March 14, 1961 W. P. FRANK ET AL 2,974,408

ELECTRICAL CAN OPENING DEVICE

Filed May 25, 1959 2 Sheets-Sheet 1

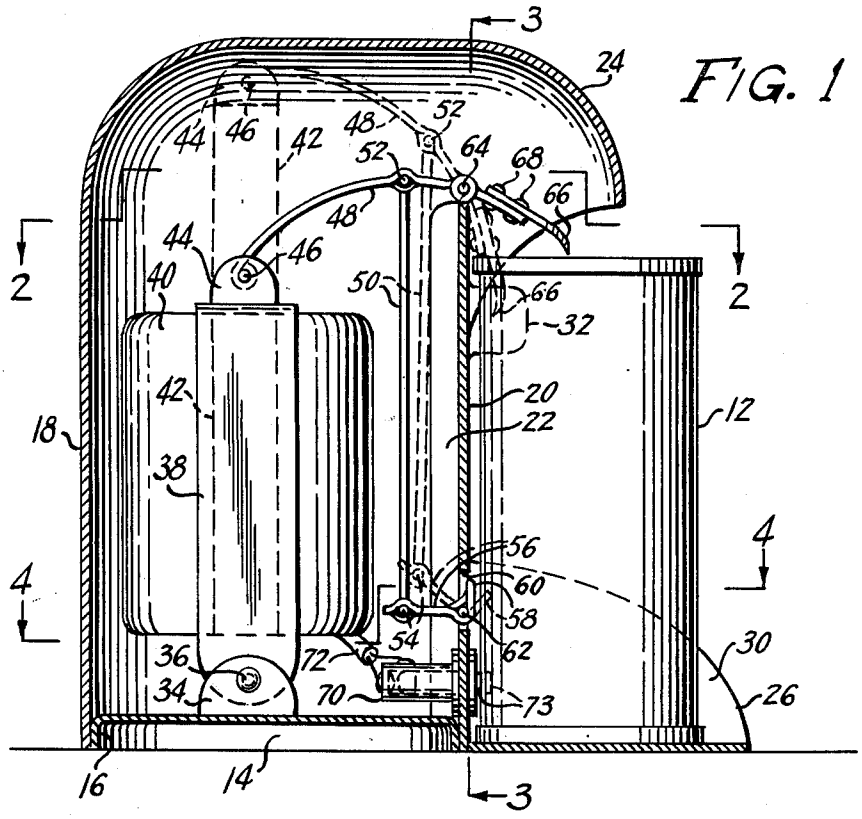


FIG. 1

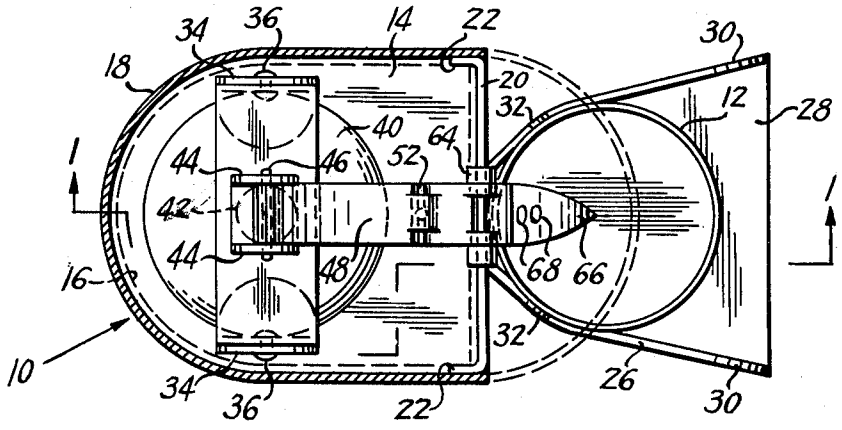


FIG. 2

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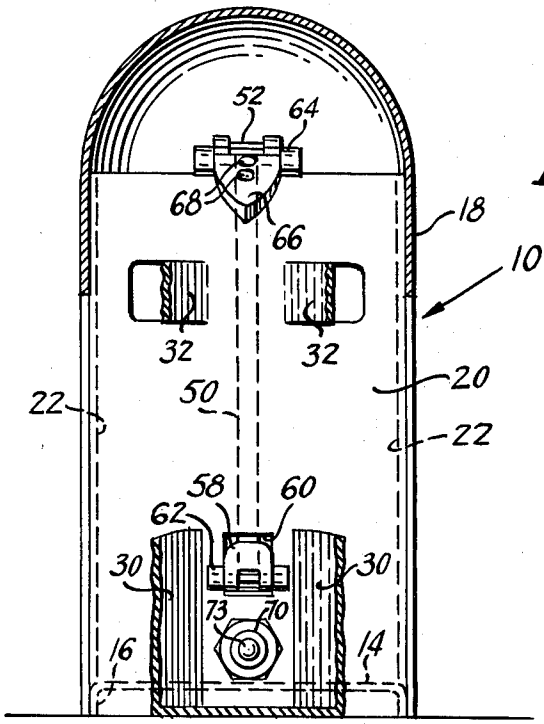


FIG. 3

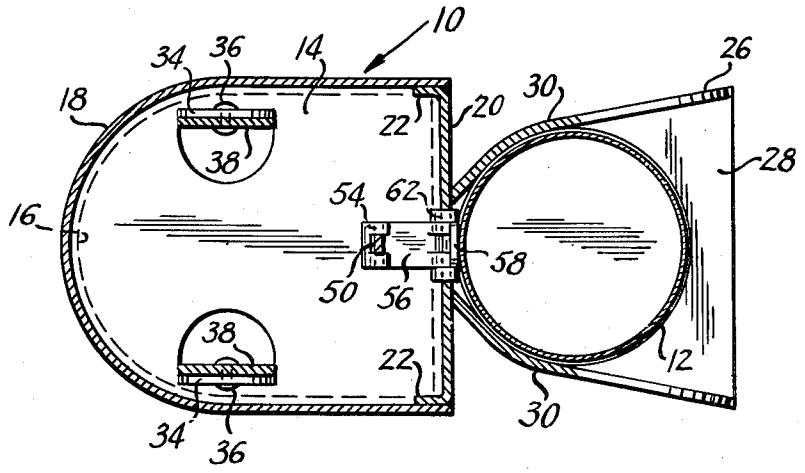


FIG. 4

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ELECTRICAL CAN OPENING DEVICE

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6 Claims. (Cl. 30—4)

This invention relates to a can opening device, and it particularly relates to an opening device of the electrically energized type.

Various electrically operated can opening devices have heretofore been produced, however, they were generally quite complex and, consequently, not only costly to manufacture but also subject to easy disorder. Once damaged, they were difficult to repair and when such repair was made, it was usually at inordinate cost.

It is one object of the present invention to overcome the aforesaid difficulties by providing an electrical can opener which is relatively simple in construction and easy to use.

Another object of the present invention is to provide an electrical can opener which does not tend to become easily damaged but which, when damaged, can be easily repaired.

Other objects of the present invention are to provide an improved can opener, of the character described, that is easily and economically produced, which is sturdy in in construction, and which is highly efficient in operation.

With the above and related objects in view, this invention consists in the details of construction and combination of parts, as will be more fully understood from the following description, when read in conjunction with the accompanying drawings in which:

Fig. 1 is a side view, partly in section and partly in elevation, of a can opening device embodying the present invention.

Fig. 2 is a sectional view of the apparatus taken on line 2—2 of Fig. 1.

Fig. 3 is a sectional view taken on line 3—3 of Fig. 1.

Fig. 4 is a sectional view taken on line 4—4 of Fig. 1.

Referring in greater detail to the drawings wherein similar reference characters refer to similar parts, there is shown a can opening device, generally designated 10, which is adapted to cut openings in beer or beverage cans or the like, such as shown at 12.

The can opening device 10 comprises a base 14 spaced from the supporting surface by a peripheral flange 16. On the base 14 is mounted a housing 18 of generally U-shaped cross-section with the curve of the U forming the rear wall area and the opposite or front portion being open. This open front is closed by a front plate 20 having opposite flanges 22 secured within the open front of the housing 18.

The front plate 20 does not extend as high as the housing 18, the upper portion of the housing 18 being in the form of a curved hood 24 extending over and above the upper end of front plate 20. This hood 24 also extends forwardly beyond the front plate 20, thereby, in effect, overhanging it in spaced relation thereto (as best shown in Fig. 1).

Connected to front plate 20, at the bottom thereof, is a can support 26 of U-shaped cross-section having a bottom wall 28 and arcuate side walls 30 leading down to an open front. The front plate 20 also is provided with struck-out can bracing arms shown at 32.

Within the housing 18, on the bottom wall 14 thereof, are provided a pair of upstanding, spaced ears 34 to each of which is pivoted, as at 36, a mounting bracket 38. These brackets 38 are connected to a solenoid 40 to pivotally support the solenoid between the ears 34.

The solenoid 40 is provided with a solenoid plunger 42 having ears 44 at the top thereof. A pivot pin 46 extends between ears 44 and pivotally supports one end of an arm 48 of convex curvature. This arm 48 is pivotally connected, intermediate its ends, to a vertical link 50, this pivotal conection being provided at 52. The link 50 is pivotally connected at its lower end, as at 54, to a pusher arm 56 having a forward estension 58, this extension 58 projecting through an opening 60 in plate 20, and being hinged to the plate 20 at 62.

The arm 48 is also pivoted at 64 to the top of plate 20. The forward end of the arm 48, forwardly of hinge 64, is provided with a knife point 66 connected thereto in any desired manner, as by rivets 68 or the like.

Within the housing 18, below the arm 56, is provided a push type electrical switch 70 connected to solenoid 40 by wires 72 and having a switch rod or button 73 extending forwardly through an opening in front plate 20. The rod or button of switch 70 is normally biased, by a spring or the like, to a forwardly extending position wherein the switch is open, the switch being closed when the switch rod is pushed in.

In operation, a beer can or the like, such as can 12, is slid onto the can support 26 until it is firmly engaged between clamp arms 32. In this position, it automatically pushes in the rod or button 73 of switch 70, thereby actuating solenoid 40. This causes solenoid plunger 42 to rise. This moves up the rear end of arm 48 causing this arm to pivot on hinge 64 so that the knife 66 is moved to cut into the top of the can 12 (as shown in dotted outline in Fig. 1).

As the arm 48 pivots in the aforesaid manner, it causes link 50 to move upwards. This causes arm 56 to pivot around on hinge 62, resulting in a slight forward movement of extension 58. This movement of extension 58 is enough to push the can 12 away from switch 70 a distance sufficient to disengage the rod or button 73 of switch 70. As a result, switch 70 is opened, solenoid 40 deenergized, plunger 42 falls of its own weight, and arm 48 swings back to its normal position carrying knife 66 out of the can 12. The can is then ready to be removed and used in the manner desired.

Although this invention has been described in considerable detail, such description is intended as being illustrative rather than limiting, since the invention may be variously embodied, and the scope of the invention is to be determined as claimed.

Having thus set forth and disclosed the nature of this invention, what is claimed is:

1. An electrical can opening device comprising a housing, a solenoid supporting means pivotally mounted in said housing, a solenoid mounted on said supporting means, a solenoid plunger vertically movable in said solenoid, said plunger being pivotally connected at one end to one end of a rocker arm, said rocker arm being hinged intermediate its length on said housing and having a knife portion extending outwardly of said housing over a can holding means, said can holding means being connected to said housing and being constructed and arranged to hold a can in a position wherein said knife portion is insertable downwardly thereinto upon rocking motion of said rocker arm, means in said housing actuatable by the insertion of a can into position in said can holding means to energize said solenoid, and means operatively connected to said rocker arm to push the can inserted in said can holding means away from said solenoid energizing

position to deenergize said solenoid upon rocking movement of said rocker arm and withdraw said knife portion from said can.

2. The device of claim 1 wherein a hood on said housing overlies said knife portion.

3. The device of claim 1 wherein said means to energize said solenoid is a push button switch normally biased into the path of the can inserted into said can holding means, said switch being normally open.

4. An electrical can opening device comprising a housing, a solenoid supporting means pivotally mounted in said housing, a solenoid mounted on said supporting means, a solenoid plunger in said solenoid, said plunger being pivotally connected at one end to one end of a rocker arm, said rocker arm being hinged intermediate its length on said housing and having a knife portion extending outwardly of said housing over a can holding means, said can holding means being connected to said housing and being constructed and arranged to hold a can in a position wherein said knife portion is insertable thereinto upon rocking motion of said rocker arm, means in said housing actuatable by the insertion of a can in said can holding means to energize said solenoid, and means operatively connected to said rocker arm to deenergize said solenoid upon rocking movement of said rocker arm, said means to deenergize said solenoid comprising a link pivotally connected at one end to said rocker arm and at its opposite end to a pusher arm, said pusher arm being hinged to said housing and having an extension movable into the path of a can inserted into said can holding means.

5. An electrical can opening device comprising a

housing having a solenoid pivotally mounted therein, an open top on said housing covered by a hood spaced from the front wall of the housing, a plunger in said solenoid, said plunger being pivotally connected to one end of a rocker arm, said rocker arm being hinged to the top of said front wall beneath the hood and having a knife portion outside the housing, said hood extending over said knife portion, a can holding means outside said housing but connected to the bottom of said front wall, said can holding means including an open front end and arcuate side walls mounted on a relatively flat bottom wall, clamping means extending from said front wall of the housing over said can holding means and below said hood, a switch in said housing in electrical circuit with said solenoid, said switch being normally open and having a push button extending into the area defined by said can holding means, and a pusher arm operatively connected to said rocker arm and movable therewith to move into the area defined by said can holding means when said rocker arm is actuated by said plunger.

6. The device of claim 5 wherein said front wall is a flat plate separably connected to said housing, said housing being of generally U-shaped cross-section wherein the bridge of the U defines the rear wall of the housing and the arms of the U define the side walls thereof.

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