

Feb. 28, 1967

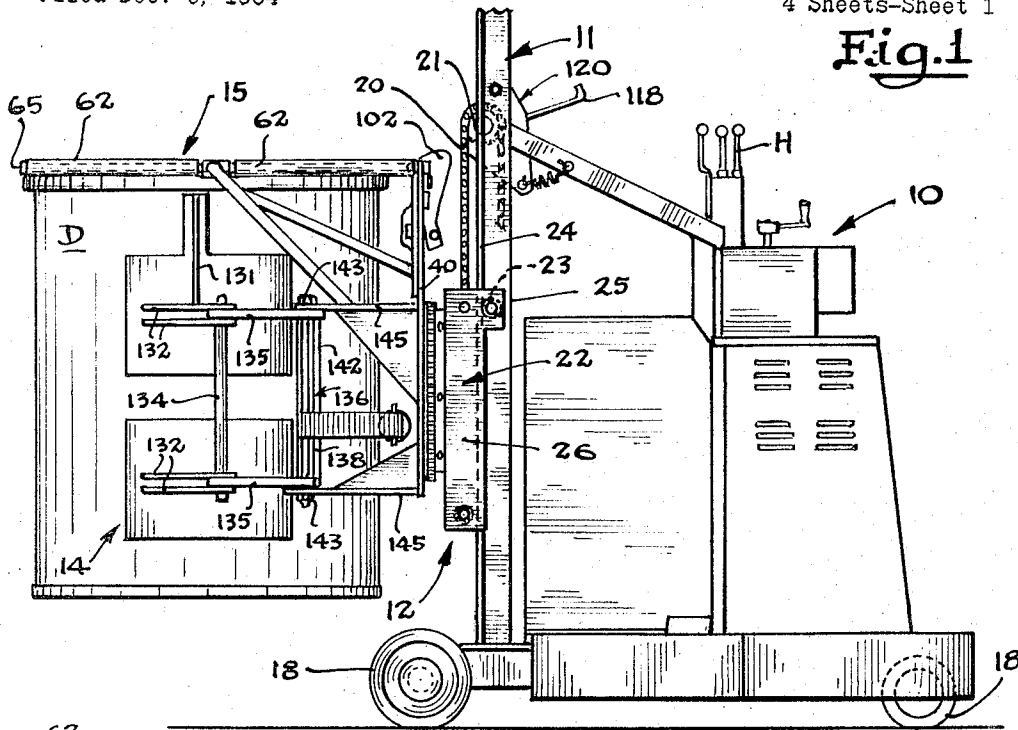
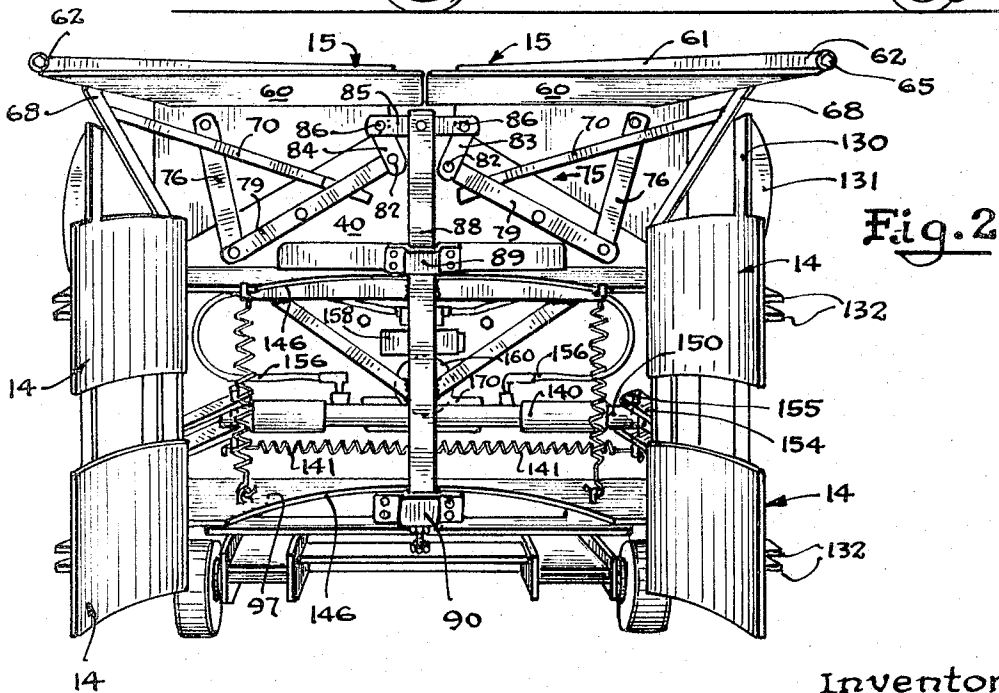
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3,306,479

DRUM TILTING APPARATUS

Filed Dec. 3, 1964

4 Sheets-Sheet 1



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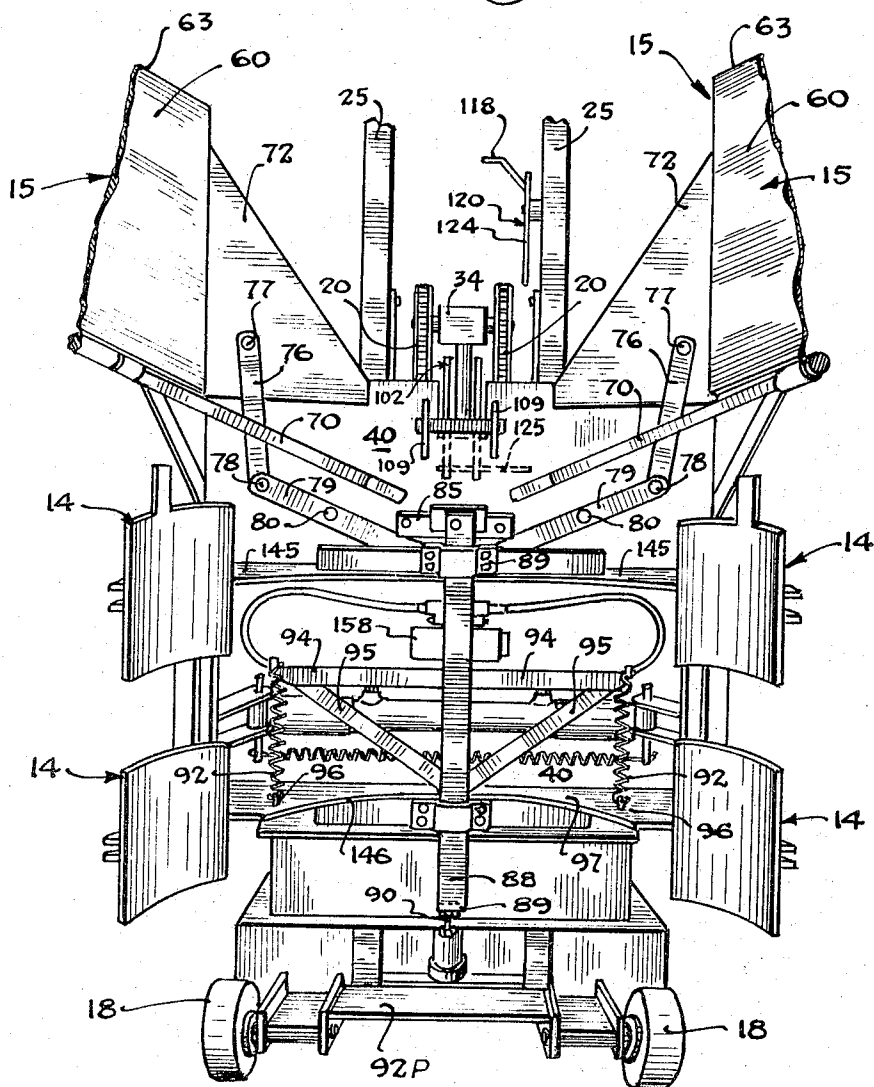
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Fig. 3



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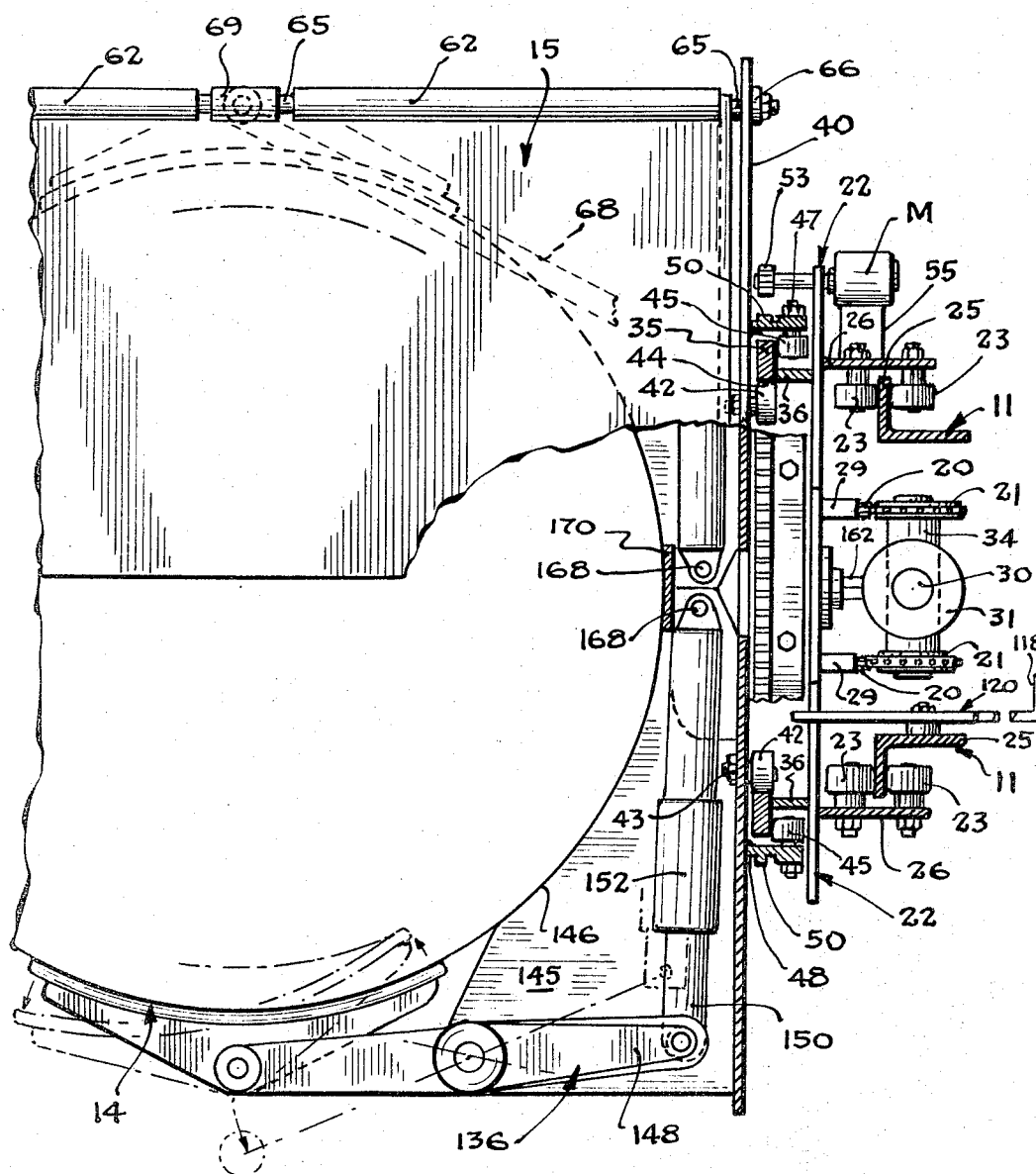
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Fig.4



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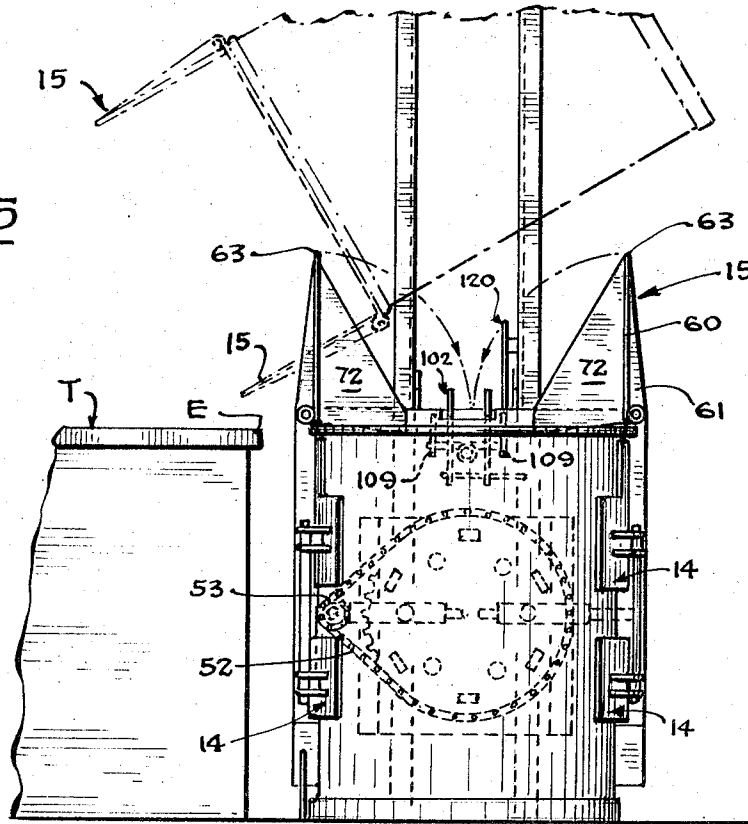
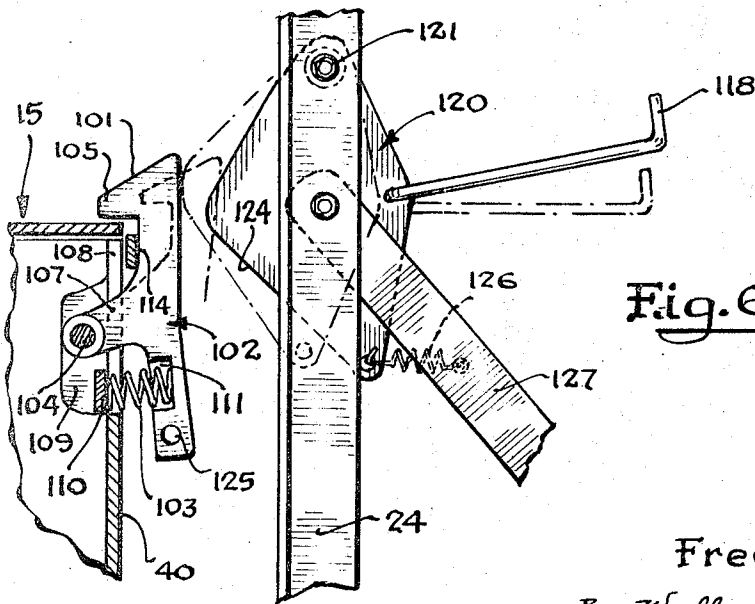


Fig. 6

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DRUM TILTING APPARATUS

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This invention relates to an apparatus for lifting and tilting a drum or the like heavy container incidental to emptying or mixing the contents thereof.

In many instances, the contents of a barrel, drum or like container must be mixed by rotation or tilting of the container which is a difficult, if not impossible, task to perform manually for a heavy container. Heretofore, after filling the barrel, drum or like container, a cover had to be secured thereto prior to a mixing operation and then the cover had to be removed before the drum could be emptied. The securing and removal of a cover on the drum is a relatively time-consuming and bothersome operation, and an object of the present invention is to eliminate the fastening and a later unfastening of a cover on a drum or the like incidental to the mixing and emptying of the contents from an open-mouth drum or the like. A more specific object of the invention is to transport a barrel or the like container on a vehicle such as a lift truck having the capability of covering the open mouth of the barrel and tilting or rotating the barrel to mix the contents therein.

In many instances, it is desirable to be able to lift a barrel, drum or the like by a lift truck and transport the barrel to a work table or station, which is at a considerable height above the supporting floor. Also when emptying the contents of a barrel or the like by tilting the barrel, the lift truck is in many instances unable to move close enough to the table to hold the mouth of the drum over the table to empty the contents thereon. Accordingly, an object of the present invention is to deposit the contents of a barrel at a position remote from the lift truck by a unique arrangement of a chute or guide for on a lift truck directing the contents of the barrel onto a table or platform.

Another object of the invention is a lift truck attachment having the dual capabilities of covering an open mouth barrel during the rotation of the barrel and of constituting a chute means for directing the contents of the barrel to a position on a work table or the like remote from the edge of the lift truck and the edge of the barrel.

Specifically, it is an object of the present invention to automatically close a pair of lid or cover elements on an open mouth of the barrel to prevent loss of the contents of the barrel during a tilting or rotation of the barrel and to use these same cover elements as guiding chutes for directing the contents of the barrel to a position on a receiving platform or the like remote from the edge of the barrel.

Other and further objects of the present invention will be apparent from the following description and claims and are illustrated in the accompanying drawings which, by way of illustration, show preferred embodiments of the present invention and the principles thereof and what is now considered to be the best mode contemplated for applying these principles. Other embodiments of the invention embodying the same or equivalent principles may be used and structural changes may be made as desired by those skilled in the art without departing from the present invention.

In the drawings:

FIG. 1 is a side view of a lift truck having a drum lifting and turning attachment constructed in accordance with the preferred embodiment of the invention;

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FIG. 2 is a front view showing the lid elements in their drum closing position with the drum side clamps in their open position;

FIG. 3 is a front view of the drum lifting and turning attachment showing the lid and clamp elements in their open position;

FIG. 4 is a plan view partially in section showing the lid elements in their closed position;

FIG. 5 is a front view showing the tilting operation of a drum to empty the contents thereof on a work table; and

FIG. 6 is an enlarged view of the latch mechanism for holding the lid in a clamped position during rotation of the barrel.

Referring now to the drawings and more particularly to FIG. 1, there is illustrated a lift truck 10 of a known and conventional type having a mast 11 on which is secured a drum or barrel rotating and lifting attachment or device 12. As shown in FIG. 1, the drum D is held by side clamps 14 clamping the sides of the barrel to hold the barrel against downward movement while the barrel is being lifted by the attachment 12. Also as seen in FIG. 1, lid or flap elements 15 are disposed in sealing or covering relationship with the top surface of a barrel or drum D having an open top or mouth.

As will be described in more detail hereinafter, the truck 10 has the capability of lifting the barrel and moving on its wheels 18 to various positions such as to a work table T, FIG. 5, where the lid elements 15 are opened to serve as chutes guiding the contents of the barrel being deposited on the work table. As evident from the phantom line position in FIG. 5, without the flap elements 15, the contents of the barrel would be deposited on the floor and on the lift truck because the lift truck is unable to dispose the open mouth of the barrel entirely over the work table T during a depositing operation. Thus, the lid elements 15 serve as a chute or guide to guide the contents of the drum past the edge E of the table T and on to the work table.

As best seen in FIG. 1, the lift truck 10 has the usual lift chain 20 disposed about a sprocket 21 secured on the mast 11. Secured to one end of the lift chain 20 is a conventional lift plate 22 which is adapted to be guided by rollers 23 along a flange 24 of angles 25. As seen in FIG. 4, the mast 11 includes these vertically extending angles 25 spaced from each other and serving as track or guide for the lift plate 22 as its rollers 23 move along the angles 25. The rollers 23 are secured to rearwardly extending plates 26 which are attached to the rectangular lift plate 22. The chains 20 are secured to anchor lugs 29 secured to the lift plate 22.

To raise or lower the lift plate 22 along the mast 11, a piston 30, FIG. 4, is moved vertically from a cylinder 31 by hydraulic fluid to raise and lower a cross-head 34 which is attached to the piston 30 for the purpose of moving the sprockets 21 vertically thereby causing the chain 20 to move about the sprockets to move the lift plate 22. Since the chain 20 is secured to a stationary portion of the truck frame and to the movable lift plate 22, vertical movement of the cross-head 34 by the piston 30 causes the chain 20 to move about the sprockets 21 and thereby raise or lower the lift plate 22. This manner of raising and lowering the lift plate 22 is conventional in the art.

Since the lift plate 22 is rigidly connected to the plate 26 and since the guide rollers 23 on the plate 26 are in engagement with the angles 25, the lift plate 22 is held against tilting or rotation with the drum D. For the purpose of providing an annular guide or race about which turns the device 12 during rotation, the lift plate 22 has an annular ring element 35 secured to the plate

22 by a plurality of spacer blocks 36 and thereby the ring element 35 is held spaced from the plane of the plate 22. Preferably, eight spacer blocks 36 are employed.

The drum turning and dumping device 12 includes a large rectangular main plate 40 which constitutes the main structural element thereof and which is adapted to be rotated relative to the lift plate 22 during a mixing or drum emptying operation. A suitable number of rollers 24 are secured by studs 43 to the main plate 40 and extend rearwardly into the interior of the ring 35 and are in engagement with the inner peripheral surface 44 thereof. The inner peripheral surface 44 serves as a race for the rollers 42 which are spaced about the inner surface of the ring 35. Thus, the main plate 40 is held against vertical or horizontal movement relative to the plate 22 by the rollers 42 in engagement with the inner surface 44 of the ring 35.

To hold the plate 40 against fore or aft movement relative to the plate 22, a plurality of rollers 45 are held in the space between the ring 35 and front plate 22 and journaled for rotation on studs 47 secured to a ring 48 secured as by welding to the plate 40. The ring 48 also functions as an outer drive ring for imparting a rotating torque to the device 12. More particularly, the ring 48 has welded thereon at suitable intervals, a number of gear teeth or lugs 50 which are encircled by the chain 52, FIG. 5, which is driven by a drive gear 53. The drive gear 53 is driven by a fluid motor M, FIG. 4, carried by a bracket 55 secured to the plate 26. Energization of the motor M rotates the drive gear 53 to turn the chain 52 which rotates the ring 48. Since the ring 48 is welded to the main plate 40, the main plate 40 turns with the ring 48 and the rollers 42 on the main plate 40 rotate on the inner race 44 while the rollers 45 on the ring 48 rotate on the rear surface of the ring 35.

The open mouth barrels or drums carried by the device 12 have their openings covered during rotation by lid members 15. The lid members 15 are identical in construction and each has a generally flat rectangular plate 60 having a flat undersurface, FIG. 2, for relatively tight engagement with the top surface of an open mouth drum. Welded to the top of the plates 60 are a plurality of stiffening ribs 61, which are increasing in thickness from the edges 63 of the plates 60 to the tubular members 62 which are welded to the top surface of the plate 60 at the opposite edges of the plates 60.

For pivotally mounting lid members 15, pivot rods 65 are secured to extend normally and forwardly of the mounting plate 40 at the upper edges of the mounting plate 40. The pivot rods 65 extend through the tubular pivot members 62 of the lid members 15 and are secured by nuts 66 to the plate 40. The pivot rods 65 are supported at about their mid-points by a brace member 68 which is welded to a small sleeve 69 through which extends the pivot rod 65. Thus, it will be apparent that the sleeve 69 is held stationary as are the pivot rods 65 while the lids 15 are adapted to turn their tubular members 62 about the pivot rods 65. As best seen in FIG. 2, an additional cross brace 70 is welded between the brace 68 and the main plate 40 to further stabilize the pivot rod 65 and thereby the lid members 15.

For the purpose of making the lid members 15 into chutes for guiding the contents from the drum D, chute end pieces 72 are secured at the rearward edges of the plates 60 to extend at right angles from the plate 60. Preferably, the chute ends 72 are triangular in shape and are welded to the plate 60.

As an important aspect of the present invention, the lid members 15 are adapted to be automatically closed to cover the open mouth barrel when the lift plate 22 and main plate 40 are lowered to the predetermined position wherein the lid members are disposed to clamp against the top surface of the barrel 60. More specifi-

cally, a linkage mechanism 75 is adapted to be actuated to force the closing of the lid members 15 against a spring force which biases the lid members 15 to the open position shown in FIG. 5. The linkage mechanism 75 is best seen in FIGS. 2 and 3. As best seen in FIG. 3, the chute ends 72 are connected to first links 76 by pins 77. The links 76 are connected at their lower ends by pins 78 to levers 79 pivotally mounted on pivot studs 80 secured to the main plate 40. The inner ends of the levers 79 are connected by pins 82 to small links 83 which are in turn pinned to a cross member 85 by pins 86. The cross member 85 is secured to a vertical extending driver bar 88 which is guided for vertical reciprocation in brackets 89 and 90 secured to the main plate 40. The lower end of the driver bar 88 has a rearwardly turned portion 89 having an aperture through which extends adjustable stud 90.

For the purpose of retaining the lid members 15 in their open position as shown in FIG. 3, strong biasing springs 92 are anchored to cross arms 94 secured to the driver bar 88 and braced thereby by brace members 95. The contractile springs 92 are hooked to the outer ends of the cross arms 94 and to anchor pins 96 on a plate 97 secured to the main mounting plate 40. Since the contractile springs 92 are in tension, the springs 92 urge the driver bar 88 downwardly to hold the lid members 15 in the open position of FIG. 3. Engagement of cross members 85 with the bracket 89 limits the downward movement of the driver bar 88 under the urging of the springs 92. With the driver bar 88 biased downwardly, as shown in FIG. 3, the linkage mechanism 75 is effective to hold the lid members 15 in their open position, as shown in FIG. 3. In the open position, the lid members 15 extend generally parallel to one another and generally upright until tilted as seen in FIG. 5.

The lift truck is brought into close relationship with the barrel 15 before the main plate 40 is moved downwardly to close the lid members 15. As the main plate 40 moves downwardly, the stud 90 on the driver bar 88 engages a bottom plate 92P, FIG. 3, extending between the front wheels 18. Thus, the driver bar 88 is held stationary while there is a further downward movement of the mounting plate 40. Since the driver bar 88 is held stationary and since the main plate 40 carries the pivot pins 80 for the levers 79 and the pivot pins 77 on the chute ends 72 further downwardly, the driver bar 88 through links 83 and 84 pulls the inner ends of the levers 79 upwardly about pivot pins 80 to the position of FIG. 2. The outer ends of the levers 79 pull the links 76 downwardly to exert a force on the lid members 15 to pivot the lid members 15 to come together and to move downwardly against the top surface of the barrel and into the covering position shown in FIG. 2.

As the lid members 15 are being pulled downwardly by the linkage mechanism 75, the chute ends 72 are brought into engagement with a camming surface 101 on each of a pair of latch pawls 102 to cam the latch pawls 102 clockwise, as viewed in FIG. 6 to the phantom line position so that the lid members 15 may move downwardly therewith. The latch pawls 102 are biased by compression springs 103 to pivot counterclockwise, as viewed in FIG. 6, about the pivot shafts 104 to bring a hook portion 105 over the top of the lid members 15.

The latch pawls 102 are disposed rearwardly of the main plate 40 and have forwardly extending legs 107 extending through an opening 108 formed in the main plate 40. The legs 107 are pivoted on the shaft 104 on the front side of the main plate 40. The pivot shaft 104 is fixedly secured in opposed lugs 109 which are secured as by welding to the front surface of the main plate 40. The compression spring 103 is anchored to a bar 110 extending between the lugs 109 and has its opposite end disposed in a spring seat cavity 111 formed in the lower portion of a latch pawl 102. The spring 103 urges the stop pawl 102 to engage a stop bar 114 which limits

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counterclockwise movement of the latch pawls 102 under the urging of the latch spring 103. The latch pawls 102 serve to prevent the lid elements 15 from swinging open under the pressure of the springs 92 and also under the weight of the contents of the drum when the drum is turned upside-down. Thus, the lid elements 15 are retained to cover the normally open mouth of a barrel while the barrel is rotated to tumble or mix the contents thereof.

When it is desired to empty the contents of the barrel on the table or suitable platform, the lift truck operator will grasp a manually operable handle 118, FIG. 6, and push a triangular cam 120 forwardly and in a clockwise direction about a pivoted stud 121 to move the cam 120 to the phantom line position of FIG. 6. In the phantom line position, the cam 120 has a camming surface 124 disposed in the vertical path of movement of a rod 125 secured to the lower ends of the latch pawls 102. As can best be appreciated from FIG. 3, the rod 125 extends rightwardly to be engaged by the cam 120 when the cam 120 is rocked forwardly by the operator.

Thus, when the rod 125 is moved upwardly to engage the cam 120, the cam surface 124 engages the rod 125 and pivots the pawls 102 to move their hooked ends 105 rearwardly of the main plate 40 whereupon the lid elements 15 snap open under the urging of the springs 92. When the operator releases the handle 118, a return spring 126 which is connected to the lower end of the cam 120 and a brace 127 for the angle member 24, pulls the cam 120 rearwardly in a counterclockwise direction about the pivot stud 121 to remove the cam surface 124 from the vertical path of movement of the rod 125 for the latch pawls 102.

The barrel or drum D is held for vertical movement by the side clamps 14 as hereinbefore described. In the preferred embodiment of the invention, four such side clamps 14 are divided into a pair of upper and lower side clamps disposed on opposite sides of the drum. The side clamps 14 are formed from generally curved plates having a curvature approximating that of the drum D to be grasped therebetween. As can best be seen in FIGS. 1 and 2, the upper side clamps 14 each have vertically extending riser portions 130, each of which has a reinforcing rib 131 welded to the rear surface thereof. The reinforcing rib 131 extends downwardly to a pair of laterally extending and spaced reinforcing ribs 132 which are secured to the outer surface of the side clamps 14. Similarly, the lower side clamps 14 have identical shaped reinforcing ribs 132 secured to the outer surfaces thereof. The side clamps 14 are mounted for independent and pivotal movement about a vertically oriented pivot shaft 134 which is secured to arms 135 of an operating lever means 136.

The side clamps 14 are rotated about their pivot shafts 134 by lever means 136 operated by hydraulic cylinders 140 to clasp the drum D. Each of the lever means 136 has an arm 135 fixedly secured to a vertical tube 142 in which is disposed the pivot shaft 138. The pivot shaft 138 is secured by nut fasteners 143 between an upper horizontal plate 145 and the lower plate 97, FIG. 1, secured to the main plate 40. The plates 143 and 97 extend normal from the main plate 40 in a forwardly direction. As can best be seen in FIGS. 2 and 3, these plates 145 and 97 have a central arcuate cut-out 146 complementary to the contour of the drum when the side clamps are moved into operative engagement with drum D. More specifically, these arcuate surfaces 146 on the plates 145 are abutted against the edge of the drum, as seen in FIG. 4, prior to the time that the side clamps 14 are closed in clamping position.

As seen in FIG. 4, each of the lever means 136 has an arm 148 extending rearwardly and pinned to a piston rod 150 of a hydraulic cylinder 140. The hydraulic cylinder 140, FIG. 4, is hydraulically operated to move its piston rod 150 horizontally outward to pivot its lever

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means 136 clockwise, as seen in FIG. 4, to move associated side clamps 14 tightly against the drum. The arm 148 ends in a clevis 154, FIG. 2, through which extends a pin 155 to interconnect the arm 148 and the piston rod 150.

The hydraulic cylinders 140 receive hydraulic fluid through flexible hoses 156 which are coupled to a divider 158, FIGS. 2 and 3. The divider 158 is secured to the main frame plate 40 adjacent a circular opening 160 immediately therebeneath, FIG. 2, which opening is aligned with circular openings and the ring 42 and lift plate 22. Supply hoses 162 from the lift truck are inserted through these aligned openings and a swivel connector (not shown) is positioned in the hoses 162 at these circular openings. The swivel connector permits the main plate 40 and cylinders 140 to rotate relative to the non-rotating lift plate 22 without twisting the supply hoses 162.

As can best be understood from FIG. 4, the hydraulic cylinders 140 are pivotally connected by pins 168 to a central bracket having upper and lower plates 170 secured to the main plate 40. Thus, the cylinders 140 are able to turn slightly about these pivot pins 168 as the lever means rotate to open or close the side clamps 14.

As best seen in FIGS. 2 and 3, the lower ends of pivot pins 155 are connected to the return springs 141 which are in turn connected to the main plate 40 to urge the lever means 136 to rotate the side clamps 14 to their open position shown in FIGS. 2 and 3. Thus, when the hydraulic fluid is applied to the cylinders 140, the pistons 150 move outwardly from their cylinders 140 to pivot the lever means 136 to move the side clamps 14 into tight engagement with the barrel while further stretching the contractile springs 141.

As an aid to understanding the invention, a brief description of operation of the invention follows herein-after. The following description of operation assumes an open condition of the side clamps 14 and the lid elements 15. The usual operation will be for the operator to drive the lift truck forwardly to engage the arcuate surfaces 146 on the horizontal plates 145 and 97 with the rear peripheral surface of the drum, as best seen in FIG. 4. The operator will then operate a handle H on the lift truck 10 to cause the downward movement of the lift plate 22 and the main plate 40, both moving in vertical planes parallel to one another during both downward and upward movement. As the main plate 40 moves downwardly, it carries driver bar 88 and its stud 90 downwardly to engage stud 90 with the plate 92P on the frame of the truck 10.

Further downward movement of the mounting plate 40 relative to the now stationary driver bar 88 stretches the contractile springs 92 and cause a pivoting of the lid elements 15 to the closed position of FIG. 2 as an incident to such further downward movement. More particularly, further downward movement of the mounting plate 40 causes the stationary driver bar 88 and its cross member 85 to pull the inner ends of the levers 79 upwardly relative to the plate 40. The turning of the levers 79 is such that the outer ends of the levers 79 pull the links 76 downwardly and thereby rotate the lid elements 15 inwardly to a closed horizontal position over the top of the drum D.

As the lid elements 15 are moved to a closed position, their respective chute ends 72 engage the inclined camming surface 101, FIG. 6, on the latch pawls 102 to swing the latch pawls 102 rearwardly to permit the closing of the lid elements 15 on the drum D. The closing of the lid elements 15 permits the latch pawls 102 to swing forwardly under the urging of their springs 103 to bring their respective hooked portions 105 over the top surfaces of the lid elements 15. Thus, the lid elements 15 are hooked against upward or open movement.

The operator will then manipulate another one of the handles H on the lift truck 10 to cause hydraulic fluid to

force the pistons 150 outwardly of the cylinders 140 to pivot their respective lever means 136 to move the side clamps 14 along horizontal paths into tight clamping engagement with the sides of the drum. The drum is thus tightly clasped by the side clamps 14 and its open top is covered by the lid elements 15. The operator will then operate one of the handles H to lift the drum to a position such as shown in FIG. 1, for transporting the drum or for rotating and tumbling of the drum to mix the contents thereof.

If it is desired to rotate the drum, the operator must employ one hand to actuate one of the handles H and the other hand to simultaneously operate a button on the control panel for the handles H. This is a safety feature to prevent inadvertent movement of the one handle and a rotation of the drum which would cause tipping of the contents therefrom onto the floor. In an elevated view, such as in FIG. 1, the hydraulic motor M, FIG. 4, is then actuated to drive its drive gear 50 to turn the chain 52, FIG. 5, to rotate the mounting plate 40 and drum D about the ring 35 with the rollers 42 rolling around the inner race surface 44 of the ring 35. In one application of the present invention, the lid elements 15 retain the solid contents within the drum while permitting any fluid therein to be drained during a rotating and tumbling of the contents within the drum. However, if it is desired, the under surfaces of the lid elements may be provided with suitable gasket means to prevent loss of any fluid from the interior of the drum.

After the rotating operation, the operator must stop the drum with the lid elements 15 uppermost prior to initiating a drum emptying operation. That is, for the cam 120 to be effective to open the lid elements 15, the cam 120 must be aligned with the operating rod 125 for the latch pawls 102, which happens only when the drum is disposed in a generally vertical position. To empty the contents of the drum, the operator of the lift truck 10 moves the handle 118 forwardly and pivots the cam 120 forwardly over the operating arm 125 for the latch pawls 102. The operator will then operate one of the handles H to move the lift plate 22 and main plate 40 vertically upward to engage the operating rod 125 with the cam surface 124 on the cam 120. The cam 120 forces the latch pawls 102 to pivot the hooks 105 rearwardly of the lid elements 15 main plate 40 whereupon the lid elements 15 snap open under the force of contractile return springs 92. Thereafter, the operator may release the handle 118 for the cam 120.

As best seen in FIG. 5, the lid elements 15 with their chute ends 72 constitute a chute or guiding means for guiding the contents of the barrel outwardly from the edge of the barrel and from the side of the lift truck and onto a receiving table or platform T. To tilt the drum D to the position shown in FIG. 5, it is again necessary that the operator use both hands to operate the handles H and a button on the control panel of the lift truck 10.

After unloading the contents of the drum D, the drum may be re-oriented to a vertical position and carried by the lift truck to a further destination whereupon the side clamps 14 can be opened by their return springs 141 to release the drum D.

From the foregoing, it will be seen that the present invention is unique and novel apparatus for handling, rotating and emptying the contents of a large heavy drum. Also, the present invention has the capability of rotating open mouth drums while preventing the loss of the contents of the drum by lid elements 15 which also function to serve as chutes for guiding the contents of the drum onto a receiving table or platform. Moreover, the apparatus is automatic in operation and constitutes a low-cost and inexpensive attachment for a lift truck or the like.

Hence, while I have illustrated and described the preferred embodiments of my invention, it is to be understood that this is capable of variation and modification.

I claim:

1. An attachment for a lift truck having a vertically movable lift mechanism, said attachment adapted to support an open mouth drum and to rotate said open mouth drum while preventing the emptying of the contents therefrom during the rotation of said drum, said attachment comprising a frame means for attachment to said lift means of said truck for vertical movement therewith and for rotatable movement relative to said truck, side clamp means extending forwardly and movable into clamping engagement with the sides of said drum, said side clamp means being pivotally mounted on said frame means, support means on said frame means extending forwardly of the sides of said drum, a pair of lid means pivotally mounted on each of said support means and each movable between a generally vertical position and a generally horizontal position, said lid means extending toward one another when in a horizontal position to cover the open mouth of said drum, means for pivoting said side clamp means to engage the sides of said drum to hold said drum to said frame means for lifting by said lift truck, and means for pivoting said lid means to a closed position to cover said open mouth drum and for pivoting said lid means to open positions to serve as a chute for guiding the material from said drum.

2. The attachment of claim 1 wherein spring means bias said means for pivoting said lid means to a generally open position, and latching means for latching said lid means in said closed position to hold said lid means in a closed position while said drum is rotating.

3. The attachment of claim 2 wherein said means for pivoting said lid means includes a linkage mechanism, said linkage mechanism having a portion thereof adapted to engage a stationary portion of said lift truck at a predetermined position of the downward movement of said frame means relative to said lift truck, further downward movement of said frame means causing said linkage means to operate and pivot said lid means downwardly to cause said linkage means to become effective to set said lid means in position.

4. The attachment of claim 3 wherein said latch means includes a pair of latch pawls for said lid means, and a selectively operable camming means for moving said latch pawls out of latching position with said lid means to allow said lid means to pivot to their open positions under the urging of said biasing means.

5. A wheeled lift truck for lifting and emptying the contents of an open ended drum or like container and comprising a vertically movable lift means, a frame supported by the lift means for movement therewith, said frame being rotatably supported by the lift means to rotate the container when clamped to the frame, clamps pivotally supported by said frame, means for moving the clamps to and from clamping position with respect to such a container, lid means pivotally mounted on said frame and movable to cover an open end of such a container, and means effective to pivot said lid means into closing position with respect to said open ended container as an incident to downward movement on said frame.

6. A lift truck according to claim 5 wherein the means effective to pivot said lid means is spring biased to hold said lid means normally in open position to constitute a chute for guiding the contents of a container, clamped to the frame, therefrom.

7. A wheeled lift truck for lifting and emptying the contents of an open ended drum or like container and comprising a vertically movable lift means movable in a predetermined vertical plane, a frame supported by the lift means for movement therewith, said frame being supported by the lift means for rotation in a plane parallel to said plane to rotate the container, when clamped to the frame, from an upright to an inverted position, clamps pivotally supported by said frame, means for moving the clamps along horizontal paths to and from clamping posi-

tion with respect to such a container, lid means pivotally supported on said frame and normally biased by a spring to an open position with respect to the open end of such a container, and means effective to pivot the lid means into closing position with respect to the open end of such a container as an incident to downward movement of said frame, the last named means including a linkage engageable with a stationary member on the lift truck during relative downward movement of said frame to operate said linkage to pull said lid means into a closed position over the open end of said container and against the force of said spring.

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