Nov. 16, 1937. O. N. WISWELL 2,099,323

DEVICE FOR OPENING CANS

Filed July 14, 1934

Fig. 1.

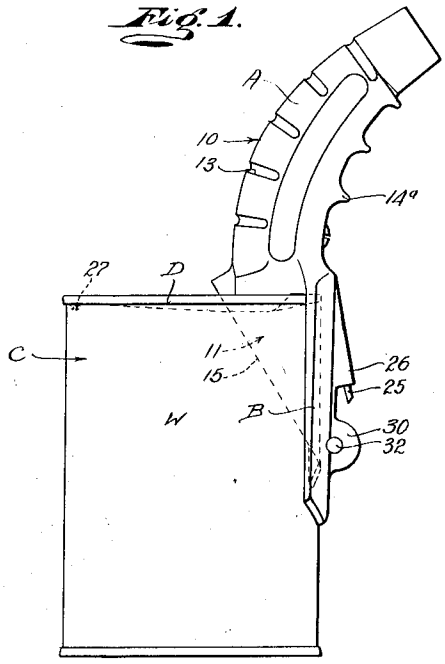


Fig. 2.

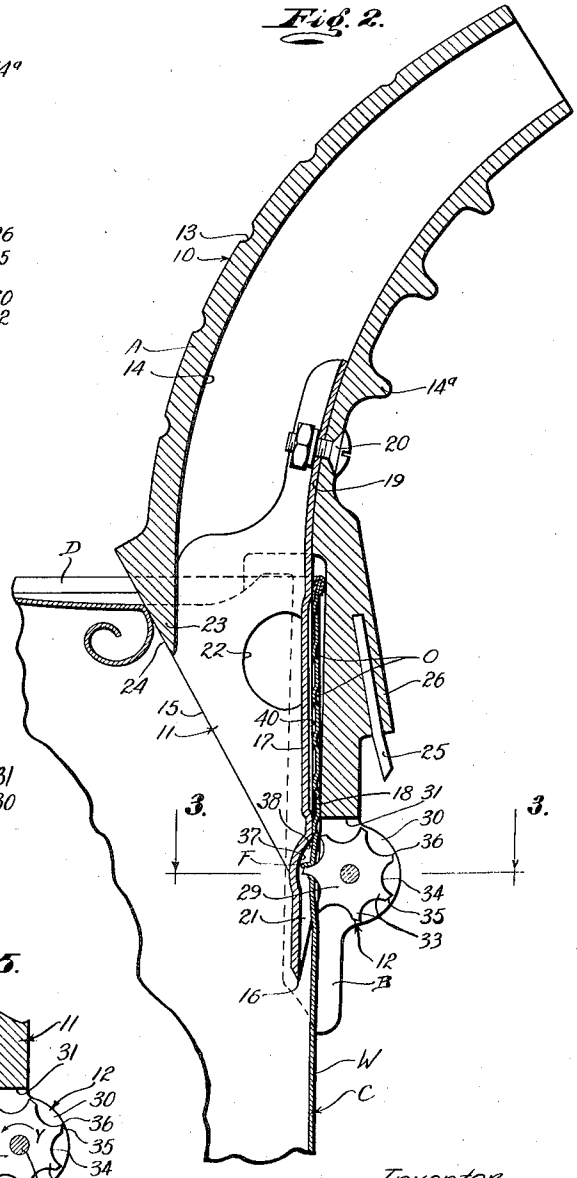


Fig. 3.

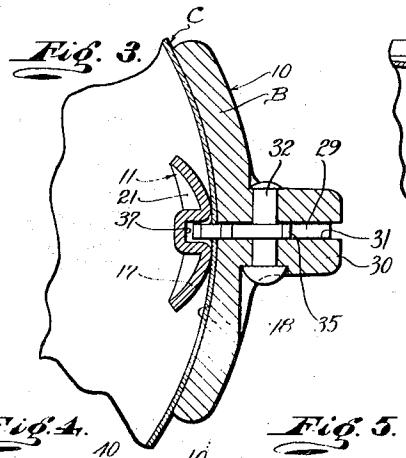


Fig. 4.

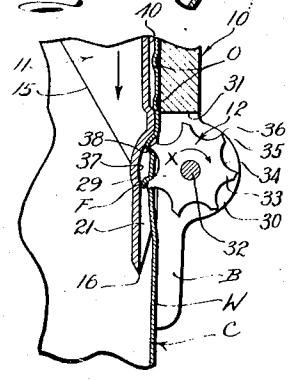
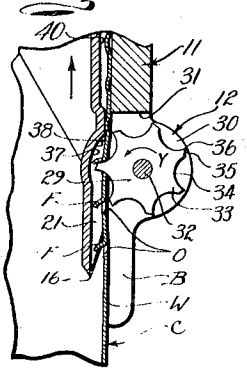


Fig. 5.



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2,099,323

UNITED STATES PATENT OFFICE

2,099,323

DEVICE FOR OPENING CANS

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Application July 14, 1934, Serial No. 735,258

18 Claims. (Cl. 221—23)

This invention relates to a container opening device and relates more particularly to a device for opening cans and for dispensing the contents therefrom. A general object of the present invention is to provide a simple, effective device for opening cans and for facilitating the pouring of the contents therefrom that embodies a practical means for mutilating or perforating the cans to make them unfit for refilling.

Various products such as lubricating oils, etc., are marketed in sealed containers or cans to prevent them from being adulterated or substituted for by inferior products. The devices that have been employed for opening cans and dispensing their contents usually cut an opening or openings in an end of the can leaving the side wall of the can whole and imperforate. The side wall of a can usually bears the label denoting the maker and the quality of the product and it has been found that cans opened by typical can openers have been provided with new ends and refilled with inferior products so that the inferior products might be sold or passed off as the products described by the original labels.

Another object of the present invention is to provide a device for opening cans that cuts a pouring or draining opening in an end of a can and perforates the side wall of the can positively rendering the can unfit for refilling.

Another object of the invention is to provide a device for opening cans that is operatable to cut a large unobstructed pouring opening in an end of a can, then constitute a spout for facilitating the pouring of the contents from the can, and form or cut a row or series of perforations in the side wall of the can so that the can may not be refilled.

Another object of the invention is to provide a device of the character mentioned that cuts a plurality of perforations in the side wall of the can and immediately recloses and seals the perforations while the principal cutter is being driven through an end of the can to form the pouring opening and automatically reopens the perforations when the principal cutter is disengaged from the can. The perforating cutter embodied in the device of the present invention readily reopens the perforations in the side wall when the device is disengaged from the can so that very little effort is required on the part of the user to detach the device from the can.

Another object of the invention is to provide a device for opening cans that cannot be detached or removed from a can after forming a pouring opening therein without perforating its side wall and destroying its label.

A further object of the invention is to provide a device of the character mentioned that includes a novel and particularly effective means for reclosing and sealing the perforations in the side wall of the can.

A still further object of the invention is to provide a device of the character mentioned that includes a simple effective cutter for cutting and reopening the mutilating perforations.

Other objects and features of my invention will be better and more fully understood from the following detailed description of a typical form and application of the invention, throughout which description reference may be had to the accompanying drawing, in which:

Fig. 1 is a side elevation of a device embodying the present invention showing it in position on a can after cutting the pouring opening therein. Fig. 2 is an enlarged longitudinal detailed sectional view of the device in its final position on the can. Fig. 3 is an enlarged transverse detailed sectional view taken substantially as indicated by line 3—3 on Fig. 2. Fig. 4 is a fragmentary detailed sectional view illustrating the operation of the perforating cutter during the forming of the pouring opening. Fig. 5 is a view similar to Fig. 4 illustrating the operation of the perforating cutter during the removal of the device from the can.

The can opening device of this invention includes, generally, a body 10 comprising a combined handle and spout A and a guide B, a principal cutter 11 adapted to be forced through an end wall of the can C to cut a pouring opening therein and means 12 for cutting through or mutilating the side wall W of the can.

The body 10 of the device may be an integral member as illustrated in the drawing. The combined handle and spout A of the body 10 is longitudinally curved upwardly and outwardly considering the device in the position illustrated in Figs. 1 and 2 of the drawing. The combination handle and spout A is shaped and proportioned to be conveniently grasped and held by the user and to be readily inserted in the oil filling pipes of the engines of vehicles, etc. In practice the exterior of the handle and spout A may be provided with a longitudinal series of grooves 13 and spaced ribs 14a to prevent the spout from tilting or slipping when supporting a can on the oil filling pipe of an engine. The particular spout and handle A illustrated in the drawing is cylindrical in its cross sectional configuration. A longi-

tudinal pouring opening 14 extends through the handle and spout from one end to the other. The body 10 and its spout A is of the character described and claimed in my co-pending application Serial No. 735,260 filed July 14, 1934.

The guide B extends from the lower end of the handle and spout A to engage the side wall W of the can to guide the principal cutter 11 during the cutting or forming of the pouring opening. The guide B may be shaped to conform generally to cans or containers of any general type. In the particular construction illustrated in the drawing the guide B is transversely curved adapting the device to open the typical or usual cylindrical cans. It will be apparent that the guide B formed as illustrated in the drawing is also capable of properly guiding the cutter 11 when the device is employed to open flat sided cans. The guide B is preferably comparatively long and provided with a rounded lower end.

The principal cutter 11 is adapted to be driven or forced through an end or end wall of the can C to cut a pouring or draining opening therein. The cutter 11 is substantially U-shaped in transverse cross section and is provided with downwardly and outwardly inclined edges 15 converging to a point 16 at the lower end of the cutter. The curved outer portion 17 of the cutter 11 opposes and is spaced from the can engaging inner surface 18 of the guide B. The principal cutter 11 is provided with a shank 19 which is received in the lower portion of the pouring opening 14. The shank 19 is longitudinally and transversely curved to conform to the walls of the opening 14. A bolt 20 connects the shank 19 to the handle and spout A and attaches the principal cutter 11 to the body 10. The cutter 11 is disposed so that its outer curved portion 17 is inclined downwardly and outwardly with respect to the can engaging surface 18 of the guide B. The guide B projects downwardly beyond the point 16 of the cutter 11 to guide the point into the end of the can adjacent its bead D. In the preferred construction the lower portion 21 of the cutter 11 is turned or bent inwardly or away from the guide B. The lower portion of the cutter being shaped in this manner allows the bead D to be readily entered or passed between the point portion of the cutter and the wall 18 of the guide.

The inclination of the cutter 11 with respect to the guide B is such that the side wall W of the can is effectively gripped between the cutter portion 17 and the surface 18 of the guide to connect the device with the can and prevent it from becoming displaced from the can during the pouring of its contents. The principal cutter 11 is more or less flexible to allow the bead D to pass between it and the surface 18 of the guide. When the principal cutter 11 has been forced through the end wall of the can so that the side wall W is received between the guide B and the cutter portion 17, the cutter is flexed or sprung away from the guide and has less inclination relative to the guide. One or more drain openings 22 are provided in the wall of the cutter 11 to allow the liquid to freely drain from behind the cutter when the can C is tipped or inverted to pour its contents through the spout opening 14. To cut the pouring or draining opening in the can C the lower projecting portion of the guide B is placed against the bead D and the can wall W so that the cutter point 16 engages the upper end of the can adjacent the bead. The combined handle and spout A is then engaged and the device is pressed or driven downwardly to force the cutter 11 through the end of the can. The point 16 perforates the end wall of the can and the inclined edges 15 roll or turn back the flap formed by the cutter leaving a clear unobstructed opening in the end of the can.

A downwardly projecting lip 23 is provided on the body 10 at the lower end of the handle and spout A. The lip 23 extends between the spaced parts of the U-shaped cutter 11 to brace and reinforce the cutter. The outer surface 24 of the lip 23 is substantially flush with the inclined edges 15 of the cutter 11 to tightly bear and seal against the flap that is rolled back by the edges 15 during the cutting operation. This function of the lip 23 prevents the leakage of liquid from around the inner side of the principal cutter 11. The device may include means for cutting or forming an air inlet opening in the can C to facilitate the easy and speedy pouring of the liquid from the can. This means may comprise a punch 25 projecting from the lower end of a protuberance or lug 26 on the outer side of the guide B. The punch 25 is operatable to readily cut an air inlet opening 27 in the upper end of the can C, prior to the cutting of the principal draining or pouring opening, to allow the contents to be more readily poured from the can through the spout A.

The means 12 operates to provide an opening or a series of openings in the side wall W of the can so that the can is no longer capable of containing liquid even when the end cut by the principal cutter 11 has been replaced. The mutilating means 12 of the present invention is characterized by the fact that its can cutting or mutilating function does not interfere with the proper easy operation of the principal cutter 11 and does not make it difficult for the user to readily detach or remove the device from the opened empty can. The means 12 includes a rotatable cutter 29 for cutting an opening or openings in the side wall W of the can as the principal cutter 11 is forced through the end of the can, which opening or openings are immediately closed and sealed during the actuation of the cutter 11 and are then re-opened by the cutter 29 as the device is removed from the can.

In the preferred construction the cutter 29 is carried by the guide B, it being obvious that the cutter 29 may be carried by the principal cutter 11 if desired. A lug 30 is provided on the rear or outer side of the guide B and a longitudinal slot or opening 31 extends through the lug 30 and the wall of the guide. The opening 31 may be in the form of a cut extending upwardly from the lower end of the guide B. A pin 32 is arranged in a transverse opening in the lug 30 and extends through a central opening in the cutter 29 to support the cutter for rotation. The opposite ends of the pin 32 may be enlarged or riveted over to prevent displacement of the pin and cutter 29.

The cutter 29 is a flat disc or plate like member provided with a plurality of peripheral teeth 33. The periphery of the cutter 29 is serrated or provided with a plurality of equally spaced notches 34 of partially circular shape which leave or provide the cutting teeth 33. The walls of the notches 34 form the rear sides of the teeth 33, considering the cutter 29 as rotating in the direction indicated by the arrow X in Fig. 4 of the drawing. The walls of the notches 34 also form the base portions of the leading sides of the teeth 33. The outer portions of the leading sides of the teeth 33 are provided with substantially flat faces 35 which are pitched outward-

ly and rearwardly relative to the direction of rotation indicated by the arrow in Fig. 4. The substantially flat faces 35 join the rear sides of the teeth 33 at comparatively sharp cutting edges 36.

The cutter 29 is positioned so that its teeth 33 may project from the surface 18 of the guide B. As the principal cutter 11 is driven through the end of the can C one of the teeth 33 engages the bead D of the can and causes the cutter 29 to be turned so that the next tooth 33 is projected from the guide into contact with the wall W of the can. The point of engagement of this next tooth 33 with the can wall W is spaced some distance below the bead D and the spaced teeth 33 thus straddle the bead D without cutting the bead. The substantially flat face 35 of the tooth 33 which is acting on the wall W bears on the can wall W and may cause the wall W to bend inwardly to some extent, this inward bending being limited by the curved portion 17 of the cutter 11. The cutting edge 36 then engages and cuts through the can wall W and the flat face 35 bears inwardly against the tongue or flap F formed by the cut causing the flap F to be bent inwardly and upwardly. The other teeth 33 of the cutter 29 are successively projected from the surface 18 of the guide B to function in the manner just described and form longitudinally spaced openings or perforations O in the can wall W. The operation of the cutter 29 during the forming of the drain or pouring opening in the end of the can is fully illustrated in Fig. 4 of the drawing. It is important to note that the cutting teeth 33 formed or shaped as described above operate to readily form the spaced openings O in the can wall W and bend the tabs or flaps F inwardly and upwardly.

In accordance with the invention the openings O formed by the cutter 29 during the downward movement of the device on the can C are closed almost immediately after being formed. Means is provided on the principal cutter 11 for bending the tongues or flaps F back into the openings O and for ironing out or smoothing the flaps F and the edges of the openings O. A depression or recess 37 is provided in the face of the cutter portion 17 opposing the opening 31. The recess 37 is provided to receive the projecting toothed portion of the cutter 29 and may be formed by pressing or bending the wall of the cutter 11 inwardly. The recess 37 is comparatively narrow and is sufficiently deep to receive the projecting portions of the cutter 29 with suitable clearance. The lower end of the recess 37 occurs in or at the inturned end portion 21 of the cutter 11 so that it is shallow and presents only a short end wall. The upper end wall 38 of the recess 37 gradually curves outwardly to join the outer surface of the cutter portion 17. This wall or surface 38 constitutes the flap straightening and smoothing element. A comparatively shallow longitudinal groove 40 is provided in the outer surface of the principal cutter portion 17. The groove 40 extends upwardly from a point a short distance above the surface 38 to a point adjacent the upper end of the active portion of the cutter 11. The longitudinal groove 40 is provided to receive the portion of the can wall W that has been provided with the openings O so that the edge portions about the flaps F and the closed openings O are not directly contacted by the principal cutter 11 and are not tightly forced against the guide surface 18.

In employing the device of the present invention to open a can the punch 25 may be driven through an end of the can to form an air vent or opening 27. The device is then positioned so that the cutter point 16 engages the end of the can at a point substantially opposite the air vent 27. The projecting lower portion of the guide B is arranged against the bead D and the can wall W so that the cutter point 16 engages the end of the can adjacent the bead D. The device is then pushed or forced downwardly to drive the principal cutter 11 through the end of the can to form the pouring opening therein. The inclined edges 15 of the principal cutter 11 bend or roll the flap formed by the cutter upwardly and inwardly to leave a clear unobstructed opening in direct alignment with the pouring opening 14 of the spout A. As described above the principal cutter 11 flexes away from the guide B during the cutting operation just described and assumes a position somewhat as illustrated in Fig. 2. The lip 24 bears against the inner wall of the pouring opening formed in the can to prevent the leakage of fluid and to aid in removably holding the device on the can.

As the device is pushed or forced downwardly to form or cut the pouring opening in the end of the can a tooth 33 of the cutter 29 comes into contact with the bead D and because of the downward movement of the device this contact results in turning of the cutter 29 in the direction indicated by the arrow X in Fig. 4. This rotation of the cutter 29 brings one of the teeth 33 into engagement with the can wall W and frees or moves the first mentioned tooth 33 out of contact with the bead D. In this manner the bead D is straddled by the cutter 29 and is left uncut. As the device moves downwardly on the can the teeth 33 of the cutter 29 are successively fed into cutting or perforating contact with the can wall W. The substantially flat surfaces 35 of the teeth come into bearing or pressure engagement with the can wall W and as the rotation of the cutter 29 continues the edges 36 cut through the can wall. The forward sides of the teeth 33 and the surfaces 35 bend the flaps F upwardly and inwardly to leave or form the openings O. Immediately following the forming or cutting of an opening O the downward movement of the device brings the surface 38 into engagement with the inner side of the flap F pushed from the opening O. The downwardly moving surface 38 forces the flap F outwardly into the opening O and smooths the flap F substantially flush and even with the portion of the can wall W surrounding the opening O. The gradual inclination or curvature of the surface 38 insures the smooth effective action of the surface in ironing or smoothing the flaps F and in sealing the openings O closed. As the device continues to move downwardly the groove 40 comes opposite the portions of the can wall provided with the closed openings O so that these portions of the can wall are not slidably engaged by the principal cutter 11 and are not forcibly engaged by the guide surface 18. When the principal cutter 11 has reached its final position as illustrated in Fig. 2 of the drawing one of the teeth 33 of the cutter 29 may have just formed an opening O and may be occupying or filling the said opening O. The tooth 33 thus closes this last opening O against the leakage of fluid. The previously formed or cut openings O have been closed and sealed through the action of the surface 38 so that there can be no substantial leakage through them. The can C may then be tipped or inverted to pour its

contents out through the spout A. The spout A is formed so that it may be readily inserted in the oil filling opening or pipe of the crank case of an engine. Further, the combined handle and spout A may support the otherwise unsupported device and can on the pipe or engine as the contents are drained from the can.

After the liquid has been poured or drained from the can C the device may be disengaged from the can by holding the can and pulling the device free of the can. The outward or upward movement of the device relative to the can C during this disengagement of the device from the can results in rotation of the cutter 29 in the direction indicated by the arrow Y in Fig. 5 of the drawing. This rotation of the cutter 29 causes the tooth 33 to be withdrawn from the lowermost opening O and brings another tooth 33 into engagement with the flap F of the lower closed opening O. The edge 36 of this tooth engages the flap F immediately adjacent its lower end and the surface 35 bears against the flap to bend the flap inwardly, leaving the opening O substantially unobstructed. This action of the other teeth 33 is repeated during the upward movement of the device so that each of the several openings O is reopened. As the lower tooth 33 remains in the lowermost opening O following the opening of the can and the cutter 29 is held against rotation until the removal of the device, the teeth 33 are geared to the can and made to again track in the openings O. This insures the full opening of the openings O. Upon reaching the uppermost opening O the cutter 29 again straddles the bead D without cutting through the bead. The lower portion of the recess 37 is shallow so that the cutter 11 does not engage or bend the flaps F back into the openings O as the device is removed from the can. It is important to note that the cutter 29 readily reopens the openings O by bending the flaps inwardly during the removal of the device from the can so that the operation of the cutter 29 does not require any appreciable effort on the part of the user. The cutter 29 merely bends in the flaps F of the previously formed openings O and very little force is required to cause the proper operation of the cutter 29 during the removal of the device from the can. The device cannot be removed or disengaged from the can without the formation or re-opening of the openings O. The openings O being in the side wall W of the can positively render the can unfit for refilling.

Having described only a typical preferred form and application of my invention, I do not wish to be limited or restricted to the specific form and application herein set forth, but wish to reserve to myself any modifications or variations that may appear to those skilled in the art or fall within the scope of the following claims.

Having described my invention, I claim:

1. A device for opening cans including, a cutter adapted to be forced through a wall of a can to cut a pouring opening therein, a member in connection with the cutter movable along another wall of the can as the cutter is actuated, means on the member for forming an opening in the second mentioned wall of the can during actuation of the cutter, and means on the cutter for closing the last named opening as the cutter is actuated, the first named means reopening the last named opening as the cutter is removed from the can.

2. A device for opening cans including, a cutter adapted to be forced through a wall of a can to cut an opening therein, a guide for engaging a second wall of the can to guide the cutter, means on the guide for forming an opening in said second wall during actuation of the cutter, and means on the cutter for closing the second named opening as the cutter is actuated, the cutter being inclined downwardly and toward the guide to provide for the proper engagement of said means with said second wall.

3. A device for opening cans including, a cutter adapted to be forced through a wall of a can to cut an opening therein, a guide for engaging a second wall of the can to guide the cutter, means on the guide for forming an opening in said second wall during actuation of the cutter, and means on the cutter for closing the second named opening as the cutter is actuated, the first mentioned means reopening the last named opening as the cutter is removed from the can.

4. A device for opening cans including two elements, one a cutter adapted to be forced through a wall of a can to cut an opening therein, the other a guide for engaging a second wall of the can to guide the cutter, a cutting part on one element operatable to form an opening in said second wall during actuation of the cutter and to reenter the last named opening as the cutter is removed from the can, and means on the other element for temporarily closing the last named opening as the cutter is actuated.

5. A device for opening cans including two elements, one a cutter adapted to be forced through a wall of a can to cut an opening therein, the other a guide for engaging a second wall of the can to guide the cutter, a rotatable member on one element having a cutting tooth to cut an opening in said second wall during actuation of the cutter and to reopen the last named opening as the cutter is removed from the can, and means on the other element for temporarily closing the last named opening as the cutter is actuated.

6. A device for opening cans including two elements, one a cutter adapted to be forced through a wall of a can to cut an opening therein, the other a guide for engaging a second wall of the can to guide the cutter, a cutting part on one element operatable to cut an opening in said second wall and to bend a flap from the opening as the cutter is operated, and means on the other element for bending the flap back into the last named opening as the cutter is actuated.

7. A device for opening cans including two elements, one a cutter adapted to be forced through a wall of a can to cut an opening therein, the other a guide for engaging a second wall of the can to guide the cutter, a cutting part on one element operatable to cut an opening in said second wall and to bend a flap from the opening as the cutter is operated, and a surface on the other element for engaging the flap to bend it back into the last named opening as the cutter is actuated, the said part again bending the flap from the opening as the cutter is removed from the can.

8. A device for opening cans including two elements, one a cutter adapted to be forced through a wall of a can to cut an opening therein, the other a guide for engaging a second wall of the can to guide the cutter, a rotatable member on one element cutting a plurality of openings in said second wall as the cutter is actuated and bending flaps from said openings, and a surface on the other element for temporarily bending the flaps back into said openings as the cutter is actuated.

9. A device for opening cans including, a cut-

ter adapted to be forced through a wall of a can to form an opening therein, a guide for engaging a second wall of the can to guide the cutter, a rotatable member on the guide having projecting teeth for perforating said second wall as the cutter is actuated, and a surface on the cutter for engaging the flaps formed during the perforating action to bend them into the perforations as the cutter is actuated.

10. A device for opening cans including, a cutter adapted to be forced through a wall of a can to form an opening therein, a guide for engaging a second wall of the can to guide the cutter, a rotatable member on the guide having projecting teeth for perforating said second wall as the cutter is actuated, there being a recess in the cutter for receiving the projecting teeth, and a part on the cutter at the recess for bending the flaps formed by said perforating back into the perforations, the teeth bending the flaps from the perforations as the cutter is removed from the can.

11. A device for opening cans including, a cutter adapted to be forced through a wall of a can to form an opening therein, a guide for engaging a second wall of the can to guide the cutter, a rotatable member on the guide having projecting teeth for perforating said second wall as the cutter is actuated, there being a recess in the cutter for receiving the projecting teeth, and a part on the cutter at the recess for bending the flaps formed by said perforating back into the perforations, the cutter having a groove for opposing the perforated portions of said second wall, the teeth bending the flaps from the perforations as the cutter is removed from the can.

12. A device for opening cans including, a cutter adapted to be forced through a wall of a can to form an opening therein, a guide for engaging a second wall of the can to guide the cutter, the guide having an opening, a member rotatable in the opening of the guide, and teeth on the member projecting from the guide to perforate the said second wall as the cutter is actuated, the cutter having a recess for receiving the projecting teeth, said recess having a wall which bends back the flaps formed by the perforating action.

13. A device for opening cans including, a cutter adapted to be forced through a wall of a can to form an opening therein, a guide for engaging a second wall of the can to guide the cutter, a rotatable member on the guide having projecting teeth for perforating said second wall as the cutter is actuated, each tooth having a cutting edge for cutting through said second wall and a substantially flat surface joining said edge to bend back a flap from the cut, and a surface on the cutter for engaging the flaps formed during the perforating action to bend them into the perforations as the cutter is actuated.

14. A device for opening cans including a body comprising a spout, and a guide for engaging the side wall of a can, a cutter on the body adapted to cut a pouring opening in an end of the can, means on the guide for cutting an opening in the side wall during actuation of the cutter, and means associated with the cutter for closing the last mentioned opening until the cutter is removed from the can.

15. A device for opening cans including, a cutter adapted to be forced through a wall of a can to cut an opening therein, a guide for engaging a second wall of the can to guide the cutter, means on the guide for forming an opening in said second wall during actuation of the cutter, and means on the cutter for closing the second named opening until the cutter is removed from the can.

16. A device for opening cans including two elements, one a cutter adapted to be forced through a wall of a can to form an opening therein, the other a guide member movable on a second wall of the can during actuation of the cutter, a cutting part on one element operable to cut an opening in said second wall as the cutter is actuated, and means on the other element for temporarily closing the last named opening as the cutter is actuated, the said other element being relieved to clear the portion of said second wall acted on by the cutting part.

17. A device for opening cans including a body comprising a handle, and a guide adapted to cooperate with a side wall of a can, there being a pouring opening in the handle whereby the handle forms a spout, a cutter on the body adapted to be forced through an end wall of the can to form an opening therein through which the contents of the can may be drained out through the pouring opening, a cutting part on the guide operable to cut an opening in said side wall as the cutter is actuated, and means on the cutter for temporarily closing the last mentioned opening.

18. A device for opening cans including a body comprising a spout, and a guide for engaging the side wall of a can, a cutter on the body adapted to cut a pouring opening in an end of the can, means on the body for cooperating with the can to removably retain the device thereon, means on the guide for cutting an opening in the side wall during actuation of the cutter, and means associated with the cutter for closing the last mentioned opening until the cutter is removed from the can.

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