United States Patent [19]

Gladwin

[11] **3,726,211**

[45] **Apr. 10, 1973**

[54] **TRASH COMPACTOR**

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[22] Filed: **Dec. 23, 1971**

[21] Appl. No.: **211,299**

[52] **U.S. Cl.** .....**100/100,** 53/124 B, 100/218, 100/221, 100/229 A, 141/73

[51] **Int. Cl.** **B30b 15/00**

[58] **Field of Search** .....232/43.2; 100/100, 100/229 R, 229 A, 218, 221; 141/73, 80; 53/124 TS, 124 B

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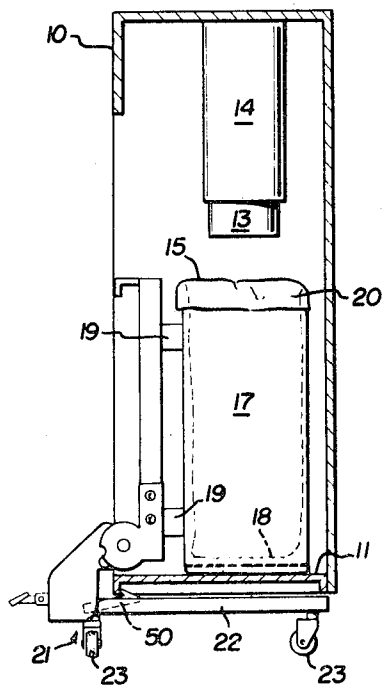
[57] **ABSTRACT**

A trash compactor formed of a cabinet having a raised support floor upon which an open top trash bag is rested in upright position beneath a compacting ram, and a movable dolly formed of a roller supported frame arranged beneath the support floor and locked thereto by a releasable locking means. A cabinet door is hingedly connected to the frame and has a bag support means upon which the bag is mounted. The door is arranged to tilt forwardly of the cabinet for raising the bag above the floor, for thereby removing the bag, door and frame as a unit, from the cabinet. The door hinge includes a locking means which releasably locks the door in tilted position and simultaneously causes the frame locking member to unlock. A manual control unlocks the door for swinging upright, thereby permitting the frame locking member to re-engage the cabinet door.

9 Claims, 13 Drawing Figures



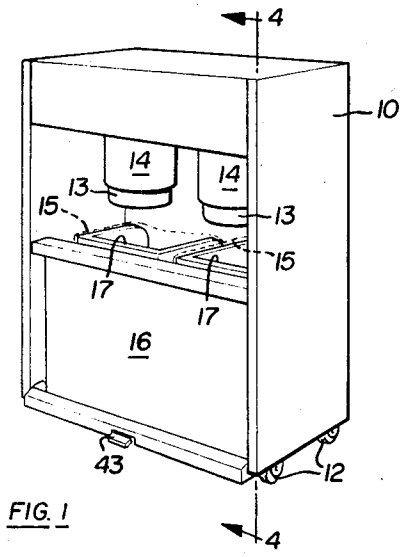


FIG. 1

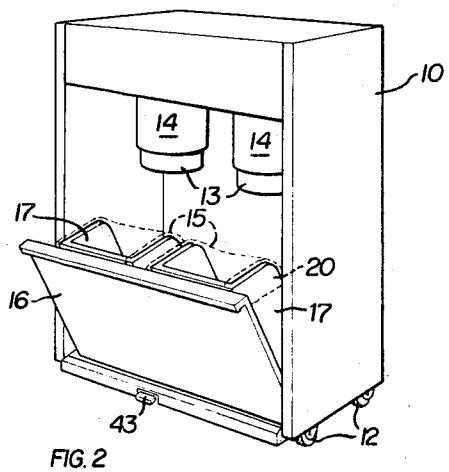


FIG. 2

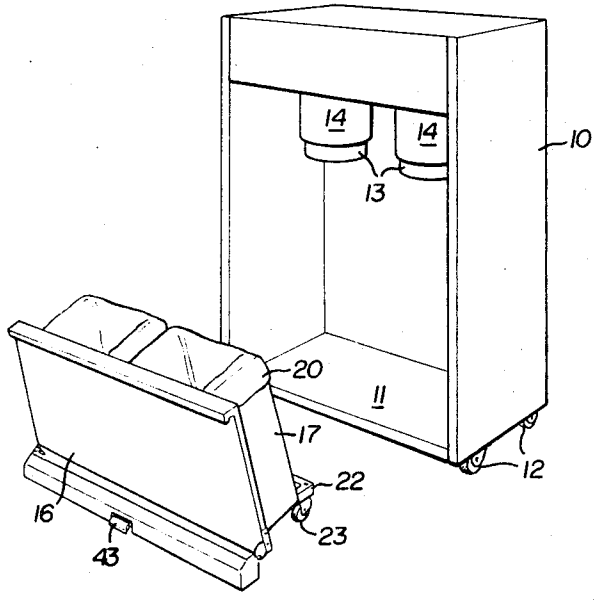


FIG. 3

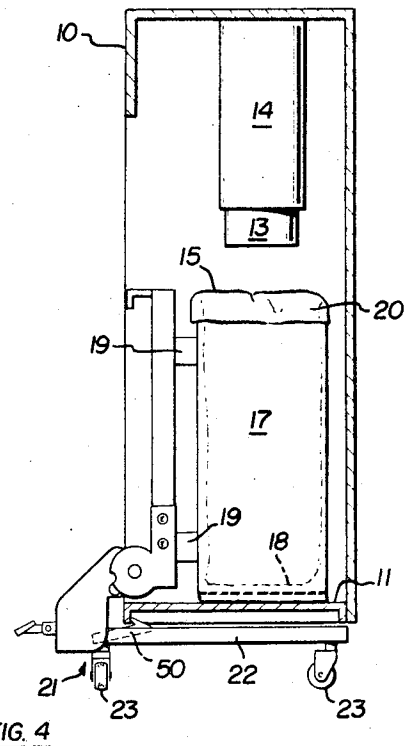


FIG. 4

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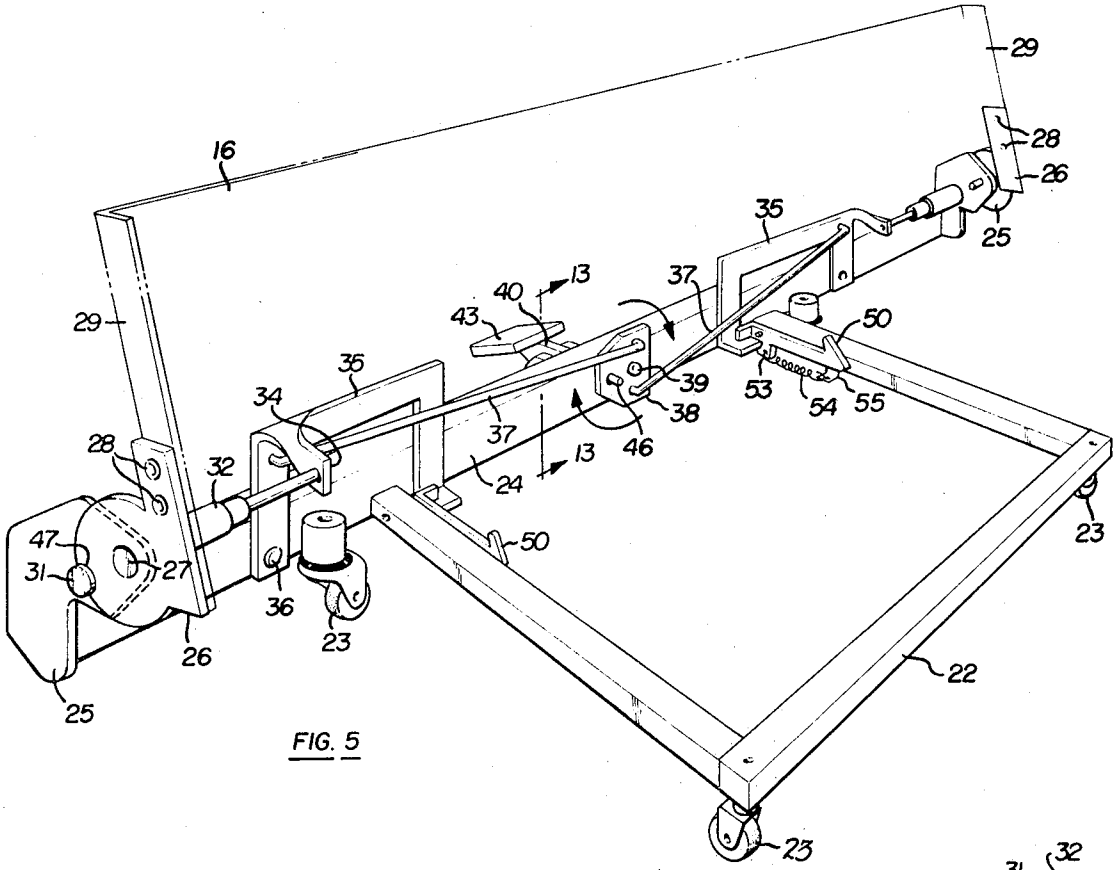

FIG. 5

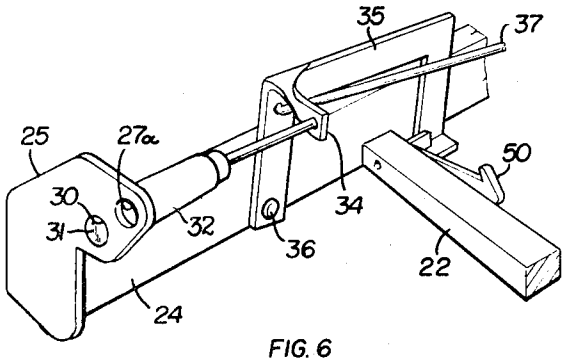

FIG. 6

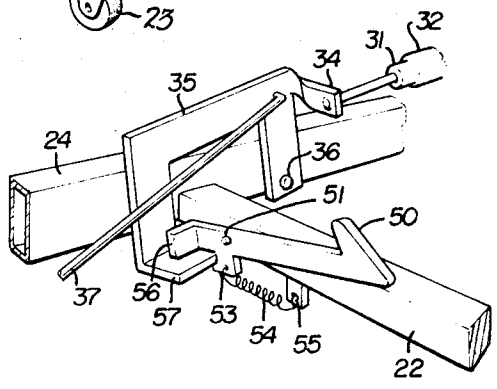

FIG. 7

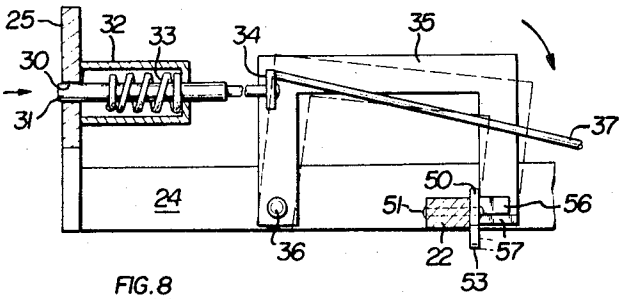

FIG. 8

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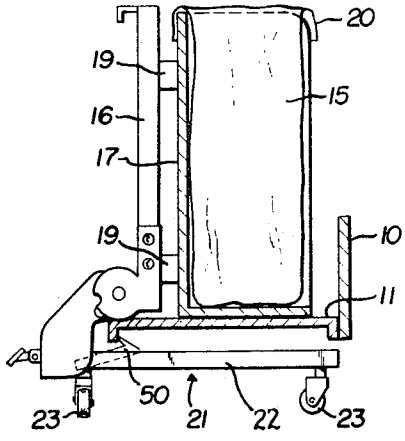

FIG. 9

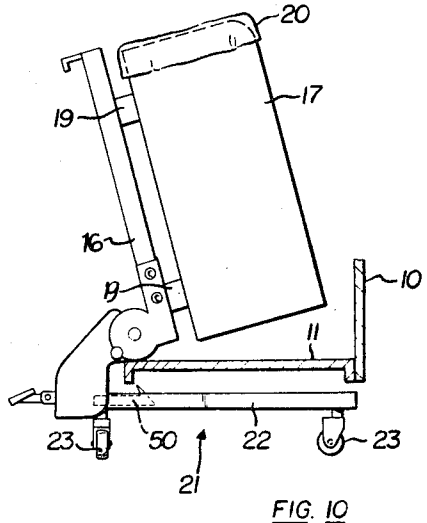

FIG. 10

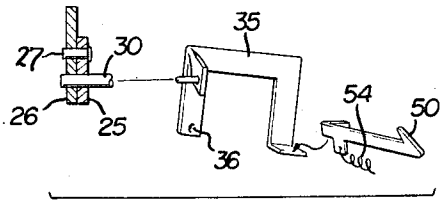

FIG. 12

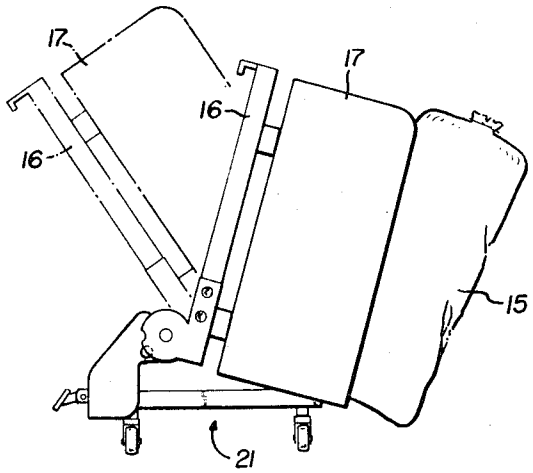

FIG. 11

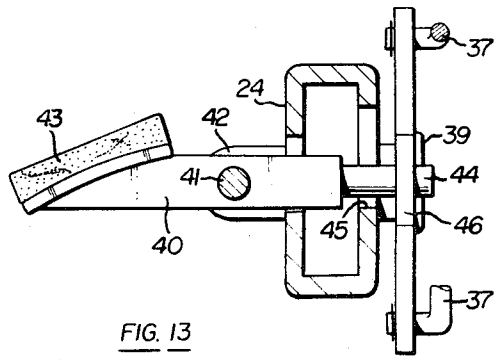

FIG. 13

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TRASH COMPACTOR

BACKGROUND OF INVENTION

The invention herein relates to a trash compactor of the type shown, for example, in my earlier U.S. Pat. No. 3,438,321 issued Apr. 15, 1969. In such type device, a trash bag is arranged within a cabinet, beneath a compacting ram or piston, and is periodically lowered into the bag to compact trash thrown therein. When the bag is filled, it is removed and replaced. Thus, the purpose of such devices are to compress together into a compact form, large quantities of loose trash such as may be found in cafeterias, restaurants, schools and the like.

In such type devices, the filled bags are relatively heavy and difficult to carry to distant trash pick-up points. Thus, efforts have been made to support the bags on movable dollys arranged within the compactor cabinet. However, these types of structures have had the disadvantage of being difficult to remove from the compactor cabinet.

In addition, it has been difficult to so construct the cabinet as to absorb the substantial loads of compacting the trash when the bags are mounted upon a removable dolly or support.

Thus, the invention herein is concerned with a compactor construction wherein the bags are mounted upon removable dollys that can be easily engaged within the compactor cabinet and easily removed, and still permit a simple, strong construction to absorb the compacting loads.

SUMMARY OF INVENTION

The invention herein contemplates forming a compactor cabinet with a reinforced, load absorbing floor elevated above the floor upon which the cabinet is rested. A bag supporting dolly in the form of a horizontal, roller mounted frame is arranged beneath the floor and the compactor door is hingedly connected to the frame and has support means for supporting a bag upright, beneath the compactor ram, with the bottom of the bag supported by the cabinet floor. The door is tiltable forwardly about a horizontal axis, thus raising the bag off the floor, after it is filled, and easily permitting the dolly to be rolled out and away from the cabinet.

A locking means is provided which locks the frame to the floor structure and which automatically releases when the cabinet door is tilted and which again actuates when the door is raised into an upright position. The locking means which is of simple construction, is formed of concealed, positively locking elements, to avoid possible accidental releases.

The resulting structure makes it possible to quickly and easily load a bag into the compactor and to remove the loaded bag with little physical effort, and roll the bag, upon the dolly to a disposal point where it may be easily removed.

These and other objects and advantages of this invention will become apparent upon reading the following description, of which the attached drawings form a part.

DESCRIPTION OF DRAWINGS

FIG. 1 is a perspective view of the trash compactor herein, with the bag supporting door in upright or vertical position.

FIG. 2 is a view similar to FIG. 1, but showing the bag supporting door tilted forwardly into open position.

FIG. 3 is a perspective view showing the dolly removed from the cabinet.

FIG. 4 is an enlarged, cross-sectional view taken in the direction of arrows 4—4 of FIG. 1.

FIG. 5 is a perspective view of the dolly and locking mechanism, and

FIG. 6 is a fragmentary perspective view of a portion of the locking mechanism.

FIG. 7 is a view similar to FIG. 6, but showing the opposite locking mechanism portion.

FIG. 8 is an enlarged, elevational view, of the portion of the locking mechanism shown in FIG. 6.

FIG. 9 is a cross-sectional, side view, of the lower portion of the compactor with the bag holder upright.

FIG. 10 is a view similar to FIG. 9, but with the door and bag holder tilted for removal of the dolly from the cabinet.

FIG. 11 is a similar view to FIG. 10, showing the dolly removed from the cabinet and the door oppositely tilted for dumping the loaded bag.

FIG. 12 is a schematic view of the linkage system for operating the locking means.

FIG. 13 is an enlarged, cross-sectional view taken in the direction of arrows 13—13 of the manual foot pedal operating means.

DETAILED DESCRIPTION

Referring to FIGS. 1–4, the compactor includes a large, open front, compactor cabinet 10, having a reinforced support floor 11 which is elevated above the floor upon which the cabinet rests by either suitable support legs or preferably by means of rollers or casters 12 mounted upon the cabinet. Compressor rams or pistons 13, arranged within hydraulic or pneumatic cylinders 14, move downwardly to compress trash thrown into upright, open top bags 15. The unit illustrated is a two-bag model, however, one bag may be omitted and the unit narrowed to contain only one bag.

An upright or vertical tiltable door 16 is provided with U-shaped, sheet metal, bag support frames or holders 17 having floors or base platforms 18, upon which the lower portion of the bag 15 rests. The U-shaped bag supports are secured by brackets 19 to the door so that they are spaced from the door a short distance whereby the upper edges 20 of each of the bags may be turned over the tops of the U-shaped support frames for holding the bags to the frames.

Instead of mounting the tiltable door upon the cabinet itself, it is mounted upon a dolly 21 which is illustrated in FIG. 5. The dolly consists of a horizontal frame 22 supported upon rollers or casters 23 and having an elongated, enlarged, front rail 24. At each end of the rail, an end or pivot plate 25 is secured in the vertical plane. Such plates are overlapped by door hinge plates 26 pivotally connected to the pivot plates by means of pins or axles 27 extending through openings 27a (see FIG. 6) in the pivot plates.

The hinge plates, which are generally rounded in shape have extensions fastened by suitable rivets or screws 28 to the edges 29 of the door 16 near the bottom of the door so that the door may be tilted upon a horizontal axis.

The pivot plates 25 are each provided with openings 30 through which locking pins or bolts 31 extend.

These locking pins are each arranged within a cylindrically shaped housing **32** fastened to the respective pivot plates and containing spring **33** which provides a spring force upon the pin **31** to urge it outwardly of the hole or opening **30** in the pivot plate.

The opposite ends of each of the pins are narrowed and attached to a tab **34** bent from and extending outwardly of U-shaped links **35** which are pivotally connected by pivot pins **36** to the rail **24**.

Each of the U-shaped links are connected by an elongated rod **37** to a turn plate **38** located centrally of the rail and suitable connected thereto by means of a pivot pin **39**.

The turn plate is rotated, as indicated by the arrows in FIG. **5**, by means of an actuating pedal lever **40** pivotally connected by a pin **41** (see FIG. **13**) to a bracket **42**, secured to the rail **24** and having one end connected to a foot pedal **43** and the opposite end **44** extending through a slot **45** in the rail **24** and into a hole **46** in the turn plate. Thus, stepping upon the foot pedal **43**, pivots the pedal lever **40** to rotate the turn plate **39** and thereby exert a pull upon each of the rods **37**. This in turn, causes the U-shaped links to rotate about their pivot pins **36**. This, in turn, retracts the locking pins **31** inwardly of the opening **30** in the pivot plates, as illustrated in FIG. **6**. FIG. **8** illustrates the locking pin extended through the pivot plate with arrows showing the movement of the pin in the retracting position and pivoting the U-shape link for that purpose.

Normally, the ends of the locking pins **31** abut the respective faces of their hinge plates **26** and thus are prevented from extending outwardly of the pivot plates.

Thus, the normal position of the locking pins is the retracted position with the ends of the pins frictionally forced against or engaging the adjacent faces of the hinge plates connected to the door. In this position, the door is upright or vertical. However, when the door is grasped at its upper edge and pulled forwardly of the cabinet so that it tilts, notches or openings **47** formed in the hinge plate align with the locking pins **31** so that the pins are spring thrust outwardly into their extended position and into such notches or openings. This positively locks the hinge plates and thus, the door, in tilted position. The locking pins remain in this position until such time as the pedal **43** is depressed by foot pressure to rotate the turn plate and thus rotate the U-shaped links **35** to retract the pins **31** out of the notches or openings in the hinge plates so that the door may be manually moved to its upright position again.

The horizontal frame **22** is normally located beneath the support foor of the cabinet and locked thereto by a locking mechanism which comprises a pair of elongated hook members **50** connected by pivot pins **51** to the side rails of the frame. The hook members have a forward hook end **52** which engage with the lower portion of the support floor **11**, namely, at the flanged or enlarged forward edge thereof. The hooks are held in this locking engagement by spring pressure provided by an integral tab **53**, depending from each hook member and connected by a suitable coil spring **54** to a bracket **55** mounted upon the frame. This is illustrated in FIGS. **6** and **7**.

The rear ends of each of the hooks **50** are provided with bent flanges **56** which are engaged by forwardly bent flanges **57** formed on the lower ends of the non-pivoted leg of each of the U-shaped links **35**. Thus, when these links **35** pivot in a direction corresponding to the extension of the locking pins outwardly of their hole through the pivot plate, the flanges **57** exert an upward force upon the rear ends of the hooks **50**, causing them to pivot so that their hooked ends **52** move downwardly and disengage from the support floor. Thus, it can be seen that merely by tilting the door forwardly until the locking pins engage, automatically disengages the hook **50** from the support floor so that the dolly may then be pulled outwardly of the cabinet and rolled, with the door tilted, and the bags tilted, to a point of disposal. This upward tilting of the door and bag clears the bottom of the bag and the platform or base **18** of the U-shaped bag support frames **17** off of the cabinet support floor.

When the bags are arranged in their upright position and trash is compressed therein, the load of the compression is absorbed and transmitted to the cabinet structure through the support floor **11**. Thus, there is a tendency for the bag and the frame support of the bag to jam down tightly against the support floor. By tilting the door and lifting the bag upwardly at an angle, clearance is immediately provided for removal of the dolly without dragging along the support floor.

Summarizing the operation of the locking mechanism, when the door is in its vertical position and the dolly is located within the cabinet, the locking pins **31** are covered by the overlapping hinge plates **26** and the hooks **50** are upwardly extended to engage the bottom of the cabinet support floor for locking the dolly in place. However, immediately upon pulling the door forwardly so that it tilts, the locking pins extend outwardly through the notches or holes in the hinge plates, thus rotating the U-shaped links **35** to in turn lift up the rear ends of the hooks and pivot them for disengagement from the support floor for pulling the dolly away from the cabinet. The user pushes the dolly back under the support floor, stepping on the foot pedal **43**, then causes the locking pins to retract and permit the user of the equipment to swing the door in its vertical position where the hooks, due to the spring pressure, automatically engage the support floor and lock the dolly in place again.

For ease of dumping the loaded bags out of the bag supporting frames, the foot pedal may be pressed for retracting the locking pins and the door swung in the opposite direction so as to tilt the bag holders downwardly, as shown in FIG. **11**. In this position, the bags may be easily pulled out and removed.

Having fully described an operative embodiment of this invention, I now claim.

1. A trash compactor comprising:

a cabinet having a support floor raised a short distance above the ground level upon which the cabinet is supported;

a horizontally arranged frame located beneath said support floor and roller means supporting said frame for movement of the frame away from the support floor and the cabinet;

a cabinet door pivotally connected at its lower end to said frame upon a horizontal axis, said door normally extending a distance approximately vertically upwardly of and closing the cabinet for a distance above said support floor;

a bag support means upon said door for removably holding an open trash bag upright within the cabinet with the closed bottom of the bag supported upon said support floor for thereby supporting the weight of a trash containing bag upon said floor;

and releasable locking means securing the frame in its position beneath the support floor;

wherein said cabinet door may be tilted outwardly of the cabinet, thus tiltably raising the bag away from the support floor and said door and its attached frame may be moved away from the cabinet for removal of the bag, after it is filled, from the bag support means.

2. A compactor as defined in claim 1, and said bag support means including a platform, secured to said door, upon which the bag bottom is rested, with the platform resting upon the support floor when the door is upright for supporting the bag bottom upon the support floor;

and the platform tilting upwardly away from the support floor when the door is tilted.

3. A compactor as defined in claim 1, and said door being pivotally connected to said frame by means of a vertically arranged pivot plate secured to the frame and overlapping and pivotally connected to a hinge plate fixedly secured to a vertical side edge of the door;

and a spring biased, horizontally slidable locking pin extending through and opening in said pivot plate and normally abutting against the overlapped face of the hinge plate;

an opening formed in said hinge plate and positioned to receive said locking pin when the door is tilted relative to the cabinet to thereby rotate the hinge plate about its pivotal connection to the pivot plate;

and said releasable locking means including a locking member mounted upon the frame and movable to engage against said support floor;

and a linkage interconnecting the locking pin and the locking member for moving and holding the locking member out of engagement with said support floor when the locking pin extends through said hinge plate opening;

and manually operable means for retracting the locking pin from the hinge plate opening.

4. A compactor as defined in claim 3, and said locking member comprising a hook pivotally connected to said frame for swinging upwardly for engaging a portion of the bottom of the support floor, and said linkage operating to permit said hook to swing downwardly out of engagement with said floor when the locking pin enters the hinge plate opening.

5. A device as defined in claim 4, and including a spring normally holding the hook in its upwardly swung, floor engaging position.

6. A compactor as defined in claim 4, and said linkage including a link pivotally connected to the frame at one end and connected to the pin at its opposite end, with a lever connected to said opposite end for pivoting the link for retracting the pin from the hinge plate opening, and said link having a portion engaging the hook and holding it downwardly out of engagement with said support floor when the link is pivoted.

7. In a cabinet having an elevated, horizontal support floor arranged a short distance above the support for the cabinet, and a cabinet door for closing a portion of the cabinet above the support floor, the improvement comprising:

a horizontally arranged frame movably fitted beneath said support floor;

and hinge means connecting the door hingedly to the frame and for releasably locking the frame and door to the cabinet, said hinge means including a flat plate fastened to the frame and a hinge plate fixedly fastened to the door, with the two plates being overlapped and pivotally connected by a pivot pin;

a locking pin extending through the frame plate and normally engaging the overlapping hinge plate face and thus being in a retracted position, and an opening formed in the hinge plate for receiving the locking pin in a pin-extended position when the door, with the plate, is swung open relative to the cabinet;

a locking member fastened to the frame and normally engaging the cabinet when the locking pin is retracted;

and link means interconnecting the locking pin and locking member for moving the locking means into a cabinet disengaged position when the locking pin is extended, whereby the frame with the open door may be removed from the cabinet as a unit;

and manually operable means for manually retracting the locking pin from the hinge plate opening.

8. A cabinet as defined in claim 7, and said locking member including a hook pivotally connected to said frame for swinging into engagement with an adjacent portion of the bottom of said support floor when the locking pin is in its retracted position and for swinging out of engagement with said support floor when the locking pin is in its extended position.

9. A cabinet as defined in claim 8, and said link means including a link pivotally connected to the frame at one end and connected to the locking pin at its opposite end;

and said manually operable means including a lever connected to said opposite end of the link for pivoting the link and thereby retracting the pin from the hinge plate opening, and said link having a portion engaging the hook and holding it out of engagement with the support floor when the link is pivoted to correspond to the locking pin extended position.

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