United States Patent

[11] **3,618,800**

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[54] **CONTAINER-DUMPING APPARATUS**
9 Claims, 12 Drawing Figs.

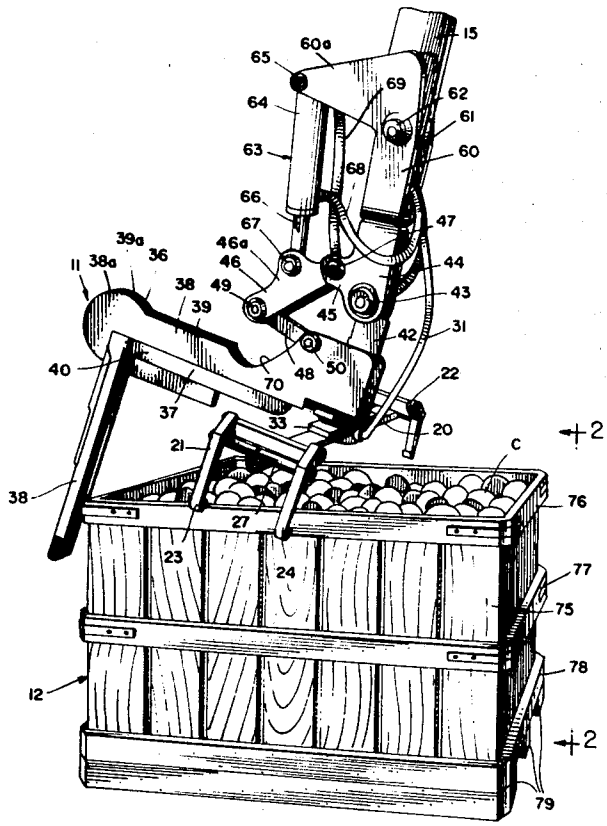
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214/147 G, 294/86, 294/88
[51] **Int. Cl.** **B65g 67/22,**
B65g 67/46
[50] **Field of Search** 214/302,
313, 147 G, 147 AS; 294/86, 88, 103, 104

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Primary Examiner—Gerald M. Forlenza
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ABSTRACT: A container-dumping apparatus particularly suitable for use with citrus and the like. The apparatus includes a grapple swingably mounted on a lift device such as a crane or boom. The grapple includes an elongated lift bar and a generally L-shaped support arm. The lift bar pivotally carries a clamp on each end thereof, and the clamps are operatively connected to a hydraulically operated piston carried by the lift bar for movement into and out of a container-engaging position. The support arm extends away from the bar and includes a generally horizontally extending base portion and a downwardly extending leg portion which is adapted to extend along the side of a container to be dumped. A hydraulic cylinder is pivotally mounted on the lift device, and the piston associated therewith is extendible to cause the support arm and lift bar to swing about the lift device, thereby tilting the container and dumping the contents thereof.



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SHEET 1 OF 5

FIG. 1

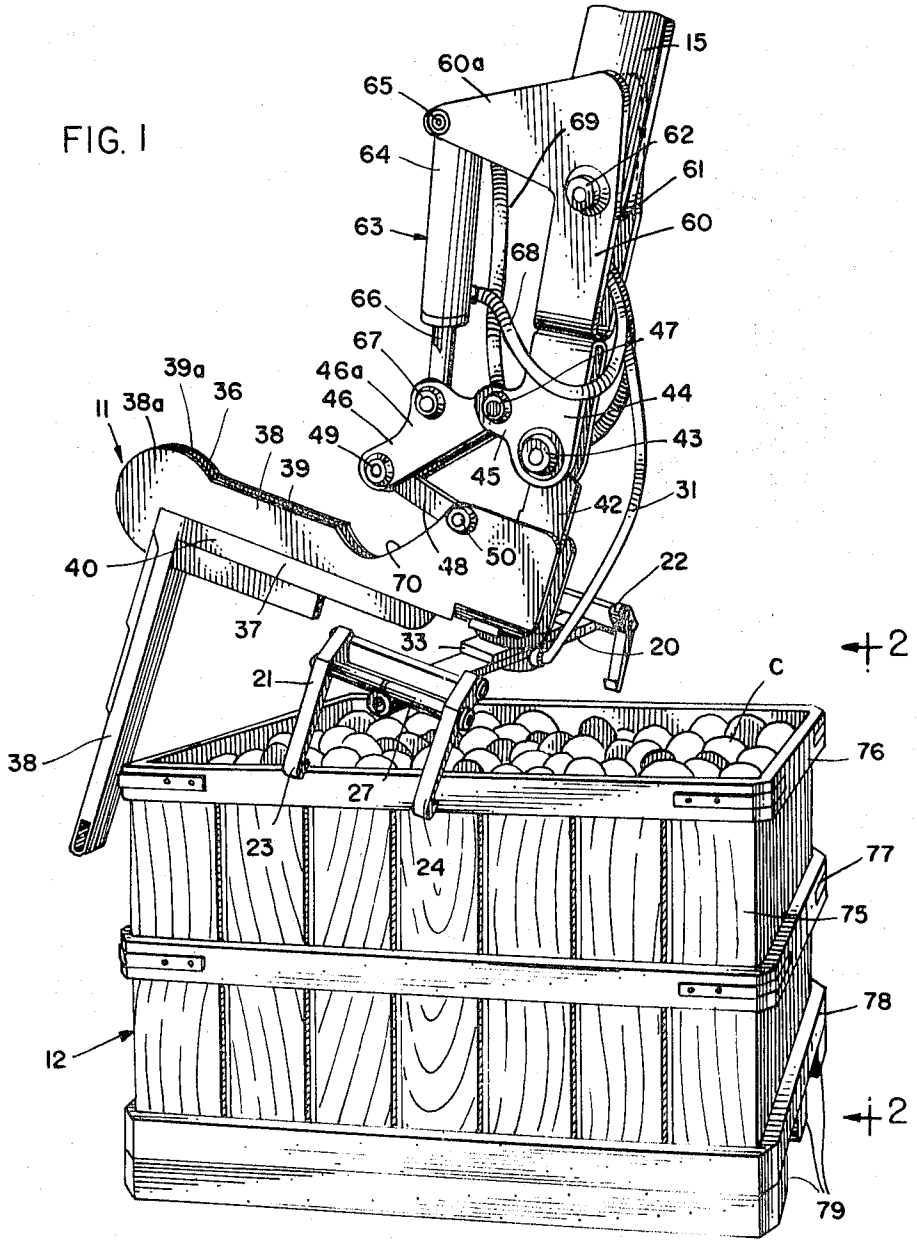
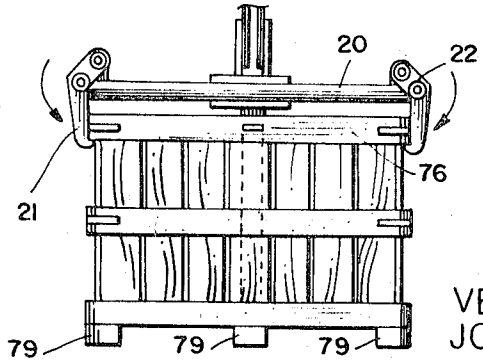


FIG. 2



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FIG. 3

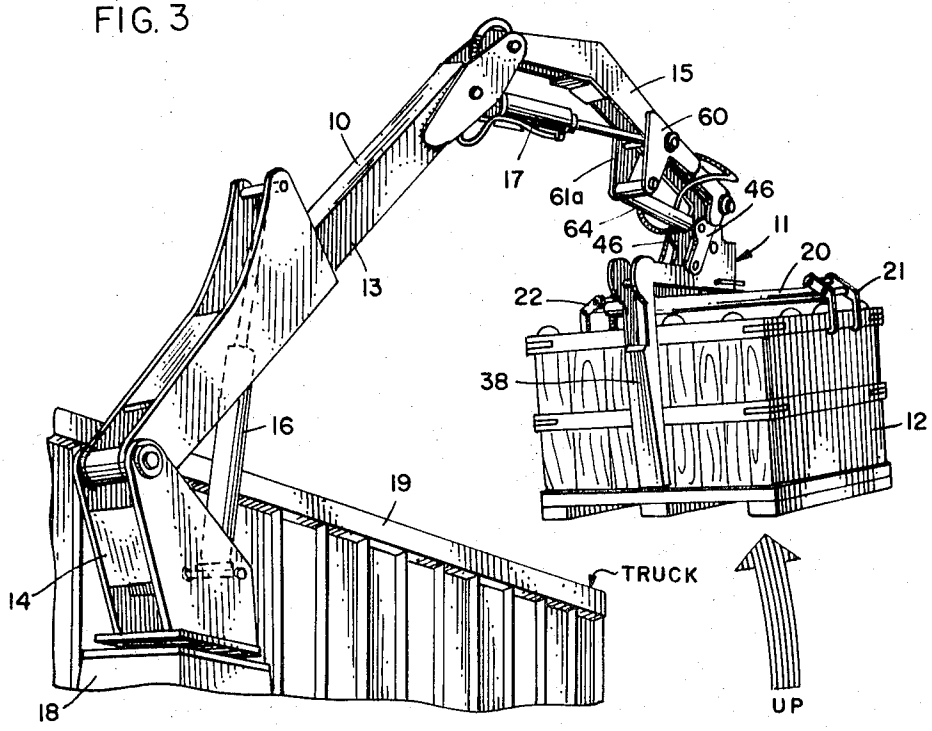
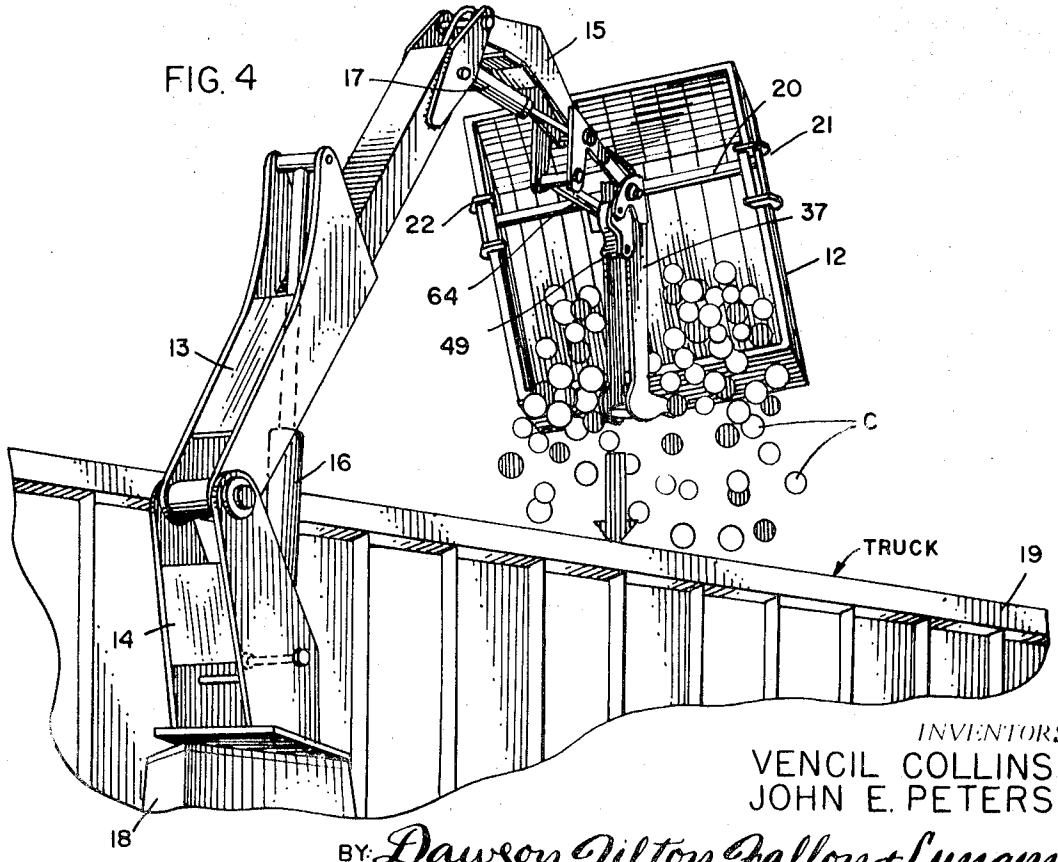


FIG. 4



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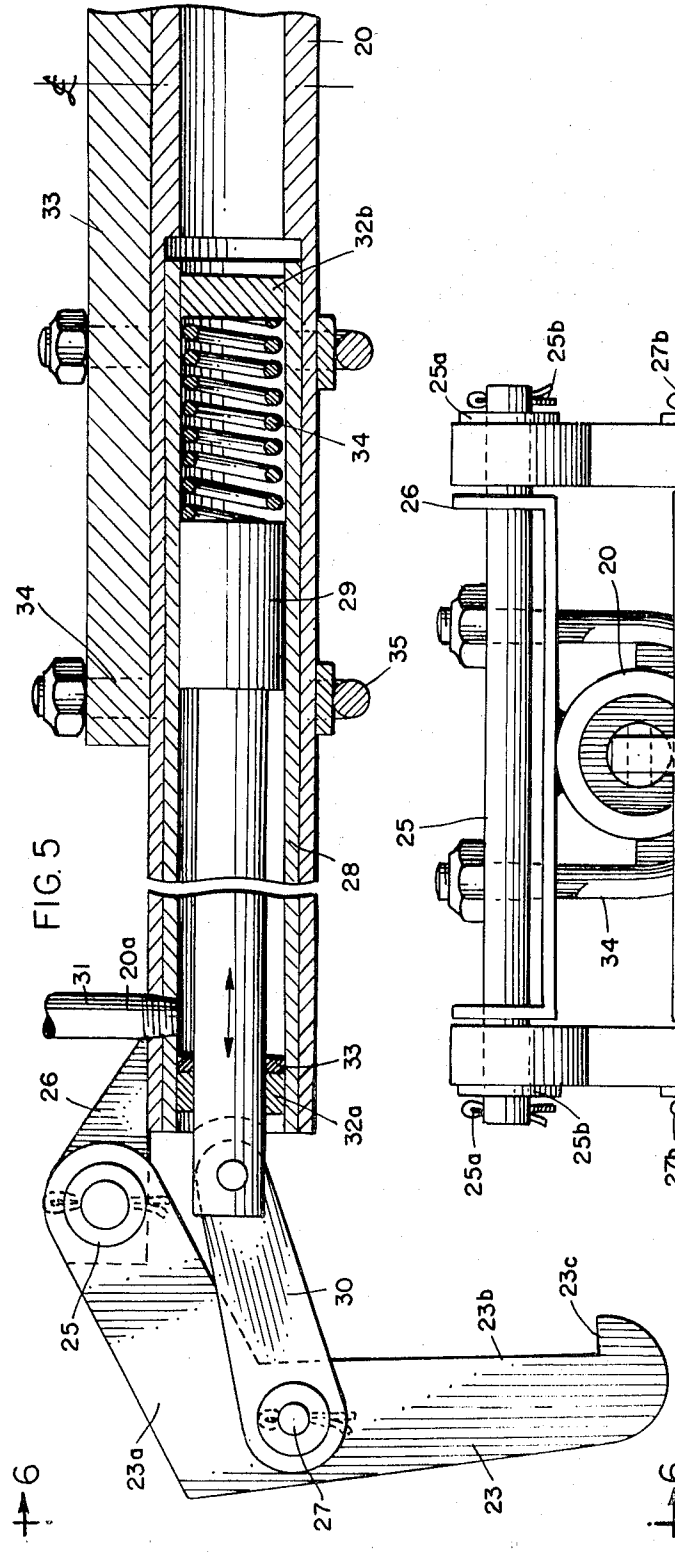


FIG. 5

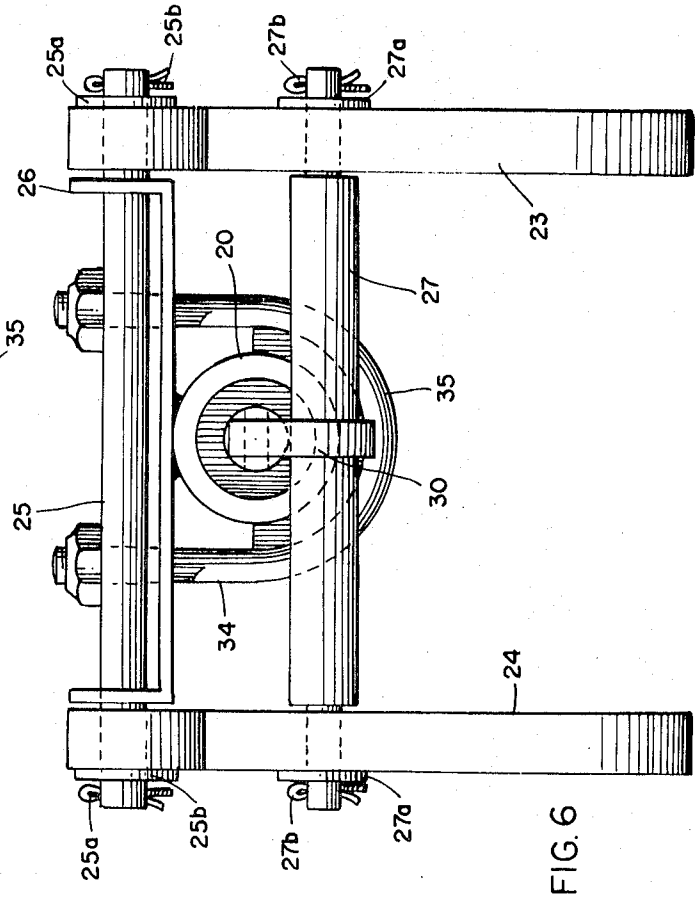


FIG. 6

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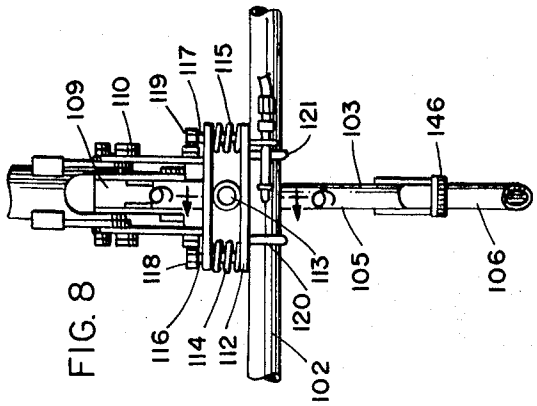


FIG. 8

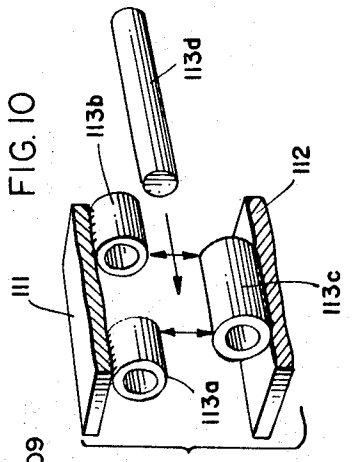


FIG. 10

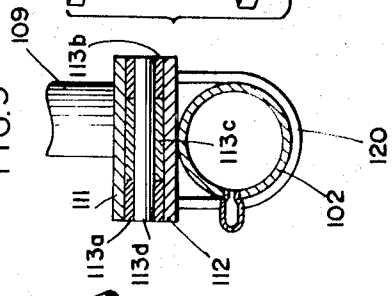


FIG. 9

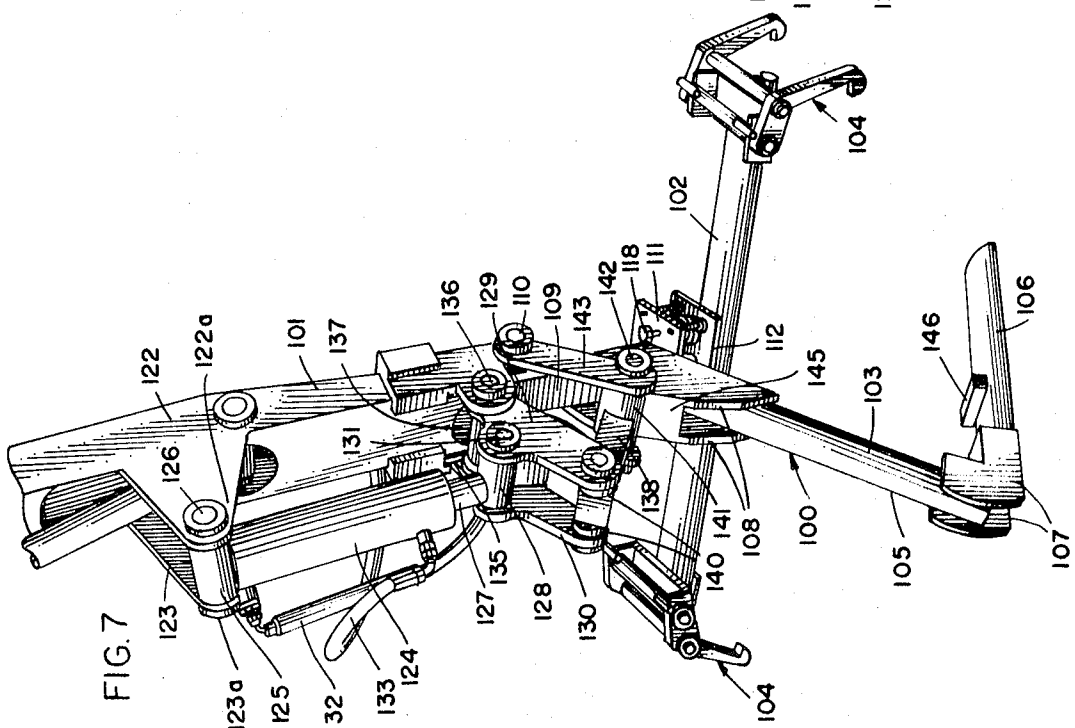


FIG. 7

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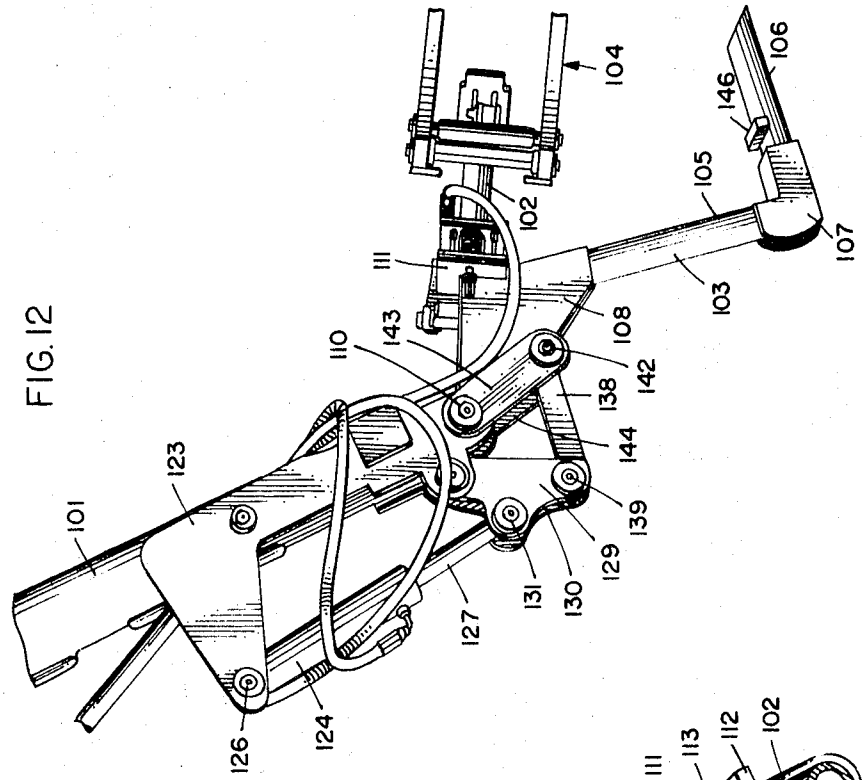


FIG. 12

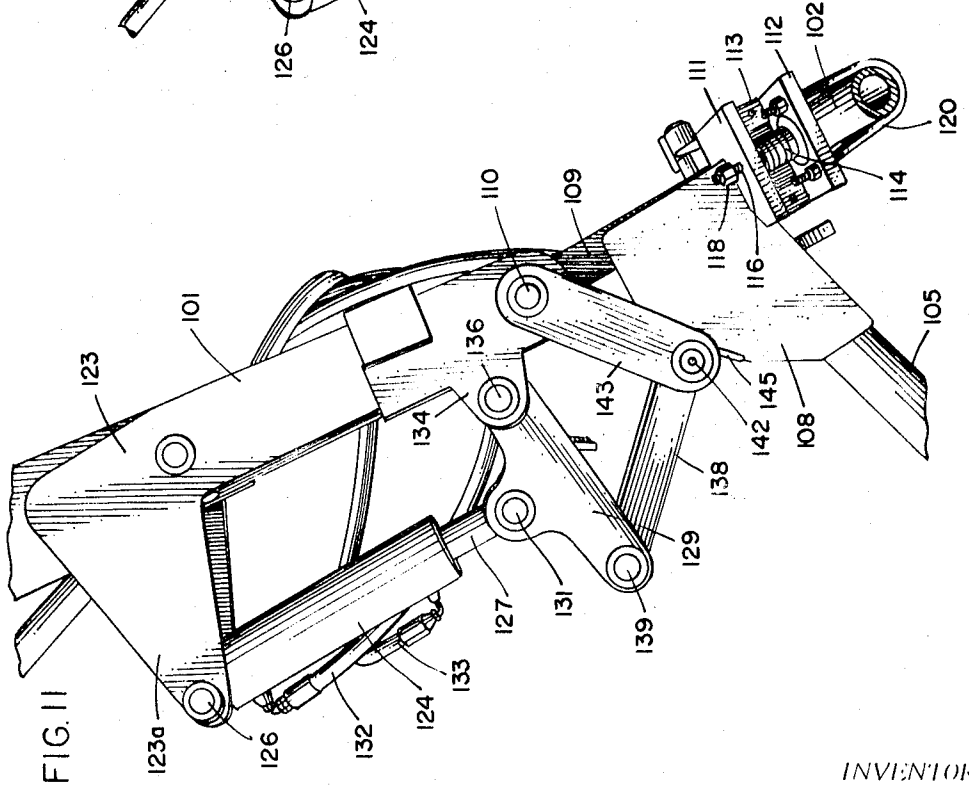


FIG. 11

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CONTAINER-DUMPING APPARATUS

BACKGROUND

This invention relates to container-dumping apparatus, and, more particularly, to an apparatus for use in emptying the contents of one container into another container.

The invention finds particular utility in the citrus-harvesting industry in which citrus, such as oranges, grapefruit and the like, is picked from the trees and placed in a container near the tree. When the container is filled, it may either be emptied into a larger container carried by a truck at the picking site or the container may be transported to the edge of the groove where it is emptied into a large semitrailer truck body or the like. One type of apparatus for emptying the contents of the container into the container body of a truck at the picking site is illustrated in my prior U.S. Pat. No. 2,981,424. In my prior patent the container was provided with a hinged bottom, and the container was emptied by releasing the hinged bottom to permit the contents of the container to fall into the container body of the truck.

The apparatus disclosed in my prior patent requires the use of baskets having a hinged bottom. However, since containers without hinged bottoms are frequently used in citrus groves, it is desirable to provide an apparatus for emptying the contents of these containers. Machine have been provided in the past for emptying specially designed containers by lifting the containers and tilting the containers to a somewhat upside-down position so that the contents flow over the side of the container. However, these machines have not proved entirely satisfactory for several reasons. For example, the machines can be used only with the specially designed containers. Further, the tilting operation has generally required the machines to withstand considerable stress, and the machines at times are unable to withstand this stress. The containers which are to be dumped generally have a capacity of about 10 "field boxes," the field not being a legal unit of measure for citrus in Florida. The contents of a field box weigh about 90 pounds, and a 10-box container will therefore weigh about 900 pounds plus the weight of the container itself. If the machine breaks down because of excessive stress, the entire picking crew, which may number from 15 to 30 men, is idled.

SUMMARY

The foregoing problems are overcome by the inventive apparatus. The apparatus includes a unique support arm which provides leverage for tilting the container without subjecting the apparatus to undue stress and which supports the container while it is being dumped. A hydraulic cylinder and piston assembly automatically swings the support arm to dump the container and thereafter permits the container to return to its original position. The lift bar of the apparatus is provided with hydraulically operated clamps which are engageable with containers commonly used in the citrus industry and which need not be specially designed for use with the apparatus.

DESCRIPTION OF THE DRAWING

The invention is explained in conjunction with an illustrative embodiment shown in the accompanying drawing, in which:

FIG. 1 is a perspective view of the container-dumping apparatus about to engage a container filled with fruit;

FIG. 2 is a view taken along the line 2—2 of FIG. 1 showing the apparatus clampingly engaging the container;

FIG. 3 is a perspective view showing the apparatus lifting the container above the container body of a truck;

FIG. 4 is a perspective view similar to FIG. 3 showing the apparatus emptying the contents of the container into the truck;

FIG. 5 is an enlarged fragmentary sectional view of a portion of the lift bar illustrated in FIG. 2;

FIG. 6 is an end view taken along the line 6—6 of FIG. 5;

FIG. 7 is a perspective view of another embodiment of the apparatus;

FIG. 8 is a front elevational view of the apparatus of FIG. 7;

FIG. 9 is a fragmentary sectional view taken along the line 9—9 of FIG. 8;

FIG. 10 is an exploded view showing the hinge connection of FIG. 9;

FIG. 11 is a side elevational view of the apparatus; and

FIG. 12 is a view similar to FIG. 11 showing the apparatus in container-dumping position.

DESCRIPTION OF SPECIFIC EMBODIMENTS

Referring to FIGS. 1 and 3, a lift device 10 carries a container-engaging grapple designated generally by the numeral 11 which is engageable with a container 12.

The lift device 10 is a hydraulically operated two-part boom of the type commonly used in the citrus industry as well as other industries. Since this type of lift device is well known to those skilled in the art, it is believed that only a brief description is necessary. The lift device 10 includes a primary boom 13 which is pivotally supported by a base 14, and a secondary or tip boom 15 which is pivotally mounted on the end of the primary boom. Hydraulically operated cylinder and piston assembly 16 connects the base 14 and primary boom 13 and permits the primary boom to be raised and lowered. Another hydraulically operated cylinder and piston assembly 17 connects the primary boom and the secondary boom and permits the secondary boom to be pivoted about the end of the primary boom. The base 14 is rotatably supported by a mast or pedestal 18, and suitable power means may be provided within the mast for rotating the base 14.

As will be described more fully hereinafter, the lift device 10 is operated to position the grapple 11 above the container 12 which is to be dumped, the grapple 11 is then operated to engage the container, and the lift device 10 is operated to raise the container over the container body 19 of a truck. Thereafter, the grapple is operated to tilt the container and empty and contents thereof into the truck body 19 as illustrated in FIG. 4.

Referring now to FIGS. 1, 2 and 5, the grapple 11 includes an elongated cylindrical lift bar 20 which carries container-engaging clamp assemblies 21 and 22 on the ends thereof. Clamp assembly 21 includes a pair of elongated clamp arms 23 and 24 which are pivotally mounted on the top of lift bar 20. As can be seen best in FIG. 5, a cylindrical shaft 25 is supported above the lift bar 20 by bracket 26 welded to the lift bar, and the shaft 25 passes through and rotatably supports the upper ends of the clamp arms 23 and 24. Washers 25*a* and pins 25*b* retain the shaft 25 within the bracket 26. The clamp arm 23 is somewhat L-shaped and includes an upper portion 23*a* which extends outwardly from the shaft 25 and a downwardly extending portion 23*b*. The lower end of the clamp arm 23 is seen to be provided with an inwardly extending ledge or shoulder 23*c* for engaging the outer rim of the container. The clamp 24 is similarly shaped, and the two clamp arms are joined for common pivoting movement by connecting rod 27, which is retained therebetween by washers 27*a* and pins 27*b*. The clamp assembly 22 carried by the other end of the lift bar 20 is similarly constructed.

A hydraulic cylinder and piston assembly is carried within the tubular lift bar 20 for pivoting the clamp assemblies 21 and 22 into and out of container-engaging position. The particular cylinder and piston assembly illustrated in FIG. 5 is single acting, and includes cylinder 28 secured within the lift bar and piston or ram 29. Link 30 is pivotally connected to the outer end of the piston 29 and is also pivotally connected to the connecting rod 27 which extends between the clamp arms. A suitable fluid fitting 20*a* may extend through the lift bar 20 and cylinder 28 and hydraulic fluid may be supplied to the interior of the cylinder through hydraulic hose 31 (FIG. 1) which is connected to the fitting. The ends of the cylinder are closed by plugs 32*a* and 32*b* which are secured to the cylinder, and gasket 33 sealingly engages piston 29. As fluid is forced into the cylinder, the piston 29 is forced axially inwardly, pivoting the clamp assembly 21 inwardly into the container-engaging position illustrated in FIGS. 2 and 5. When pres-

surized fluid is no longer supplied to the cylinder, return spring 34 which abuts plug 32*b* moves the piston axially outwardly to its original position. A similar cylinder and piston assembly is provided within the other end of the lift bar for operating the clamp assembly 22, and both piston and cylinder assemblies may be operated by the single hydraulic line 31.

The lift bar 20 is secured to plate 33, as by bolts 35, and the plate 32 is secured to a generally L-shaped support arm 36 which includes a base portion 37 and a leg portion 38. The base portion 37 includes a pair of spaced-apart parallel plates 38 and 39 which extend upwardly from a relatively flat bar 40. An upwardly extending connecting bar 42 is secured to the bar 40 and the plates 38 and 39 and is pivotally secured by bolt 43 to a generally U-shaped bracket 44 which in turn is secured to the end of the secondary boom 15.

An attaching lug 45 extends transversely from each of the halves of the U-shaped bracket 44, and a pair of generally T-shaped links 46 are pivotally secured to the attaching lugs 45 by bolt 47. Link 48 is received between the spaced-apart T-shaped links 46 and between the spaced-apart plates 38 and 39 of the support arm 36 and is pivotally secured to the links 46 by bolt 49 and to the plates 38 and 39 by bolt 50. It is to be understood that suitable spacers are carried by the bolts 47 and 49 and are interposed between the two links 46 to hold the links in a spaced-apart position, and spacers may be carried on bolt 50 to position the link 48 centrally between the plates 38 and 39.

A pair of generally L-shaped attaching arms 60 and 61 are bolted to the secondary boom 15 as at 62 and provide rearwardly extending attaching arms 60*a* and 61*a*. A cylinder and piston assembly 63 extends between the attaching arms 60*a* and the links 46 and includes a hydraulic cylinder 64 which is pivotally secured to the attaching arms 60*a* and 61*a* by bolt 65 and a piston 66 which is pivotally secured to the lugs 46*a* of the T-shaped links 46 by bolt 67. Cylinder 64 is preferably double-acting and is supplied with hydraulic fluid by hoses 68 and 69, which may extend through the boom parts 15 and 13 to the hydraulic fluid source.

The portion of the plates 38 and 39 of the support arm 36 are provided with notches or cutout portions 70 just rearwardly of the bolt 50 which attaches the link 48, and the length of the downwardly and rearwardly inclined portion of the notches is preferably at least as long as the link 48.

FIG. 1 illustrates the apparatus about to engage a container called a pallet box filled with citrus such as oranges. Pallet boxes are commonly used containers in the citrus industry, and usually hold the equivalent of 10 field boxes, or about 900 pounds of oranges. The particular pallet box illustrated is constructed of wood and includes a plurality of vertically extending plates 75 which form a generally rectangular enclosure. The slats 75 are secured by upper, intermediate, and lower sets 76, 77 and 78 of four horizontally extending slats which extend around the sides of the container formed by the vertically extending slats. The container may also include wood beams 79 on the bottom thereof to space the bottom of the container from the ground and permit lifting by a fork truck.

OPERATION

Referring now to FIGS. 1, 2 and 5, the lift device 10 is operated to position the grapple 11 above the container 12 which is to be emptied and which may be resting on the ground or some supporting surface, such as a flatbed truck or the like. When the lift bar 20 is positioned approximately centrally above the container, the hydraulic cylinders 16 and 17 which operate the primary and secondary booms 13 and 15, respectively, are operated to lower the lift bar into contact with the top of the container. The hydraulic piston 66 carried by the secondary boom 15 is operated to pivot the links 46 and 48 downwardly, thereby swinging the support arm 36 about its connection to the secondary boom to bring the base portion 37 of the support arm into generally horizontal position and the leg portion 38 into generally vertical position. The plate 33 which connects the lift bar to the support arm is preferably connected to the support arm in a manner to permit the lift bar to rock from side to side. Any suitable attaching means can be used, for example, a pin which extends generally vertically from the plate 33 through the bar 40. This permits the lift bar to rock to engage the top of a container even when the container is resting on an incline. If necessary, the grapple is then moved forwardly by the boom to position the leg portion 38 of the support arm 36 against one side of the container. Thereafter, the hydraulic pistons within the lift bar 20 are operated to move the clamps 21 and 22 inwardly into container-engaging position. A spacer bar 40*a* may be attached to the underside of bar 40 so that both the support arm and the lift bar engage the top of the container at the same time. As can be seen best in FIG. 2, as the clamp arms are pivoted inwardly, the shoulders 23*c* swing into position below the upper slat 76 on opposite sides of the container.

The hydraulic cylinder and piston assembly 16 may then be operated to raise the primary boom, thereby lifting the container from the ground as illustrated in FIG. 3. When the container is raised above the truck body 19 into which the container is to be emptied, the base 14 of the lift device is rotated to position the container over the truck body. The piston 66 is then further extended to push the bolt 49 which connects the link 48 to the links 46 against the recessed portions 70 of the support arm and to cause the grapple 11 to swing forwardly and upwardly about its pivot connection to the secondary boom 15. The bolt 49 engages the recessed portions of the plates 38 and 39 rearwardly of the pivot connection between the grapple and the secondary boom, thereby providing adequate leverage for the piston 66 to swing the grapple forwardly.

As the piston 66 is extended, the cylinder and piston assembly 17 which operates the secondary boom 15 may also be extended, and the combination of the action of both pistons causes the grapple to rotate through an arc of slightly more than 90°, thereby tilting the container to empty the contents thereof into the truck body 19 as illustrated in FIG. 4. As the container is tilted by the action of the piston 66, the container is prevented from sliding with respect to the clamps 21 and 22 by the leg portion 38 of the support arm. As the leg portion 38 becomes more and more inclined from its original vertical position, more of the weight of the container is supported thereon.

Reinforcement is provided for the leg portion 38 by the arcuate shaped portions 38*a* and 39*a* of the plates 38 and 39 which extend downwardly along the leg portion.

After the container has beam emptied, the piston 66 and the secondary boom may be retracted to return the container to an upright position while the boom is being operated to return the container to the ground. The valve supplying hydraulic fluid to the cylinders within the lift bar 20 may then be closed, and the return springs 32 act on the pistons 29 to disengage the clamps 21 and 22 from the container. The apparatus may then be advanced to another container for dumping.

A slightly different embodiment of the invention is illustrated in FIGS. 7—10. The grapple 100 is swingably mounted on the end of the secondary boom 101, and the grapple 100 similarly includes a tubular lift bar 102 and a generally L-shaped support arm 103. Each end of the lift bar 102 is equipped with a clamp assembly 104 similar to the clamp assemblies 21 and 22 previously described, and the interior of the lift bar 102 receives cylinder and piston assemblies for operating the clamps 104 as herein before described with respect to lift bar 20.

The support arm 103 is formed of tubular pipe stock and includes base portion 105 and leg portion 106, which extend generally perpendicular to each other. A pair of generally L-shaped reinforcing plates 107 may be secured to the base and leg portions at the junction thereof. A pair of somewhat triangularly shaped spaced-apart plates 108 are welded to opposite sides of the forward end of the base portion 105 and an attaching bar 109 extends upwardly between the plates 108 and

is welded to the plates **108** and the base portion **105**. The attaching bar **109** is pivotally secured to the end of the secondary boom **101** by bolt **110**.

A generally rectangular plate **111** is secured to the plates **108** below the attaching bar **109**, and the base portion **105** of the support arm is seen to extend away from the rectangular plate **111** at a slight angle with respect to the plane of the plate. A second rectangular plate **112** is positioned below the plate **111** and hingedly or rockably secured thereto by hinge **113**. Referring to FIG. **9**, the hinge **113** includes a pair of cylindrical end sleeves **113***a* and **113***b* which are welded to the upper plate **11** and an intermediate sleeve **113***c* which is welded to the lower plate **112**. A hinge pin **113***d* extends through the sleeves **113***a–c* and rotatably connects the end sleeves to the intermediate sleeves. The plates **111** and **112** are normally maintained generally parallel by coil springs **114** and **115** which extend between the plates and are maintained therebetween by bolts **116** and **117**, respectively. Each of the bolts extend upwardly from the plate **111** and threadedly receives a nut **118** and **119**, respectively, and each nut is normally spaced upwardly from the plate **111**. The tubular lift bar **102** is rigidly secured to the bottom plate **112** by U-bolts **120** and **121**, and the lift bar is seen to be rockably mounted with respect to the support arm **103** by means of the hinge **113** and the compression springs **114** and **115**.

A pair of generally L-shaped attaching plates **122** and **123** are secured to the end of the secondary boom **101** and provide a pair of rearwardly extending attaching arms **122***a* and **123***a*. A hydraulic cylinder **124**, preferably double-acting, is provided with a cylindrical sleeve **125** at the end thereof which is received between the attaching arms **122***a* and **123***a* and pivotally secured thereto by bolt **126**. Piston **127** which extends from the cylinder **124** is similarly provided with a cylindrical sleeve **128** which is received between a pair of generally T-shaped links **129** and **130** and pivotally secured thereto by bolt **131**. A pair of hydraulic hoses **132** and **133** supply hydraulic fluid to extend and retract, respectively, the piston **127**.

A pair of attaching lugs **134** and **135** extend rearwardly from the end of the secondary boom, and each of the attaching lugs is pivotally secured to one end of one of the T-shaped links **129** and **130** by bolt **136**. Cylindrical spacer **137** is carried by a bolt **136** between the links **129** and **130** to maintain the in a spaced-apart condition.

An elongated link **138** is received between the rearward ends of the T-shaped links **129** and **130** and pivotally secured thereto by bolt **139**. A pair of cylindrical spacers **140** carried by bolt **139** maintain the links **129** and **130** in a spaced-apart condition and maintain the link **138** centered between the two T-shaped links. The other end of the link **138** is welded to a cylindrical sleeve **141** and bolt **142** is rotatably received by the cylindrical sleeve **141** and by one end of each of the links **143** and **144**. The other ends of the links **143** and **144** rotatably receive the bolt **110** which connects the grapple **100** to the secondary boom.

The apparatus illustrated in FIGS. **7–10** operates in much the same manner as the apparatus illustrated in FIGS. **1–6**. Hydraulic fluid may be introduced into the cylinder **124** through hose **132** to extend the piston **127**. The T-shaped links **129** and **130** are thereby pivoted downwardly and urge the cylindrical sleeve spacer **141** in the lower end of link **138** against a heelplate **145** which is welded to the upper edges of the parallel spaced-apart plates **108**. As the cylinder **127** is further extended, the grapple **100** swings forwardly about its pivot connection at **110** to the secondary boom as illustrated in FIGS. **11** and **12**.

The leg portion **106** of the support arm is provided with a transverse bar **146** which is adapted to extend inwardly below the bottom of the outer rim of the container to be dumped, and the support arm **103** extends rearwardly and somewhat downwardly from the rectangular plates **111** and **112** so that the rearward end of the base portion **105** of the support arm will be positioned against or just above the sidewall of the container when the container is engaged by the clamps **104**. The rockable connection of the lift bar to the support arm provided by the compression springs **114** and **115** and the hinge **113** permit the lift bar to readily engage a container which may be resting on the ground in an inclined position with respect to the lift device. It will be appreciated that the terrain within which citrus grow may be somewhat bumpy, and the upper edge of the container may be inclined somewhat with respect to the horizontal. As the lift device lowers the lift bar **102** into engagement with the upper edge of the container, one end of the lift bar will engage the container side first, and as the lift device further lowers the grapple, the intermediate sleeve **113***c* rotates with respect to the end sleeves **113***a* and **113***b* to permit the other end of the lift bar to engage the other side of the container. Referring to FIG. **8**, if the left side of the container were raised above the right side, the left end of the lift bar would engage the top of the container. As the lift device further lowered the grapple, the lift bar and the lower plate **112** would rock clockwise with respect to the upper plate **111** and compress the spring **114** until the right end of the lift bar engaged the container. If the right end of the lift bar engaged the container first, the lift bar would rock counterclockwise and compress the spring **115**.

Thereafter, the clamps may be operated as herein before described to engage the container, and the container may be lifted from the ground. The bar **146** on the leg portion of the support will provide some lifting force to the container by engaging the outer rim thereof. When the container is lifted over the truck body, the piston **127** is intended to tilt the container and dump the fruit while the base portion **106** of the support supports the container.

In the apparatus illustrated in FIGS. **1–6**, the piston **66** which operates to tilt the grapple is operatively connected to the grapple by means of the T-links **46** and the link **48**. Accordingly, retraction of the piston will swing the grapple rearwardly about the secondary boom, or in the clockwise direction as viewed in FIG. **1**. Thus, the base portion **37** of the support arm may be rotated upwardly beyond the horizontal as illustrated.

The grapple **100** illustrated in FIGS. **7–10** is not connected to the piston **127**, the rearward ends of the T-links **129** and **130** being connected to the secondary boom by the link **138** and the links **143** and **144**. However, in both cases, extension of the piston pivots the T-links downwardly, thereby swinging the grapple forwardly. The swinging force is applied to the grapple rearwardly of its pivot connection to the boom, thereby providing a lever arm.

Since the grapple **100** is not connected to the piston **127**, retraction of the piston **127** will cause the grapple to swing rearwardly only until the grapple hangs freely from its pivot connection under the influence of gravity. Further retraction of the piston will merely pull the sleeve **141** away from heel plate **145**.

Although in both embodiments of the apparatus the cylinder and piston assembly is arranged so that the cylinder is attached to the lift device and the piston is attached to the T-links, it will be apparent that these connections could be reversed without changing the operation of the apparatus, i.e., the piston could be pivotally connected to the lift device and the cylinder could be pivotally connected to the T-links.

While we have described our invention for use in the citrus industry, it is to be understood that the use of the apparatus is not so limited. Indeed, the apparatus can be used in many other applications where a container is to be emptied. Also, although the particular container described was an ordinary pallet box, the apparatus may be used with other containers, such as plastic tubs, steel mesh baskets, and the like, of round, square or other configurations.

While in the foregoing specification, we have set forth a detailed description of particular embodiments of our invention in considerable detail for the purpose of illustration, it is to be understood that many of the details hereingiven may be varied considerably by those skilled in the art without departing from the spirit and scope of our invention.

We claim:

1. In a container dumping apparatus having a hydraulically operated lift device, a grapple swingable mounted on the lift device for rotation about a generally horizontal axis, said grapple including an elongated generally horizontally extending lift bar and a generally L-shaped support arm, clamp means on each end of the lift bar for engaging a container to be dumped, first hydraulically operated piston means for moving said clamp means into and out of a container-engaging position, said support arm having a base portion extending generally perpendicularly from said lift bar and a leg portion extending generally downwardly from the base portion, second hydraulically operated piston means mounted on said lift device above said grapple for rotating the grapple about a generally horizontal axis to move the leg portion of the support arm from a generally vertical position to a generally horizontal position whereby the contents of the container may be dumped while said leg portion supports the container along a container side.

2. The apparatus of claim 1 including an upper plate secured to said support arm and a lower plate secured to said lift bar, and pin means between said upper and lower plates rotatably secured to each plate whereby said lower plate and said lift bar may rock with respect to said upper plate.

3. The apparatus of claim 2 including spring means between said plates for normally maintaining the plates generally parallel.

4. The apparatus of claim 1 in which said second piston means includes a hydraulic cylinder and a piston received by said cylinder and extending therefrom, first and second elongated links, each of said first and second links having one end thereof pivotally connected to the lift device, a third elongated link, each end of the third link being pivotally connected to the other end of one of the first and second links, one of said cylinder and piston being pivotally connected to said first link intermediate the ends thereof and the other of said cylinder and piston being pivotally connected to the lift device, said piston being extendible from the cylinder to pivot the first and second links downwardly about their pivot connections to the lift device, one of said second and third links being engageable with said grapple to swing the grapple about the pivot connection thereof with the lift device.

5. The apparatus of claim 4 including an upper plate secured to said support arm and a lower plate secured to said lift bar, and pin means between said upper and lower plates rotatably secured to each plate whereby said lower plate and said lift bar may rock with respect to said upper plate.

6. The apparatus of claim 5 including spring means between said plates for normally maintaining the plates generally parallel.

7. In a container dumping apparatus having a hydraulically operated lift device, a grapple swingably mounted on the lift device, said grapple including an elongated generally horizontally extending hollow lift bar and a generally L-shaped support arm, clamp means on each end of the lift bar for engaging a container to be dumped, first hydraulically operated piston means for moving said clamp means into and out of a container-engaging position, said first piston means including a piston within said lift bar adjacent each end thereof, said support arm having a base portion extending generally perpendicularly from said lift bar and a leg portion extending generally downwardly from the base portion, second hydraulically operated piston means mounted on said lift device above said grapple for swinging said lift bar and said support arm about the lift device to bring said leg portion to a generally horizontal position whereby the contents of the container may be dumped while said leg portion supports the container along a container side.

8. The apparatus of claim 7 in which each of said clamp means includes an elongated clamping arm pivotally mounted at the upper end thereof to the lift bar and link means operatively connecting the first piston means to each of the clamping arms whereby said clamping arms may be pivoted toward and away from the lift bar.

9. In a container dumping apparatus having a hydraulically operated lift device, a grapple swingably mounted on the lift device, said grapple including an elongated generally horizontally extending lift bar and a generally L-shaped support arm, clamp means on each end of the lift bar for engaging a container to be dumped, first hydraulically operated piston means for moving said clamp means into and out of a container-engaging position, said support arm having a base portion extending generally perpendicularly from said lift bar and a leg portion extending generally downwardly from the base portion, second hydraulically operated piston means mounted on said lift device above said grapple for swinging said lift bar and said support arm about the lift device to bring said leg portion to a generally horizontal position whereby the contents of the container may be dumped while said leg portion supports the container along a container side, the second piston means including a hydraulic cylinder and a piston received by said cylinder and extending therefrom, a first elongated link having one end thereof pivotally connected to the lift device and the other end thereof pivotally connected to one end of a second link, the other end of said second link being pivotally secured to said support arm, one of cylinder and piston being pivotally connected to said first link intermediate the ends thereof and the other of said cylinder and piston being pivotally connected to the lift device, said piston being extendible from the cylinder to pivot the first link downwardly and swing the support arm and lift bar about the lift device.

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