

[54] PIVOTAL SHELF CONTROL MEANS FOR REFUSE COMPACTOR	3,793,942	2/1974	Martiniak .....	100/73
	3,800,694	4/1974	Miller et al. ....	100/45
[75] Inventor: William A. Eckerle, Louisville, Ky.	3,839,952	10/1974	McDonald et al. ....	100/45
	3,855,919	12/1974	Potter .....	100/53 X

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[58] Field of Search ..... 100/45, 53, 73, 229 A, 100/290

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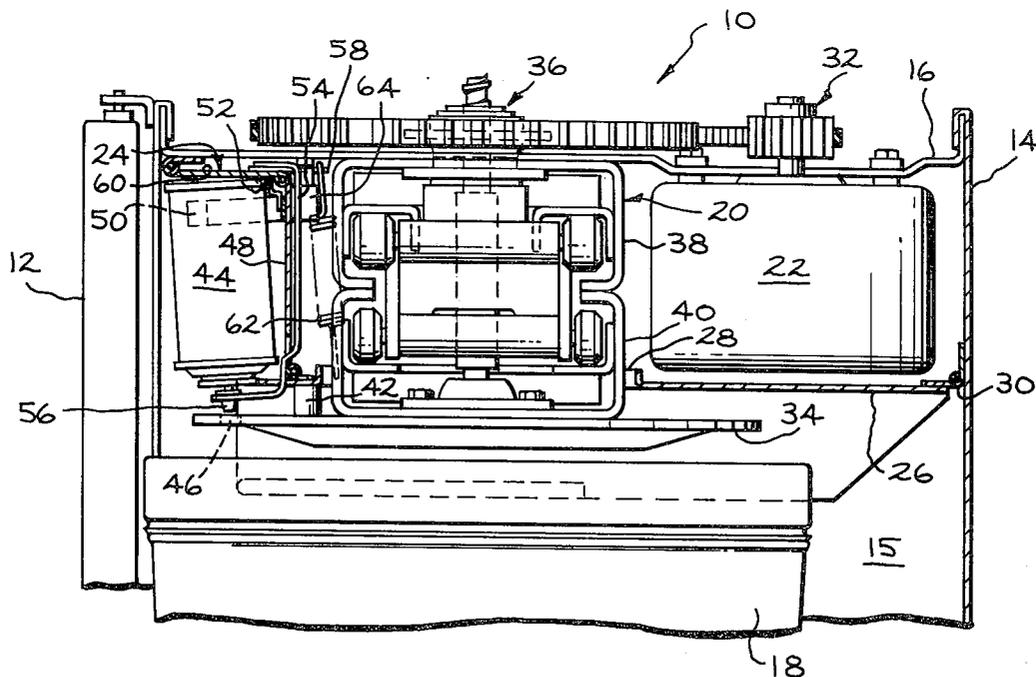
[57] ABSTRACT

A domestic refuse compactor including a pivotal shelf within the compacting chamber which is engaged by the refuse contacting pressure plate to effect movement thereof from a first position to a second position and back, thereby actuating switches attached to the shelf to operate the compactor circuitry.

[56] References Cited  
UNITED STATES PATENTS

3,636,862 1/1972 Bottas et al. .... 100/45

10 Claims, 3 Drawing Figures



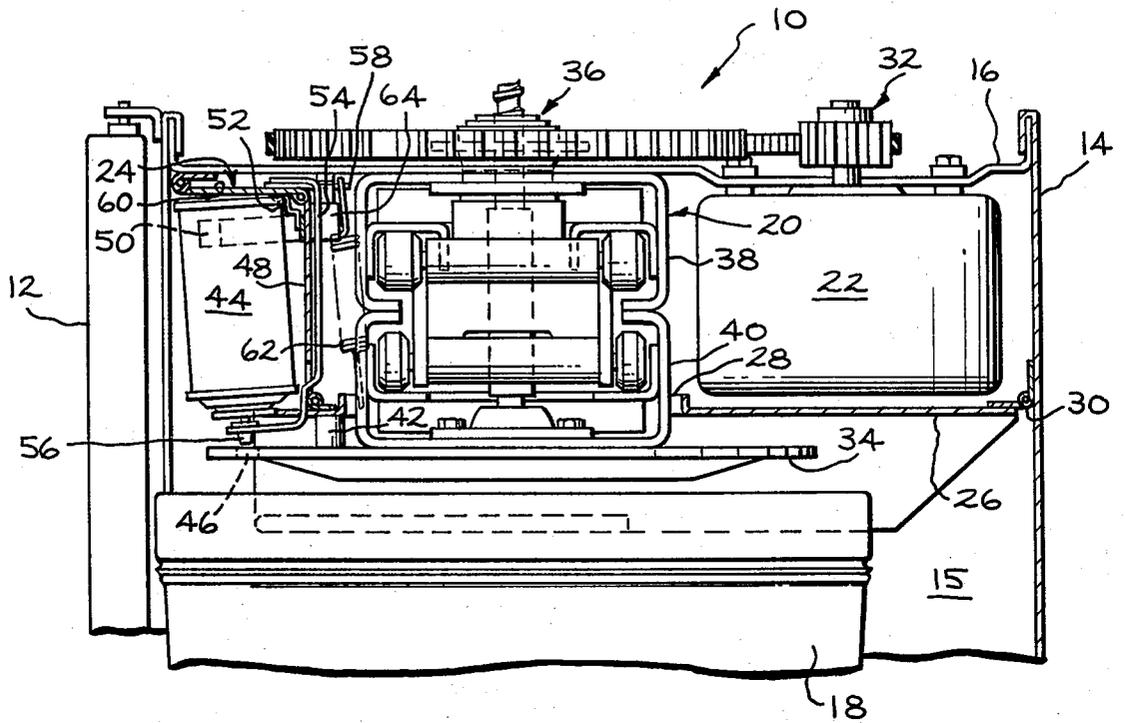


FIG. 1

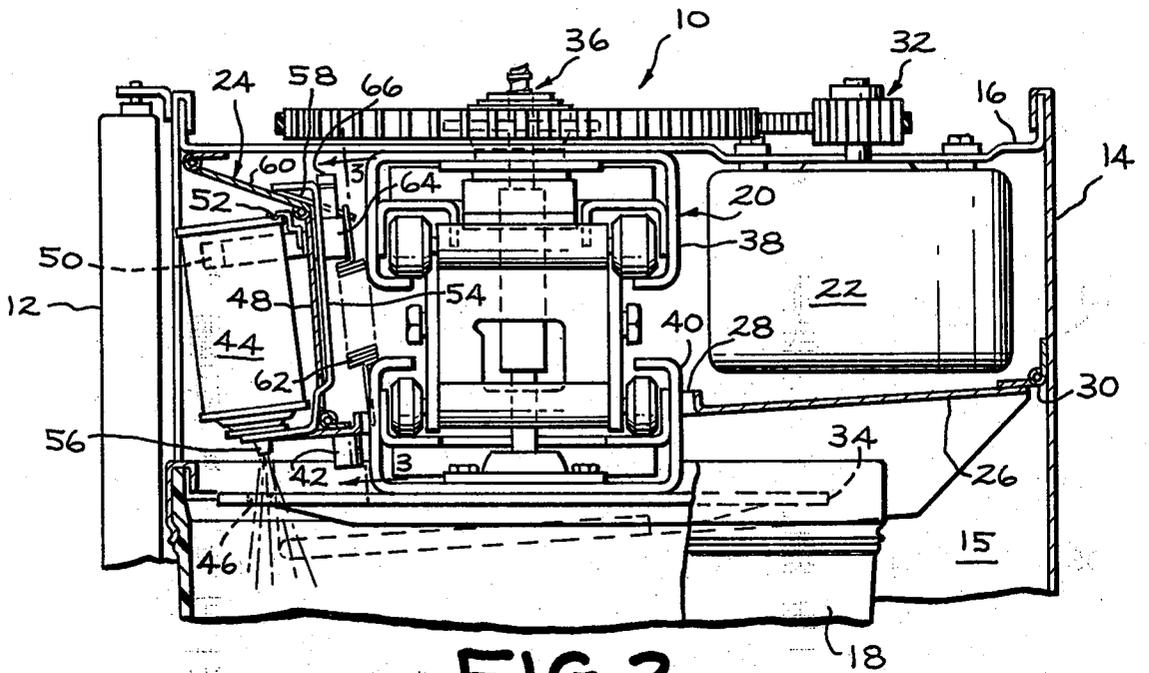


FIG. 2

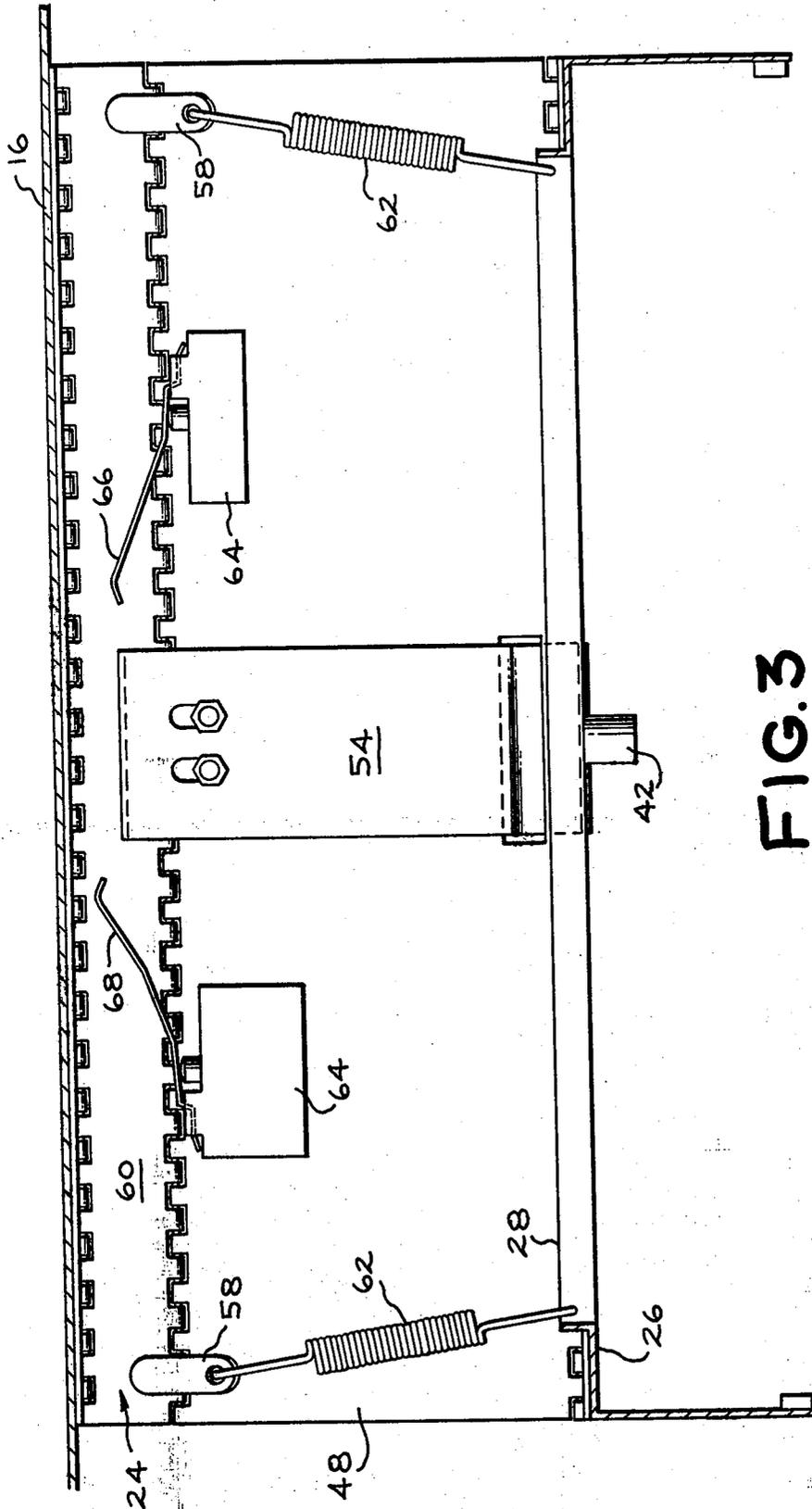


FIG. 3

## PIVOTAL SHELF CONTROL MEANS FOR REFUSE COMPACTOR

### BACKGROUND OF THE INVENTION

Most domestic compactors presently on the market include a slidably mounted drawer movable into and out of the compacting cabinet for receiving refuse. Such an arrangement generally causes the compactors to be relatively heavy and expensive since they must include a plurality of peripheral bracing members and other support members on the drawer sidewalls to withstand the stresses generated during compacting. It has been found to be advantageous to utilize a generally cylindrical refuse container since cylindrical structures have no sidewall corner joints and thus are better able to withstand sidewall stresses than rectangular structures. The provision of cylindrical containers for refuse compactors has been suggested in the prior art as in, for example, U.S. Pats. Nos. 3,654,855 and 3,734,006.

Another problem encountered in using a drawer for compacting refuse therein is that as the compression mechanism enters the drawer it may exert forces which tend to open the drawer. Such an arrangement necessitates that the compactor circuitry include safety switches so that upon slight opening of the drawer the compactor is immediately stopped to prevent possible injury to persons operating the compactor. To avoid this problem it has been suggested that the container be mounted on the compactor door which remains locked during the compacting cycle. Thus, the above-described complex circuitry is not required when such an arrangement is employed in place of a drawer. However, in either arrangement it is necessary to provide a protection device such that when an object is accidentally disposed on top of the compactor platen it is not forced upwardly into the compactor mechanism on the upward stroke. Prior art circuitry, such as that shown in U.S. Pat. No. 3,613,560, makes no provision for such an event other than providing that the compactor relay will reverse when the current in the compactor circuit increases as the ram reaches the uppermost extent of its travel. Such an arrangement would not preclude extensive damage to the compactor should a bottle or other item accidentally become lodged on top of the compactor ram. The present invention, however, overcomes this defect of prior art compactors and provides a simple, inexpensive, readily constructed and easily maintained arrangement whereby refuse lying on the top of the compactor ram will cause the compactor to shut off before any damage can be done to the compacting mechanism on the upward stroke.

### SUMMARY OF THE INVENTION

The invention includes a pivotally-mounted shelf member located above the compactor pressure plate through which the pressure plate support mechanism projects. The shelf engages the upper side of the pressure plate during the uppermost portion of the compression stroke. The pivotal shelf includes switch means adapted to control the drive motor circuitry, which switch means are preselectively operated by movement of the shelf from a first position to a second position and back. The shelf includes abutments adapted to engage the upper end of the refuse container during movement in and out of the compacting chamber and functions to prevent rubbing of the container against the cabinet sidewalls. More specifically,

the invention includes a domestic refuse compactor including a frame having a bottom, a top wall, first and second spaced sides, and an open front defining a refuse compacting chamber; means for providing access to the compacting chamber; a compacting mechanism supported by the frame including a refuse compacting pressure plate and a drive motor including control circuitry to effect movement of the compacting mechanism; a pivotal shelf member within the compacting chamber movable between first and second positions, and switch means actuated by relative movement of the shelf from the first position to the second position to switch the compactor circuitry. Preferably, the pivotal shelf member is attached at one end to the back wall of the frame and attached at its opposite end by a foldable wall, having a plurality of hinge connections, to the top wall of the compactor. Also, the switch means is preferably mounted on the foldable wall. The shelf of this invention has been found to be an effective arrangement for relating control of the compactor to the position of the ram. The shelf is particularly effective since it provides a generally large surface which is exposed to the upper surface of the ram whereby refuse accidentally carried on the upper surface of the ram will cause the compactor to shut off, rather than be forced into the drive components of the compactor. In addition, the shelf serves as a convenient base for abutments which engage the open-topped container periphery and thereby prevent the container from contacting the frame as it is being moved in and out of the compactor during normal use.

### DESCRIPTION OF THE DRAWINGS

FIG. 1 is a partial elevational view of a domestic refuse compactor showing the electrical shelf of this invention in its uppermost or horizontal position;

FIG. 2 is a view substantially the same as FIG. 1 showing the electrical shelf in its lowermost position and showing the compactor ram extending into the open-topped container; and

FIG. 3 is a view taken along line 3—3 of FIG. 2.

### DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring to FIG. 1, there is shown a compactor 10 including a door 12 and a frame 14 having a top wall 16 defining a compacting chamber 15. Top wall 16 supports motor 22, compacting mechanism 20, and a foldable wall 24. Located below compacting mechanism 20 is container 18 which is removably fastened to door 12 to swing into and out of chamber 15 for compacting and loading of refuse, respectively. Compacting mechanism 20 includes upper reaction structure 38 and lower reaction structure 40 independent of screw means 36. As can be seen from the drawings, screw means 36 is attached to pressure plate 34 and is adapted to be reciprocated by drive means 32 into and out of container 18. Pivotal shelf member 26 is provided with an aperture 28 through which lower reaction structure 40 may pass in compacting and retracting during the compacting cycle. Pivotal shelf member 26 is attached to frame 14 by hinge means 30. It is also attached at its opposite end by foldable wall 24 to top wall 16.

In FIG. 2, pivotal shelf member 26 is shown in its lowermost or inclined position and pressure plate 34 is partially within container 18. It should be noted that at this

point resilient bumper 42, which normally is contacted by pressure plate 34, when in its horizontal position, is now spaced therefrom so that pivotal shelf member 26 may pivot downwardly to the extent permitted by foldable wall 24.

It should be noted that, in accordance with one of the features of this design, spray can 44 may be located such that as the pressure plate 34 begins its descent during the compacting cycle a spray of deodorizing mist is discharged into container 18 through orifice 46 in pressure plate 34. Spray can 44 is held adjacent the midsection 48 of foldable wall 24 by bracket means 50 and is further prevented from movement by clip 52. Channel member 54 is movably fastened to midsection 48 of the foldable wall 24 in such a manner that when the wall unfolds during compaction it exerts a force upon nozzle 56 of spray can 44 to cause the deodorant to be sprayed therefrom, as will be more fully described hereinafter.

It should also be noted that there is provided an arm 58 which is attached to the upper section 60 of foldable wall 24. Arm 58 projects downwardly from upper section 60 such that when pivotal shelf member 26 is in its horizontal position arm 58 is also in a horizontal position. Attached to arm 58 is a spring 62. Spring 62 is also attached to foldable wall 24 at the mouth of the aperture 28 and functions to bias the foldable wall into an unfolded position. Such biasing aids in operating spray can 44 when pivotal shelf member 26 falls to its lowermost position as shown in FIG. 2. Also attached to midsection 48 of foldable wall 24 is switch means 64, best seen in FIG. 3. Switch means 64 is of such a design that its upward levers 66 and 68 contact top wall 16 on its underside when pivotal shelf member 26 is in its horizontal position. It should be noted that upper lever 68 is the upper limit switch for the compacting mechanism. It projects above upper lever 66 which is the reversing switch for the motor circuitry, for reasons which will be more fully explained hereinafter.

In the operation of the present invention, the cycle is begun by pressing the start button to actuate the control circuitry (not shown) and start the pressure plate on its downward path into the refuse container. As the pressure plate begins its downward movement, the bumper follows along allowing the pivotal shelf to pivot about hinge 30 whereupon levers 66 and 68 drop from contact with the top wall of the compactor so that the upper limit switch is again functional and the motor circuitry is prepared for reversal of the ram. Spring 62 insures at this point that the pivot action occurs by overcoming the inertia effect of the shelf. The pivotal shelf continues to move downwardly with the aid of spring 62 until the foldable wall begins to straighten, at which point the spray can is actuated. Such actuation is effected since spray can 44 is held fast between the clip 52 and the channel member 54 with the bracket means 50 preventing any lateral movement thereof. Thus, as pivotal shelf 26 continues to move downwardly, the upper section of foldable wall 24 acts as a pry bar to pry against the upper portion of channel member 54 and causes the nozzle 56 to be moved longitudinally toward the body of the can, thereby causing mist to be emitted.

After the pressure plate has descended into the container and compacted the refuse, it beings its upward stroke. As the pressure plate moves upwardly out of the container and approaches its uppermost position, it contacts resilient bumper 42 on its upper side and lifts

pivotal shelf member 26 toward its horizontal position. As such occurs, upper levers 68 and 66 of switch means 64 engage respectively with the top wall 16 whereupon, firstly, power to the motor is shut off and, secondly, the control circuitry is reversed so that the start button can be pressed to initiate a subsequent compacting cycle. While this is happening, spring member 62 is being put under increased tension in preparation for overcoming the inertia of pivotal shelf member 26 upon initiation of a subsequent stroke and in preparation for actuating the spray nozzle 56 of the spray can 44 to administer deodorizing mist on the trash in the receptacle upon initiation of a subsequent cycle. Finally, the lower reaction structure comes to rest abutting against the upper reaction structure and the compactor is ready for a subsequent cycle. It can be seen from the above description that if refuse, for example a soda pop bottle or other similar container, accidentally becomes positioned on top of the compacting ram, it will abut either the resilient bumper 42 or the lower surface of pivotal shelf member 26 and cause the pivotal shelf to assume its horizontal position, thus shutting off the compactor before damaging the circuitry or compacting mechanism.

Having thus described the invention, what is claimed is:

1. A domestic refuse compactor comprising: a frame having a bottom, a top wall, first and second spaced sides and an open front defining a refuse compacting chamber; means for providing access to the compacting chamber; a compacting mechanism supported by said frame including a refuse compacting pressure plate and a drive motor, including control circuitry, to effect movement of said compacting mechanism; a pivotal shelf member within said compacting chamber movable between first and second positions and switch means actuated by relative movement of said shelf from said first position to said second position to switch the compactor circuitry.

2. The apparatus of claim 1 wherein said pivotal shelf member is attached at one end of the back wall of said frame and attached at its opposite end by a foldable wall, having a plurality of hinge connections, to said top wall of said compactor.

3. The apparatus of claim 2 wherein said switch means is mounted upon said foldable wall.

4. The apparatus of claim 1 wherein said shelf member includes a resilient bumper which is contacted by the pressure plate when said shelf member is in its horizontal position.

5. The apparatus of claim 1 wherein said pivotal shelf member includes an aperture through which said compacting mechanism extends.

6. The apparatus of claim 3 wherein said switch means attached to said foldable wall includes an upper limit switch and a reversing switch for the motor circuitry, said upper limit switch being positioned to be actuated before said reversing switch as said pivotal shelf member is moved to its second, horizontal position.

7. The apparatus of claim 2 wherein said foldable wall includes bracket means to support a deodorant spray can and wherein said pressure plate includes an aperture for deodorant mist to be sprayed therethrough onto the refuse in said compacting chamber.

8. The apparatus of claim 7 wherein said foldable wall further includes clip means cooperating with said

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bracket means to prevent said spray can from moving in a longitudinal direction.

9. The apparatus of claim 8 wherein said foldable wall includes a channel member, one leg of which abuts the top of said spray can as said foldable wall unfolds during the initiation of the compaction cycle to effect discharge of spray deodorant mist.

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10. The apparatus of claim 9 wherein said pivotal shelf is linked to said foldable wall by spring means, said spring means serving to overcome inertia of the shelf during initiation of the compacting cycle and provide a supplemental force to effect discharge of said deodorant spray mist.

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