United States Patent [19]

Le Duff

[11] **3,868,033**

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[54] **LIFTING TRUCK, PARTICULARLY ADAPTED FOR CYLINDRICAL CONTAINERS**

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[52] **U.S. Cl.** **214/707,** 214/313

[51] **Int. Cl.** **B65g 65/04**

[58] **Field of Search** 214/302, 303, 312, 313, 214/314, 315, 317, 318, 700, 705, 706, 707, 214/711-715, 127

[56] **References Cited**

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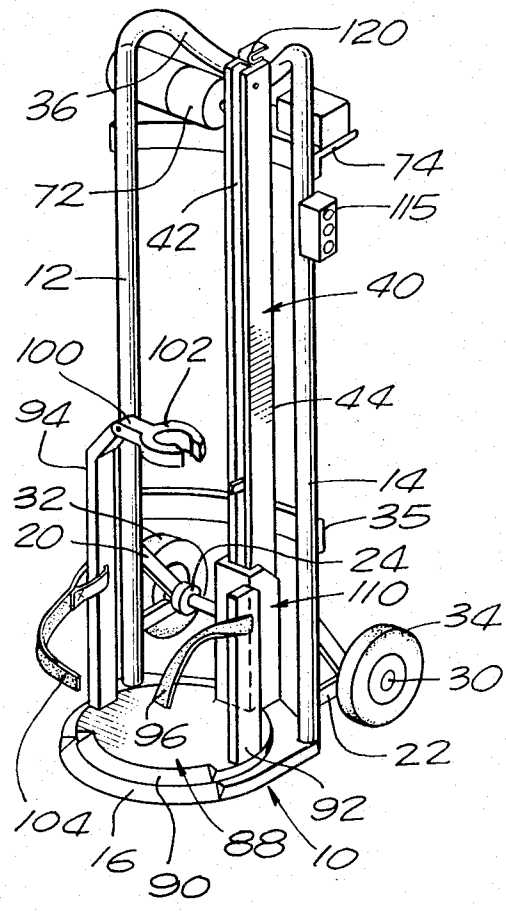
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[57] **ABSTRACT**

A lifting truck, particularly adapted for lifting cylindrical containers, more especially water bottles. The truck has a frame and a circular lift platform adapted to receive and hold a water bottle. Associated with the frame is an upright forming channels for an endless chain having attachment to the platform for lifting the bottle. The platform has attachment to the chain, allowing it to be tilted at the upper end of travel to facilitate tilting the bottle and moving it into an inverted position on the top of a water cooler.

9 Claims, 6 Drawing Figures



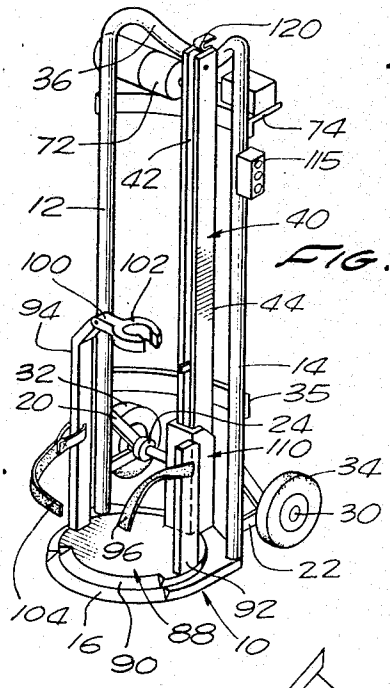


FIG. 1.

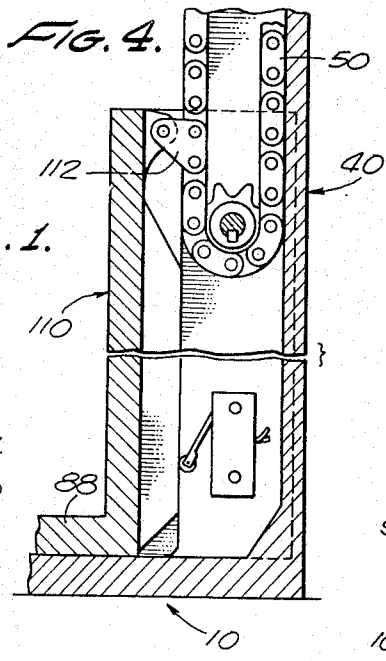


FIG. 4.

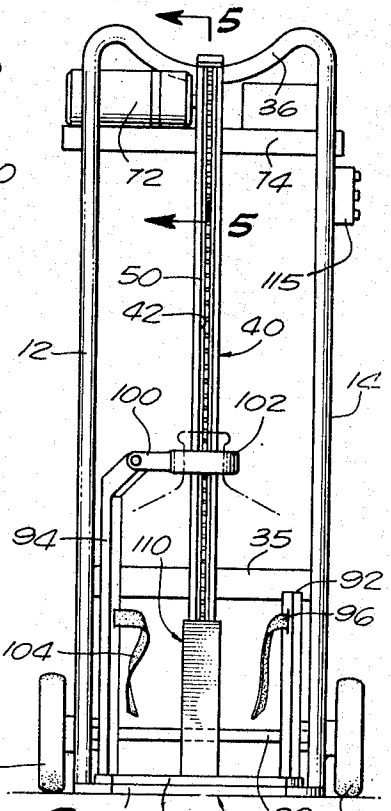


FIG. 2.

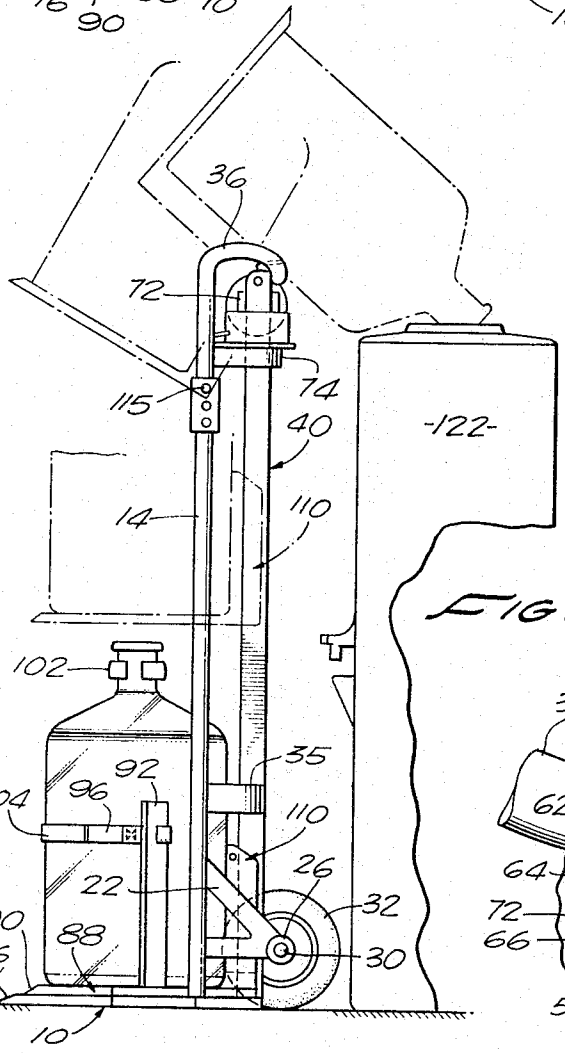


FIG. 3.

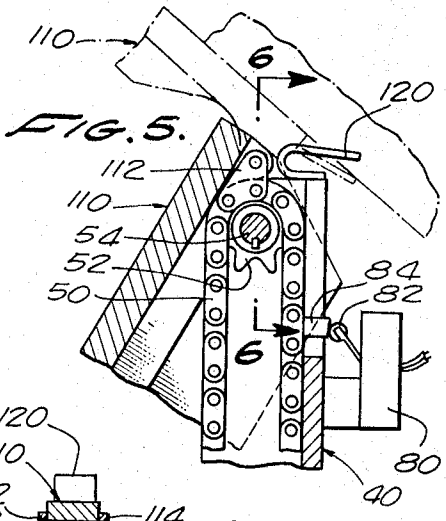


FIG. 5.

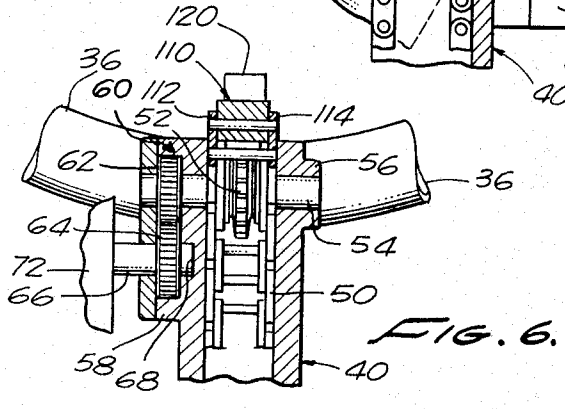


FIG. 6.

LIFTING TRUCK, PARTICULARLY ADAPTED FOR CYLINDRICAL CONTAINERS

SUMMARY OF THE INVENTION

The invention is a lifting truck, particularly constructed for use with cylindrical containers, especially water bottles.

Prior art presently known is: U.S. Pat. No. 1,312,089 to Anderson; U.S. Pat. No. 2,709,015 to Sasgen et al.; U.S. Pat. No. 2,895,567 to Hall; U.S. Pat. No. 3,052,323 to Hopfeld; U.S. Pat. No. 3,704,799 to Morris, Jr.

Pure water is sold commercially in large glass bottles having a neck with stopper. Water coolers typically in use have a tank at the top with a top opening of a size to support the top shoulders of the bottle in an inverted position with the neck of the bottle in the opening of the cooler.

Full bottles of water are relatively heavy. It is difficult to move and transport them to the cooler, and it is particularly difficult to lift them, invert them, and replace them in position on the cooler. In lifting the bottles, inverting them, and positioning them on the cooler, it is customary to grasp the bottles by the neck with one hand. Because of the weight of the bottle and the leverages involved in inverting the bottles, stresses imposed are such that at times, the neck of the bottle breaks off. This may happen suddenly with the result that a part of the lifter's hand or arm comes in contact with jagged edges of broken glass, causing serious injury. Thus, there is clearly a hazard involved in handling bottles as described.

The primary object of the invention is to provide handling means in the form of a lifting truck, particularly adapted for transporting and moving water bottles as described, lifting them, and facilitating the inverting of the bottle, and positioning it on the cooler. The invention is adapted for use with other cylindrical containers, but the particular adaptation (exemplary embodiment) as described herein has to do with the handling of the water bottles.

In the preferred form of the invention, the lifting truck has an upright frame mounted on wheels and a round or circular lifting platform. The truck has an upright column, providing channels for an endless motor driven chain. The bottle supporting platform is pivotally attached to the endless chain so that it can be lifted by power means and then tilted over so that it can be inverted and positioned in the inverted position in or over the cooler. Further objects reside in providing the construction of the truck with a single endless chain and with the attachment to the lifting platform to facilitate the desired movements of the bottle or other article being lifted.

BRIEF DESCRIPTION OF THE DRAWINGS

Further objects and additional advantages of the invention will become apparent from the following description and annexed drawings, wherein:

FIG. 1 is a perspective view of a preferred form of the invention;

FIG. 4 is a sectional detail view showing the attachment of the lifting platform to the endless chain;

FIG. 3 is a side view of the lifting truck of the invention illustrating its utilization with a water bottle;

FIG. 2 is a front view of the lifting truck;

FIG. 5 is a sectional view taken along line 5—5 of FIG. 2; and

FIG. 6 is a detail view taken along 6—6 of FIG. 5.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In the drawings, the truck comprises a base platform **10** having two side uprights **12** and **14** which may be of tubular construction and which are positioned slightly back from the front of base platform **10.** The front of platform **10** is bevelled at **16.** Attached to uprights **12** and **14** are frame members **20** and **22** which support journal bearings as designated at **24** and **26** for a transverse shaft **30** on which are journalled truck wheels **32** and **34.** An angular brace **35** is provided between uprights **12** and **14.** The upper ends of columns **12** and **14** are connected by a rearwardly and downwardly curved cross member **36.**

At the rear of platform **10** and midway between upright columns **12** and **14,** is column or upright **40** having front facing channel **42** and rear facing channel **44.** These channels form guides for a continuous or endless chain **50.**

Column **40** is constructed at the upper end as illustrated in FIGS. **5** and **6.** Small sprocket wheel **52** is mounted on shaft **54** which is journalled in bores formed in the sides of the upper end of column **40.** Column **40** has boss **56** adjacent one end of shaft **54** and on the opposite side has an extending part **58** forming a recess **60** in which is gear **62** on the other end of shaft **54** and meshing with another gear **64** on shaft **66,** one end of which is seated in recess **68** formed in the side of column **40** and which is also journalled in a cover plate **70** which covers recess **60.** The shaft **66** is driven by a motor **72** mounted on an arcuate platform **74** that is suitably attached to the upright columns **12** and **14.** Cross member **36** is just behind the upper end of column or upright **40.**

Supported by column **40** is a switch **80** having a switch arm **82** with a roller on the end which can be actuated by a projection or finger **84** carried by endless chain **50.** Switch **80** controls motor **72** in a circuit to stop it when the lifting platform has been lifted to the correct height, as will be described.

Numeral **88** designates a circular or lifting platform, edge **90** of which is bevelled, correspondingly to bevel **16** at the front of base platform **10.** At one side of platform **88,** is an upright member **92,** and at the other side is a longer upright member **94.** Numeral **96** designates a strap attached to the upper part of upright **92.** At the upper end of upright **94,** there is an inwardly extending bracket part **100,** at the end of which is the pivoted split circular holding member **102** having a side opening as shown, into which the neck of the bottle can be inserted when it is placed on platform **88.** Numeral **104** designates a strap attached to upright **94** which can be buckled to strap **96** in the manner illustrated in FIG. **3** for securely holding the bottle while it is being lifted.

Numeral **110** designates a channel-shaped shoe member, the channel of which is of a size to have the column **40** engage in it, the lower end of the shoe member being secured to and integral with the lifting platform **88.** The channel-shaped shoe member **110** is pivotally linked to the endless chain **50** by way of links to allow pivotal movement of shoe **110** and platform **88** relative to the endless chain. Shoe **110** is linked to end-

less chain **50** by link members **112** and **114** and appropriate pivot pins shown in FIG. **5.**

Referring to FIG. **5,** flexible cushioning member **120** is attached to the upper end of column **40** in a position as shown. This is a piece of flexible metal bent into a U shape.

FIG. **3** illustrates the preferred mode of utilization or practicing of the invention. The water bottle is placed on platform **88** and secured by buckling straps **96** and **104,** with the neck of the bottle in holding member **102.** Motor **72** is then energized by actuating push button switch **115** which causes sprocket wheel **52** to be driven so as to operate the endless chain in its guides to lift shoe **110** and platform **88** with the bottle upwardly into position as shown in FIG. **3.** Near or at the top position, straps **96** and **104** are unbuckled, the flexible holding member **102** being then disengaged from the neck of the bottle. Motor **72** is then again operated while the bottle is being manually steadied so the endless chain pulls shoe **110** along with platform **88** and the bottle up as illustrated in FIG. **3** so the bottle can be tilted over on to curved cross member **36** between uprights **12** and **14** and rested on cushion member **120.** The completion of the positioning of the bottle in inverted position on cooler **122** then can be done by hand. If desired, the motor can be used to tilt platform **88** into a tilted position as illustrated in FIG. **3.** Switch **80** is a limit switch positioned to be actuated to automatically shut off the motor to prevent the endless chain from moving shoe **110** and platform **88** too far. After the bottle has been positioned, manual switch **115** can be operated to reverse the motor to return the parts into position as shown in FIG. **1.**

From the foregoing, those skilled in the art will readily understand the nature of the construction of the invention and the manner of its utilization. Those skilled in the art will also readily appreciate the manner in which all of the objects as set forth in the foregoing are realized, along with many additional advantages which are apparent from the detailed description. The truck is of simple and rugged construction, not requiring maintenance, being of very great utility and eliminating the need for manual lifting and positioning of heavy containers, such as water bottles. It provides a significant safety factor, avoiding possible breakdown of the bottles, more particularly necks shearing off as described in the foregoing.

The foregoing disclosure is representative of a preferred form of the invention and is to be interpreted in an illustrative rather than a limiting sense, the invention to be accorded the full scope of the claims appended hereto.

What is claimed is:

1. As an article of manufacture, a lifting truck, particularly adapted for lilfting cylindrical containers comprising, in combination:

a frame having a base platform and upright side column members and a further upright member for guiding an endless chain, the platform and upright side members being configurated to receive a cylindrical container;

an endless chain associated with and guided by the upright guide member;

a container lifting platform carrying a shoe member having hinged attachment to the endless chain by pivotal attachment of the shoe member to the chain at a point spaced from the platform whereby at the upper end of travel of the chain the shoe and lifting platform will tilt the container laterally to facilitate its removal and repositioning;

cushioning means supported at the top of said upright member positioned to have the container rested thereon when tilted sideways during removal from the truck;

stabilizing means carried by said lifting platform for holding the container in position while being lifted, said stabilizing means including means adapted for engaging and holding a narrow neck of a bottle type container, said means for engaging and holding the bottle neck being an arm pivotally mounted on said lifting platform in position to be lowered after the bottle is in place on the lifting platform into a position for engagement with the neck of the bottle, said arm having an opening defined therein for engaging the neck of the bottle and into which the neck of the bottle may be inserted; and

controllable drive means for the endless chain whereby the lifting platform supporting the container may be lifted to a position at the upper ends of the upright side column members at which position the container can be tilted sideways and positioned for dispensing therefrom.

2. An article as in claim **1,** wherein the supporting platform for the cylindrical container is circular.

3. An article as in claim **1,** including an arcuate cross member between the side members positioned whereby to support the cylindrical container when tilted sideways.

4. An article as in claim **1,** wherein said guide means for the endless chain comprises means forming two U-shaped channels back to back, one having a reach of chain in it moving it in the upward direction and the other having in it a reach of chain moving downwardly.

5. The invention defined in claim **1,** wherein said arm has a split-ring type holding member formed on its end which defines the opening for engaging the neck of the bottle.

6. The invention defined in claim **1,** wherein said stabilizing means includes strap means for strapping the bottle on said lifting platform while it is being lifted.

7. The invention defined in claim **1,** wherein said controllable drive means includes limit switch means operable to de-energize it whenever the lifting platform reaches selected positions.

8. A truck for transporting, lifting and then positioning a container having a relatively narrow neck portion in an elevated substantially lateral position, comprising:

frame structure mounted on wheels for being moved from one location to another;

lifting platform means mounted on said frame structure for supporting a container positioned to rest on said lifting platform means, said lifting platform means being selectively operable to raise in a substantially vertical direction supported container from a lower vertical extending position to an upper substantially laterally extending position; and

stabilizing means carried by said lifting platform means for holding the container stably on said platform means during movement between said lower and said upper positions, said stabilizing means including an arm pivotally mounted on said lifting platform means in position to be pivoted into engagement around the upwardly extending side surface of the narrow neck portion of a container positioned on said lifting platform means.

9. The invention defined in claim **8,** wherein said arm has a split-ring type holding member formed on its end which defines an opening for engaging the narrow neck portion of a container.

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