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PROTECTING DEVICE FOR USE IN OPENING CANS CONTAINING LIQUIDS GASEOUSLY FORTIFIED

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This invention relates to improvements in a shield, particularly a shield for use with can openers of the can top piercing variety. Many items of a liquid nature are supplied to the user in cans having secured thereto the top and which liquid is obtained from the can through an opening or opening formed therein by the user through the use of a small hand operated "opener." Some of the liquids supplied in said cans have incorporated therewith gas of different kinds, such as carbonated gas, in the so called "soft" drinks as well as beer and the like.

In the handling of cans of gased or carbonated liquids the contents become agitated and have a tendency to "bottle" or effervescence, particularly, if the said liquid content is at room temperature, such as 70 to 75 degrees Fahrenheit. When a can containing said gased or carbonated liquid is pierced the contents have a tendency to "explode," that is upwardly "spout" until the pressure generated by the gas has been released.

The present invention pertains to a shield for use with the can opener or piercer, to prevent the above noted explosion or effervescence reaching the user by intercepting the same and returning it harmlessly to the top of the can.

Broadly, shields for this purpose are not new in the present application but as heretofore produced considerable difficulty was encountered in combining the shield with the can opener or piercer, with certain of the prior structures being so elaborate that the expense in producing same made them impractical.

The principal object of the present invention is, therefore, the provision of a shield for use with can openers of the piercing type that can be readily mounted on said can openers as presently known and used.

Another object of the present invention is the provision of a shield for use with can openers of the piercing type in which the structures of the said shield and can opener, as heretofore known and used, are employed to readily combine or attach one to the other.

A still further object of the present invention is the provision of a shield for use with a can opener of the piercing type wherein said shield has an area greater than the area of the opening being formed, with said shield either of a relatively flat body portion or a body portion of a novel and relatively grotesque form and either located substantially adjacent the can top being pierced or located quite remotely from said can top but in each instance the said shield body portion having an area greater than the area of the opening being pierced and said shield including integral means for securing the shield in operative position on the said can opener.

Other objects and advantages of the present invention should be readily apparent by reference to the following specification considered in conjunction with the accompanying drawings forming a part thereof and it is to be understood that any modifications may be made in the exact structural details thereon and described, within the scope of the appended claims, without departing from or exceeding the spirit of the invention.

FIG. 1 is a perspective view of a simple inexpensive can opener of the piercing type as presently on the market and commonly employed for providing cans with an opening for drainage of liquid therefrom.

FIG. 2 is a view similar to FIG. 1 having a shield of the present invention mounted in operative position thereon.

FIG. 3 is a fragmentary, longitudinal, sectional view through a portion of the can opener as seen from line 3—3 on FIG. 2.

FIG. 4 is a cross-sectional view taken at right angles to FIG. 3 as seen on line 4—4 on said FIG. 3.

FIG. 5 is a perspective view of the shield, per se, as illustrated in operative positions in FIGS. 2, 3 and 4.

FIG. 6 is a perspective view of a modified form of the shield.

FIG. 7 is a perspective view of a further modified form of the shield.

FIG. 8 is a cross-sectional view, similar to FIG. 3, showing the modified shield of FIG. 7 in an operative position other than that of actually shielding the can opening while in process of being formed.

FIG. 9 is a perspective of a portion, mainly the attaching portion, of a shield embodying the principles of the present invention.

FIG. 10 is a view similar to FIG. 2 illustrating the shield attaching means of FIG. 9 in operative position and with a shield designed as one incorporating an amusing and decorative shield member.

Throughout the several views of the drawings similar reference characters are employed to denote the same or similar parts.
at its free end with a small hook 24 that acts as a fulcrum during the actuation of the implement about the can head to cause its finger or piercing element 19 to form the opening in the can top.

The operation of the can opener or piercer is well known and is at the moment that the piercing point 20 goes through the can top that the pressure gas escapes carrying with it the liquid of the can. The shield, as noted above, of the present invention, comes into play at this time for preventing the said gas and canned liquid from spraying or contacting the operator. While the shield of the present invention may be made of any appropriate material it is preferably cut, stamped or molded from synthetic resin, that is, what is popularly known as "plastic." The various forms of the shield illustrated in the drawings are respectively indicated, in the drawings, in their entirety, by the reference numeral 24.

The actual form of the shield may be considerably varied, but must include a body portion 25 of an area, at least, to completely cover the opening being formed and, preferably, to outwardly project from the sides and piercing point of the finger 19. The body portion as illustrated in FIGS. 2, 3, 5, and 6, is substantially rectangular in area and of considerably greater area than the effecting the piercing finger 19. The said shield body portion 25 is provided inwardly of its rear edge 26 with an interrupted cut line 27 with the opposite ends of said cut line formed as semi-circles, respectively, indicated, in the drawings, by the reference numerals 28 and 29. The said cut line from said semi-circular portions thereof converge as at 30 and 31 and wherein the said cut lines extend through the said rear edge 26 of the shield body portion. The ends of the semi-circular cut portions 28 and 29 are joined by a cut line, not shown in the drawings, that is parallel to the interrupted cut line 27 wherefore the material between said last mentioned cut line, not shown in the drawings, and the converging cut lines 30 and 31 provides a void in the shield flanked by ears or wings 32a and 33a. The said wings 32a and 33a are respectively provided with an inwardly extending ear portion 32 and 33 for further clamping the shield to the implement as is later pointed out.

The shield is further provided, in effect, with the portion between the inner edges of the portions of the interrupted cut line 27, with a rearwardly projecting tongue 34 and with said tongue having on opposite sides thereof finger portions 35 and 36 defined, respectively, at its rearward edge by said interrupted cut line portions 27a and 27b, at their respective ends by the semi-circular cut line portions 28 and 29 and at their rear edge by the not illustrated cut line parallel with the interrupted cut line 27.

The width of the tongues 35 and 36 is substantially equal to the height of the opening 22 in the can opener wall member or shoulder 21.

In practice the said fingers 35 and 36 are downwardly bent, as illustrated in dotted lines in FIG. 6 for similar fingers of the shield there illustrated, to pass through the opening 22 whereupon the said fingers are outwardly bent, as illustrated in FIG. 10 for similar fingers of the shield part there illustrated, to underlie or engage the inner side of said shoulder 21, all as further clearly illustrated in FIGS. 3 and 4. With the shield in this position the body portion 25 thereof outwardly projects from the shoulder 21 to overlie, albeit, in a plane thereabove, the piercing finger 19 as illustrated in FIGS. 2 and 3. At this time, and to more securely attach the shield to the can opener or piercer of the implement the ears 32a and 33a are arranged for clampingly engaging the side edges of the implement body portion while the said ears have, respectively, inwardly projecting portions 32 and 33 that are disposed to be below the implement body portion 13, as illustrated in FIG. 2, to thereby effect a further clamping of the shield to the implement.

As will be noted, particularly from FIG. 4, with the placing of the fingers 35 and 36 against the underside of the shoulder 21, no interference is given in the normal operation of the can piercing mechanism.

The modified shield in FIG. 6 differs, primarily from the disclosure in FIG. 5 in that the body portion 25 is illustrated as somewhat circular, however, of an area to effectively cover or shield the opening in the can top as formed by the piercing finger 19. Furthermore, the modification in FIG. 6 has eliminated therefrom the ears 32a and 33a and depend entirely on the fingers 35 and 36 for securing the shield in position.

Obviously the said body portion 25 of FIG. 5 may take the contour of the body portion 25' of FIG. 6 and similarly the ears 32a and 33a of FIG. 5 may be added to the body portion 25' of FIG. 6.

The modified shield in FIG. 7 utilizes the body portion 25 of FIG. 5 without the ears 32a and 33a thereof. Outwardly extending from the attaching fingers 35 and 36 the shield of FIG. 7 includes a stabilizing tongue 37 which, when the shield of FIG. 7 is mounted in operative position, overlies the implement body portion 13 outwardly of the opening 22 therein as shown in FIG. 10 in connection with a further modification of the invention.

The shield illustrated in FIG. 7 is further modified by having a U-shaped cut 38 formed therein with said cut including a base 39 and arms 40 and 41 and with said arms 40 and 41 stopping the forward edge 42 of the shield body 25. With this construction there is provided within the shield body portion 25 a tongue 43 hingedly or swingably attached to the said body portion 25 along a line just inwardly of the body portion forward edge 42.

By this construction the shield is provided with a safety device which acts as a guard for the sharp piercing point 19 of the can opener piercing finger 19. Since the shield is formed of relatively flexible plastic, and after the same has been mounted in operative position, that is, with its attaching fingers 35 and 36 beneath the shoulder 21, the body portion of the shield may be actuated to be substantially flat on the upper surface of the piercing finger 19 and the tongue 43 downwardly pressed to be beneath the piercing point 20, all as clearly illustrated in FIG. 8. By this construction, as noted above, a safety device or guard for said point 20 is provided and the can opener or implement can be carried in the pocket without danger to the person or the fabric of the pocket.

The modification illustrated in FIG. 9 while in and of itself is not a complete shield it provides a structure, in accordance with the present invention, whereby a novel and amusing shield may be provided. The part illustrated in FIG. 9 may be designated as a shield attaching means and instead of including the shield, per se, has a comparatively long stem 44 extending from the attaching fingers 35 and 36. The said attaching fingers 35 and 36 have projecting from their rear edge the stabilizing tongue 37.

In practice the shield attaching means or device of FIG. 9 has its fingers 35 and 36 projected through the implement opening 22 and subsequently positioned against the underside of the implement wall or shoulder 21 and with the stabilizing tongue 37 on the implement body portion 13 as illustrated in FIG. 10. At this time the stem 44 of the attaching means is positioned to substantially vertically upset from the implement and the said stem has attached to its end, upper end the shield body member which of course would have an area in excess of the implement piercing finger 19 and the opening formed thereby. The said shield in this instance may take the form of an open umbrella, structurally, a circle of material of plastic, for example, dish shaped and suitably secured to the upper end of the stem 44, for thereby providing a practical and shield yet having an amusing and novel appearance.

It is to be understood that the shield, per se, as illustrated in FIG. 10 may take other forms than a simulated open umbrella requiring only that the shield have a body portion or deflecting surface of an area equal to the area
of the opening in the can top as effected by the piercing finger 19.

From the foregoing, it will be noted that there has been provided a shield for can top piercing openers and with said shield arranged either directly over the opening as it is being formed or in a plane upwardly of the can top but in each instance in such an operative position as to prevent the gases and canned liquid, as emerging through the opening, from contacting the user.

What is claimed is:

1. A shield for use with an implement which has a body portion of a given width, a can opener of the piercing type that includes a finger with a rear edge of a width substantially equal to the width of the body portion and a piercing pointed free end, a shoulder depending from the piercing finger at the rearward end thereof connecting said piercing finger with the implement body portion and said shoulder having an aperture substantially centrally, transversely, thereof, said shield comprising a body portion overlying the piercing finger and of an area somewhat greater than the area of the said piercing finger, a tongue projecting centrally, rearwardly, of one side of said shield body portion and of a width comparable with the width of the shoulder aperture and disposed through said aperture, and bendable fingers outwardly of the said tongue bent to underlie said shoulder outwardly, radially, of its aperture and thereby secure the shield in operative position above the piercing finger by clamping the piercing finger between the shield body portion and the bendable fingers.

2. A shield for use with an implement which has a body portion of a given width, a can opener of the piercing type that includes a finger with a rear edge of a width substantially equal to the width of the body portion and a piercing pointed free end, a shoulder depending from the piercing finger at the rearward end thereof connecting said piercing finger with the implement body portion and said shoulder having an aperture substantially centrally, transversely, thereof, said shield comprising a body portion overlying the piercing finger and of an area somewhat greater than the area of the said piercing finger, a tongue projecting centrally, rearwardly, of one side of said shield body portion and of a width comparable with the width of the shoulder aperture and disposed through said aperture, and bendable fingers outwardly of the said tongue bent to underlie said shoulder outwardly, radially, of its aperture and thereby secure the shield in operative position above the piercing finger by clamping the piercing finger between the shield body portion and the bendable fingers,

between the shield body portion and the bendable fingers, and ears integral with the shield body portion laterally, outwardly of said bendable fingers rearwardly projecting from said shield body portion in flanking engagement with the side of the implement shoulder and the implement body portion rearwardly of the piercing finger.

3. A shield for use with an implement which has a body portion of a given width, a can opener of the piercing type that includes a finger with a rear edge of a width substantially equal to the width of the body portion and an upwardly pointed free end, a shoulder depending from the piercing finger at the rearward end thereof connecting said piercing finger with the implement body portion and said shoulder having an aperture substantially centrally, transversely, thereof, said shield comprising a body portion overlying the piercing finger and of an area somewhat greater than the area of the piercing finger, a tongue projecting centrally, rearwardly, of one side of said shield body portion and of a width comparable with the width of the shoulder aperture and disposed through said aperture, bendable fingers outwardly of the said tongue bent to underlie said shoulder outwardly, radially, of its aperture and thereby secure the shield in operative position above the piercing finger by clamping the piercing finger between the shield body portion and the bendable fingers, ears integral with the shield body portion laterally, outwardly of said bendable fingers rearwardly projecting from said shield body portion in flanking engagement with the sides of the implement shoulder and the implement body portion rearwardly of the piercing finger, and inwardly projecting portions on said ears forming further clamping means underlying the implement body portion outwardly of the shoulder for further securing the shield in operative position by further clamping the Implement body portion between the bendable fingers and ears projecting portions.

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