April 8, 1952 O. L. ENGSTROM 2,592,017

BOTTLE LIFTER

Filed Oct. 11, 1947 2 SHEETS—SHEET 1

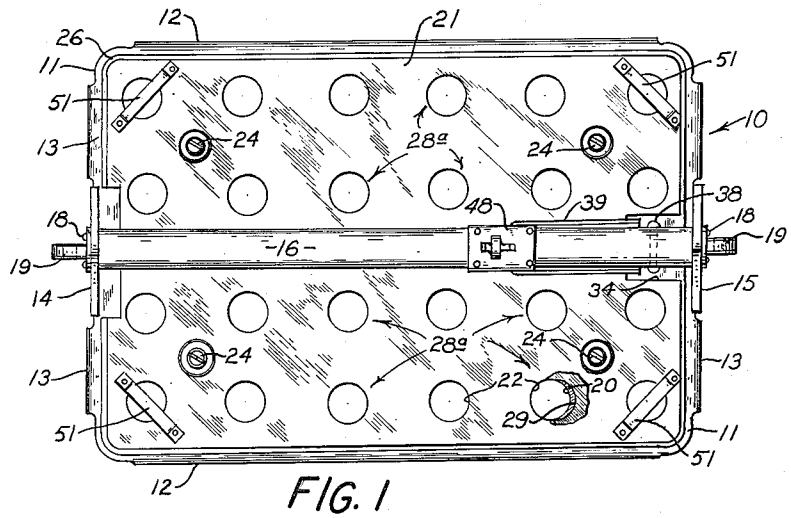


FIG. 1

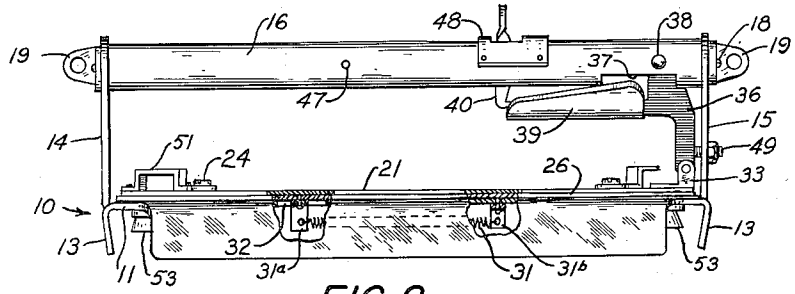


FIG. 2

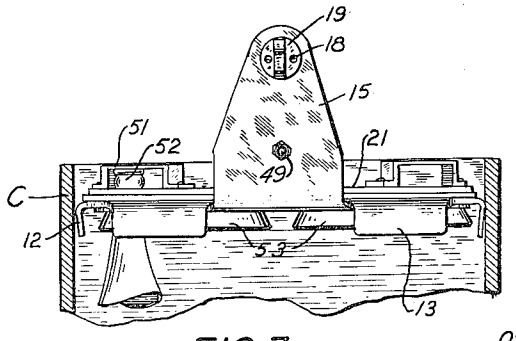


FIG. 3

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BOTTLE LIFTER

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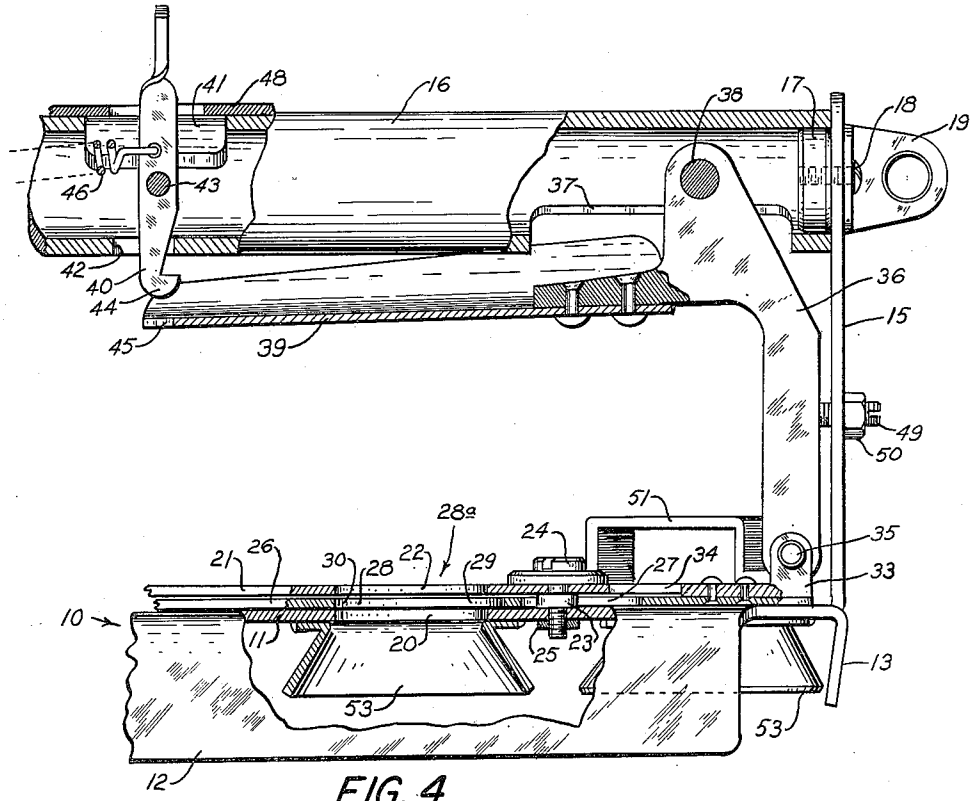


FIG. 4

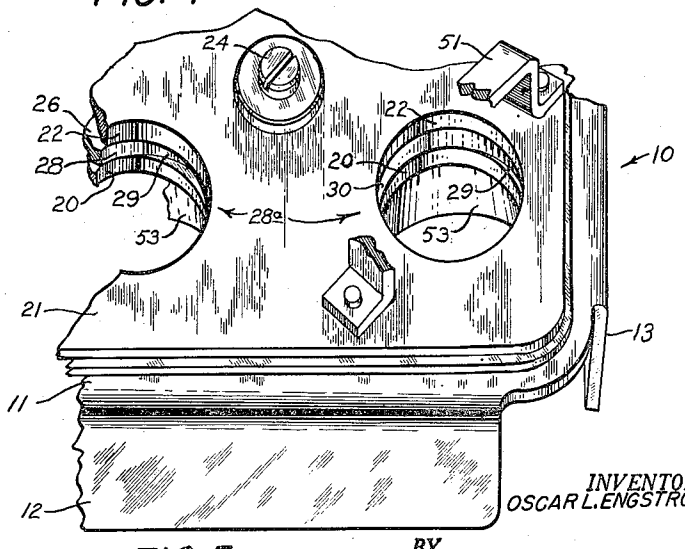


FIG. 5

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BOTTLE LIFTER

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6 Claims. (Cl. 294—87)

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This invention relates to bottle lifters, and more particularly to a bottle lifter adapted to be lowered over the necks of a group of bottles to grip the same so that they may be raised or transferred to another location.

One object of this invention is to provide a device of the above nature having a pair of superposed apertured plates which are relatively slidable for gripping the necks of the bottles.

Another object is to provide a device of the above nature in which the group of bottle necks will be gripped quickly and efficiently by actuation of a single operating lever.

Another object is to provide a device of the above nature, wherein the bottle gripping plates will be resiliently urged to non-gripping position and will be automatically locked in gripping position when manually moved to grip the bottles.

Another object is to provide a device of the above nature, in which the means for operating the gripping plates, and the manually-releasable automatic lock for the operating means are mounted on the yoke-shaped handle of the lifter.

Another object is to provide a device of the above nature which includes guide surfaces for facilitating the convenient insertion of the lifter into a bottle-carrying case, and conical locating means for correctly positioning the bottle necks in said lifter.

A further object is to provide a device of the above nature which will be simple in construction, inexpensive to manufacture, easy to install and manipulate, compact, and very efficient and durable in use.

With these and other objects in view, there has been illustrated on the accompanying drawing one form in which the invention may conveniently be embodied in practice.

In the drawings,

Fig. 1 shows a plan view of the improved bottle lifter.

Fig. 2 is a front elevation thereof, partly broken away to show the operating spring.

Fig. 3 is a fragmentary end elevation showing the lifter in engagement with a bottle in a bottle-carrying case.

Fig. 4 is a fragmentary front elevation partly in section, and on an enlarged scale, of one end portion of the bottle lifter.

Fig. 5 is an enlarged perspective view of a corner portion of the bottle lifter.

Referring now to the drawings in which like reference numerals denote corresponding parts throughout the several views, the numeral 10 indicates generally a sheet metal frame including

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a flat substantially rectangular base plate 11 of a size to fit within a bottle-carrying case indicated generally by the letter C (Fig. 3). The four edge portions of the frame 10 are bent downwardly to form side flanges 12, and two pairs of spaced end flanges 13 for reinforcing the base plate 11, said flanges being inclined inwardly slightly to provide guiding surfaces to facilitate the insertion of the lifter frame 10 into the top of the bottle-carrying case C. The corners of the base plate 11 are rounded to provide proper clearance.

The ends of the carrier frame 10 are provided with upwardly bent portions between the pairs of end flanges 13 forming a pair of upstanding brackets 14, 15 for mounting a tubular handle 16 above and parallel to the base plate 11.

Tapped plugs 17 are welded into each end of the handle 16, and screws 18 are entered through apertures in the upper ends of the brackets 14, 15, and threaded into said plug 17 for securing the handle 16 in operating position. The screws 18 also hold a pair of outwardly-extending flanged apertured ears 19 against the outer face of each bracket 14, 15, whereby a lifting means, such as a chain (not shown) may be readily attached to the lifter.

The flat base plate 11 is further provided with four rows of regularly arranged circular apertures 20 placed to correspond with the position and number of bottles in the case C. An upper plate 21 is also provided having apertures 22, like in number, position, and shape, to the apertures 20 of the plate 11, and said upper plate 21 is supported in parallel stationary relation to the plate 11 by spacer washers 23 embracing screws 24 passing through the base plate 11 and the upper plate 21, and rigidly secured in position by nuts 25.

A bottle-gripping slide 26 is confined between the base plate 11 and the upper plate 21—being provided with slots 27 which embrace the washers 23. Apertures 28, like in number and position to the apertures 20 and 22 are formed in the bottle-gripping slide 26 to cooperate with the apertures 20 and 22, to provide openings 28a for the passage of the bottle necks.

It will be noted that the apertures 20 in the base plate 11 and the apertures 22 in the upper plate 21 are circular, while the apertures 28 in the bottle-gripping slide 26 have eccentric bearing sides 29 in opposed relation to the opposite circular sides 30 thereof, whereby the apertures 28 are slightly oval in order to insure that full clearance will be provided for the insertion of the bottle necks therein.

The bottle-gripping slide **26** is urged to non-gripping position (that is, to the right in Fig. 2) by a coiled spring **31** having its respective ends secured to a lug **31***a* mounted on the lower surface of the slide **26**, and to a lug **31***b* mounted on the lower surface of the base plate **11**. A slot **32** in the base plate **11** provides clearance for movement of the lug **31***a* when the slide **26** is moved. Thus, the bottle receiving springs of the frame are normally maintained in their enlarged condition.

In order to operate the slide **26** to constrict the openings **28***a*, a lug **33** is secured, as by riveting, to the upper surface of one end of said slide—a slot **34** being provided in the end of the upper plate **21** to permit movement of said lug.

A horizontal pin **35** connects the lug **33** to the lower end of a bell-crank operating lever **36** having an upper portion entered through a slot **37** in the lower side of the tubular handle **16** and pivoted therein by a horizontal pin **38**. The operating lever **36** extends beyond the pin **38** in a position below the handle **16**, and parallel thereto, to form a hand grip **39** of suitable rounded shape.

In order to lock the slide **26** in bottle-gripping position against the force of the spring **31**, provision is made of a latch **40** which extends vertically through an upper aperture **41** and a lower aperture **42** in the tubular handle **16** and located adjacent the end of the hand grip **39**, said latch being pivoted in the handle **16** as by a horizontal pin **43**.

A lower hooked end **44** of the latch **40** is engageable in a notch **45** of the hand grip **39** to hold it in raised position—said hooked end being urged into engagement with said notch by a coiled spring **46** connected at one end to the latch **40** above the pin **43**, and having its opposite end anchored to a cross pin **47** located within the handle **16**. A slotted arcuate plate **48** embraces the upper end of the latch **40** and covers the aperture **41**.

In order to limit the opening or bottle-releasing movement of the slide **26**, provision is made of a stop screw **49** which has a lock nut **50** and is threaded into the bracket **15** centrally thereof, so as to adjustably limit the movement of the operating lever **36**. For limiting the downward movement of the base of the carrier plate **11**, in the bottle-carrying case C provision is made at each of the four corners of the frame **10** of a stop member **51** of inverted U-shape riveted to the upper plate **21** and spanning the corner openings **28***a*. Thus, when the bottle lifter has been lowered into the top of the bottle-carrying case C, as shown in Fig. 3, the stop members **51** will engage the enlarged heads **52** of bottles B at the corners of the case C, so that the bottle lifter will be correctly positioned to grip the bottles below the enlarged heads **52**.

The base plate **11** is further provided with flaring skirt-shaped annular guide members **53** secured to the bottom of the base plate **10**, as by welding, in a position surrounding and concentric with each aperture **20**. Thus, the bottles will be guided into correct position in the openings of the frame even though they may be slightly out of alignment therewith.

Operation

In operation, the improved bottle lifter will first be lowered into the open top of the bottle carrying case C, as shown in Fig. 3, to loosely embrace the necks of bottles B within the openings **28***a* of the frame.

The side flanges **12**, being inclined inwardly, and the corners of the lifter being rounded, the step of insertion will be facilitated, and the lifter will be lowered until the corner stops **51** come into contact with the enlarged heads **52** at the tops of the bottles, thereby locating the lifter in its correct gripping position.

The hand grip **39** will then be manipulated to move the slide **26** to the left in Fig. 4, thereby gripping the bottle necks between the sides of the apertures **20, 22**, in the stationary plates **11, 21**, and the eccentric bearing sides **29** of the slide **26**. At the same time, the spring-pressed latch **40** will automatically engage in the notch **45** of the grip **39** to retain the lever **36** and the slide **26** securely in bottle-gripping position.

The lifter will now be raised manually or by any desired auxiliary means and transferred to the location at which it is desired to deposit the bottles. In this connection, it will be understood that if desired, the apertured ears **19** will provide convenient means by which a cable or other lifting means may be attached to the said operator.

After the bottles are deposited in the desired location, the upwardly-projecting end of the latch **40** may be manually swung to the right, whereupon the spring **31** will force the slide **26** to the right in order to release the bottles so that the lifter may be removed therefrom.

One advantage of the improved bottle lifter herein disclosed is that the hand grip means for operating the slide and the latch are conveniently located to permit a natural engagement by the operator's hand upon the handle **16**. Thus in handling the lifter, the operator's fingers may readily engage the hand grip **39** in the position in which they will be used for raising the lifter. After the lifter has been transferred to the place where the bottles are to be deposited, the upper end of the lock lever **40** will be in convenient position to be tripped by the operator's thumb for releasing the bottles.

Another advantage of the present invention is that the lifter includes no pivoted bottle gripping parts, and that the gripping slide is confined and guided between protecting plates so that it is not likely to get out of order.

Another advantage is that the lifter may be easily manufactured since the frame is formed from a single piece of sheet metal, and the lifter includes only three moving parts, including the latch for locking the operating means.

Another advantage is that the annular guide member **53** and the spring **31** are protected by the downwardly-extending flanges of the frame so that they will not be injured when the empty lifter is set down upon the floor.

While the lifter in this instance is provided with a series of twenty-four openings, it will be understood that this number may be varied in accordance with the capacity of the bottle-carrying cases which are used within the spirit and scope of the invention.

While there has been disclosed in this specification one form in which the invention may be embodied, it is to be understood that this form is shown for the purpose of illustration only, and that the invention is not to be limited to the specific disclosure, but may be modified and embodied in various other forms without departing from its spirit. In short, the invention includes all the modifications and embodiments coming within the scope of the following claims.

Having thus fully described the invention,

what is claimed as new, and for which it is desired to secure Letters Patent, is:

1. In a lifter for a plurality of bottles, a base plate provided with a series of apertures, a slide mounted on said base plate and provided with a series of apertures adapted to register with the base plate apertures, means comprising a single horizontal handle secured to said base plate for raising said lifter, slide-moving means for constricting said base plate apertures including a lever pivotally secured to said handle and connected to said slide, said lever comprising a hand grip extending horizontally below said handle, and a spring urging said slide to bring the slide apertures into register with the base plate apertures, whereby a plurality of bottles may be engaged upon grasping and lifting said handle with one hand.

2. The invention as defined in claim 1, including a latch pivotally mounted on said handle for detachably locking said lever and so disposed as to be operable by the thumb of the hand grasping said handle, whereby said lever and said slide may be held in a position to constrict the base plate aperture around the necks of said bottles against the force of said spring.

3. In a bottle lifter, a base plate provided with a series of apertures, mechanism for gripping bottle necks in said apertures, means for operating said mechanism, downturned reinforcing flanges at the ends of said base plate, a pair of central upturned brackets integral with the ends of said base plate, and a single handle disposed parallel to and directly above the longitudinal axis of said base plate and secured to the upper ends of said brackets, said operating means being so arranged with respect to said handle that bottles may be gripped and lifted in the lifter by the use of one hand.

4. In a bottle lifter, an apertured horizontal base plate, an apertured slide adapted to grip bottle necks in the base plate apertures, a pair of upwardly extending brackets on said base plate, a tubular handle mounted on said brackets and disposed parallel to and directly above the longitudinal axis of said base plate, and a bell-crank lever pivotally connected to said slide and to said handle adjacent one end thereof for operating said slide, said lever comprising a vertically swingable hand grip disposed adjacent the lower side of said handle.

5. The invention as defined in claim 4, including a spring mounted on said frame for urging said slide to non-gripping position.

6. The invention as defined in claim 5, including a latch mounted on said handle and engageable with said lever to retain said slide in gripping position against the force of said spring, said latch having a portion extending upwardly from said handle above said hand grip, whereby the operator may operate said hand grip and said latch without changing the location of his hand upon the lifter handle.

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