United States Patent [19]

Charles

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[54] **SOLID WASTE COMPACTOR OPERABLE ON LOW PRESSURE FLUID**

[76] Inventor: **Ray E. Charles,** 605 W. Mercer Pl., Seattle, Wash. 98119

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[52] **U.S. Cl.** ..... **100/192,** 100/3, 100/35, 100/218, 100/245, 100/255, 100/269 R

[51] **Int. Cl.** **B30b 1/32**

[58] **Field of Search** ..... 100/42, 35, 192, 100/43, 269 R, DIG. 8

[56] **References Cited**

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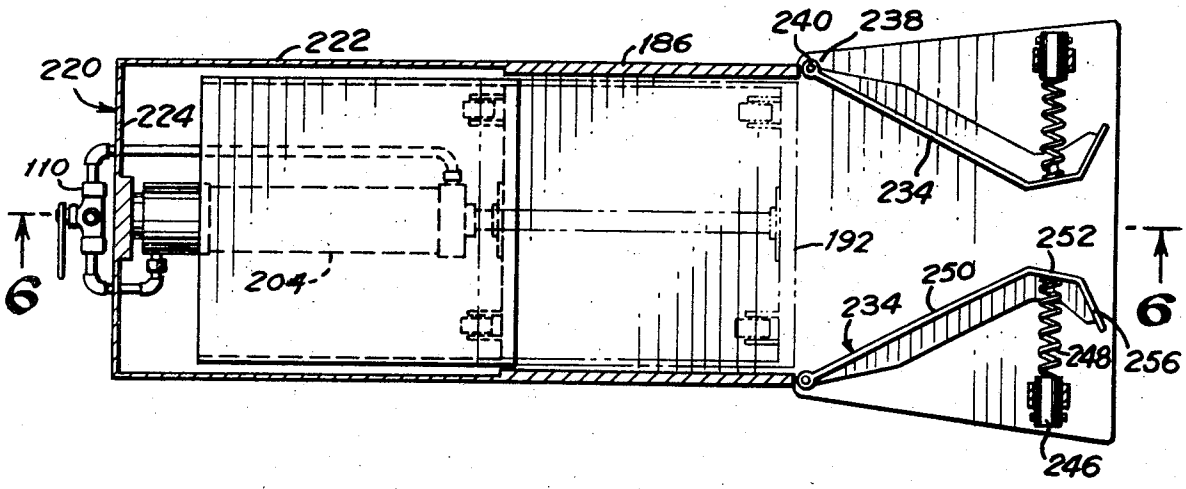
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Primary Examiner—Billy J. Wilhite
Attorney—Thomas W. Secrest

[57] **ABSTRACT**

Many food handling establishments such as restaurants, cafes, eating establishments, retail stores, wholesalers and the like have a large volume of disposable solids. In many instances, it is a problem to dispose of these solids. These solids, like corrugated boxes and plastic containers, occupy a large volume.

7 Claims, 14 Drawing Figures



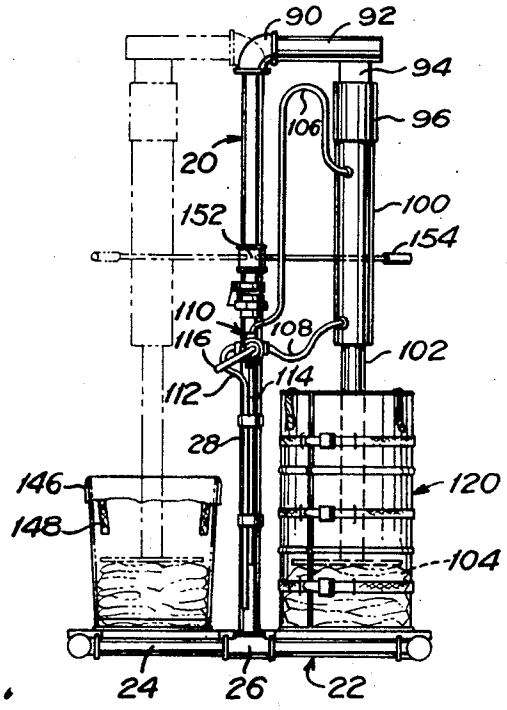


Fig. 1.

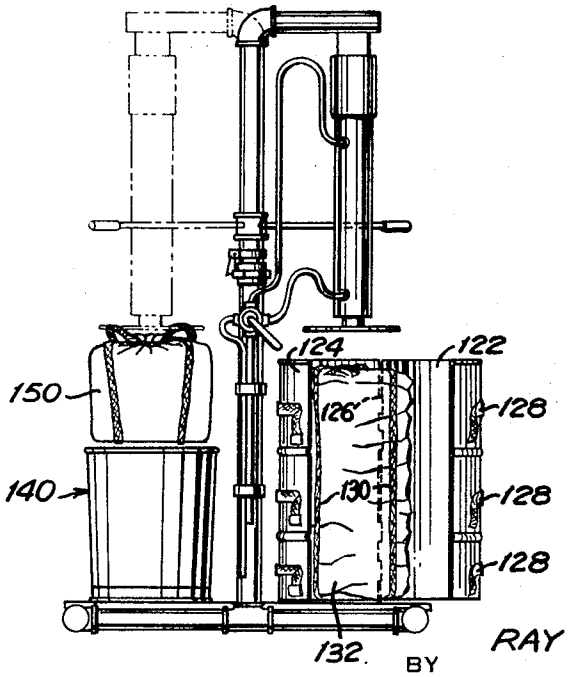


Fig. 2.

INVENTOR
RAY E. CHARLES

BY
THOMAS W. SECREST
ATTORNEY

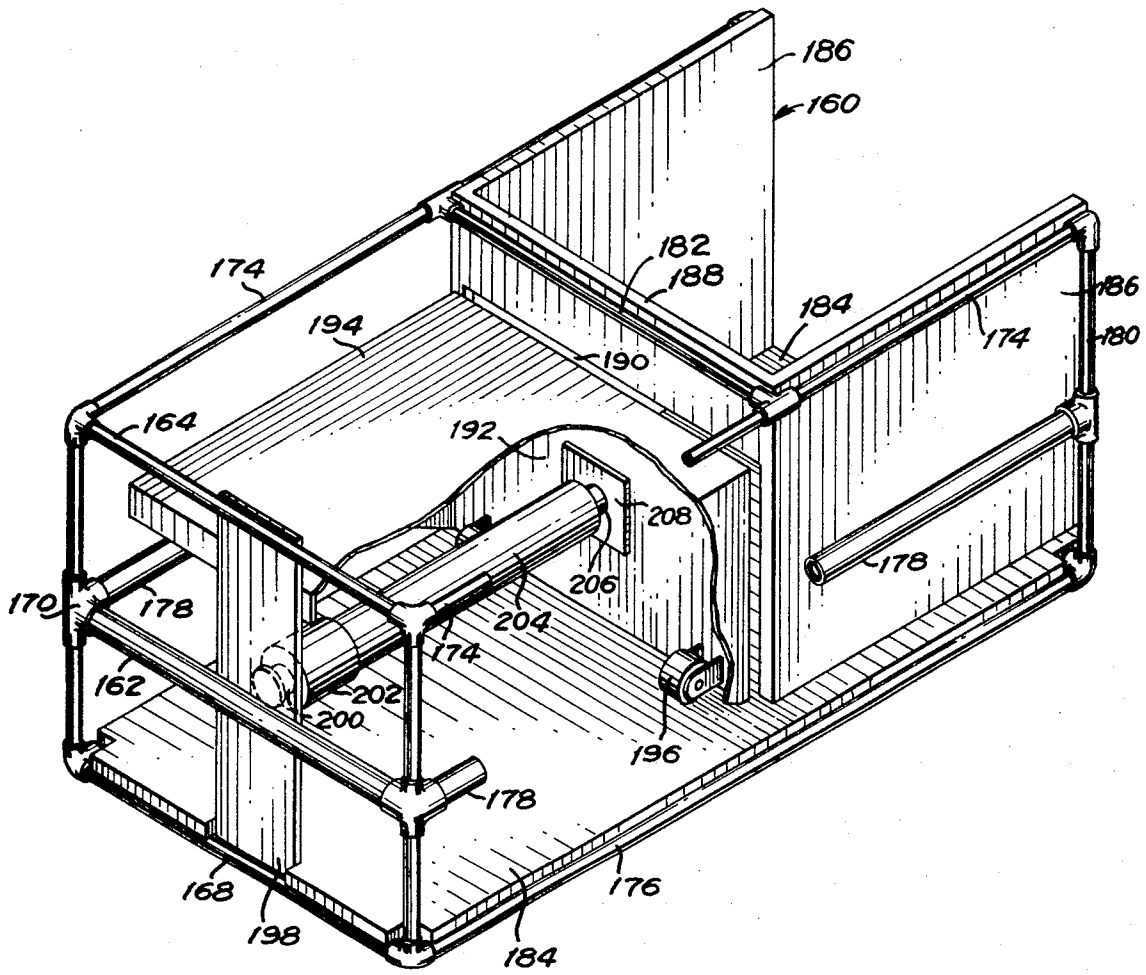


Fig. 3.

INVENTOR
RAY E. CHARLES

BY

THOMAS W. SECREST
ATTORNEY

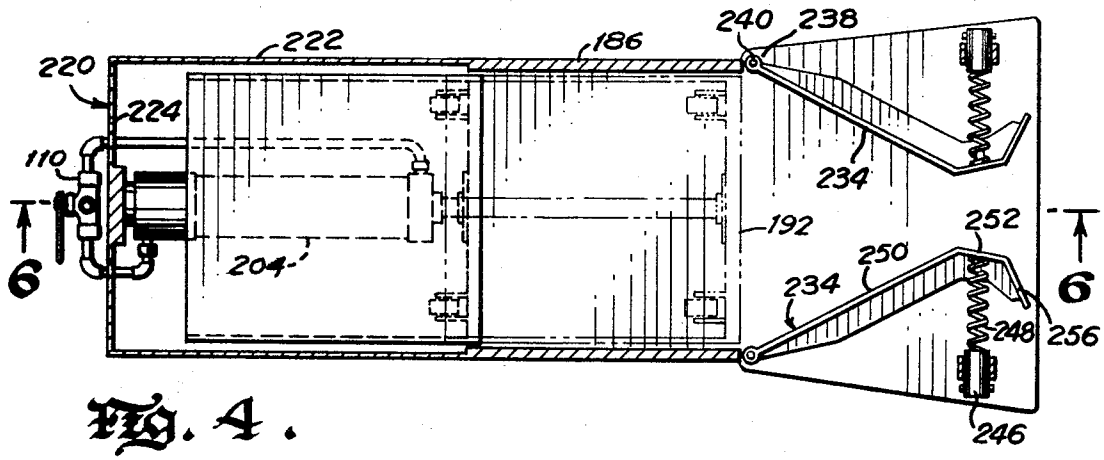


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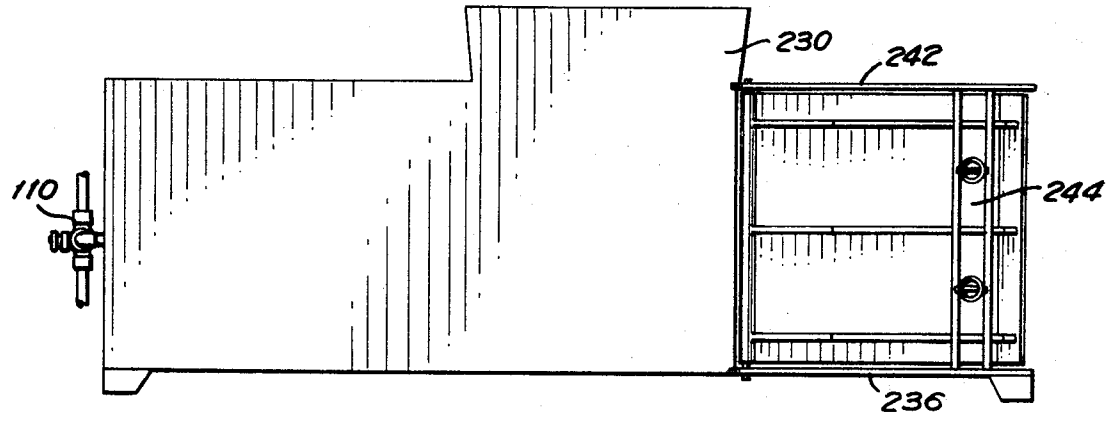


Fig. 5.

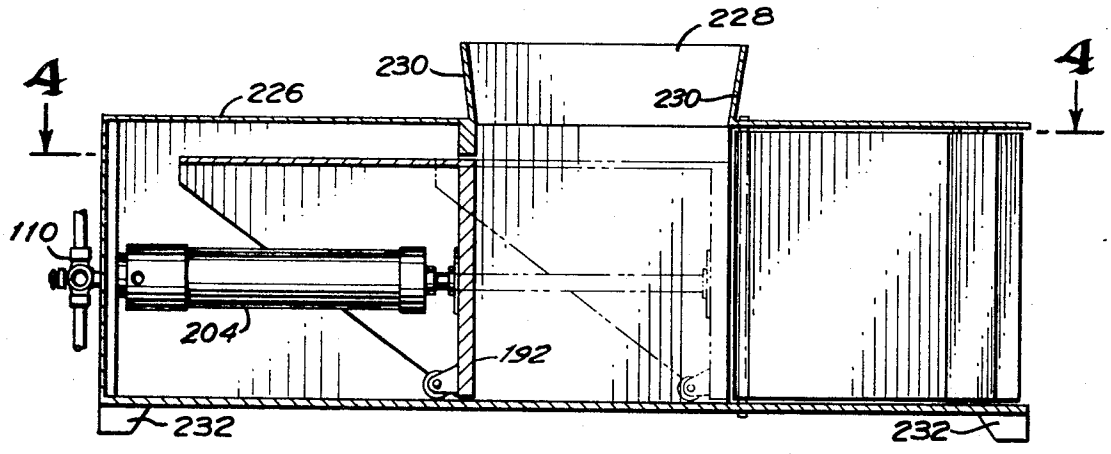


Fig. 6.

INVENTOR
RAY E. CHARLES

BY

THOMAS W. SECREST
ATTORNEY

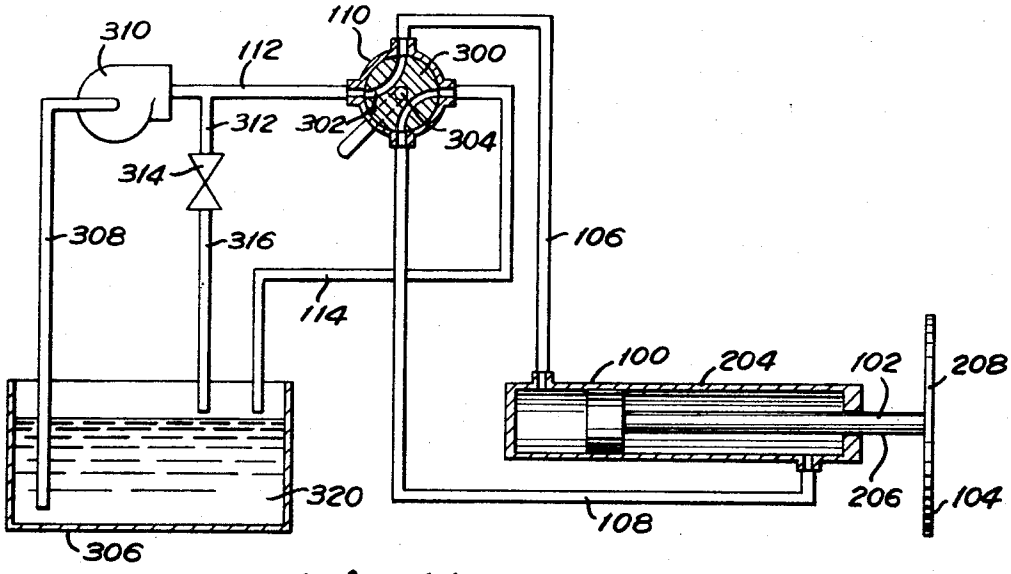


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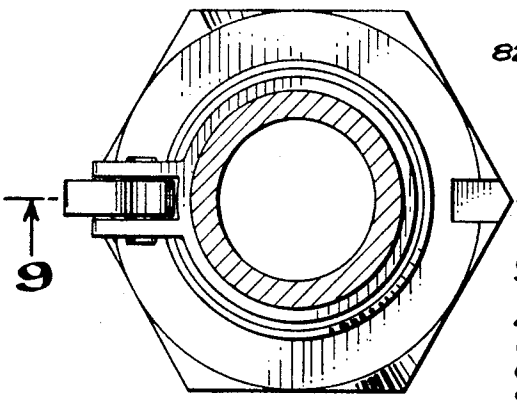


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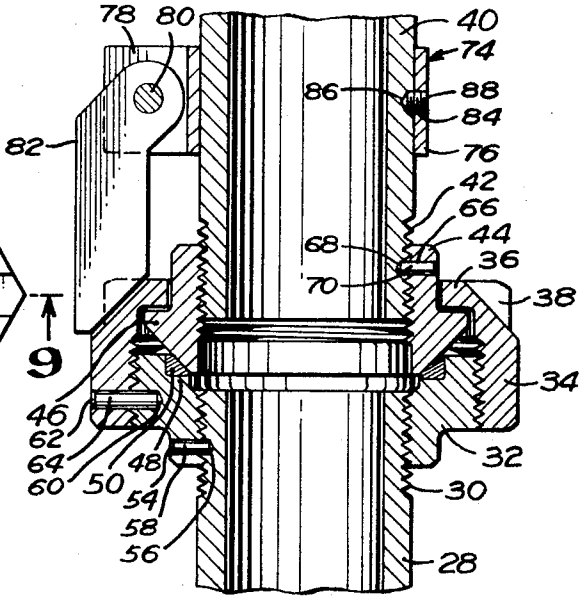


Fig. 9.

INVENTOR
RAY E. CHARLES

BY

THOMAS W. SECREST
ATTORNEY

Fig. 10.

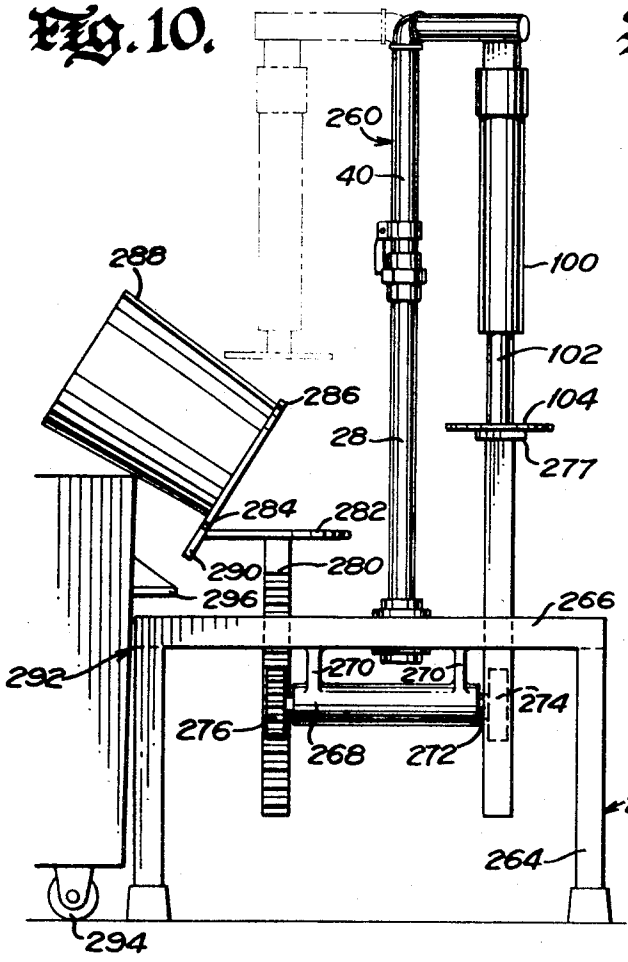


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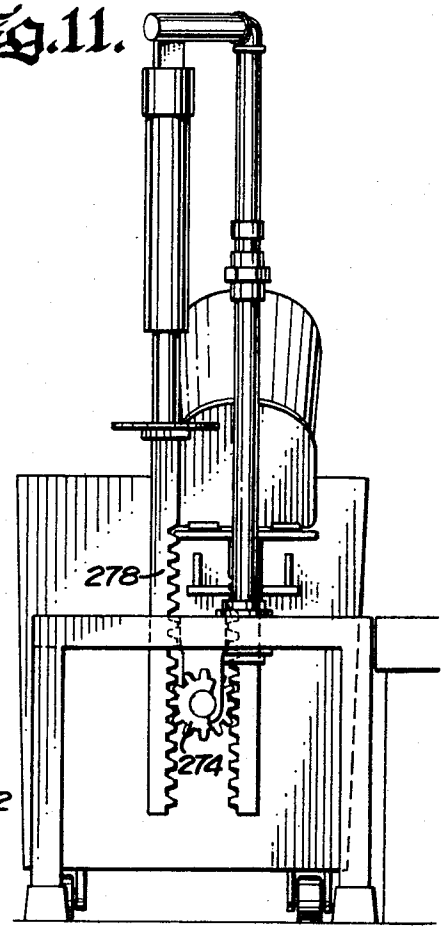


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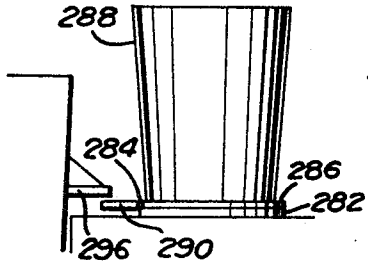


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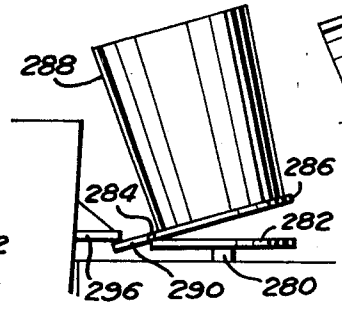
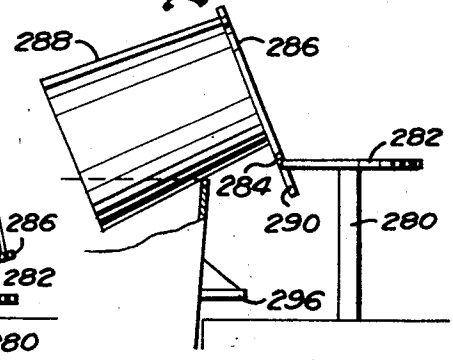


Fig. 14.



INVENTOR
RAY E. CHARLES

BY

THOMAS W. SECREST
ATTORNEY

SOLID WASTE COMPACTOR OPERABLE ON LOW PRESSURE FLUID

This invention is directed to a compactor for compacting disposable solids in a store, eating establishment, an office, a warehouse and the like. The source of power is, normally, readily available. The compactor operates on a low pressure hydraulic fluid such as available from a waterline having a pressure in the range of about 35 pounds per square inch to about 150 pounds per square inch. Also, in some places, there is available a low pressure source of air. The compactor may be operated from a source of pneumatic pressure in the range of about 50 pounds per square inch to about 150 pounds per square inch.

This compactor has relatively few moving parts and may be installed in those establishments having disposable solids and which disposable solids must be compressed to a smaller volume awaiting the pickup of the disposable solids by a collection agency.

In many places there is accumulated solid waste such as glass and plastic containers and bottles, metal containers and cans, cellulose base containers such as corrugated boxes, paper board containers, cardboard containers, paper bags, discarded paper, and food in certain forms such as lettuce leaves, potato pealings, bones, trimmings from food and the like. It is necessary to dispose of these solid wastes in an economical manner. Further, it is necessary to dispose of these wastes so as to not have the waste utilizing valuable operating room. For example, in a restaurant or a cafe or eating establishment or a grocery store, there is an accumulation of solid waste. At times, this accumulation of solid waste may become so large that valuable working space is destroyed, temporarily, because the waste has not been moved.

This invention is directed to a compactor which operates off of a low pressure source of fluid. For example, this compactor may operate off of water in the waterlines in a normal business. The water pressure in these waterlines varies between about 35 pounds per square inch to approximately 150 pounds per square inch. Further, in certain localities the fluid may be air. In a gas station, there is a source of air under pressure. The pressure on the air varies in the range of about 50 pounds per square inch to approximately 150 pounds per square inch.

This compactor operating at a low pressure is capable of compressing corrugated boxes, paper board and the like to about one-fourth to one-sixth the original size. In other words, the compression factor is in the range of four and six to one. Also, this compactor is capable of compressing paper from an office, and the like, to about one-third or one-fourth the original size. In other words, the compactor can compress paper from an office, and the like, with a compression factor of approximately three and four to about one.

With this reduction in the volume of the solid waste, it is possible to store the solid waste until these wastes can be collected by a central collection agency. Then, at the central collection agency the solid waste may be further processed.

Accordingly, an object and advantage of this invention is to provide a compactor which can be operated with a low pressure fluid, generally less than approximately 150 pounds per square inch; to provide a compactor which can be operated with a fluid at a generally low pressure and which fluid at said generally low pressure is readily available; to provide a compactor which can function with readily available molds or containers such as galvanized garbage cans, oil drums and the like; to provide a compactor which can operate with a flexible container inside of a rigid mold such as a plastic bag inside of the garbage can; to provide a compactor which can operate with a rigid container or a rigid mold having sides which may be rotated to open and to close; to provide a compactor having inwardly directed movable sides for restricting the movement of material being compacted; to provide a compactor which has a ram and a bearing member which may be rotated to a plurality of positions for compacting solids of differing compositions; to provide a compactor which also comprises an elevator for raising compressed solids in a container in a vertical direction and which compressed solids can be dumped out of the container into a larger collection unit.

These and other important objects and advantages of the invention will be more particularly brought forth upon reference to the accompanying drawings, the detailed specification of the invention and the appended claims.

In the drawings:

FIG. 1 is an elevational view illustrating a compactor comprising a fluid cylinder, a plunger and a bearing member, and which fluid cylinder and plunger can be rotated to compact solids of various compositions in different molds or containers;

FIG. 2 is an illustration of said compactor and illustrates the side of one of the molds being rotated outwardly so as to expose the compacted material and also illustrates the fluid actuated cylinder, plunger and bearing member being elevated to pull a bag of compacted solids out of another mold;

FIG. 3 is a fragmentary isometric view of a compactor having a bottom wall, two upright side walls, a fluid actuated cylinder and plunger with a bearing member on the end of the plunger and said bearing member being adapted to slide between said two upright side walls;

FIG. 4, taken on line 4—4 of FIG. 6, is a horizontal longitudinal cross-sectional view of a compactor having two spaced apart side walls, a bearing member on the end of a plunger of a fluid actuated cylinder, and two movable spaced apart side walls juxtapositioned to said two spaced apart side walls for forming a plug as the compacted material is being forced out of the compactor;

FIG. 5 is a side elevational view of the compactor of FIG. 4 and illustrates the housing for an opening into the compactor and also illustrates one of the movable spaced apart side walls;

FIG. 6, taken on line 6—6 of FIG. 4, is a longitudinal vertical cross-sectional view of the compactor and illustrates the details of construction;

FIG. 7 is a modification of a compactor and illustrates said compactor having a motor and pump, a reservoir for the fluid for operating the fluid actuated cylinder, and a valve for operating the fluid actuated cylinder;

FIG. 8 is a detail of the locking mechanism for the rotatable upright shaft of FIGS. 1 and 2;

FIG. 9, taken on line 9—9 of FIG. 8, is a vertical longitudinal cross-sectional view illustrating the locking mechanism;

FIG. 10 is an elevational view illustrating an elevator for elevating a container for waste material and which container will be dumped into a larger collection unit;

FIG. 11 is an elevational view of said elevator for elevating the container for the waste material;

FIG. 12 is a fragmentary view illustrating the platform on which the container for the waste material is carried and also a tripping mechanism on said platform;

FIG. 13 is a fragmentary view illustrating the platform as being elevated and the tripping mechanism on the platform being actuated to rotate the container into the larger collection unit; and,

FIG. 14 is a fragmentary view illustrating the platform as being elevated and the container being dumped into said collection unit.

In FIGS. 1 and 2 there is illustrated a compactor 20. The compactor 20 comprises a base 22 which may be constructed of pipe 24, and tees 26 and the like. Also, the compactor 20 comprises an upright supporting member 28 attached to a Tee 26 of the base 22.

With references to FIGS. 8 and 9 it is seen that the upper end of the support or pipe 28 is externally threaded at 30. There is a spacer 32 which is both internally threaded and externally threaded. The spacer 32 is positioned on the upper end of the pipe 28. Then, there is a locking member 34 which is internally threaded but also has an internally directed lip 36. The upper side wall of the locking member 34, on its exterior surface, is grooved at 38 to make a notch. There are a plurality of grooves or notches 38.

There is another supporting member 40. The supporting member 40 on its lower end is externally threaded at 42.

There is a sleeve bearing 44 which is internally threaded and screwed onto the lower end of 40. The sleeve bearing 44 has an outwardly directed ledge, a circumscribing ledge 46.

The spacer 32, on its upper inner face is recessed at 48 to receive a seal 50.

In FIG. 9 it is seen that the member 28 and the member 40 comprise an upright shaft or supporting member. The member 40 may be positioned on the member 28 with the sleeve bearing 44 resting on the seal 50. Then, the locking member 34 may be screwed onto the spacer 32 so that the inwardly directed lip 36 overrides the circumscribing lip 46 to definitely position the member 40 on the member 28.

In the lower end of the spacer 32 it is seen that there is a passageway 54. Also, in the upper end of the pipe 28 there is a recess 56. A pin 58 is positioned in the passageway 54 in the recess 56 to definitely position the spacer 32 onto the upper end of the pipe 28.

In the spacer 32 there is a recess 60. In the lower end of the locking member 34 there is a passageway 62. A pin 64 is positioned in the passageway 62 and in the recess 60 so as to definitely position the locking member with respect to the spacer 32.

In the upper end of the sleeve bearing 44 there is a passageway 66. In the lower end of the pipe 40 there is a recess 68. A pin 70 is positioned in the passageway 66 and in the recess 68 so as to definitely position the sleeve bearing 44 onto the lower end of the pipe 40.

Above the exterior threads 42 on the pipe 40 there is positioned a supporting member 74. The supporting member 74 comprises essentially a collar 76 having two outwardly spaced apart flanges 78. A pin 80 runs between these two flanges 78. A rotatable locking pawl 82 is positioned on the pin 80.

In the collar 76 there is an internally tapped passageway 84. In the member 40 there is a recess 86. A screw 88 is positioned in the passageway 84 and in the recess 86 to firmly position the supporting member 74 on the lower end of the pipe 40.

It is seen that the lower end of the pipe 40 and the sleeve bearing 44 are freely rotatable in the locking member 34. This means that the member 40 can be rotated with respect to the member 28.

Also, it is seen that the rotatable locking pawl 82 can be moved out of position with respect to the slot 38, the member 40 rotated with respect to the member 28, and then the locking pawl 82 moved into position with respect to a new slot 38 for locking the member 40 with respect to the member 28.

Now, returning to FIG. 1, it is seen that the member 40 on its upper end connects with a right angle elbow 90. Also, the right angle elbow 90 connects with a straight member 92. The member 92 connects with a depending member 94. The depending member 94 by means of a union 96 connects with a fluid actuated cylinder 100 having a movable plunger 102. The movable plunger 102 on its lower end connects with a bearing member 104.

The fluid actuated cylinder 100 has a first connecting tube 106 and a second connecting tube 108. The connecting tubes 106 and 108 connect with a two-way valve 110. The two-way valve 110 also connects with a tubular member 112 and a tubular member 114. The tubular member 112 may be considered to connect with a source of fluid under pressure such as water under pressure in the range of approximately 35 pounds per square inch to about 150 pounds per square inch or a gas under pressure in the range of approximately 50 pounds per square inch to 150 pounds per square inch. The tube 114 may be considered to connect with a discharge or drain or a reservoir.

The two-way valve 110 has a handle 116. By rotating the handle 116 it is possible to move the plunger 102 with respect to the fluid actuated cylinder 100.

In FIGS. 1–2 it is seen that there is a mold 120 having split sides 122 and 124. The split sides 122 and 124 are joined by a piano type hinge 126 so as to be free to rotate with respect to each other. Also, there are straps 128 for firmly joining the two sides together to form the mold 120. In essence, the mold 120 may be an oil drum such as a 55 gallon oil drum which has been split and then a hinge 126 inserted so as to allow the two sides 122 and 124 to rotate with respect to each other.

In using the compactor 20 with respect to the mold 120, there is positioned in the mold 120 a number of vertical straps 130. These straps go from the top, down to the bottom and then back to the top. There may be two or more such straps 130. Then, bulky material such as corrugated boxes, paper, paper board containers, cardboard containers, paper bags and the like may be placed in the mold 120.

The fluid actuated cylinder 100 and the bearing member 104 may be positioned above the mold 120. The valve 110 adjusted so that the plunger 102 extends downwardly and the bearing member 104 crushes the corrugated boxes and the like in the mold 120. After a sufficient number of corrugated boxes, cardboard containers, paper bags and the like have been crushed, the straps 130 may be tied together at the top so as to form

a relatively compact bundle **132.** It is to be recalled that in the compressing of corrugated boxes and the like, with this compactor operating at a pressure in the range of approximately 35 pounds per square inch to about 150 pounds per square inch, depending upon the local water pressure of the local available pneumatic pressure, the degree of compression varies from about 4 to 1 to about 6 to 1. Therefore, the final volume of the compacted material **132** will be about one-fourth to one-sixth of the original volume of the compacted material.

In FIGS. **1** and **2** it is seen that there is another mold **140.** The mold **140** may be the conventional mold of a galvanized garbage can. In this mold **140** there is positioned a flexible bag **146.** The flexible bag **146** may be a readily available material such as a polyethylene bag or a craft paper bag of rugged construction. Between the mold **140** and the flexible bag **146** there are positioned straps **148,** similar to the straps **130.** There may be a plurality of these straps **148.**

When it is desired to compress material in the mold **140,** more particularly, in the flexible bag **146** in the mold **140,** there is positioned this material such as tin cans, plastic bottles and containers, possibly paper, glass bottles and containers, paper, paper bags and the like. Then, the fluid actuated cylinder **100** and the bearing member **104** are positioned over the container **140** and the valve **110** adjusted so that the plunger **102** is forced into the container **140** and also into the flexible bag **146.** After this process has been repeated a sufficient number of times, the bearing member **104** may be removed from the mold **140,** the top of the bag **146** neatly tucked together and then the straps **148** tied so as to form a package **150.** The package **150** may be lifted out of the mold **140** by means of the bearing member **104** and the upper ends of the straps **148.**

From experience, I have found that the compaction of cans, plastic containers, glass and the like in the mold **148** can be successfully accomplished. Also, the flexible bag **146** is not punctured or is not damaged under normal operating conditions. This makes it possible to prepare a neat package **150** which can be loaded into a refuse container or truck.

Again, it is to be recalled that in the compression of paper, plastic containers, and the like that the compression ratio is in the range of about 3 to 1 to approximately 4 to 1. In other words, the bundle **150** occupies approximately one-third to one-fourth the space of the original material to be compressed or compacted.

In FIGS. **1** and **2** it is seen that on the member **40** there is a sleeve **152.** A handle **154** connects with the sleeve **152** for rotating the member **40** and also the fluid actuated cylinder **100,** the plunger **102** and the bearing member **104.**

From the preceding, it is seen that I have provided a compactor having a depending fluid actuated cylinder, a plunger **102** and a bearing member **104** which can be vertically moved. Also, this compactor can be arranged in various positions, a plurality of positions as illustrated in FIGS. **1** and **2,** for compacting various types of waste material. In FIGS. **1** and **2** it is seen that the fluid actuated cylinder **100,** the plunger **102** and the bearing member **104** are positioned over at least two different molds, i.e., **120** and **140.** It is to be realized that it is possible to build such a compactor which can be positioned over three or four, or if the radius is sufficiently large, five or six different molds. With the plurality of molds, such as illustrated in FIGS. **1** and **2,** it is possible to compact various waste materials as a unit and, possibly, to dispose of these various units of waste material in different manners or different ways.

In FIG. **3** there is a fragmentary isometric view of a compactor **160** and a frame for said compactor. The frame for said compactor comprises a central bearing bar **162,** an upper bearing bar **164** and a lower bearing bar **168.** The bars **168** by means of suitable connections **170** connect with longitudinal bars, an upper bar **174,** a lower bar **176** and a middle bar **178.** Then, on each end the bars **174, 178** and **176** connect with an upright set of bars **180.** Further, the upper bars **174** at approximately their midpoint connect with a lateral bar **182.** It is to be realized that the frame for the compactor **160,** said frame comprising the bars **162, 164, 168, 170, 174, 176,** and **180,** may be joined by the appropriate adaptors or unions **170** or may be welded together to form a one piece frame.

The compactor **160** comprises a bottom wall **184** and two spaced apart side walls **186.** The two spaced apart side walls **186** are positioned above the bottom wall **184.** Also, there is a lateral partition member **188** at the inward ends of the side walls **186.** The lateral partition member **188** has a lower opening **190.** A bearing member **192** is positioned to move through the lower opening **190,** above the bottom wall **184** and between the side walls **186.** The bearing member **192,** on its upper end, has a shield **194,** and on its lower end, away from the side walls **186,** two rollers **196.**

There is an upright bearing plate **198** bearing against the lateral members **162, 164** and **168.** A connector **200** connects with the bearing plate **198** and with a coupling member **202.** The coupling member **202** connects with a fluid actuated cylinder **204** having a plunger **206.** The plunger **206** connects with a plate **208.** In turn, the plate **208** connects with the back of the bearing member **192.**

In operation, the waste material may be dropped or positioned between the two spaced apart side walls **186** and above the bottom wall **184.** Then, the fluid actuated cylinder **204** may be actuated to extend the plunger **206** so as to move the bearing member **192** forward to compress the waste material. This process may be continually repeated until the waste material is compressed to a smaller volume for transfer to a more central disposal unit.

In FIGS. **4, 5** and **6** there is illustrated a modification of the compactor **160.** In this instance the compactor is referred to by reference numeral **220.** The main difference between the compactor **220** and the compactor **160,** in the basic structure, is that the compactor **160** used readily available bars, tubing and piping as the frame while the compactor **220** utilizes solid sheets of material such as sides **222,** an end plate **224** and a top plate **226.** Further, above the two spaced apart side walls **186** and the bottom wall **184** there is positioned a hopper having side walls **228** and end walls **230.**

Further, the compactor **220** may be positioned on pedestals **232.**

In FIG. **4** it is seen that there are two movable spaced apart side walls **234** juxtapositioned near said side walls **186.** More particularly, there is a lower bottom wall **236.** For each side wall **234** there is a passageway **238.** In the passageway **238** there is an upright pin which is pinned to the bottom wall **236** and also to an upper wall **242.** This definitely positions the pin **240.** Also, there

is an upright member 244 positioned on the bottom wall 236. In the upright member 244 there are two spaced apart housings 246 for housing springs 248. The springs 248 connect with the side walls 234 so as to direct the side walls 234 toward each other. In essence, the side walls 234 comprise a relatively large flat area 250, a relatively small plate 252 and another plate 256. The large flat area 250 or plate 250 is directed inwardly so as to form a funnel, see FIG. 4, for the compacted material being moved away from the side walls 186 by means of the bearing member 192. Then, the relatively small area 252 expands outwardly as also does the relatively small area 256.

The material to be compacted can be fed through the hopper 230 and between the side walls 186. The bearing member 192 is moved forwardly by means of the actuation of the fluid actuated cylinder 204. The side walls 234 restrict the movement of the material being compacted. With this restriction of the movement of the material being compacted, there is formed a compressed mass of material. When the force becomes sufficiently great, the two movable side walls 234 are moved outwardly and the material moves between these side walls 234.

Again, if corrugated boxes and the like are being compacted, the compaction ratio is in the range of about 4 to 1 to approximately 6 to 1. And, if paper products and like are being compacted such as waste paper from an office, paper bags and the like, the compaction ratio is approximately 3 to 1 to about 4 to 1. It is to be realized that there may be various combinations of corrugated boxes, cardboard, paper boxes, waste paper, paper bags and the like and that the compaction ratio can vary from about 3 to 1 to approximately 6 to 1, depending upon the mix of the waste material.

The controls for operating the compactor 160 and also for operating the compactor 220 are the same as for operating the compactor 20 and comprise mainly the valve 110, the associated piping or tubing 106, 108, 114 and 112.

In FIGS. 10 through 14 there is illustrated a compactor 260 which can be used for also elevating the material which has been compacted. The compactor 260 comprises an elevated frame 262 having legs 264 and an upper surface 266. Positioned on the upper surface 266 is the upright member 28, see FIGS. 1 and 2, the locking mechanism, see FIGS. 8 and 9, and the upright member 40, so as to be able to rotate the compactor when necessary.

There is positioned below the upper surface 266 or the bearing surface 266 a tubular housing 268. The tubular housing connects with the bearing surface 266 by means of lugs 270. In the tubular housing 268 there is positioned a shaft 272. On each end of the shaft 272 there is positioned a gear 274 and a gear 276.

There is a rack 278 which connects with the gear 274. The rack 278, on its upper end, can connect with the bearing member 104 by means of a union 277.

Also, there is a rack 280 which meshes with the gear 276. On the upper end of the rack 280 there is a bearing plate 282. The bearing plate 282 is hinged by means of hinge 284 with the bottom 286 of a mold 288. It is seen that the bottom 286 has an outwardly projecting lug 290.

A central trash collector 292 having wheels 294 may be pushed so as to be adjacent to the upright support 262. The trash collector 292 has an outwardly directed bearing lug 296.

After the compactor 260 has been used for compactor waste material in the mold 288 the fluid actuated cylinder 100, plunger 102 and bearing member 104 may be rotated so as to be above the rack 278. The union 277 may be connected to the lower end of the bearing member 104. Then, the plunger 102 may be forced downwardly. With the rotation of the gear 274 and the shaft 272, the gear 276 rotates. The rack 280 is moved upwardly. Then, the outwardly directed lug 290, see FIGS. 12 and 13, comes in contact with the lug 296 of the collector unit 292. The mold 288 is rotated, see FIGS. 13 and 10, so as to direct the waste material in the mold 288 into the collector unit 292. With the further elevation of the rack 280 the mold 288 tips so that the contents may be dumped into the collector unit 292, see FIG. 14.

In this manner, it is not necessary for a party to manually lift the mold 288 and to dump its contents into the collector unit 292. The compactor itself can be used to elevate the mold 288 and the contents so that they can be dumped into the central collector unit 292.

The use of central collector units 292, these are portable units, is becoming more prevalent. It is possible to position one of these collector units 292 at a central collection station, dump a number of garbage cans or the like full of waste material into the units. Then, the collection truck can drive up to these units, attach to the bearing lugs 296, and rotate the units 292 so that the contents go into a garbage truck for further disposal.

In FIG. 7 there is schematically illustrated a unit for operating the compactor where there is not readily available a fluid under low pressure such as water in a city or an urban area. The fluid actuated cylinder may be 100, see FIGS. 1 and 2, or 204, see FIGS. 3 through 6. Also, the plunger may be plunger 102, see FIGS. 1 and 2 or plunger 206, see FIGS. 3 through 6.

The bearing member may be 104, see FIGS. 1 and 2 and 10 and 11, or may be 208, see FIGS. 3 through 6.

There is the line 108 and the line 106 for connecting with the fluid actuated cylinder and also for connecting with the valve 110. The valve 110 has a movable member 300 having a passageway 302 and a passageway 304.

The valve 110 connects with the pipes or tubes 112 and 114.

In FIG. 7 it is seen by rotating the movable member 300 of the valve 110 that it is possible to connect the plunger 102 with 206 in the fluid actuated cylinder 100 or 204.

There is a reservoir 306 of a fluid such as water. The pipe or tube 114 discharges the water into the reservoir 306. A pipe or tube 308 connects with the reservoir 306 to remove water from the reservoir. Also, the pipe 308 connects with a motor pump combination 310. The motor pump combination 310 connects with the pipe 112. The pipe 112 connects with a pipe 312 which in turn connects with a throttling valve 314. The throttling valve 314 connects with a pipe 316 which can discharge into the reservoir 306.

By adjusting the throttling valve 314 it is possible to adjust the pressure on the fluid actuated cylinder 204.

It is seen that moving the movable member 300 of the valve 110 it is possible to connect the pressure line 112 with the line 106 so as to extend the plunger 102 or 206

of the fluid actuated cylinder. Also, by rotating the movable member **300** of the valve **110** it is possible to connect the pressure line **112** with the line **108** so as to retract the plunger **102** or the plunger **206** into the fluid actuated cylinder or **204.**

The reservoir **306** and the motor pump combination **310** can be used to supply a liquid to the fluid actuated cylinder **100** or **204** and which liquid can be under pressure of about 35 pounds per square inch to about 150 pounds per square inch. Again, the pressure of the liquid can be controlled by the throttling valve **314.**

In the reservoir **306** the liquid may be referred to by reference numeral **320.** In most instances the liquid **320** will be water as it is the most readily available. However, in cold climates it may be desirable to use a non-freezing liquid or a liquid which does not freeze at temperatures near 0. For example, there may be added to the liquid **320,** water, an alcohol such as methyl alcohol or a glycol such as ethylene glycol or propylene glycol so as to lower the freezing temperature for the liquid **320.**

From the foregoing it is seen that I have provided a compactor which can be operated from readily available fluid under pressure such as water in the mains of most water systems in an urban area or in a city and which water is normally at a pressure in the range of about 35 pounds per square inch to about 150 pounds per square inch. Generally, in most urban areas and in most cities the water in the water mains will be at a pressure above about 35 pounds per square inch and will also be at a pressure less than approximately 150 pounds per square inch. Likewise, at some places there is a source of air under pressure. Air under pressure can also be used to operate this compactor. Generally, air under pressure will be at a pressure above about 50 pounds per square inch and below a pressure of about 150 pounds per square inch, in most pneumatic installations.

From the foregoing and having presented my invention, what I claim is:

1. A compactor for compacting solids, said compactor comprising:

a. a fluid activated cylinder and a plunger;
b. a bearing member on said plunger;
c. a guide for said bearing member;
d. said guide comprising a bottom wall and two spaced apart side walls;
e. said bearing member moves between said side walls and said bottom wall;
f. said side walls defining an opening at the upper part of the guide and through which opening solids may be introduced into said guide;
g. two moveable spaced apart side walls juxtapositioned to said two spaced apart side walls;
h. said two moveable spaced apart side walls converging toward each other upon extending from said two spaced apart side walls to define a funnel;
i. a wall over which said two moveable spaced apart side walls move on one set of their edges; and,
j. said two spaced apart moveable side walls being free of a cover on the other set of their edges to allow observance of their movement.

2. A compactor according to claim **1,** said compactor comprising:

a. a means resiliently forcing the outer ends of said two moveable spaced apart side walls toward each other.

3. A compactor according to claim **2,** and comprising:

a. said means comprising a spring connecting with said outer end of said moveable side wall.

4. A compactor according to claim **1,** and comprising:

a. said fluid being a liquid;
b. a reservoir for said liquid;
c. a pump for pumping said liquid from said reservoir to said cylinder and plunger; and,
d. means to return said liquid from said cylinder to said reservoir.

5. A compactor according to claim **1,** and comprising:

a. said fluid being a liquid and at a pressure in the range of about 35 pounds per square inch to a pressure of approximately 150 pounds per square inch to compact cellulose based materials such as corrugated boxes, cardboard, paper boxes, waste paper, paper bags and the like to a compaction ratio from about 3 to 1 to, approximately, 6 to 1.

6. A compactor according to claim **1,** and comprising:

a. said fluid being a gas and at a pressure in the range of about 50 pounds per square inch to a pressure of about 150 pounds per square inch to compact cellulose based materials such as currugated boxes, cardboard, paper boxes, waste paper, paper bags and the like to a compaction ratio from about 3 to 1 to, approximately, 6 to 1.

7. A compactor according to claim **1,** and comprising:

a. the inner end of each moveable side wall being pivoted near one of said two spaced apart side walls;
b. the main part of each moveable side wall being directed inwardly to define a funnel; and,
c. the outer end of said each moveable side wall being directed outwardly.

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