two parallel tracks 310 mounted on the inside surface of panel 302. Tracks 310 thus serve as extensions of tracks 308 when panel 302 is in its open horizontal position. Such roller basket and track arrangements are well known in the art, particularly in connection with household automatic dishwashing machines and hence need not be described in further detail herein. It is also to be understood that suitable depressions may be provided in tracks 308 which register with rollers 306 when basket 304 is fully inserted into the cabinet so that the bottom of the basket seats firmly on the floor of the cabinet in the closed position of the cabinet, whereupon the bottom wall of the cabinet supports the bottom wall of the basket against the forces exerted during compaction of trash in the basket. A suitable latch 312 is provided on cover 52 to lock panel 302 in its upright closed position after a basket 304 with a bag 202 therein has been loaded into the cabinet of compactor 300.

FIG. 8 illustrates a third embodiment of a compactor 330 also constructed in accordance with the present invention in which the sliding drawer 160 of compactor 20 is replaced by a swinging door arrangement. Compactor 330 thus has a front panel 332 rigidly connected to a right side panel 334 and a horizontal bottom panel 336 connected along its right and front edges in rigid relationship to panels 334 and 332, respectively. A modified basket 338 is provided which is constructed similarly to basket 200 except that it is contoured to seat on the bottom wall or panel 336, and no side indentations need be provided to accommodate the drawer slides embodied in compactor 20. Basket 338 receives bag 202 in the same fashion as basket 200. Panel 332 is suitably hinged along its left vertical edge to the front vertical edge of the left wall 24 of the cabinet of compactor 330 so that the door can be swung about a vertical axis from the open position shown in FIG. 8 to a closed position (as indicated by the broken lines in FIG. 8). In its closed position, panel 334 forms a portion of the right side wall of the cabinet and panel 332 serves as the front door of the cabinet.

In order to interconnect panel 334 with bottom wall 340 and with the fixed upper portion 342 of the right side wall of the cabinet, panel 334 is provided with inwardly bent flanges 344 and 346 (FIGS. 8 and 9) along the top and bottom edges respectively of the panel. The lower edge of side panel 342 is bent inwardly and then outwardly to form a channel portion 348 (FIG. 9) which receives flange 344 in the closed position of the swinging door. Likewise, bottom wall 340 has a downwardly offset retainer strip 350 affixed to the underside thereof adjacent its right edge to define therewith a lower slot or groove for receiving flange 346 of panel 334 in the closed position of the door. Thus approximately half of the reaction forces opposing the compaction force developed by the compacting mechanism of unit 330 are taken in tension through panels 334 and 342 as a result of the tongue-in-groove connection of the right door panel 334 with the cabinet panels. As in the previous embodiments, basket 338 is adapted to removably seat on the door bottom so that it can be readily lifted and removed when the door is in its open position.

FIG. 10 shows a fourth embodiment of a refuse compactor 370 which in most respects is similar to compactor 20 except that it is particularly adapted for built-in applications wherein the cabinet of the unit would be suspended from adjacent structure of a conventional cabinet 372 as illustrated in FIG. 10 for use in home kitchens, restaurants, lunch counters and the like. Compactor 370 has one-piece side walls 374 and 376 and a rear wall 378 similar to walls 24, 26 and 28 of compactor 20 but without the bottom flanges 30 and 34 thereof. In lieu of drawer 160, cabinet 370 has a downwardly opening, flour bin type front panel 380 fixed at its lower edge to a bottom panel 382, with reinforcing side gusset panels 384 and 386 suitable secured to the front and bottom panels 380 and 382. The rear edge of bottom panel 382 is hinged by a piano-type hinge 388 to the lower edge of bottom wall 378 so that the door pivots about a horizontal axis from its down, open position shown in FIG. 10 upwardly to a closed position wherein the upper edge of panel 380 overlies and engages the clamping strip 210 of compactor 370. Suitable latches and interlocks are provided to connect panel 380 to the front panel 54 of the cover so that the cabinet in closed position is adapted to take the compacting forces as well as lateral stresses imposed by bulging of the refuse bag during compaction. A

removable bag and basket such as bag **202** and basket **338** is used with compactor **370**.

FIGS. **11–15** inclusive illustrate a fifth embodiment of a compactor **400** also constructed in accordance with the present invention. Compactor **400** has a cabinet and compacting mechanism constructed identically to compactor **20** except for the bottom wall of the cabinet, the other principal modification being in the bag, basket and drawer structure. Referring to FIG. **11**, the bottom wall **402** of compactor **400** is provided with four pockets **404, 406, 408, 410** arranged with the rear pockets **406** and **410** spaced farther apart laterally of the cabinet than the front pockets **404** and **408**. As shown in FIG. **12**, wherein front pocket **408** is illustrated, the pockets may be in the form of drilled holes in wall **402** or they be hemispherical indentations (not shown) or other readily formed shapes.

In accordance with a further feature of the invention, compactor **400** has a combination drawer, basket, drip pan and handle assembly **412**. Assembly **412** comprises an upright front panel **414** having a drip pan **416** made up of an imperforate bottom wall **418** and four short upright side walls **420**, the pan being fixed along its front edges to panel **414**, as best seen in FIG. **12**. A set of four suitable ball casters **422** are mounted on the underside of wall **418** so as to register with pockets **404–410** when drawer basket **412** is fully inserted into the cabinet of compactor **400**. In this position, the roller ball of each caster drops into its associated pocket and thus serves as a detent to hold the drawer securely positioned against lateral movement within the cabinet. A suitable latch operated by a handle **424** is mounted on panel **414** near the upper edge thereof to cooperate with latching structure (not shown) mounted on the front panel **54** of the cover of compactor **400**, as in the previous embodiments. Pan **416** is liquid tight around its joint between the bottom and sides thereof to serve as a drip pan to catch liquids which might leak from the refuse bag. Preferably bottom wall **402** of the cabinet bears against the undersurface of the pan bottom wall **418** in the closed condition of the cabinet to provide support for the bottom wall against the compacting stresses.

Assembly **412** also serves as a basket for the refuse bag and for this purpose has a pair of brackets **426** and **428** affixed at their inner ends to the inner surface of panel **414** near the upper corners thereof so as to extend rearwardly slightly more than half the front-to-rear dimension of assembly **412**. A handle **430** of U-shaped configuration has the free ends of its arms **432** and **434** pivotally connected at **436** and **438** to the free ends of arms **426** and **428**, respectively. Handle arms **432** and **434** are curved beyond the pivot connection to form stops **440** which engage the lower edge of the associated arms **426, 428** when handle **430** is pivoted clockwise **90** degrees from the upright carrying position thereof shown in FIG. **11** to the horizontal position thereof shown in FIG. **15**.

Another U-shaped member **444** having arms **446** and **448** also has the free ends of its arms pivotally connected at **436** and **438** to the inner ends of arms **426** and **428** and serves as a clamping fixture for the refuse bag. It is to be understood that handle **430** has its arms disposed outwardly of the bracket arms, whereas clamp **444** has its arms disposed inwardly of the bracket arms. Suitable shims may be provided at the pivot connections to provide clearance between the clamp arms and bracket arms to allow the upper edges of the bag to fit closely therebetween. Clamp **444** thus can be pivoted from a clamping position shown in solid lines in FIG. **13** upwardly to a release position shown in broken lines in FIG. **13**. Suitable stops (not shown) are also provided on clamp **444** to limit pivotal movement thereof counterclockwise beyond the clamping position shown in solid lines in FIG. **13**.

In accordance with another feature of the present invention, a specially constructed refuse bag **450** is provided as shown in FIGS. **13–15** for use with drawer basket **412**. Bag **450** may be constructed of heavy paper with a plastic lining and is a five-sided (i.e., four upright sides and a bottom side) bag open at the top. Bag **450** has a pair of notches **452** and **454** formed in the middle of the upper edges of its side walls **456** and **458** adapted to register with and provide clearance for the pivoted ends of handle **430** and clamp **434** when the bag is seated upright with its bottom resting snugly in the drip pan **416**, as best seen in FIG. **15**.

To install bag **450** in drawer-basket **412**, handle **430** is first rotated clockwise to its down, horizontal position, in which position it acts as a rear support for the upper edge of the bag. Clamp **444** is also rotated (counterclockwise) to its down clamping position. Then bag **450** may be inserted vertically downwardly bottom end first through the opening defined by handle **430** and clamp **444** until the bottom of the bag is seated in the drip pan **416**. Next clamp **444** is pivoted clockwise upwardly to a vertical position, whereupon the upper front edge portions **460** and **462** of the bag sides are folded slightly forwardly. Then clamp **444** is again pivoted counterclockwise downwardly to clamping position wherein it is disposed inwardly of the adjacent portions of the bag. Now the rear edge **466** of the bag and rear portions **468** and **470** of the sides of the bag are folded outwardly over and then down about the handle **430** to thereby suspend the rear half of the bag on handle **430**. Finally, the front half of the bag is suspended on clamp **444** by folding bag edges **460, 464, 462** inwardly over clamp **444** as best seen in FIGS. **13** and **14**. Preferably the front portion of clamp **444** has a tight fit against the inner surface of wall **14** in the horizontal position of clamp **444** so that the front wall of the bag is securely pressed in clamped relation against the front panel **414**. The drawer basket **412** is now ready to be loaded with trash and then rolled into the cabinet of compactor **400**.

After several loads have been compacted in bag **450**, and the bag is full except for the last load, the last load is placed in the bag, compacted, the drawer pulled out and then clamp **444** and handle **430** both pivoted upwardly. Preferably, prior to compacting the last load, the bag is loosened to uncurl and release the edges of the bag and then the upper edges are folded inwardly to seal the upper end of the bag. After compacting the bag in sealed condition, and pivoting the handle and clamp upright, handle **430** alone or in conjunction with clamp **444** is grasped with one hand and used to carry drawer basket **412** to the area where the compacted trash bags are stored for pick-up. Thus, there is a minimum handling of the refuse bag, the drip pan insures that there will be no spillage in transit and one hand is free to open doors, etc.

Referring to FIG. 17, rocker 231 of the "stop-start" switch 230 is shown as it appears from the interior of control panel 210 and for clarity without any of the other associated structures of switch 230. As described previously, rocker 231 is pivotable about axis 231' and is mounted in an opening 470 in panel 210 as as to project on both sides thereof in all three positions of the rocker described previously. Hence, side surface 472 of rocker 231 will be exposed interiorly of panel 210, both in the stop and start positions of the rocker. In accordance with another feature of the present invention, rocker 231 is combined with a safety key lock arrangement so as to mechanically prevent operation of compactor 20 except when a key (not shown) is inserted into the tumbler of a conventional drawer lock 474 mounted in panel 210 adjacent rocker 231. The axis of rotation of the tumbler of lock 474 is arranged transversely to axis 231' and lock 474 is angularly oriented so that when its tumbler is in locked position a block 476 secured to shaft 478 of the lock is oriented as shown in FIG. 17. In this position a hook-shaped arm 480 secured to block 476 has its free end 482 inserted into a hole 484 drilled in side wall 472 of rocker 231 to thereby lock the rocker against pivotal movement. Only in this locked position of the tumbler can the key be withdrawn from the lock, the absence of the key in the lock thus indicating to the operator that the stop-start switch has been rendered safe so that the compactor cannot be operated by unauthorized personnel or children. As will be evident from the above as well as FIG. 17, side surface 472 of rocker 231 blocks movement of free end 482 of arm 480 to its position shown in FIG. 17 unless and until rocker 231 is moved to the "stop" position thereof shown in FIG. 17. Hence it is necessary to so condition switch 230 in order to remove the key from lock 474 because only then is hole 484 aligned to receive the free end 482 of arm 280.

To unlock switch 230, the operator inserts the key into lock 474 and rotates its tumbler 90 degrees counterclockwise as viewed in FIG. 17, thereby pivoting the free end 482 of arm 480 out of hole 484 so that rocker 231 can now be pivotally manipulated as described previously. Lock 474 is of the type wherein in any but the locked position of its tumbler the key cannot be removed. Hence, the key serves as a "warning flag," i.e., the operator can tell at a glance whether or not it is safe to leave the compactor unattended merely by observing the presence or absence of the key protruding from the control panel.

From the foregoing description, it now will be apparent that the present invention provides an improved refuse compacting mechanism, cabinet arrangement, control circuitry, safety interlock features, and drawer, basket and bag features which amply fulfill the objects of the present invention. In addition to the objects and features described previously herein, it now will be better understood that the compactor of the present invention is of economical construction due to the walls of the cabinet and drawer serving as the main structural framework, as well as providing lateral constraint against bulging forces generated in the refuse being compacted. Cover 52 also serves as a part of the compactor framework in that it is a rigid one-piece member and serves as a brace for the side and rear walls so as to resist twisting force exerted on the cabinet due to the slight lateral motion of platen 106 during its downstroke travel.

The construction of the drawer and basket wherein the drawer is generally open at the rear and the basket is generally open at the front greatly facilitates removal of a refuse bag after the same has been filled with compacted trash. The provision of the close-fitting drip pan at the bottom of basket 200 adapted to nest snugly in the bottom of drawer 160 with the mating rear walls inclined to provide the locking angle relationship insures that the basket is located in proper position in the drawer for movement therewith, as well as being properly angularly oriented in the drawer, and offers support to resist tipping or tilting of the basket during compaction and movement of the drawer. The provision of side and/or rear panels on the basket restrains the bag from bulging when the drawer with the basket therein is pulled out to open position. However, as soon as the basket is lifted a fraction of an inch to disengage it from the friction locking relationship with the bottom of the drawer, the basket may be tilted rearwardly slightly, increasing the fore and aft clearance so that the basket with the full bag therein may be readily lifted out of the drawer. Likewise, the generally open front of the basket will then permit ready removal of the refuse bag despite its tendency to bulge laterally when full of compacted material. The rear panel on the basket, by preventing rearward bulging of the trash bag when the basket is fully seated in the drawer, makes the drawer easy to shut after each successive reloading of the bag.

The suspension of the compacting mechanism from the two main beams 74 and 76, which in turn are suspended by screws 78, greatly facilitates servicing. Merely by loosening these four screws 78, the heads of which are conveniently accessible from above, the entire compacting unit including the motor, drive, toggle mechanism, platen, control panel and all wiring can be removed as a single unit for servicing on the site or at a remote service center. It will be noted that fasteners 78 extend in the direction of thrust and hence are not loaded by the compacting forces but rather merely carry the weight of the compacting mechanism. Thus only hanger brackets 70 and 72 which are welded to the side walls take the compacting force as a shear stress and thus have high strength for this type of loading.

Motor 78 is mounted on the fore and aft center line of the compacting mechanism as well as on the fore and aft center line of the cabinet and compacting space. Hence the forces exerted by the compacting mechanism develop a minimum of twisting couples or moments, enabling only the walls of the cabinet themselves to serve as a framework for the unit.

It is also to be understood that the basket and refuse bag can be integrated into one unit by using a plastic container. Such a single basket-bag unit need not be any stronger than the refuse bag described herein, but in such event the back wall on the drawer would be extended slightly higher in order to provide reinforcement against rearward bulging of the unit when the drawer is opened which otherwise could make the drawer hard to close.

I claim:

1. In a refuse compactor comprising a cabinet, a refuse receptacle removably received in said cabinet adjacent the lower end of said cabinet and having an open upper end facing the upper end of said cabinet, a compacting mechanism mounted in said cabinet ad-

jacent said upper end thereof including a pressure platen movable into and out of the open upper end of said receptacle between a downwardly extending position within said receptacle and a retracted position disposed above and clear of said open upper end of said receptacle, a motor and drive means operably interconnecting said motor and said compacting mechanism for causing movement of said platen between said extended and retracted positions thereof, the improvement wherein said compactor has a control circuit for controlling the operation of said motor including a stop-start switch having a pivotable actuating member associated therewith mounted on an exterior control panel of said cabinet for manual operation from the exterior of the cabinet and having limited pivotal movement about an axis extending generally parallel to the exterior surface of said control panel, said actuating member having a portion thereof always exposed interiorly of said control panel and extending in the direction of movement of said actuating member, a key lock mounted on said panel with its key hole exposed exteriorly of said panel, said lock being located adjacent said member and having an arm fixed to a rotatable tumbler shaft of said lock for rotation therewith about an axis extending generally perpendicular to said pivot axis of said actuating member, said arm and said portion of said member having projection and socket means interengaged in the locked condition of said lock and the stop condition of said switch to render said member immobile and disengaged by rotation of the tumbler of said lock out of locked condition to render said member movable, said lock being of the type wherein its operating key can be removed only in the locked condition of its tumbler, said portion of said member permitting movement of said arm and thus movement of said tumbler shaft to its locked position only when said switch is in said stop condition wherein said projection and socket means are registered to be interengaged.

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