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CAN LIFTER

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2 Sheets-Sheet 1

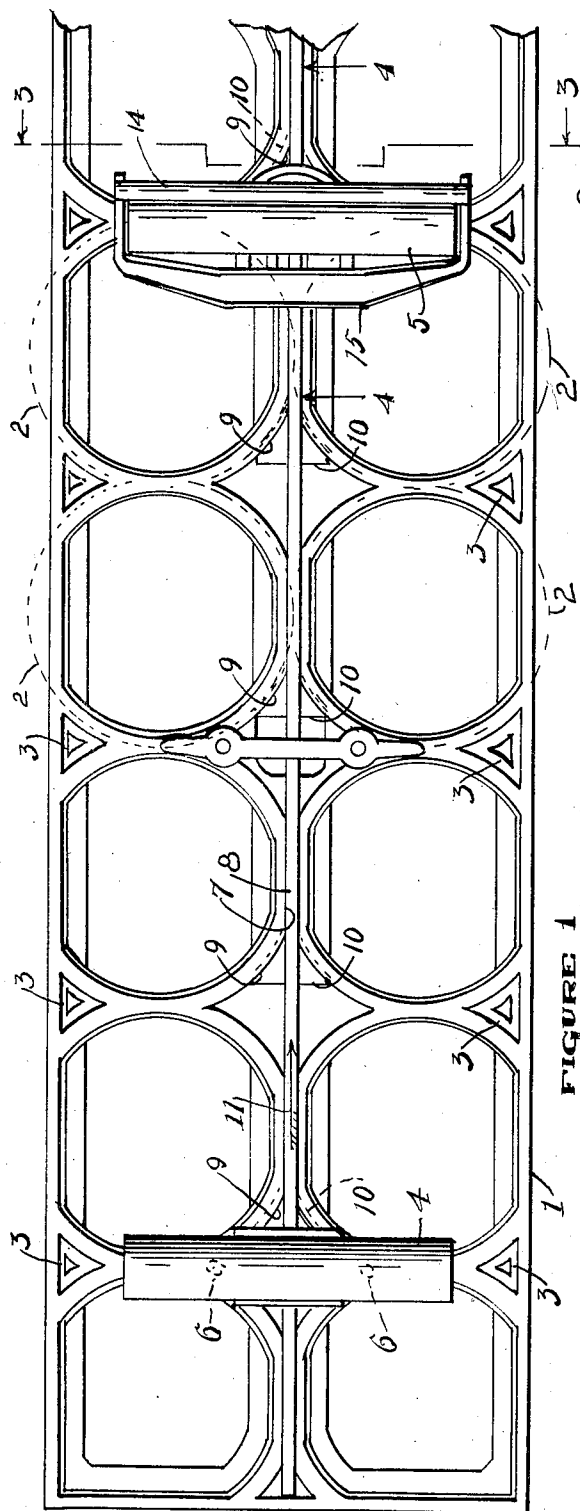


FIGURE 1

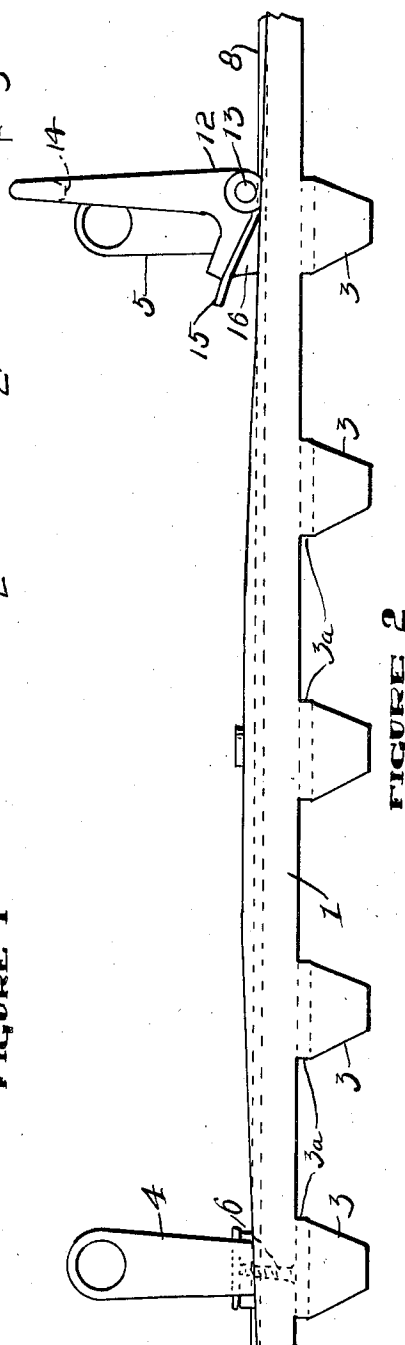


FIGURE 2

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CAN LIFTER

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5 Claims. (Cl. 294—87)

The present invention relates particularly to means for picking up and depositing filled cans where they are handled in large quantities such as in warehouses and the like.

It is one object of the present invention to provide a device of the character indicated that is capable of picking up a number of cans at one time, and that will simultaneously release all of the cans when deposited in their new location.

It is another object to provide a can lifter that will positively grasp all of the cans through the operation of a minimum number of moving parts, and that will therefore have little opportunity to get out of order.

It is still another object to provide a can lifter so constructed and arranged that it will grasp the cans in such a manner that they cannot be even slightly injured.

Finally, it is an object of the invention to provide a can lifter of the character indicated that will be exceptionally light in weight, quickly and easily operated, economical to manufacture, strong, durable, and highly efficient in its practical application.

In the drawings:

Figure 1 is a plan view of a device embodying my invention, a part being broken away.

Figure 2 is a side elevation of the same.

Figure 3 is an enlarged sectional view on line 3—3 of Figure 1.

Figure 4 is an enlarged sectional view on line 4—4 of Figure 1.

Figure 5 is a perspective view of a portion of the slidable can engaging member.

Figure 6 is a diagrammatical illustration showing the method of engaging the cans.

In the embodiment of the invention as herein disclosed I show at 1 a plate dimensioned to accommodate twelve cans arranged in two rows of six cans each, two cans being indicated in dotted lines in place at 2—2.

The plate 1 could be a solid flat plate of suitable thickness, but in order to reduce the weight of the device to a minimum it has been reduced to a skeleton structure as shown.

Formed integrally with the plate to depend from its under side, and spaced about the edges thereof, are lugs 3. These lugs are provided with arcuate inner surfaces as at 3a and are so positioned that when the plate is set upon the top of a can the adjacent opposing surfaces 3a will seat against the rim of the can, that is, these arcuate surfaces have exactly the same curvature as the rims of the cans to be handled.

Mounted upon the top surface of the plate in parallel relation to each other, and adjacent the two ends of the plate, are handles 4 and 5, these handles being fixedly secured in position in any suitable manner as by screws 6.

The can engaging and releasing mechanism is assembled in the following manner. A slot 7 is formed in the center of the top surface of the plate to extend longitudinally thereof, and a bar 8 is mounted to slide freely therein.

Formed integrally with the bar 8 and depending from the under side thereof through openings as 9 in the plate 1, are bosses 10. These bosses 10 are spaced along the bar 8 similarly to the spacing of lugs 3, and each boss has the general shape of an arrow head, with an arcuate face on either side having the same curvature as surfaces 3a as indicated at 10a. In each of these arcuate surfaces 10a is formed a groove as at 10b disposed to engage the rim or bead on a can when moved into contact therewith.

All of the above described parts are so proportioned that when the plate 1 is set upon the tops of a number of cans the fixed lugs 3 will drop in between the outer portions of the cans as clearly shown in Figure 1, and each boss 10 will drop in between the inner portions of two opposing cans, so that when the bar is advanced a little in the direction indicated by arrow 11 the grooves 10b on boss 10 will engage the rims on the two cans which it contacts and liftably engage the same, at the same time urging the cans outwardly into intimate contact with their respective lugs 3. An opposite movement of the bar 8 will, of course, remove the bosses 10 from engagement with the cans and permit the withdrawal of the device.

In order to slide the bar 8 at the will of the operator I provide a bell crank 12 which is pivotally mounted upon the handle 5 as at 13 in offset relation to the center plane of the handle. The long arm of the lever 12 overlies the top of the handle as at 14 and swings freely over its ends, while the short arm is carried across the front of the handle as at 15. On the central portion of the part 15 is formed a finger 16 that extends downwardly and backwardly in the direction of the pivotal mounting 13. A short link 17 is pivotally connected to the part 16 as at 18, and to the bar 8 at 19.

When the device is in position as hereinbefore described the operator grasps the two handles 4 and 5, but before lifting up on them, in fact in the grasping operation the operator will throw the bell crank 12 over in the direction indicated

by arrow 20. This movement of the bell crank operates to move the link 17 in the direction indicated by arrow 21, thereby causing the bar 8 to slide in the direction indicated at 11 and engage the cans as described. Since the link 17 is moved downwardly about its pivotal point 19 and the point 19 can move only in a horizontal direction, it follows that the link will move into a substantially horizontal position and automatically maintain the several parts in the grasping position until manually displaced. While the bell crank is moved as above described by the act of grasping the handle, it is moved in the opposite direction to move the bar 8 backwardly and release the cans by hooking the thumb over the part 14 and pulling the same in the direction opposite to that indicated by the arrow 20.

The principle upon which the device works will be readily understood by referring to Figure 6. Here the bar 8 with one boss 10 moves in the direction indicated by the arrow 11 to engage a can 2 and cause its rim 2a to seat in the groove 10b and to engage the lugs 3. In considering this figure it is pointed out that a movable boss urges the can into lifting engagement with a fixed member on the opposite side of the can. While in the device described in detail shows the fixed lug as being on the outer edge of the plate, Figure 6 clearly demonstrates that the fixed lug may be placed in any desired relationship relative to other cans, either on the outside or in the center of a group of cans, the only limitation being that it be placed in opposed relation to the movable boss. The direction in which the boss 10 moves is determined by the nature of the general assembly. It may move into grasping position as shown in solid lines, or it may be positioned to move as indicated in dotted lines.

While it has been herein stated that the cans are released by pulling the lever 12 in the reverse direction to its first movement, it is only necessary to move the lever far enough to position the link 17 angularly with respect to the bar 8. The movement is then completed by means of a spring 22 placed between the end of the plate and the adjacent end of the bar 8.

The bosses 10 are specifically referred to as sliding, and they are supported to slide in parallel relation to the plate 1, because by means of this movement they contact the cans without material friction and without danger of injury thereto.

Although certain specific embodiments of the invention have been herein illustrated and described, it will be understood that various alterations in the details of construction and mode of assembly and operation may be made without departing from the scope of the invention as indicated in the appended claims.

I claim:

1. A can lifter comprising, in combination, a supporting plate adapted to overlie and seat upon the tops of a row of cans and having lugs fixedly disposed on one face thereof disposed and arranged to engage the rims of the row of cans, a bar slidably mounted on the plate and provided with devices spaced the same as said lugs and

engageable with the can rims in opposed relation to said lugs, said bar and devices being mounted for movement in a plane parallel with said plate, and to urge the cans into intimate engagement with said lugs, and instrumentalities operative to actuate the said bar.

2. A can lifter comprising, in combination, a supporting plate adapted to overlie and seat upon the tops of a group of cans and having elements fixedly disposed on one face thereof and disposed and arranged to engage the rims of the several cans, a bar slidably mounted on the plate and provided with devices engageable with the can rims in opposed relation to said elements, handles fixedly mounted on the plate, a lever fulcrumed on one handle, and instrumentalities connecting the lever and bar whereby operation of the lever will shift the bar to move the said devices into or out of engagement with the cans.

3. A can lifter comprising, in combination, an apertured supporting plate adapted to overlie and seat upon the tops of a group of cans and having elements fixedly mounted upon one face thereof and disposed and arranged to engage the rims of the several cans, said plate having a guideway formed in the outer face thereof, a bar slidably mounted in said guideway and having devices disposed thereon to extend through the apertures in the plate in opposed relation to said elements, and instrumentalities operative to slide the bar and move the devices into and out of engagement with the cans.

4. A can lifter comprising, in combination, a supporting plate adapted to overlie and seat upon the tops of a group of cans and having elements fixedly disposed on one face thereof and disposed and arranged to engage the rims of the several cans, a bar slidably mounted on the plate and provided with devices engageable with the can rims in opposed relation to the said elements, handles fixedly mounted on the plate, a lever fulcrumed on one handle with its long arm overlying the handle and its short arm overlying the bar, and a link pivotally connected to the short arm of the lever and to the bar whereby movement of the long arm of the lever in either direction will shift the bar to move the devices thereon into and out of engagement with the cans.

5. A can lifter comprising, in combination, an oblong rectangular plate adapted to overlie and seat upon the tops of two rows of cans and having elements fixedly disposed about the periphery thereof and on one side thereof each element being formed and arranged to the outer portions of the rims of two adjacent cans, a bar slidably mounted on the plate to extend longitudinally along its median line, the plate having apertures formed therein and the bar having devices disposed thereon to extend through said apertures and formed and arranged to engage the rims of two opposed cans in opposed relation to said elements, and instrumentalities operative to slide the bar and move the devices into and out of engagement with the cans.

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