United States Patent

Ziegler

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[54] REFUSE COMPACTOR

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[52] **U.S. Cl.**.....**100/48,** 100/226, 100/229 A, 100/269 R, 100/DIG. 15

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[58] **Field of Search**....100/48, 49, 53, 221, 224, 227, 100/229, 214, DIG. 15, 229 A, 269, 295, DIG. 2, 51, 219, 258, 226

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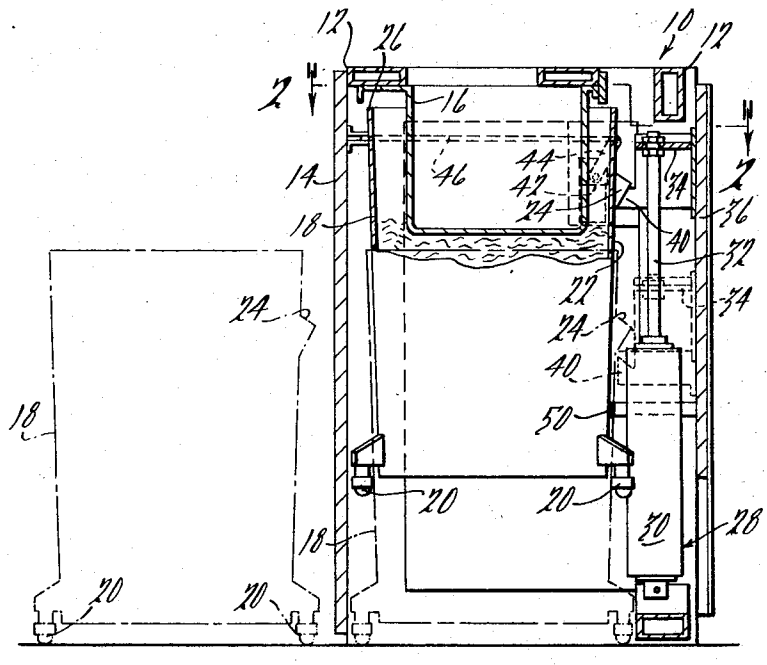
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[57] **ABSTRACT**

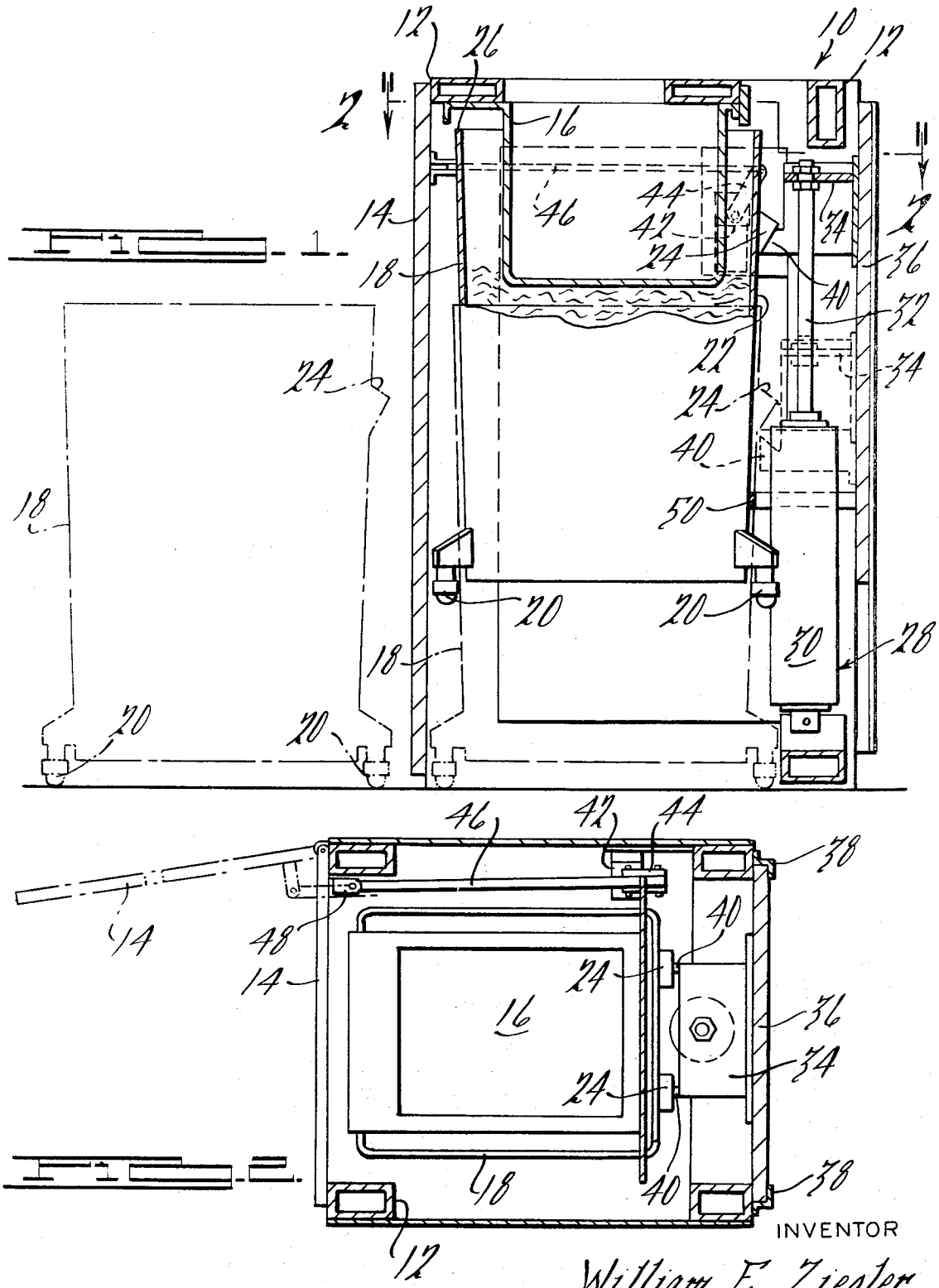
Apparatus for compacting refuse comprising a fixed position compactor head, a portable refuse container having an open upper end and positionable below and in substantially vertical alignment with the head, and lift apparatus engageable with the container and operable to move the container upwardly to engage the refuse therein with the head so as to compact the refuse in the container. The lift apparatus consists of a cylinder assembly operated by water pressure and capable of maintaining a sustained force on the container over a period of time so that the refuse therein is subjected to a continuous compacting action by the head. A door operated valve controls the flow of water to the cylinder assembly.

5 Claims, 2 Drawing Figures



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REFUSE COMPACTOR

BACKGROUND OF THE INVENTION

There is a continually increasing need for a household appliance capable of compacting household refuse so as to reduce the bulk of the refuse and simplify refuse handling. The principal object of the present invention, therefore, is to provide an improved refuse compactor.

SUMMARY OF THE INVENTION

The refuse compactor of this invention consists of a frame which can be built-in to a household kitchen or incorporated in a free standing unit. A door is mounted on the frame so that a wheeled refuse container can be positioned within and removed from the frame. A downwardly extending compactor head is mounted on the upper end of the frame so that it is in vertical alignment with the open upper end of the container when the container is moved to a position within the frame. The container is provided on one side with lift brackets which are aligned with lift members on the piston rod for a fluid actuated cylinder assembly mounted within the frame. When the cylinder assembly is actuated, the piston rod is guidably moved in an upward direction so that the lift members engage the lift brackets and move the container upwardly. Upward movement of the container is continued until either the piston rod reaches the top of its stroke or until the density of the refuse which is in the container and is engaged with the head stalls the cylinder. The cylinder maintains a continuous force on the refuse even after stalling so that over a period of time the refuse is gradually compacted further and further. Normal household refuse can be compacted to bulk three to five times less than its uncompacted bulk depending on content. The control valve which admits water from the household water system to the cylinder assembly is connected to the door so that in response to door opening movement, the piston rod is moved downwardly and in response to closing movement of the door, the piston rod is moved upwardly.

Thus, the apparatus of this invention consists essentially of a portable container, a compactor head, and a lift assembly which can be economically produced and economically operated by conventional household water pressure to provide for a continuous compaction of refuse.

Further objects, features and advantages of this invention will become apparent from a consideration of the following description, the appended claims, and the accompanying drawing in which:

FIG. 1 is a vertical sectional view of the refuse compactor of this invention showing the portable refuse container in the several positions it is in during normal use of the compactor; and

FIG. 2 is a horizontal sectional view of the refuse compactor of this invention illustrating the door therefor in a closed position in solid lines and in an open position in broken lines.

With reference to the drawing, the refuse compactor of this invention, indicated generally at **10**, is illustrated in FIG. 1 as including a frame **12** on which a door **14** is hingedly mounted for movement between open and closed positions shown in broken and full lines, respectively, in FIG. 2. A hollow downwardly extending compactor head **16** is mounted on the upper end of the frame **12** so that the head **16** is hidden from view when the door **14** is closed. The refuse compactor **10** also includes a portable container **18** mounted on wheels **20** so that it can readily be moved between positions outside the frame **12** when collecting refuse and a position within the frame **12** when the refuse in the container **18** is to be compacted, as shown in broken lines in FIG. **1**. The rear side **22** of the container **18** is provided with a pair of lift brackets **24** located below the upper end **26** of the container **18**.

A fluid actuated cylinder assembly **28**, consisting of a cylinder **30** mounted at its lower end on the frame **12** and an upwardly extending piston rod **32**, is provided for lifting the container **18**. The piston rod **32** is connected at its upper end by a bracket **34** to a guide member **36** which is slidably supported between flanges **38** on the frame **12** for up and down movement on the frame **12** for insuring straight up and down movement of the piston rod **32** in response to actuation of the cylinder assembly **28**. The bracket **34** also supports a pair of lift members **40** positioned so that they are alignable with the lift brackets **24** on the container **18** when the container **18** is wheeled into a position within the frame **12**, as shown in broken lines in FIG. **1**, so that when the piston rod **32** is extended, the lift members **40** will apply lifting forces to the lifts brackets **24**.

The cylinder assembly **28** is conveniently operated by water from the usual household water system which is under sufficient pressure to extend the piston rod **32**. A four-way valve unit **42** (FIG. **2**) mounted on the frame **12** and connected in a conventional manner to the cylinder assembly **28** has an actuating lever **44** connected to a link **46** which is in turn pivotally secured to an arm **48** on the door **14**. As a result, when the door **14** is moved to its open position, the valve **42** provides for a supply of water to the cylinder assembly **28** which will cause the piston rod **32** to be retracted to its broken line position shown in FIG. **1** in which the lift members **40** are below the lift brackets **24**. When the door **14** is moved to its closed position, the valve **42** is moved by the lever **44** to a position in which it will provide for a supply of water to the cylinder assembly **28** that will cause the piston rod **32** to be extended toward its full line position shown in FIG. **1**.

In the operation of the refuse compactor **10**, assume that the container **18** has been filled with refuse at a location remote from the frame **12**. Assume also that the door **14** is open so that the piston rod **32** is in its retracted position. The container **18** is wheeled into the frame **12** to a position in which the rear side **22** of the container **18** engages a stop **50** mounted on the guide member **36**. The container **18** is then in the position within the frame **12** shown in broken lines in FIG. **1**, and the door **14** is then closed. Closing of the door **14** results in movement of the valve actuating lever **44** to a position in which water will be supplied to the cylinder assembly **28** so as to extend the piston rod **32**.

During extension of the piston rod **32**, the container **18** is lifted upwardly to extend the compactor head **16** downwardly into the upper end of the container and into engagement with the refuse therein. Refuse in the container **18** is then subjected to the compressing and compacting action of the head **16** and this compacting action continues until either the piston rod **32** reaches

the end of its stroke or the force required for further compaction is sufficient to stall the cylinder assembly **28**. In the latter event, the cylinder assembly **28** continues to exert an upward lifting force on the container **18** so that as the refuse in the container **18** relaxes, further compacting is continually achieved. Stated otherwise, so long as the door **14** remains closed, the cylinder assembly **28** continues to provide for the application of a continuous compressing force on the refuse by the head **16**. This continuous action insures maximum compaction of the refuse in the container **18** and the engagement of the stop **50** with the container **18** prevents the container from tipping during upward movement.

In actual practice, a conventional container liner of disposable plastic material is placed in the container **18** prior to the depositing of refuse therein. When additional refuse is to be deposited in the container **18**, after the initial compacting of refuse therein, the door **14** is opened causing retraction of the piston rod **32** and a return of the container **18** to a floor supported position within the frame **12** from which it can readily be removed. The above-described cycle is then repeated until the container **18** is substantially filled with compacted refuse. At such time, the plastic liner bag with the compacted refuse therein is removed and replaced by a new bag. The hollow construction of the compactor head **16** provides a convenient storage place for plastic bags for this purpose and for that reason the head **16** is preferably slidably mounted on the frame **12** for access purposes.

From the above description it is seen that this invention provides a refuse compactor **10** which consists of a minimum number of essential components, namely, the head **16**, the container **18** and the cylinder assembly **28** thus enabling economical manufacture and installation of the compactor **10**. In addition, the use of water as the actuating force for the cylinder assembly **28** further reduces the cost of installation and operation of the compactor **10**. The connection of the actuating valve **42** to the door **14** insures continuous compacting action on the refuse while the door **14** is closed and the container **18** is not being used for refuse collection purposes.

What is claimed is:

1. A refuse compactor comprising a fixed position head, a refuse container having an open upper end of a size to be telescoped over said head, said container being disposed below said head and having the open upper end thereof arranged in substantially vertical alignment with said head, lift apparatus engageable with said container and operable to move said container upwardly to engage refuse therein with said head, said lift apparatus being located entirely to one side of said container and said head and being operable to apply a continuous upward force to said container, said lift apparatus comprising a fluid actuated cylinder assembly having a fixed position cylinder and an upwardly extendible piston rod having transversely extending lift members thereon engageable with said container.

2. A refuse compactor according to claim 1 wherein said container is supported on wheels and has lift brackets thereon alignable with said lift members on said piston rod so that said lift members are movable upwardly into engagement with said lift brackets to lift said container.

3. A refuse compactor according to claim 1 further including a frame supporting said head and said cylinder, and guide means attached to said piston rod and supported on said frame for up and down movement in response to up and down movement of said piston rod.

4. A refuse compactor according to claim 3 further including a control valve for said cylinder operable to control the flow of pressure fluid to said cylinder, and door means mounted on said frame for movement between open and closed positions and connected to said valve means so as to provide for actuation thereof to move said piston rod upwardly on closing of said door means and move said piston rod downwardly on opening of said door means.

5. A refuse compactor according to claim 3 further including stop means on said guide means engageable with said container below the upper end thereof for maintaining said container in an upright position during lifting thereof.

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