# United States Patent

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[73] Assignee **Whirlpool Corporation**


[54] **REFUSE COMPACTOR**
**8 Claims, 4 Drawing Figs.**


[52] **U.S. Cl.** ..... **100/53,** 100/73, 100/229 A, 100/290
[51] **Int. Cl.** ..... **B30b 15/14**
[50] **Field of Search** ..... 100/53, 45, 229, 70, 73, 229 A, 290; 53/124; 141/71, 73



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| 3,353,478 | 11/1967 | Hopkins | 100/53 X |
| 3,537,390 | 11/1970 | Hinkel et al. | 100/229 X |



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**ABSTRACT:** A refuse compactor comprising a cabinet with top and bottom sections, a refuse receiver in the bottom section, a refuse compacting ram in the top section movable when energized in a cycle into and out of the receiver to compact refuse therein, a movable top closure in the cabinet top section extending across a top access opening when closed but movable for exposing the ram means through the opening and means for inactivating the ram before the closure means can be moved to expose the ram to preclude accidental operation of the ram when the closure is open in order to avoid possible injury to the operator of the compactor.

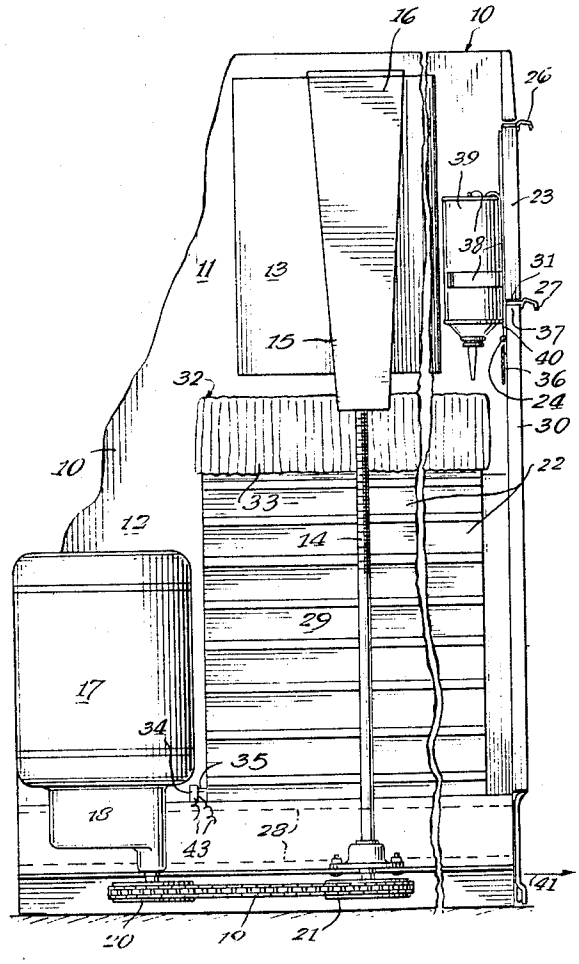



Fig. 1

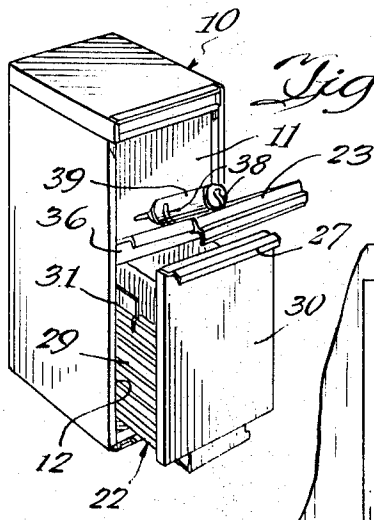



Fig. 3

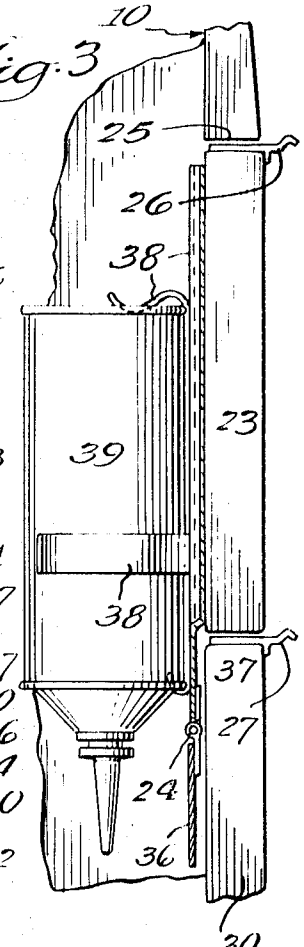
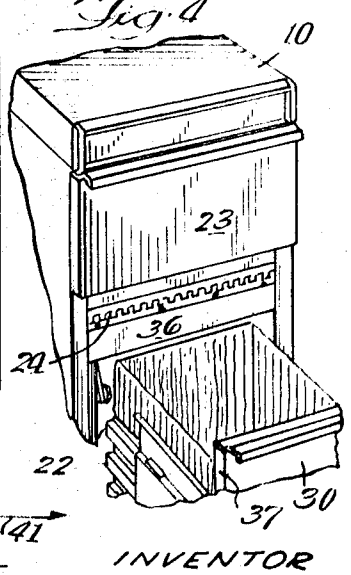



Fig. 2




Fig. 4




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# REFUSE COMPACTOR

As is disclosed in Hinkel et al. U.S. Pat. No. 3,537,390 and assigned to the same assignee as the present application, an efficient present form of refuse compactor employs a cabinet having top and bottom sections with a compacting ram in the top section and a refuse receiver in the bottom section that is movable when filled with compacted refuse through an opening that is normally closed by a bottom closure. For safety, the compactor is inoperable until the receiver is in proper position within the compactor cabinet to receive the ram for compacting refuse in the receiver.

In the present invention there is provided an access door or panel that can be opened to service the compactor and particularly the ram such as for cleaning, inserting a can of deodorizer and disinfectant and for other purposes. The present invention has as its principal feature an apparatus for ensuring inactivation of the compactor before this top closure can be opened in order to prevent accidental injury to the operator.

One embodiment of the invention claimed herein is disclosed in the accompanying drawings. Of the drawings:

FIG. 1 is a perspective view of a refuse compactor embodying the invention.

FIG. 2 is a fragmentary side elevational view of the compactor with a side panel removed for clarity of illustration.

FIG. 3 is a fragmentary side elevational view of a portion of FIG. 2 showing the parts in enlarged detail.

FIG. 4 is a fragmentary perspective view of the compactor showing certain of the parts in enlarged detail.

As is disclosed in the above patent the refuse compactor as illustrated in the accompanying drawings comprises a cabinet **10** having a top section **11** and a bottom section **12**. The top section **11** as shown in FIG. **2** contains a refuse compacting ram means **13** that is movable in a vertical path by a pair of drive screws **14** that threadably engage nut means (not shown) disposed adjacent the bottoms of opposite flanges **15** of a yoke **16**. Rotation of the screws **14** is caused by an electric motor **17** and gear drive **18** located in the bottom rear of the cabinet **10**. As is explained in the above copending application, this operation of the motor drives a chain **19** by a sprocket **20** and this movement of the chain **19** rotates the pair of heavy drive screws **14**. As is explained in the above patent the drive means which includes the motor **17**, chain **19** and a sprocket **21** on the lower end of each drive screw **14** moves the ram **13** in a cycle downwardly into a receiver **22** and then back up again to the raised position shown in FIG. **2**.

The cabinet **10** is provided with top closure means **23** here shown as a panel that is movable arcuately outwardly about a horizontal hinge **24** which may be of the piano hinge type. Panel **23** normally closes a top access opening **25** and when the refuse receiver drawer **22** is first pulled out the access panel **23** is movable into open position by a handle **26** attached to the top edge of the panel **23**.

The refuse receiver **22** is of the type illustrated in the above patent in that it comprises a drawer located in the bottom section **12** of the cabinet and movable outwardly by its top handle **27** as illustrated in FIG. **1** so that refuse may be placed therein for compacting by the ram **13** and the compacted refuse may be removed therefrom. The receiver **22** or open-topped drawer as illustrated is guided in its substantially rectilinear horizontal movement by side guide means at the bottom thereof illustrated diagrammatically at **28** and illustrated and explained in detail in the above patent.

The refuse receiving drawer **22** has opposite sides **29** that are corrugated, as illustrated, for additional strength and the front of the drawer comprises a closure panel **30** on the top of which is mounted the drawer operating handle **27**. This panel **30** completely closes the front bottom access opening **31** when the drawer is closed as illustrated in FIG. **2**.

The drawer **29** retains within it a disposable reinforced paper bag **32** whose top edge **33** is turned over the top edge of the open topped drawer **22** as illustrated in FIG. **2**. An excellent type of bag is disclosed and claimed in the copending application of Bottas and Difley Ser. No. 874,251, filed 11/5/69.



The drive means including the above-described motor, sprockets and chain is electrically powered and includes in its circuit as illustrated diagrammatically by the electric leads **43** a normally open electric switch **34** that is held closed when the refuse drawer **22** is in proper position within the cabinet **10** by having the lower section of the drawer depress a movable plunger **35** that is a part of the switch **34**. Such a switch arrangement is described more fully in the above Hinkel et al. patent.

In the present invention the ram **13** and its drive means are thus only capable of being activated via switch **34** when the drawer **22** is in proper closed position in the cabinet **10** and when the hinged closure panel **23** and drawer **22** are in closed positions all as shown in FIG. **2**.

The present invention provides means for ensuring inactivation of the ram drive means before the top closure panel **23** can be moved to open position as illustrated in FIG. **1**.

In the illustrated embodiment this automatic inactivation of the drive means for the ram **13** prior to outward opening movement of the top-hinged panel **23** is brought about by mounting the hinge **24** (see FIG. **4**) for the top panel **23** on a crossbar **36**, fastened to the cabinet side panels, that extends from one side of the cabinet to the other across the front of the access opening **31** in a location spaced beneath and behind the top edge portion **37** of the bottom closure panel **30** which forms a part of the refuse receiving drawer **22**. When the bottom closure panel **30** is in closed position the upper portion of the panel blocks hinging movement of top-hinged panel **23**.

If the drawer **22** is not already open so as to automatically inactivate the ram drive means by permitting opening the control switch **34** in the manner described above at least a partial opening of the drawer to about the halfway open position will be required in order to permit the opening of top panel **23**. This opening of the bottom drawer **22** a sufficient distance to permit top panel **23** to be opened will release the plunger **35** so that the switch **34** which is normally open will automatically move to open position and inactivate the motor. This is brought about because the hinge **24**, being located spaced well beneath the top edge portion **37** of the drawer panel **30**, will prevent the opening of panel **23** until the drawer **22** is at least partially open to approximately the halfway open position shown in FIG. **1**.

As mentioned above, the top closure panel **23** provides access to the ram **13** for servicing such as cleaning. In the illustrated embodiment this top panel **23** also carries a bracket holder **38** for releasably retaining a container **39** of a deodorizer and disinfecting spray.

When the refuse drawer **22** is in its closed position as shown in FIG. **2** the top access panel **23** will also be closed and the compactor may be operated, as explained in the above patent, to lower the ram **13** into the drawer **22** and raise it back to the position shown in FIG. **2** to compact refuse placed in the drawer. On occasion it is necessary, for servicing of the ram **13** and for other purposes such as replacing the container **39** with a fresh one, to open the access panel or door **23**. If there were no means for inactivating the compactor when the access panel **23** was opened, there would be danger of accidental injury to the person servicing the unit. However, because of the safety means of this invention a pull on handle **26** in an attempted opening of the top panel **23** prior to opening drawer **22** will automatically cause an upper hinge part **40** to abut against the top edge portion **37** of the drawer **22** thus preventing opening of the access panel **23** prior to inactivating the ram drive means by opening drawer **22**. Therefore, before the access panel **23** can be opened, the drawer **22** must first be pulled out to move it outwardly, or to the right as indicated by the arrow **41**, to about a halfway open position so that the top edge portion **37** of the drawer is not blocking hinging movement of hinge part **40**. The access panel **23** can then be pulled open and the drawer **22** is spaced outwardly a sufficient distance to release the plunger **35** and thereby permit switch **34** to move to its normally open position. This of course cuts off all power to the motor **17** ensuring inactivation of the ram

drive means prior to any ram-exposing movement of the access panel 23.

Having described my invention as related to the embodiment shown in the accompanying drawings, it is my intention that the invention be not limited by any of the details of description, unless otherwise specified.

The embodiment of the invention in which an exclusive property or privilege is claimed is defined as follows:

1. A refuse compactor comprising: wall means defining the front of a compacting space having top and bottom sections, said wall means defining a top opening to said top space section and a bottom access opening to said bottom space section; a refuse receiver in said bottom space section having an open top; means for guiding said receiver through said bottom wall means opening between a retracted compacting position in said bottom space section and an exposed refuse receiving position forwardly of said wall means; refuse compacting ram means in said top section movable in a cycle inwardly into and upwardly out of said receiver through said receiver open top for compacting refuse in said receiver; electrically powered drive means for moving said ram means; a movable top closure means on said wall means extending across a top access opening of said wall means and movable for exposing said ram means through said opening; and control means utilizing a single electrical control switch for ensuring inactivation of said ram drive means prior to said ram exposing movement of said closure means and ensuring inactivation of said ram drive means upon movement of said receiver from said compacting position in said bottom space section.

2. The compactor of claim 1 wherein said drive means is electrically powered through said control switch, and said means for ensuring said inactivation comprises means for opening said switch by movement of said refuse receiver and means requiring such movement prior to ram-exposing movement of said top closure means.

3. The compactor of claim 1 wherein said top closure means is mounted for movement about a hinge and at least a portion of said control means for ensuring inactivation is located adjacent said hinge for engagement by said top closure means preventing movement thereof prior to at least a partial movement of said refuse receiver.

4. The compactor of claim 1 wherein there are provided a movable bottom closure means in said bottom space section extending across the bottom access opening and manipulatable for moving said refuse receiver selectively through said bottom access opening.

5. The compactor of claim 4 wherein said control switch comprises a normally open electrical switch, and said refuse receiver comprises a drawer having a front wall comprising said bottom closure means, said drawer holding said switch closed when in retracted position in said space.

6. The compactor of claim 5 wherein said top closure means is mounted for outward movement about a hinge and operatively engages said front wall thereby to require said drawer to be moved outwardly to permit outward movement of said top closure means.

7. A refuse compactor comprising: wall means defining the front of a compacting space having top and bottom sections, said wall means defining a top opening to said top space section and a bottom access opening to said bottom space section; a refuse receiver in said bottom space section having an open top; refuse-compacting ram means in said top space section movable in a cycle into and out of said receiver through said open top for compacting refuse in said receiver; electrically powered drive means for moving said ram means having a normally open control switch; a movable top closure means in said top space section extending across said top wall means opening and movable for exposing said ram means through said opening; a movable bottom closure means in said bottom space section extending across said wall means bottom access opening and movable for withdrawing said refuse receiver through said bottom access opening, said refuse receiver when in retracted position in said space holding said switch closed; and means for preventing opening of said top closure means prior to opening said bottom closure means comprising hinge means for said top closure means mounted behind and blocked by an upper portion of said bottom closure means in its closed position.

8. The compactor of claim 7 wherein said refuse receiver comprises a drawer having a front wall comprising said bottom closure means.