Dec. 12, 1961 J. T. EMBREY 3,012,320

ELECTRIC BEER CAN OPENER

Filed Jan. 30, 1961 2 Sheets-Sheet 1

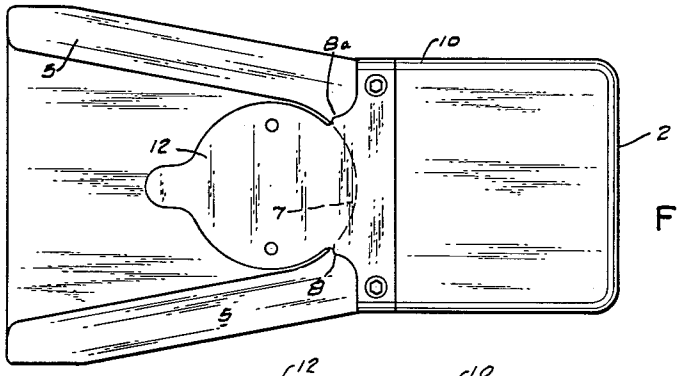



FIG. 1

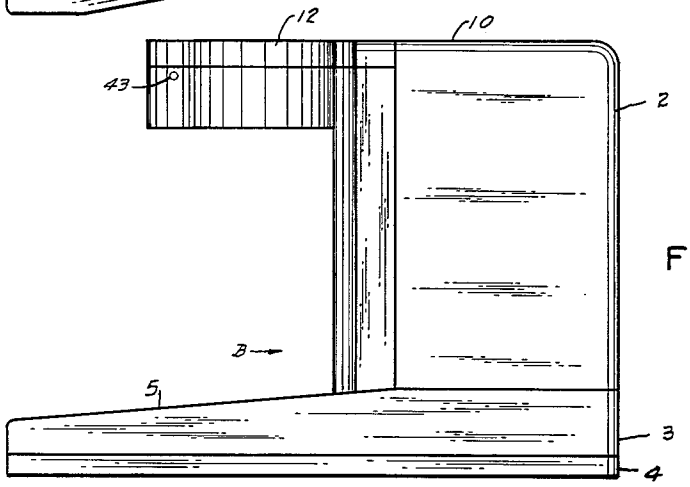



FIG. 2

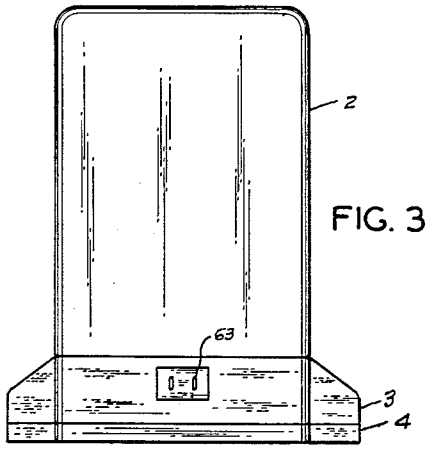



FIG. 3

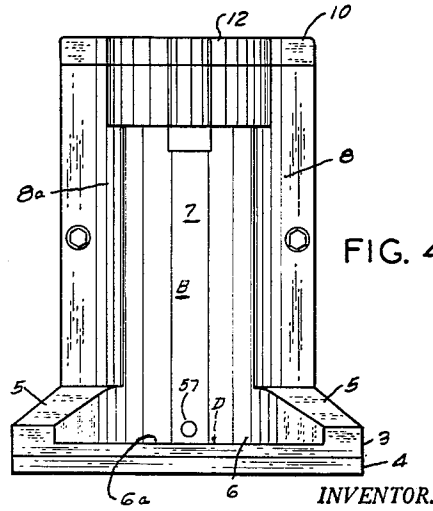



FIG. 4

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ELECTRIC BEER CAN OPENER

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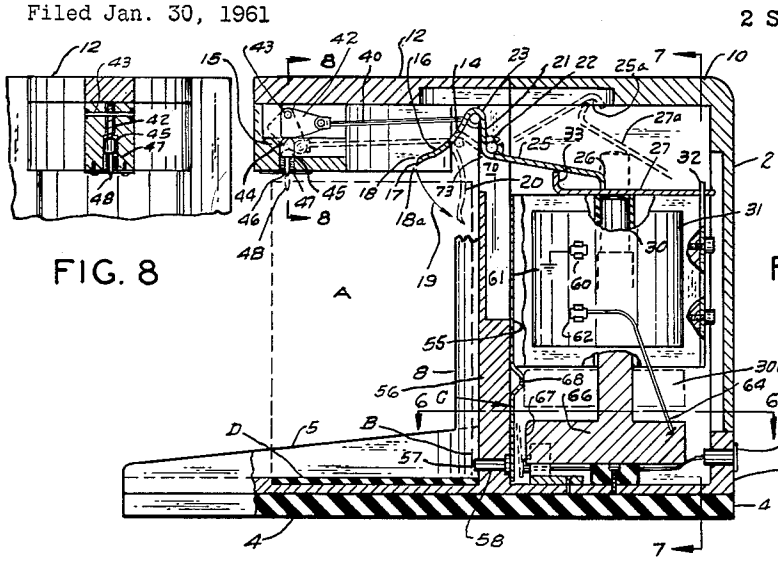


FIG. 8



FIG. 5

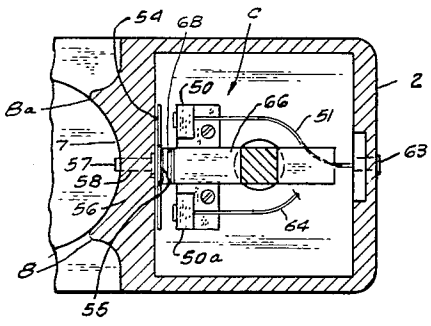


FIG. 6

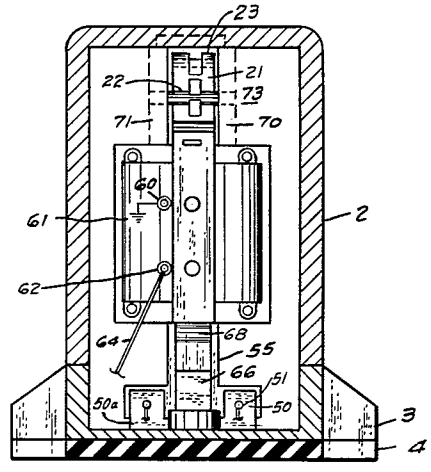


FIG. 7

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# ELECTRIC BEER CAN OPENER

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2 Claims. (Cl. 30—4)

This invention concerns an electrically operated beer can opener.

The invention has for its objects the construction of a beer can opener, or an opener for juice cans which operates electrically and instantaneously to provide a large opening for the exit of fluid from the can and a small opening for admission of air.

Another object of the invention is to provide a case container for the mechanism which will be fluid type and impervious to any damaging liquids or substances.

Another object of the invention is to provide mechanism which will operate with very little current drain or consumption and at the same time have adequate power to puncture the top of the can and provide a side opening through which beer or other liquids can be poured with an adequate flow.

Still another object is to provide an electrically operated instantaneous fluid can opener which can be used in any convenient place on top of a bar or table and by means of which cans may be rapidly opened.

Other objects will appear hereinafter.

I attain the foregoing objects by means of the devices, parts and combinations of parts shown in the accompanying drawings, in which—

FIGURE 1 is a plan view of the outer case of the device;

FIGURE 2 is a side elevational view thereof;

FIGURE 3 is a back elevational view thereof;

FIGURE 4 is a front elevational view thereof;

FIGURE 5 is a substantial mid-sectional view of the device, as shown in FIGURE 2;

FIGURE 6 is a partial horizontal view of the device; the section being taken substantially on line 6—6 of FIGURE 5;

FIGURE 7 is a vertical section taken substantially on line 7—7, FIGURE 5; and

FIGURE 8 is a partial vertical section taken substantially on line 8—8 of FIGURE 5.

Similar numerals refer to similar parts in the several views.

Referring to FIGURES 1 through 4, the case **2** has a base 3 provided with the rubber bottom pad **4**, the bottom face of which is roughened or provided with suction cups (not shown) to keep it in place on the smooth surface of a bar or table top. The base is provided with an abutment rim **5** which is closed on the sides and back but open at the front to form a gate **6** through which a can may be presented to the vertical portion of the back **7**.

The vertical portion of the back **7** is curved to substantially conform to the curvature of the sides of a can to be opened. There are vertical side columns **8** and **8***a* which aid in positioning the can vertically and centrally against back **7**. These parts form a can positioning configuration.

At the top the case is closed by a cap piece **10**. At the front of the top there is an outwardly extending cover piece **12** which contains the opening knife **14** and part of the mechanism by which it operates and the pin puncturing mechanism **15** which forms a small air hole in a position in the can top substantially diametrically opposite to the puncture made by the knife **14**.

Referring to FIGURES 5 through 8, which show the interior mechanism, note that the knife **14** consists of a curved blade **16** having a puncturing point **17**. The point is formed by narrowing the edges of the knife **14** and bringing these edges to a point laterally and then sharpening the point with a bevel **18** to leave the actual point **18***a*.



This is disposed to enter the top of the can as it moves downward and somewhat rearward along line **19** until it reaches the position indicated by dotted lines **20**.

Centrally, the knife has an upwardly bent portion **23**. At the rear of this bend it has a drop **21** which is fitted over and cleated so that it pivots on a cross-bearing pin **22**.

From the drop portion **21** the rear portion of the knife extends angularly downward forming the leverage stem **25** and this is terminated by a downward bend to form a stop **26**. The rear end portion of the knife normally slants downward, and contacts the leverage plate **27** at a position over the armature **30** of solenoid **31**. The leverage plate is hinged to a frame plate at **32** and extends forward from this hinged joint to a point undeneath the portion **25** of the knife where it contacts the under face of this portion **25**, with an upward bend **33**. The end of this contacting bend slidably bears on the under face of portion **25** of the knife. When the armature **30** is drawn up into solenoid **31** the contact plate portion **33** presses up on the blade portion **25**, and then slides rearward under the portion **25** until it reaches the stop **26** and the parts reach the positions indicated by dotted lines **27***a* and **25***a*, respectively.

During this movement the point end of the blade moves downward. Point **18**, moving downward along line **19**, punctures the top of the can and then the sharpened sides of the blade, adjacent the point, cut the thin metal of the can top and form a V-shaped opening. The V-shaped opening has its apex towards the center of the can top and its base towards the rim of the can top. This provides an adequately large opening for pouring or otherwise removing liquids from the can.

During this motion the bar **40**, which extends forward from the bend **23** in the blade, rotates the cam plate **42**, which is pivoted at **43**, in a clockwise direction so that the dwell **44** of the cam forces the rounded head **45** of the pin **46** downward against the resistance of the small spring **47**. This drives the point **48** of the pin into the top of the can "A" near its rim at a point opposite to the V-shape opening formed by knife **14** as previously described.

"D" indicates a soft rubber pad on which the can sets when it is in position to be opened and otherwise disposed within the space "B."

I have found that when the knife punctures the can it delivers quite a blow and this is sufficient to stir up beer in the can and cause excess gas pressure. The pad "D" absorbs this pressure at the instant of the puncturing and opening of the can. The time interval is short. It is only an instant that the resilient qualities of the rubber base "D" are needed.

To make the knife **16** easily replaceable, I provide the bearing blocks **70** and **71** which are slidably set into the central portion **73** of the case **2**. When the top cap is removed these bearings will slide upward, carrying the knife bearing pin **22** with them and making the knife easily replaceable for replacement, repair or the like.

The parts **25** and **27**, above described, provide adequate leverage so that upward movement of the armature **30** from the position shown in solid lines to the position shown in dotted lines **30***a* has adequate power to perform the cutting functions above mentioned.

Solenoid **30** is wound with the proper size wire, considering the voltage and amperage ordinarily available in domestic supply source to cause the armature to function for the purposes stated.

The ends of the windings of the solenoid **30** are brought out at grounded terminal **60** which is grounded at **61** and at **62** which is the live terminal. The live terminal is connected to an insulated lead wire **64** and thence to switch "C" to a prong socket fitting **63** to receive the line wire plug fitting. Switch "C" includes the double contacts **50** and **50***a*. Conductor **51** is connected to contact **50** and to

socket fitting **63**. Insulated conductor **64** connects winding end **62** to contact **50***a*. The other side of socket **63** is grounded to frame **2** which includes case **61**. Double contact switch "C" has a cross-buss **54** attached to a leaf spring **55** attached to the inner portion of the case at **56**. This cross-buss **54** is operated by the button **57**, which is slidably held in a hole **58** in the bottom of the case part **56** and is positioned and disposed so that the rear portion of can "A" will press against it when the can is placed in the can holding configuration "B."

In operation it is only necessary to set the can on the bottom **6***a* of the can holding configuration "B" of the case body **2** and then press it rearwardly so that the inner portion of its side wall contacts the button **58**. Normally this button is neutral and carries no electricity. As the button is pressed rearwardly the buss **54** contacts the terminals **50** and **50***a* and completes the circuit from the source of electrical energy through the solenoid windings. When contact is made the armature **30** is immediately drawn up into the windings of the solenoid **30** and the knife **16** is operated as above explained. At the same time the pin **46** punctures the can to form an air hole. As the base **66** of the armature **30** moves to the raised position **30***a*, its front end **67** engages hump **68** on buss holding spring **55** and forces buss **54** away from contacts **50** and **50***a*.

From the foregoing it will be understood that the device is very efficient in that it provides a can holding platform in the main body portion which is bounded in the back by upright **7**. This supports the top or upper part of the frame, marked **12**, which contains the mechanism that extends over the top of the can while it is resting on the can platform.

The switch "C" and solenoid operate to use very little current and to wholly disconnect the live lead from the power line when not in use. The only current used is at the instant contact made by pushing the can against the plunger, marked **57**.



I claim:

1. A beer can opener comprising a base, a case including an upright standard extending above the base having a horizontal overhanging arm extending over a portion of the base and a can-bottom positioning configuration on the upper face of said base, an opening knife having a V shaped front end with a sharp opening point with diverging cutting edges diverging therefrom, a central upward bend hump with a drop portion on the rear side of the hump having a cleated portion receiving a cross bearing pin, and a downward slanting rear portion with a downwardly bent stop, a cross bearing pin cleated to the drop portion of said hump with its end portions journalled in said overhanging arm downwardly slanting pivotally supporting said knife, an electrically operated solenoid on said base having an armature, a knife contacting plate hinged at its outer end to a portion of said base, contacting the under side of the rear portion of said blade at its front end and contacted by said armature at its central portion, conductors including, in circuit said solenoid and a normally open switch disposed on said upright standard and adapted to be closed by contact with a can positioned on end on said can opening platform.

2. The device, as described in claim 1, in combination with a cam operated pin punch connected by linkage to said knife and adapted to punch an air hole in said can top at a position diametrically opposite to the hole made by said V shaped knife.

**References Cited** in the file of this patent

UNITED STATES PATENTS

| | | |
|---|---|---|
| 2,779,096 | Moore | Jan. 29, 1957 |
| 2,916,817 | Nordquist | Dec. 15, 1959 |
| 2,974,408 | Frank | Mar. 14, 1961 |