March 27, 1956 W. E. MOORE 2,739,378

MAGNETIC LID LIFTER

Filed Dec. 20, 1950

Fig. 1.

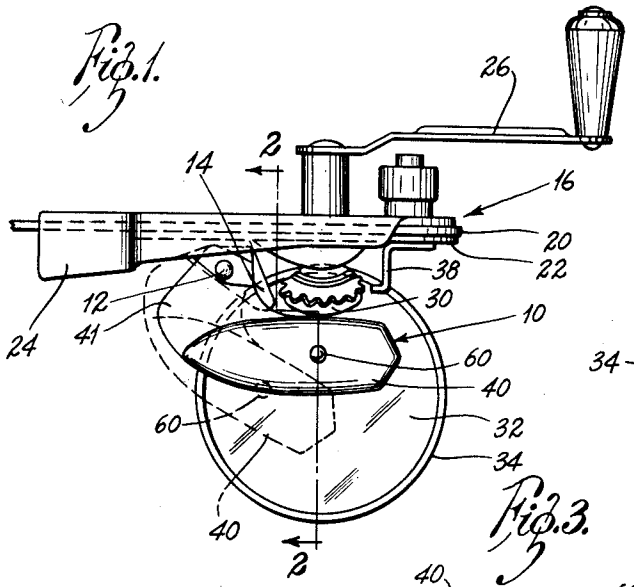


Fig. 2.

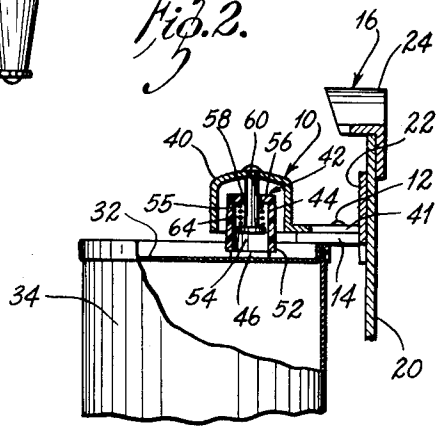


Fig. 3.

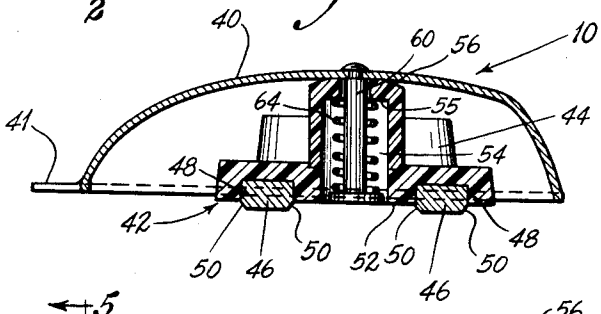


Fig. 4.

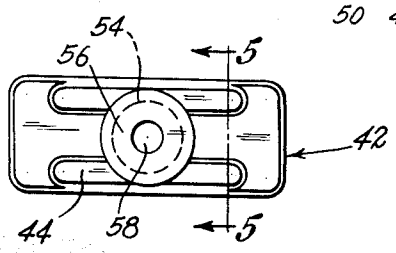


Fig. 5.

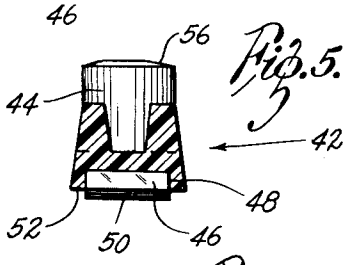


Fig. 6.

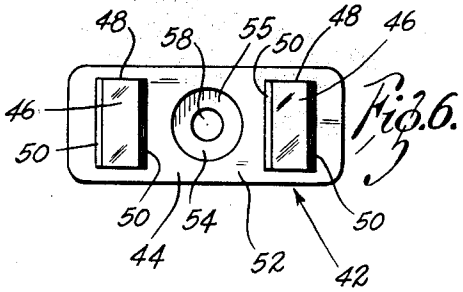
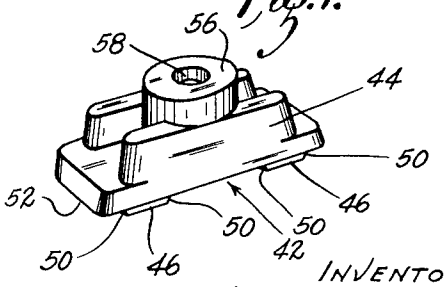


Fig. 7.



INVENTOR:
WALTER E. MOORE,
BY Kingsland, Rogers & Ezell
ATTORNEYS

United States Patent Office

2,739,378

Patented Mar. 27, 1956

2,739,378

MAGNETIC LID LIFTER

Walter E. Moore, Bel Nor, Mo., assignor to Swing-A-Way Manufacturing Company, St. Louis, Mo., a corporation of Missouri

Application December 26, 1950, Serial No. 201,849

7 Claims. (Cl. 30—6.4)

The present invention relates generally to can openers, and more particularly to novel improvements in magnetic lid lifters or holders adapted for use in combination with mechanical can openers.

Briefly, the invention contemplates an improved magnetic lid lifter or holder comprising a novel arrangement of two permanent magnets in a non-magnetic holder to form a magnet assembly, said assembly being resiliently suspension mounted in a shell-like enclosure or cover which is, in turn, pivotally mounted to an element of a known type of can opener.

It is a general object of the present invention to provide improvements which will overcome certain deficiencies in the manufacture and in the operation of known devices intended generally to retain a severed can top or lid to prevent it from falling into the can.

In the attainment of the general object, as above set forth, it is a specific object to provide a novel, magnetic can top or lid lifter or holder which is so mounted as to permit ready and convenient access to parts of the associated can opener which it is desirable to clean periodically.

It is another specific object of the invention to provide a magnetic lid lifter or holder having an exceptionally efficient magnet assembly, which exceptional efficiency results from the employment of a plurality of separate magnets adapted to attract a lid.

It is another specific object of the invention to provide a magnetic lid lifter or holder in which the magnet assembly is freely supported so as to enable it to conform to the usual tipped position of the can lid at the moment of final severance, thereby to lessen the possibility of pulling the lid from the lifter at the moment of maximum holding strain.

It is another specific object of the invention to provide a magnetic lid lifter or holder in which the magnet assembly is resiliently suspension mounted, thereby continuously to adapt the position of the magnet assembly to the various positions of the lid as it is severed from the can, and, further, to exert through spring retraction an effective mechanical lifting force upon the lid when it is finally severed from the can to raise it from the contents thereof.

Other specific objects of the invention are to provide a magnetic lid lifter having a minimum number of separate parts adapted to relatively inexpensive mass production and assembly, which is neat and compact in appearance, which is automatic in its action, and which has an inherent long life.

Further objects and advantages of the invention will be apparent from the following description taken with the accompanying drawing, in which:

Fig. 1 is a top plan view of a magnetic lid lifter constructed in accordance with the teachings of the present invention shown attached to a mechanical can opener of known type severing the lid from a can;

Fig. 2 is a fragmentary, vertical, sectional view taken generally along the line 2—2 of Fig. 1;

Fig. 3 is an enlarged, vertical, sectional view taken generally on the longitudinal center line of the magnetic lid lifter showing a magnet assembly in a normal position of rest;

Fig. 4 is an enlarged top plan view of a magnet assembly;

Fig. 5 is a vertical sectional view thereof taken generally along the line 5—5 of Fig. 4;

Fig. 6 is a bottom plan view of the magnet assembly of Fig. 4; and

Fig. 7 is an isometric view thereof.

Referring to the drawing more particularly by reference numerals, a magnetic lid lifter 10 is shown pivotally mounted by means of a rivet 12 to a horizontally disposed flange or can top guide bracket 14 and a known type of wall mounted can opener 16. Although not shown in the drawing, the rivet 12 may have assembled therewith a resilient device, for example, a common lock washer for the purpose of providing continuous frictional contact between the abutting surfaces of the riveted joint.

As mentioned, the can opener 16 may be a known type adapted for wall mounting and may comprise principal elements, such as a frame 20 upon which is slidably mounted a carrier 22 so as to be movable with respect to the frame 20 upon rotation of a lever 24. A crank 26 and a feed wheel (not shown) are rotatably mounted on a lower portion of the frame 20, the feed wheel (not shown) being adapted to cooperate in conventional overlapping relation with a cutter disc 30 rotatably mounted on the carrier 22 in severing a lid such as 32 from a can such as 34.

The conventional overlapping relation of the feed wheel (not shown) and the cutter disc 30, when the lever 24 is in the position of Fig. 1, provides effective support for the weight of the can 34 and the contents thereof, and the can is rotatably maintained in a vertical position by lateral abutment of its side with a conventional horizontally disposed can guide flange (not shown) of the frame 20, and by vertical abutment of its upper rim with the underneath surface of the can top guide bracket 14. A rim guide bracket 33 mounted on the carrier 22 serves to prevent the can from pivoting laterally about its area of engagement with the feed wheel 28.

The magnetic lid lifter 10 includes a shell-like enclosure or cover 40 preferably formed from non-magnetic material, such as aluminum, and having a horizontally disposed mounting flange 41 for the aforementioned pivotal attachment to the can top guide bracket 14. The cover 40 forms an enclosure with an open face, the open face lying in a single plane. The generally preferred shape of the cover 40 is clearly depicted in the several orthographic views of the accompanying drawings.

A magnet assembly 42 comprises a holder 44 and two block type permanent magnets 46. The holder 44 is preferably of molded plastic and is shaped as clearly shown in Figs. 2 through 7 of the drawing. It will be noted that the holder 44 is symmetrical about its vertical center line and has two rectangular sockets 48 disposed equi-distantly therefrom to accommodate the two block type permanent magnets 46. The magnets 46 are each of rectangular block-shape except for parallel bevelled edges 50 and are appropriately secured in the rectangular sockets 48 of the holder 44 so as to dispose a portion of each magnet 46 beyond a lower face 52 of the holder 44 as best shown in Fig. 3. The securement of the magnets 46 in the holder 44 may be accomplished either by molding the latter around the former or by cementation of the magnets 46 into the holder 44 after the latter is molded.

A vertical, cylindrical recess 54 is formed coaxially along the vertical center line of the holder 44 so as to extend from the face 52 thereof to a level 55 somewhat below an upper face 56 of the holder 44. An aperture 58 of smaller diameter than the recess 54 extends coaxially from the level 55 to the face 56, there-

by forming a horizontal ledge at the upper level 55 of the recess 54.

The magnet assembly 42 is movably suspended within the cover 40 by means of a preferably non-magnetic rivet pin 60 passing loosely through the aperture 58 in the holder 44 and firmly secured to the cover 40 as best shown in Fig. 3. A preferably non-magnetic compression spring 64 is interposed between the suspended head of the rivet pin 60 and the level 55 of the holder 44, the magnet assembly 42 being thus supported in a position wherein the upper face 56 of the holder 44 abuts with the inside top of the cover 40. It will be noted that, although the distribution of weight in the magnet assembly 40 is such as to dispose it in a normally level rest position, it is free to tip in any direction therefrom. This ability to readily occupy a tipped position cooperates with the usual tipping of a can lid at the moment of final severing and thus tends to equalize the holding strain upon the magnets 46 at the time of maximum demand upon the attractive force of the magnet assembly. Obviously, after the can lid is completely severed from the can, the spring 64 tends to lift both the magnet assembly and the severed lid, thereby preventing the latter from dropping into the open can.

Operation

With a can such as 34 supported in the can opener 16 as previously described and as depicted in Figs. 1 and 2, the attractive force of the magnet assembly 42 upon the lid 32 causes the magnet assembly 42 to descend against the action of the spring 64 until the magnets 46 rest upon the lid 32, as best shown in Fig. 2. As the crank 26 is turned, the rotating feed wheel 28 causes the can 34 to rotate upon its vertical axis, thereby shearing the lid 32 from the can 34, the magnets 46, meanwhile, remaining in continuous gliding contact with the lid 32. At the moment of complete severance of the lid 32 from the can 34, the normal rearwardly downward tipping of the lid 32 causes a maximum strain upon the holding power of the magnet assembly 42 which is in part accommodated by the above mentioned ability of the magnet assembly 42 to assume a slanting position. Upon complete severance of the lid 32 from the can 34, the former continues to adhere to the magnet assembly 42, whereupon, the spring 64 is effective to withdraw the lid 32 upwardly from the can 34 so that the latter may be removed from the can opener 16 without the lid 32. After removal of the can 34, the lid 32 may be either pulled or slipped from the attraction of the magnet assembly 42.

When, for purposes of cleaning the cutter disc 30 or parts associated therewith, it may be desirable to move the magnetic lid lifter 19 from its normal proximate position relative to these parts, it is only necessary to swing the magnetic lid lifter 19 about the pivot 12 to the position indicated by the phantom lines of Fig. 1 to gain the desired access.

It is apparent that there has been provided a magnetic lid lifter which fulfills the objects and advantages sought therefor.

It is to be understood that the foregoing description and the accompanying drawing have been given only by way of illustration and example, and that changes in form and substitution of equivalent elements which will be apparent to those skilled in the art are contemplated as within the scope of the present invention which is limited only by the claims which follow.

What is claimed is:

1. The combination with a can opener including means for severing a top from a can, of magnetic means mounted on said can opener for retaining a severed top so as to prevent its falling into the open can including an enclosure, a holder suspension mounted in said enclosure, and a plurality of permanent magnets disposed in said holder.

2. In combination, means for severing a top from a can, magnetic means for retaining the severed top so as to prevent its falling into the open can, said magnetic means including a holder and a plurality of separate permanent magnets, and means associated with said holder whereby said magnetic means may be suspension mounted, said means for suspension mounting being so disposed with respect to said magnetic means as to provide a symmetrical distribution of the weight of said magnetic means about said means for suspension mounting whereby said magnetic means tends to assume a level horizontal rest position and said association of said means for suspension mounting with said holder being such as to enable said magnetic means readily to assume an inclined position when so urged by magnetic attraction.

3. In combination, means for severing a top from a can and magnetic means for retaining the severed top so as to prevent its falling into the open can, said magnetic means including a symmetrically formed holder and a plurality of permanent magnets symmetrically disposed therein.

4. In combination, means for severing a top from a can and magnetic means for retaining the severed top so as to prevent its falling into the open can, said magnetic means including a symmetrically formed holder and a plurality of permanent magnets symmetrically disposed therein, said magnets having planar faces disposed substantially below said holder for contact with the top of a can.

5. In combination, means for severing a top from a can and magnetic means for retaining the severed top so as to prevent its falling into the open can, said magnetic means including a symmetrically formed holder and a plurality of permanent magnets symmetrically disposed therein, said holder being of non-magnetic material.

6. Magnetic construction comprising an enclosure, a magnet assembly including a non-magnetic magnet holder, and means mounting said magnet assembly in said enclosure including a mounting member extending freely through one of said magnet holder and said enclosure and secured to the other, and a resilient member engaging said mounting member and one of said magnet holder and said enclosure, said magnet assembly being biased by said resilient member inwardly in respect to said enclosure, said mounting means permitting tilting movement of said magnet assembly relative to said enclosure.

7. Magnetic construction comprising an enclosure, a magnet assembly including a non-magnetic magnet holder, and means mounting said magnet assembly in said enclosure including a mounting member extending freely through one of said magnet holder and said enclosure and secured to the other, and a resilient member engaging said mounting member and one of said magnet holder and said enclosure, said magnet assembly being biased by said resilient member inwardly in respect to said enclosure, said mounting means permitting tilting movement of said magnet assembly relative to said enclosure, said enclosure, said mounting member and said resilient member being formed of non-magnetic materials.

References Cited in the file of this patent

UNITED STATES PATENTS

2,265,491	Powers	Dec. 9, 1941
2,369,300	Kehoe	Feb. 13, 1945
2,385,859	Jacobson	Oct. 2, 1945
2,437,234	Webb	Mar. 2, 1948
2,474,036	Curley	June 21, 1949
2,489,475	Blind	Nov. 29, 1949
2,503,467	Blind	Apr. 11, 1950
2,573,427	Frolich	Oct. 30, 1951

FOREIGN PATENTS

538,226	Great Britain	July 25, 1941