A can top removal mechanism has pivotal levers and bell cranks for removing a can top by first lifting the back edge and then the front edge of the top.

7 Claims, 5 Drawing Figures
CAN TOP REMOVAL MECHANISM

BACKGROUND OF THE INVENTION

One of the difficulties of the can top removers known in the patented art is that prior can tops would bind during the initial lifting step making further removal of the top difficult. In general, the prior can top removers are of two types, a hand operated mechanism connected to the can top and pivotally connected to a support, or a foot actuated lever mechanism having levers connecting the foot actuator to the can top. In both the hand operated lever can top remover and the foot actuated can top remover, the first movement is to lift the front edge of the can which usually binds the top at the back edge making further movement of the top more difficult.

SUMMARY OF THE INVENTION

It is the purpose of this invention to overcome the inefficiencies of the prior art can top removers by providing a can top remover which first lifts the back edge of the top and then the front edge. To accomplish the desired lifting of the back edge first a specially designed bell crank and lever system initiate the lifting motion. The bell crank and levers of this invention provide a smooth removal of the can top without any binding.

It is a further object of this invention to provide a can top removal mechanism with few moving parts.

Another object of this invention is to provide a can top removal mechanism which may be installed without making major alterations to the existing can and can top.

BRIEF DESCRIPTION OF THE DRAWINGS

In the accompanying drawings showing a preferred embodiment of the present invention:

FIG. 1 is a side elevation view of the can top removal mechanism of the present invention;

FIG. 2 is a top view of the can top removal mechanism of FIG. 1;

FIG. 3 is a side elevation of the can top removal mechanism with the can top partially removed;

FIG. 4 is a side elevation view of the can top removal mechanism with the can top completely removed; and

FIG. 5 is a side elevation view of the can top removal mechanism with the can top partially removed and part of the levers cut away to show the bell crank used in the present invention.

DESCRIPTION OF THE PREFERRED EMBODIMENT

Referring now to the drawings, FIG. 1 shows a can 10, can top 12 and a can top removal mechanism 20. The can top removal mechanism is pivotally connected to a stationary support which may be a wall, or some other vertical structure such as a post.

A top view of the linkage system is shown in FIG. 2 where two lifting levers 22 and 22' are pivotally connected by pivots 24 and 24' to a wall or post. The opposite ends of the levers are pivotally attached at 23 and 23' to a pivotal handle 26. Also pivotally connected to the pivots 24 and 24' and can top 12, by pivots 30 and 30', are the operating levers 28 and 28'. Between the lifting levers 22 and 22' and operating levers 28 and 28' are bell cranks 32 and 32' as shown clearly in FIG. 5. The bell cranks are pivotally connected to the tops by pivots 34 and 34', and to lifting levers 22 and 22' and operating levers 28 and 28' by pivot points 36 and 36', and 38 and 38', respectively. The bell cranks have a long arm 40 and a short arm 42 set at an angle of about 30°-75° to provide an angular relationship between the lifting levers, operating levers and the bell cranks. The best angle for the bell cranks is about 60° since the angle of the bell cranks must be such that the can top can be removed without any binding. The choice of angle is partially dependent upon the size of the can top and the length of the levers used since the levers must be long enough to reach pivots 24 and 24'. It has been found that in connecting the bell cranks to the lift levers 22 and 22' at the intersection of the arms 40 and 42 and pivotally connecting the arm 40 to the can top, the initial lifting of the handle moves the can top back edge which is closest to the pivots 24 and 24' without moving the front edge of the can top as shown in FIG. 3. This initial movement of the back edge is due to the short arm 42 of the bell cranks being pivotally connected to the operating levers 28 and 28' at pivots 38 and 38'. The pivots 38 and 38' function as fulcrums as the bell cranks pull up on the back edge of the can top. Affixed to the handle 26 is a plate 29 which extends beyond the pivot 33 and 23' and comes in contact with operating levers 28 and 28' when the handle is initially lifted. When the plate is in contact with the operating lifters a stronger lifting force is applied to the rear of the lid thereby relieving any suction which may be present when removing the lid from the can.

Mounted on the wall in alignment with the lid removal mechanism 20 and hook 14 is a can positioner 46 shown in FIG. 1. The purpose of the can positioner is to locate the can under the lid remover and to prevent the can from moving while the lid is being removed.

The pivot connections 30 and 30', 34 and 34' may be integral unit 44 with the can top, as in FIG. 1, or they may be separately attached, as in FIG. 2.

FIG. 4 shows the can top 12 completely removed from can 10 and supported by a hook 14 attached to the wall. Handle 26 engages hook 14 to support the weight of the can tops and removal mechanism when the can 10 is being filled or being emptied.

The can removal mechanism of this invention may be used in many environments, the most obvious of which is for trash cans where a good locking engagement between the can top and can is necessary for environmental purposes.

Although the one embodiment of this invention has been illustrated and described, it will be apparent to those skilled in the art that the various modifications and changes can be made herein without departing from the spirit of the invention or the scope of the pending claims.

I claim:

1. An apparatus for removing a can top from a can comprising a fixed pivot means, a first operating lever pivotally connected to said pivot means, a second operating lever pivotally connected to said pivot means, and bell crank means pivotally connected to said first operating lever, said second operating lever and the can top, said pivot connection to said first operating lever being between the ends of said bell crank means, a handle on said first operating lever whereby an upward pivoting movement of said first operating lever removes said can top from one end of said can, and continued upward
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3, movement of said first operating lever completely removes said can top from said can.

2. An apparatus for removing a can top from a can as in claim 1, wherein said bell crank means has a short arm and a long arm, said short arm being pivotally connected to said second operator, and said long arm being connected to said can top, said short arm and said long arm intersecting at an angle where said bell crank means is pivotally connected to said first operating lever at the intersection of said angle.

3. An apparatus for removing a can top from a can as in claim 2, wherein bell crank means is angled at about 30°-75°.

4. An apparatus for removing a can top as in claim 3, wherein said bell crank means is angled at about 60°.

5. An apparatus as in claim 1, wherein said pivot connections from said second operating lever and said bell crank means are on a bar attached to said can top.

6. An apparatus as in claim 1, wherein said first operating lever includes a pair of bars connected by a handle, said second operating lever being a pair of bars, and said bell crank means being a pair of bell cranks.

7. An apparatus for removing a can top as in claim 1, wherein said handle has a plate for contacting said second operating lever when said first operating lever moves upward.