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Johnson et al.

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(54) **FLASHLIGHT WITH BOTTLE OPENER**

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(51) **Int. Cl.**

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F21V 5/04	(2006.01)
F21L 4/00	(2006.01)
F21V 17/10	(2006.01)
F21V 23/04	(2006.01)
B67B 7/16	(2006.01)
F21Y 101/02	(2006.01)

(52) **U.S. Cl.**

CPC ***F21V 33/0036*** (2013.01); ***B67B 7/16*** (2013.01); ***F21L 4/005*** (2013.01); ***F21V 5/04*** (2013.01); ***F21V 7/00*** (2013.01); ***F21V 17/10*** (2013.01); ***F21V 23/0428*** (2013.01); *F21Y 2101/02* (2013.01)

(58) **Field of Classification Search**

CPC .. B67B 7/16; B67B 7/066; B67B 7/44; F21V 21/0885; F21V 21/145; F21V 33/0024; F21V 33/0036

USPC 362/109

See application file for complete search history.

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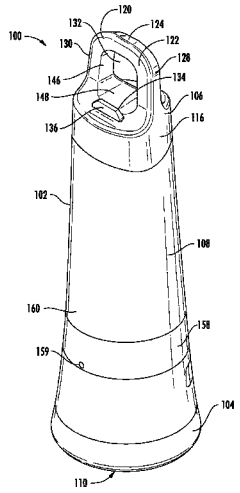
(57) **ABSTRACT**

A flashlight, or portable light source, that has a light source at one end and a bottle opener at the second end. The bottle opener may be secured to the body of the flashlight in a permanent or removable manner. The bottle opener may be secured to the body of the flashlight by a cap on the end opposite the light source.

22 Claims, 7 Drawing Sheets



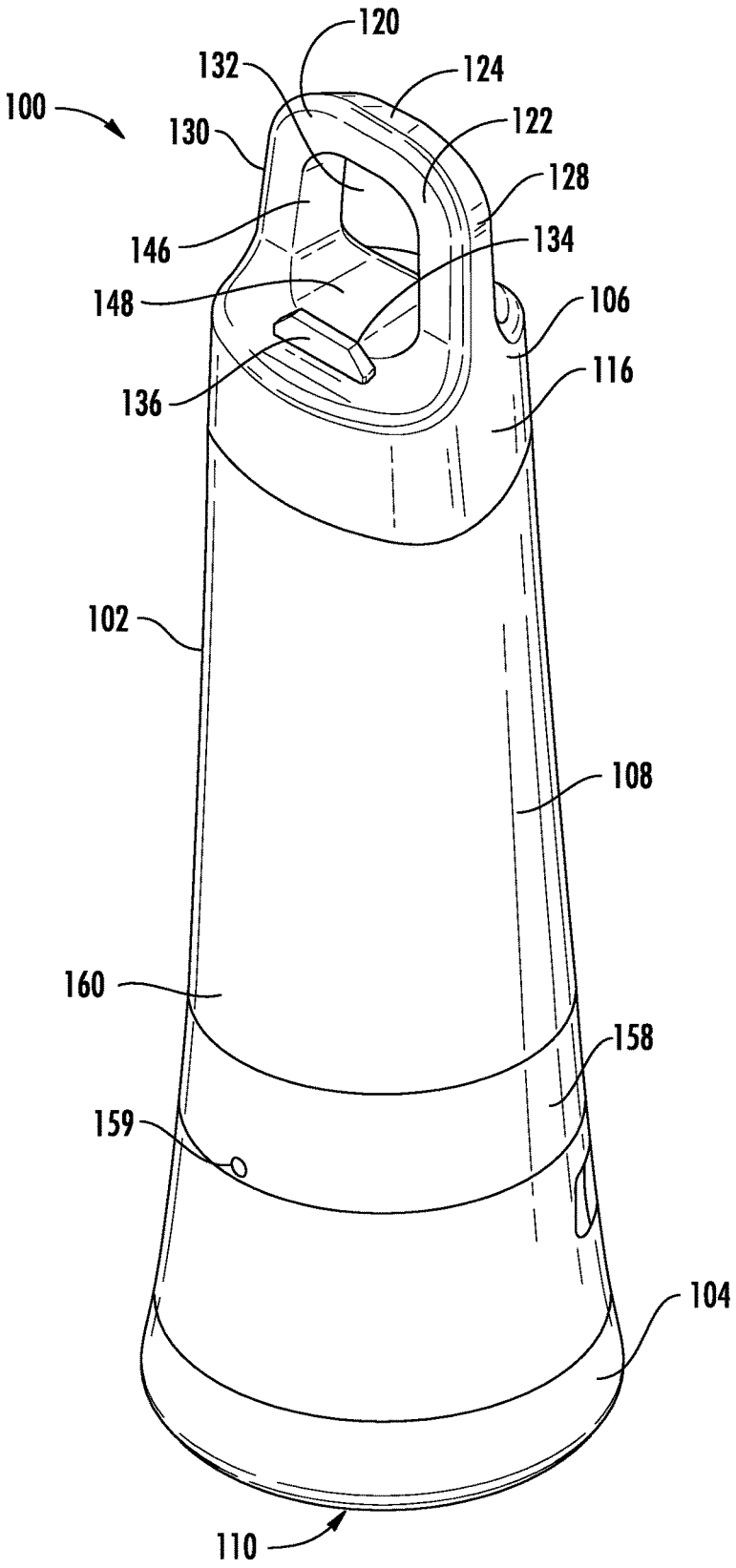

120
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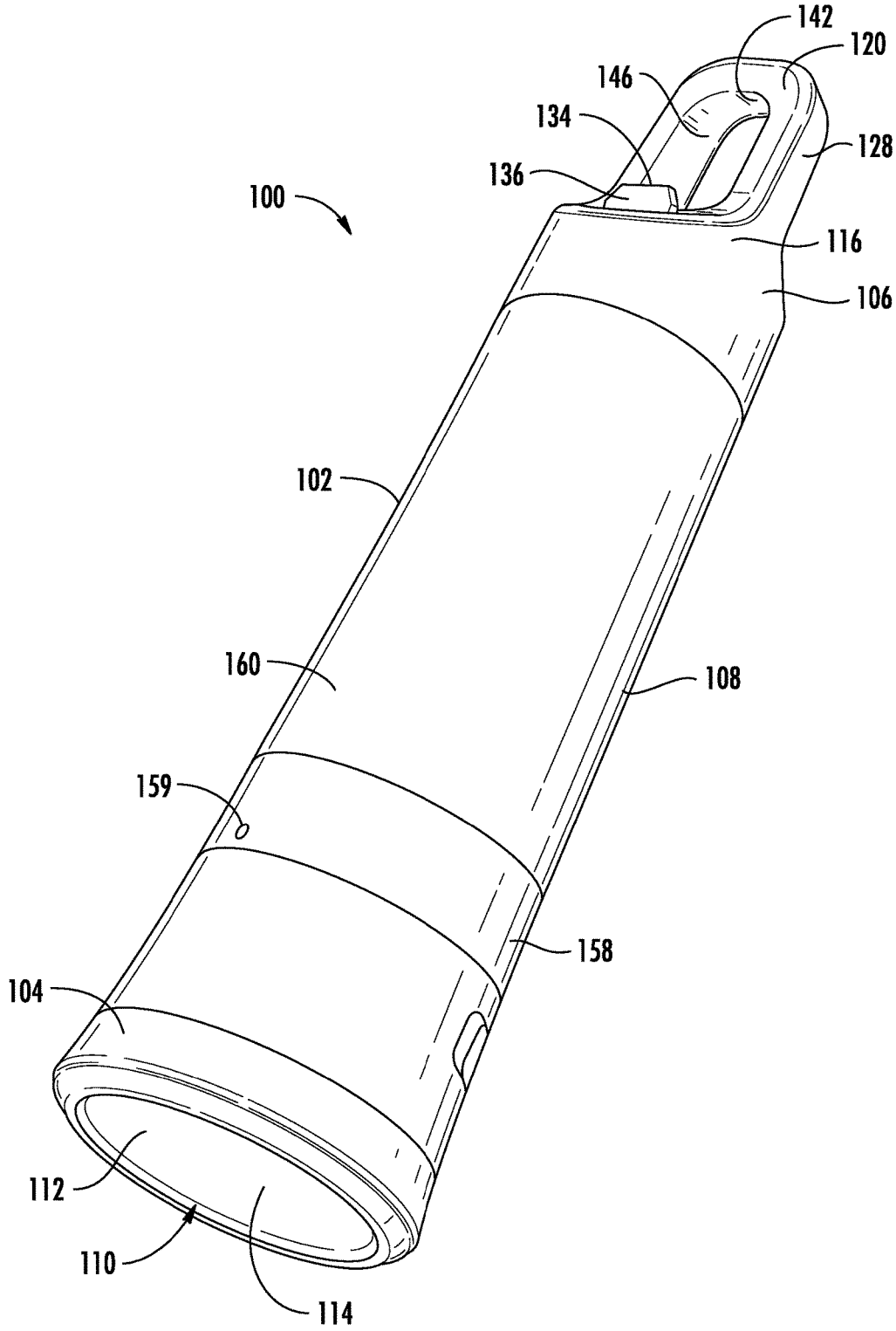
FIG. 1


142
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112
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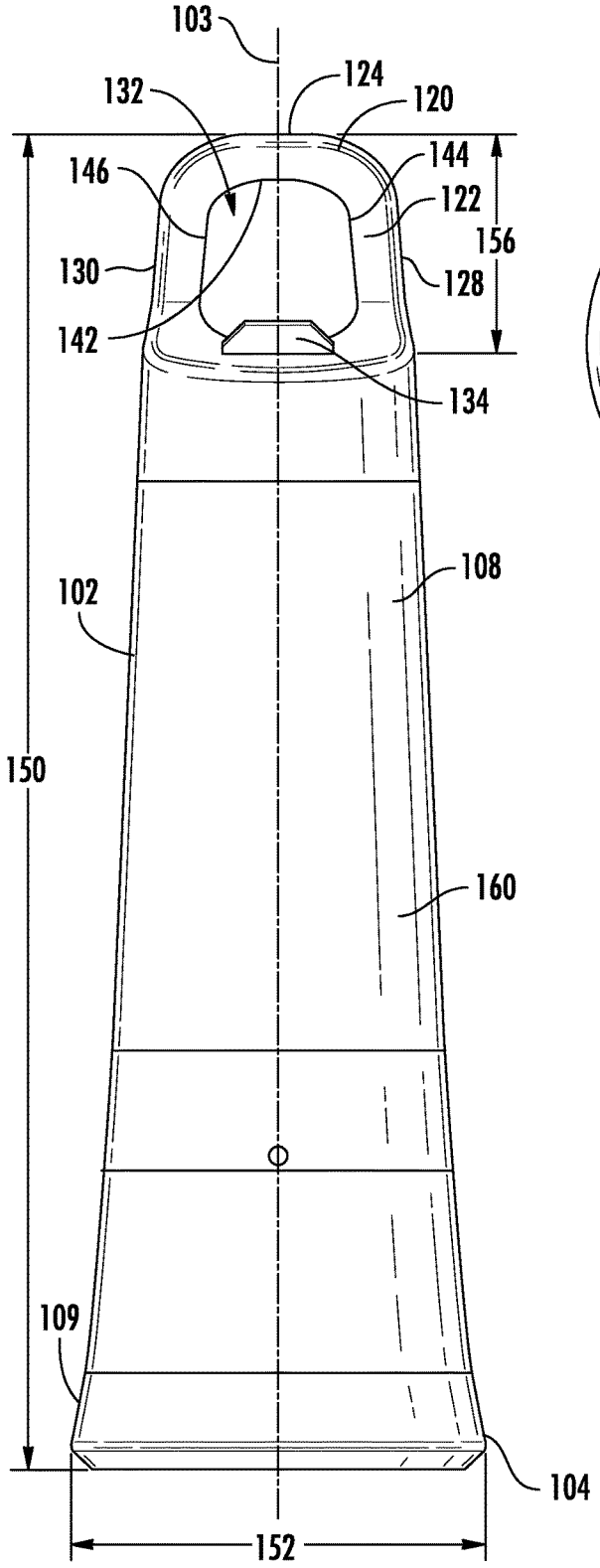
114

FIG. 2


103
132
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152

FIG. 3

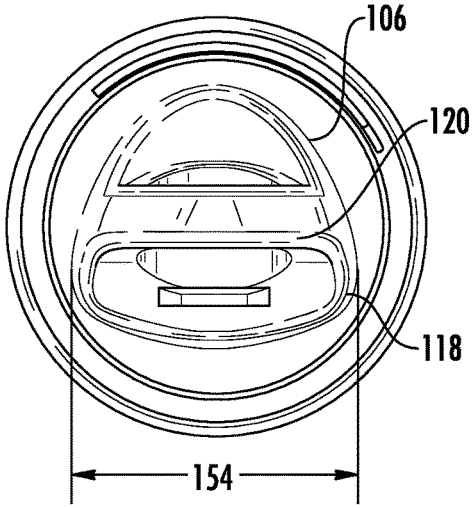
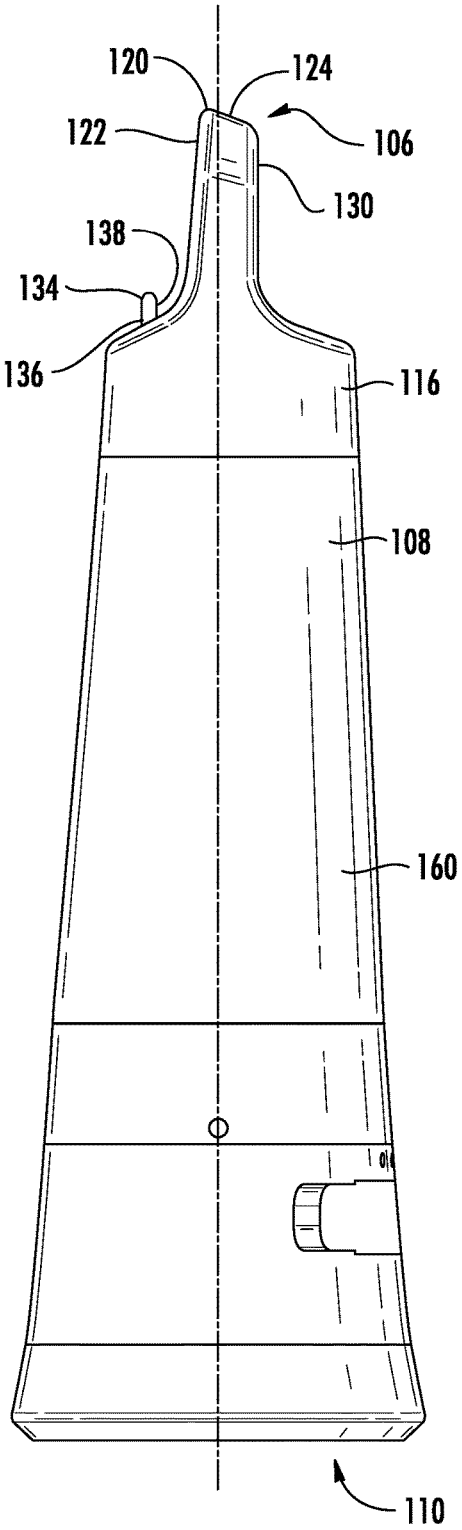

106
120
118
154

FIG. 4


120
124
122
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130
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116
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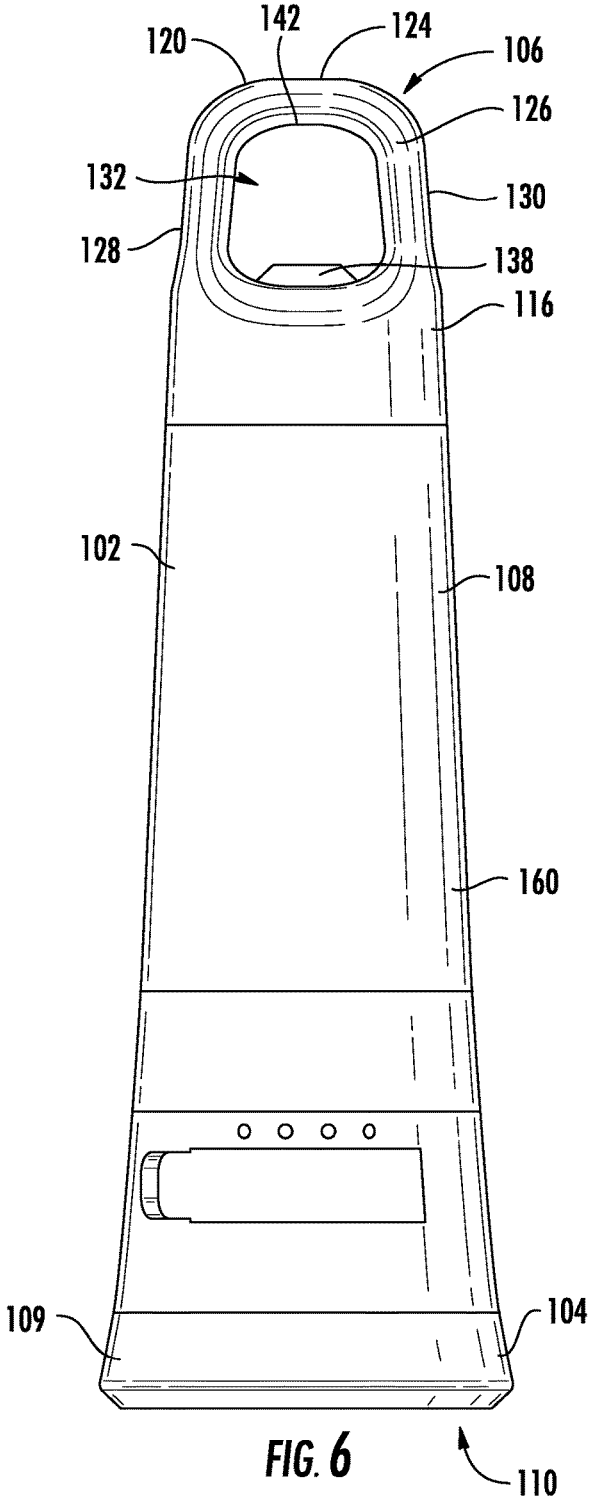
160
110

FIG. 5


120
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124
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102
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FIG. 6

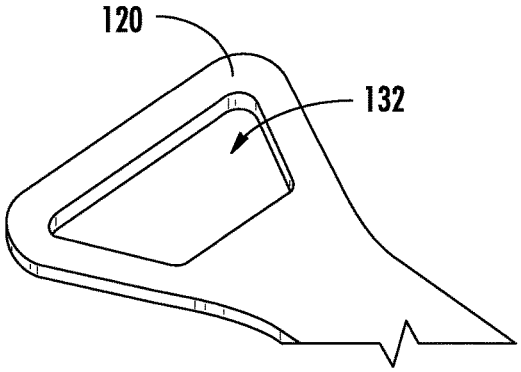

FIG. 7A

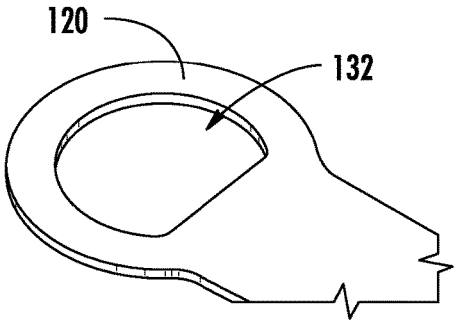

FIG. 7B

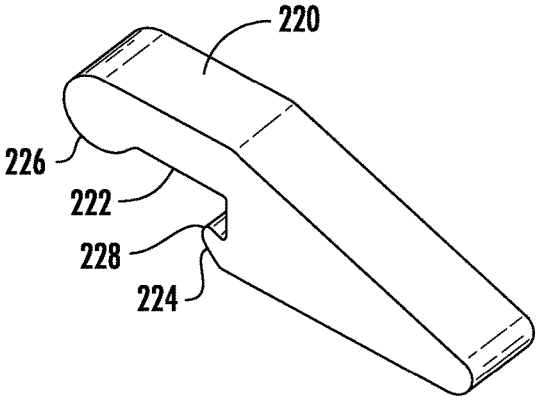

FIG. 7C

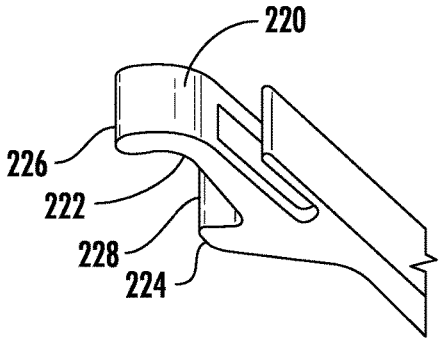

FIG. 7D

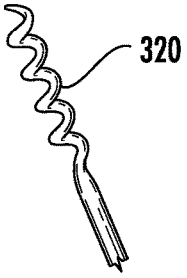

FIG. 7E

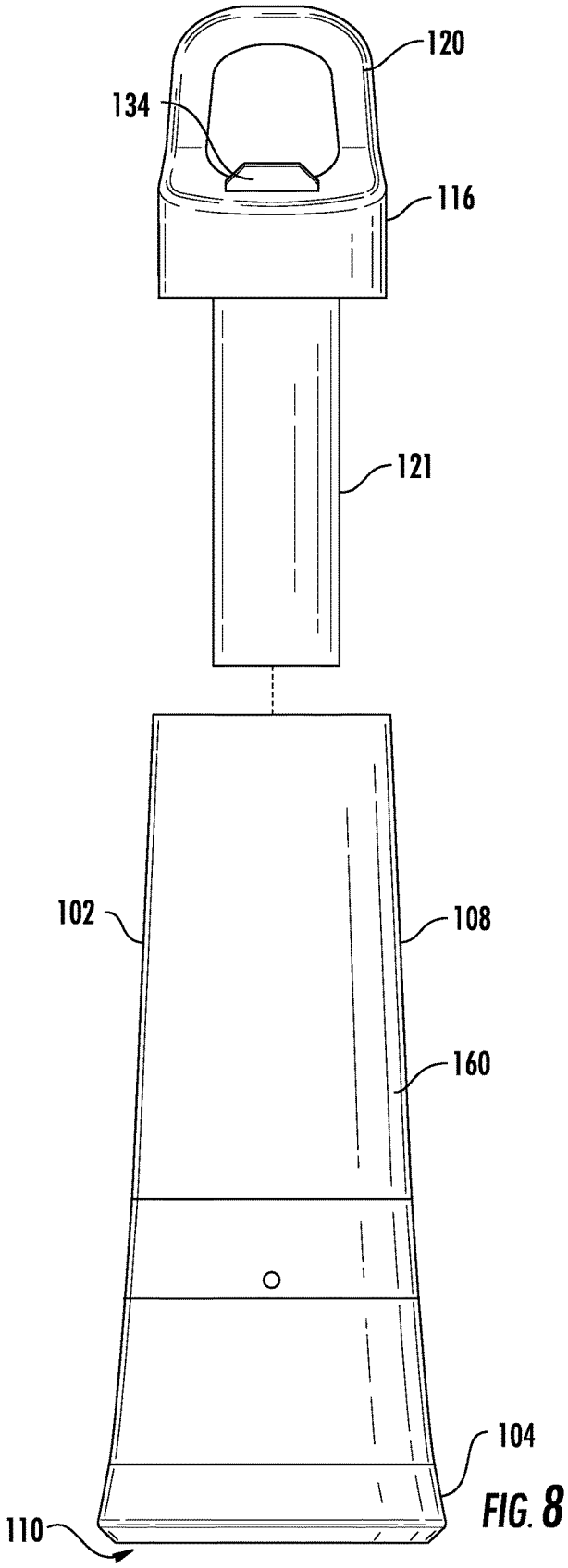

FIG. 8

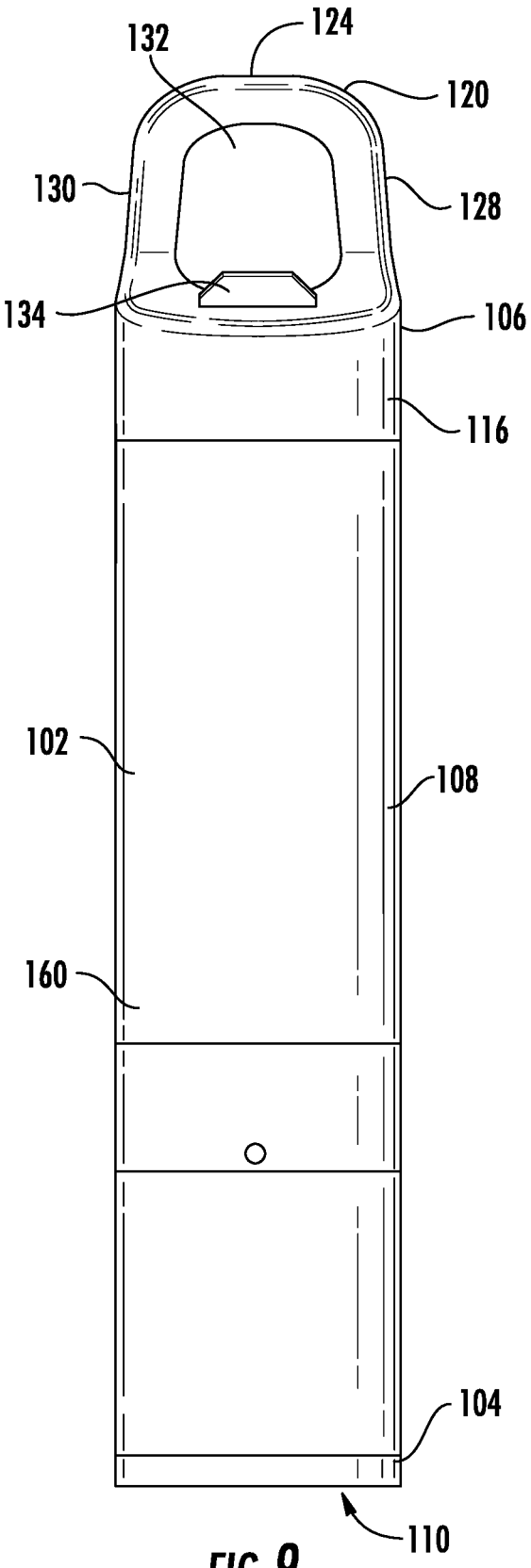

FIG. 9

FLASHLIGHT WITH BOTTLE OPENER

FIELD OF INVENTION

The field of invention for this disclosure is a portable light source, or flashlight, that also functions as a bottle opener.

BACKGROUND

Flashlights provide a portable and easily transportable light source. Since the flashlight is portable, if the flashlight provided any additional functionality this would be a great benefit to a user as they would need to carry fewer items. A flashlight that can also serve as a bottle opener provides the additional functionality desired.

SUMMARY

The following presents a general summary of aspects of the invention in order to provide a basic understanding of the invention and various features of it. This summary is not intended to limit the scope of the invention in any way, but it simply provides a general overview and context for the more detailed description that follows.

Aspects of this disclosure relate to a flashlight comprising a body having a first end, a second end opposite the first end, and a center section spaced between the first end and the second end; a primary light source located at the first end; and a bottle opener located at the second end. The bottle opener may have a front surface, a top surface, a rear surface and side surfaces, and an opening through the front surface and rear surface. The top surface and side surfaces of the bottle opener may have a portion made of a polymer material and the front surface may be a metallic material. The polymer material on the top and side surfaces of the bottle opener may be a polycarbonate. The flashlight may further comprise a reflector and a lens, and the primary light source may be a light emitting diode. The bottle opener may be secured to the body by a cap and may be removably connected to the body. The flashlight may have an overall length of the flashlight in a range of 140 mm to 170 mm and also may have a ratio of an overall length of the flashlight to an overall length of the bottle opener within a range of 5.5:1 and 7:1. The flashlight may further comprise a secondary light source within the center section of the flashlight, and the center section of the body may have a clear exterior surface. Lastly, the bottle opener may have a tooth that includes a rear surface that is offset a fixed distance and parallel to the front surface of the bottle opener.

Another aspect of this disclosure relates to a flashlight comprising a body having a first end, a second end opposite the first end, and a center section positioned between the first end and the second end; a light source positioned at the first end; and a bottle opener positioned at the second end, where the bottle opener may protrude through a cap that secures the bottle opener to the body. The bottle opener may further comprises a front surface, a top surface, a rear surface and side surfaces, an opening centered on a longitudinal centerline of the body; and wherein the opening extends through the front surface and the rear surface. The top surface, the rear surface, and side surfaces of the bottle opener may be a polymer. Additionally, the first end of the body may have a width greater than a width of the second end of the body.

Yet another aspect of this disclosure relates to a flashlight comprising a body having a first end, a second end opposite the first end, and a center section positioned between the first end and the second end; a primary light source, a reflector, and a lens positioned at the first end; a bottle opener positioned at the second end; and a secondary light source positioned in the center section of the body. The bottle opener may be secured to the body by a cap that is molded onto the body. Also, the bottle opener may have a first arm and a second arm, where the first arm is longer than the second arm. Lastly, the bottle opener may have an opening centered upon a longitudinal centerline of the body forming a plurality of interior surfaces and wherein a portion of one of the interior surfaces may be made of a polymer.

BRIEF DESCRIPTION OF THE DRAWINGS

The present invention is illustrated by way of example and not limited in the accompanying figures in which like reference numerals indicate similar elements and in which:

FIG. **1** illustrates a top front perspective view of an example embodiment of a flashlight according to one or more aspects described herein;

FIG. **2** illustrates a bottom front perspective view of an example embodiment of a flashlight according to one or more aspects described herein;

FIG. **3** illustrates a front view of the example embodiment of the flashlight of FIG. **1**;

FIG. **4** illustrates a top view of the example embodiment of the flashlight of FIG. **1**;

FIG. **5** illustrates a side view of the example embodiment of the flashlight of FIG. **1**;

FIG. **6** illustrates a rear view of the example embodiment of the flashlight of FIG. **1**;

FIGS. **7**A-**7**E illustrates examples of alternate embodiments of the bottle opener end of the example embodiment of the flashlight of FIG. **1**;

FIG. **8** illustrates another example of an embodiment of the flashlight according to one or more aspects described herein; and

FIG. **9** illustrates another example of an embodiment of the flashlight according to one or more aspects described herein.

Further, it is to be understood that the drawings may represent the scale of different components of one single embodiment; however, the disclosed embodiments are not limited to that particular scale.

DETAILED DESCRIPTION

In the following description of various example structures according to the invention, reference is made to the accompanying drawings, which form a part hereof, and in which are shown by way of illustration various example devices, systems, and environments in which aspects of the invention may be practiced. It is to be understood that other specific arrangements of parts, example devices, systems, and environments may be utilized and structural and functional modifications may be made without departing from the scope of the present invention. Also, while the terms "top," "bottom," "front," "back," "side," "rear," and the like may be used in this specification to describe various example features and elements of the invention, these terms are used herein as a matter of convenience, e.g., based on the example orientations shown in the figures or the orientation during typical use. Nothing in this specification should be construed as requiring a specific three dimensional orientation of structures in order to fall within the scope of this invention. Also, the reader is advised that the attached drawings are not necessarily drawn to scale.

The following terms are used in this specification, and unless otherwise noted or clear from the context, these terms have the meanings provided below.

"Generally parallel" means that a first line, segment, plane, edge, surface, etc. is approximately (in this instance, within 5%) equidistant from with another line, plane, edge, surface, etc., over at least 50% of the length of the first line, segment, plane, edge, surface, etc.

"Generally perpendicular" means that a first line, segment, plane, edge, surface, etc. is approximately (in this instance, within 5%) oriented approximately 90 degrees from another line, plane, edge, surface, etc., over at least 50% of the length of the first line, segment, plane, edge, surface, etc.

In the following description of the various embodiments, reference is made to the accompanying drawings, which form a part hereof, and in which is shown, by way of illustration, various embodiments in which aspects of the disclosure may be practiced. It is to be understood that other embodiments may be utilized and structural and functional modifications may be made without departing from the scope and spirit of the present disclosure.

In general, as described above, aspects of this invention relate to a flashlight having a light source at one end and a bottle opener positioned at the other end. More detailed descriptions of aspects of this invention follow.

One aspect of this invention relates to a flashlight **100**, as shown in FIGS. **1** and **2**, which may have a body **102**, a first end **104**, a second end **106** opposite the first end **104**, and a center section **108** positioned between the two ends. A light source **110** may be positioned at the first end **104** and a bottle opener **120** may be located at the second end **106**. The light source **110** may be a light emitting diode. The light source **110** may be other light sources capable of providing light.

The flashlight **100** may further comprise a reflector **112** and a lens **114** located at the first end **104**. The reflector **112** and lens may increase the amount of light created by the light source **110** and the flashlight **100**. The reflector **112** may be made of a polymer material such as polycarbonate material with a bright chrome finish. The lens **114** similarly may be made of a polymer such as a polycarbonate material with a transparent finish.

The second end **106** may include a cap **116** along with the bottle opener **120**. The bottle opener **120** may protrude from the cap **116**. Additionally, the cap **116** may secure the bottle opener **120** to the flashlight **100**.

As discussed above and shown in FIGS. **1-6**, the body **102** may have a first end **104** and a second end **106**. The first end **104**, which includes the light source **110** may have any shape. For example, the body **102** in the embodiment shown in FIGS. **1** and **2** has a first end **104** with a circular shape. However, the first end **104** may be a square, rectangular, triangular, oval or any shape. Similarly, the second end **106** which defines the cap **116** may have any shape as well, such as a triangular shape as shown in the embodiment shown in FIG. **4** or may have a square, circular, oval, or any shape. Further, if either of the first end **104** or second end **106** have a non-rounded shape, the corners may have a fillet radii **118**, as also shown in FIG. **4** at the corners of the triangular shaped second end **106**, to provide a smooth transition and avoid any sharp corners.

The first end **104** and second end **106** may be any size, but are preferably sized to fit in a user's hand. For example, the first end **104** may a have a maximum width, defined as the maximum width **152** at the furthest extent across of the first end **104**, within a range of 40 mm to 60 mm or 25 mm and 65 mm. Similarly, the second end **106** may have a maximum width **154**, defined as the maximum width of the cap **116** within a range of 25 mm and 35 mm or 20 mm and 40 mm. The maximum width of the cap **116** may be measured at the top surface of the cap **116** where the bottle opener **120** protrudes from the surface of the cap **116**. The first end **104** may have a maximum width **152** that is greater than a maximum width **154** of the second end **106**. Alternatively, the maximum width **152** of the first end **104** may be the same width as the maximum width **154** of the second end **106** or the maximum width **152** may be less than the maximum width **154**.

Additionally, an overall length **150** of the flashlight **100** may be defined as the length of the first end **104** to a top surface **124** of the bottle opener **120**. The overall length **150** may be in a range of 140 mm to 170 mm. The overall length **156** of the bottle opener **120** may be defined as the length from the top surface **124** of the bottle opener **120** to where the bottle opener **120** protrudes from the top surface of the cap **116**. The flashlight **100** may have a ratio of the overall length **150** of the flashlight **100** to an overall length **156** of the bottle opener **120** within the range of 5.5:1 and 7:1.

The flashlight **100** may have any shape. For example, the body **102** may have a smooth continuous curvature that changes gradually from the profile or shape of the first end **104** to the shape or profile of the second end **106** similar to the example embodiment shown in FIGS. **1-6**. The body **102** may have a flared section **109** near the first end **104** as shown in FIGS. **1-6**. Alternatively, the body **102** may have discrete sections that form a corner or edge where the sections join. As another embodiment, the body **102** may have a constant width or diameter as shown in FIG. **9** where the first end **104** and the second end **106** have the same width.

The bottle opener **120** may be defined as an apparatus used to open a beverage container that is sealed with a bottle cap. As discussed above, the bottle opener **120** may be positioned at the second end **106** of the body **102**. The bottle opener may have a front surface **122**, a top surface **124**, a rear surface **126**, and side surfaces **128**, **130**, and an opening **132** through the front surface **122** and the rear surface **126**. Additionally, the bottle opener **120** may further comprise a tooth **134** that has a front surface **136** and a rear surface **138**. The rear surface **138** may be generally parallel to and oppose the front surface **136** of the tooth **134**. The rear surface **138** may be offset a fixed distance from the front surface **122**. The tooth **134** may also have a substantially flat top surface **140**.

The opening **132** may be centered and symmetrical about a longitudinal centerline **103** of the body **102** and may form a plurality of interior surfaces defining an upper interior surface **142**, side interior surfaces **144**, **146**, and a lower interior surface **148**. The opening **132** may have any shape such as generally trapezoidal, square, or rectangular where the upper interior surface **142** may be a flat or linear surface. Alternatively, opening **132** may have a rounded shape with a flat upper interior surface **142**. The opening **132** may be appropriately sized to have the side interior surfaces **144**, **146** have a width to fit over the bottle cap. The maximum width of the opening **132** may be greater than a width of the tooth **134**.

The side surfaces **128**, **130** of the bottle opener **120** may have a curvature that is the same as the curvature of the cap **116** to give the appearance that the bottle opener **120** has a seamless appearance with the geometry of the cap **116**. Alternatively, the side surfaces **128**, **130** may have a curvature that is different than the curvature of the cap **116** where a break in the geometry is visible.

The body **102** may be formed of a first material, and the cap **116** may be formed of a second material different than the first material or formed of the same material that may be dyed a different color. In one example embodiment, the body **102** may be formed of multiple components made of the same material with various portions that are formed of the same material that may be dyed a different color. The cap **116** may be formed from the same material as the body **102** using an overmolding technique to secure it to the body **102**. For example, the body **102** and the cap **116** may both be made of a polycarbonate material.

As discussed, the cap **116** may be overmolded onto the body **102** and secure the bottle opener **120** to the flashlight **100**. The bottle opener **120** may be formed as a separate part and then placed in the mold prior to forming the cap **116**. The cap **116** may then be formed by molding over a portion of the bottle opener **120** to form a mechanical lock around the bottle opener **120**. The bottle opener **120** may be permanently connected using this overmolding technique or other may be secured using other mechanical means such as fasteners or adhesives.

Alternatively, the bottle opener **120** may be removable from the flashlight **100**, as shown in the embodiment shown in FIG. **8**. In this example embodiment, the bottle opener **120** may have a releasable mechanical connector such that the bottle opener is removable. The removable portion may comprise only the bottle opener **120** or a combination of the cap **116** and bottle opener **120**. The removable portion may further comprise a handle **121** that may extend from the cap **116**.

The bottle opener **120** may be formed of a metallic material, such as a stainless steel. However, the top surface **124**, the rear surface **126**, and the side surfaces **128**, **130** of the bottle opener **120** may be a polymeric material, while the front surface **122** may be metallic. The polymeric material may be the same material as the cap **116** such as polycarbonate. These interior surfaces **142**, **144**, **146**, **148** may have a portion formed of a metallic material and a portion formed of a polymer. Alternatively, these interior surfaces **142**, **144**, **146**, **148** may be all metallic or all polymer. The tooth **134** may be formed of a stainless steel material and have exposed surfaces being metallic.

The body **102** may be may manufactured from any materials such as polymers or metals. The body is preferably made of materials with a density within a range of 4.6 g/cc to 1.0 g/cc or within a range of 2.8 g/cc to 1.1 g/cc. The body **102** may be made of a plurality of materials where the body **102** is made of a plurality of components. The components may be made of separate pieces that are joined together or may be formed at different stages such as molding the components in multiple stages using such techniques as overmolding to create the different components and textures found on the body **102**.

The flashlight **100** may further comprise a secondary light source **160** within the center section **108** of the body **102**. The secondary light source **160** may extend over a majority of the overall length of the flashlight **100**. The secondary light source **160** may be a light emitting diode. When the secondary light source **160** is present, the center section **108** of the body **102** may include a clear exterior surface and may be made of a transparent or translucent material.

The flashlight **100** may also feature a switch **158** to allow a user to adjust and control the light source **110** on the flashlight **100**. The switch **158** may allow the user to turn on or off the light source **110**. The switch **158** may also allow the user to switch between different light levels for the light source **110**. Additionally, the switch **158** may allow the user to adjust and control the light source between the primary light source **110** and the secondary light source **160**. For example, the switch may control or adjust only the primary light source **110** active to only with the secondary light source **160** active or an option having both the primary light source **110** and the secondary light source **160** active. The switch **158** may be positioned closer to the first end **104** than the second end **106**. Also, the switch **158** may rotate or slide around the body **102** with an exterior surface made of a material different than that of the body **102** to provide the user a different feel and texture. The switch **158** may also include an indicator **159** to communicate to the user the location of the switch **158**. Additionally, the switch **158** may have an exterior surface made of a thermoplastic elastomer (TPE), while the body **102** may be made of a different polymer such as polycarbonate.

FIGS. **7**A-**7**E shows some alternate embodiments of the bottle opener **120**. The bottle opener **120** may be configured without the tooth **134** as shown in example embodiments of **7**A and **7**B. For example, FIG. **7**A may comprise an opening **132** of a trapezoidal shape without the tooth or **7**B comprising a circular opening with a flat surface on the bottom edge.

FIGS. **7**C and **7**D show an alternate embodiment of bottle opener **120**. For the embodiment of FIGS. **7**C and **7**D, the features of the bottle opener **220** are referred to using similar reference numerals under the "2XX" series of reference numerals, rather than "1XX" as used in the embodiment of FIGS. **1**-**6**. Accordingly, certain features of the bottle opener **120** and the flashlight **100**, that were already described above with respect to bottle opener **120** of FIGS. **1**-**6** may be described in lesser detail, or may not be described at all. FIGS. **7**C and **7**D show alternate embodiments where the bottle opener **220** comprises a shape having a pair of arms **222**, **224** where the first arm **222** is longer than the second arm **224**. The second arm **224** is generally parallel to the first arm **222** and is spaced a distance offset from the first arm **222**. Both the first arm **222** and the second arm **224** may have a curved end portion **226**, **228** respectively.

FIG. **7**E shows an alternate embodiment of bottle opener **120**. For the embodiment of FIG. **7**E, the features of the bottle opener **320** are referred to using similar reference numerals under the "3XX" series of reference numerals, rather than "1XX" as used in the embodiment of FIGS. **1**-**6**. Accordingly, certain features of the bottle opener **120** and the flashlight **100**, that were already described above with respect to the bottle opener **120** of FIGS. **1**-**6** may be described in lesser detail, or may not be described at all. Another alternate embodiment of the bottle opener **120** may have a corkscrew **320** type features instead of the bottle opener **120** shown in FIG. **7**E. The corkscrew **320** may have a cover (not shown) to protect the user from any sharp edges.

CONCLUSION

While the invention has been described in detail in terms of specific examples including presently preferred modes of carrying out the invention, those skilled in the art will appreciate that there are numerous variations and permutations of the above described systems and methods. Thus, the spirit and scope of the invention should be construed broadly as set forth in the appended claims.

We claim:

1. A flashlight comprising:

a body having a first end with a circular shape, a second end opposite the first end, and a center section spaced between the first end and the second end;

a primary light source located at the first end;

a bottle opener located at the second end;

wherein the bottle opener has a front surface, a top surface, a rear surface and side surfaces, and an opening extending through the front surface and rear surface, wherein the opening is centered along a longitudinal centerline of the body;

wherein the bottle opener has a tooth that includes a rear surface that is spaced away and offset a fixed distance from the front surface of the bottle opener, and wherein the rear surface of the tooth faces the front surface of the bottle opener and is positioned at an angle to the front surface of the bottle opener.

2. The flashlight of claim **1**, wherein the top surface and side surfaces have a portion made of a polymer material and the front surface is a metallic material.

3. The flashlight of claim **2**, wherein the polymer material is a polycarbonate.

4. The flashlight of claim **1**, wherein the primary light source is a light emitting diode.

5. The flashlight of claim **1**, wherein the bottle opener is secured to the body by a cap.

6. The flashlight of claim **1**, wherein the bottle opener is removably connected to the body.

7. The flashlight of claim **1**, further comprising a reflector and a lens.

8. The flashlight of claim **1**, wherein an overall length of the flashlight is in a range of 140 mm to 170 mm.

9. The flashlight of claim **1**, wherein a ratio of an overall length of the flashlight to an overall length of the bottle opener is within a range of 5.5:1 and 7:1.

10. The flashlight of claim **1**, wherein the flashlight further comprises a secondary light source within the center section of the flashlight.

11. The flashlight of claim **1**, wherein the center section of the body has a clear exterior surface.

12. The flashlight of claim **1**, wherein the front surface of the bottle opener is positioned at an angle to the longitudinal centerline of the body.

13. A flashlight comprising:

a body having a first end with a circular shape, a second end opposite the first end, and a center section positioned between the first end and the second end;

a light source positioned at the first end; and

a bottle opener positioned at the second end;

wherein the bottle opener protrudes through a cap and the cap secures the bottle opener to the body,

wherein an overall length of the flashlight is in a range of 140 mm to 170 mm; and

wherein a ratio of the overall length of the flashlight to an overall length of the bottle opener is within a range of 5.5:1 and 7:1.

14. The flashlight of claim **13**, wherein the bottle opener further comprises a front surface, a top surface, a rear surface and side surfaces, an opening centered on a longitudinal centerline of the body; and wherein the opening extends through the front surface and the rear surface.

15. The flashlight of claim **14**, wherein the top surface, the rear surface and side surfaces of the bottle opener are a polymer.

16. The flashlight of claim **13**, wherein the first end of the body has a width greater than a width of the second end of the body.

17. A flashlight comprising:

a body having a first end with a circular shape, a second end opposite the first end, and a center section positioned between the first end and the second end;

a primary light source, a reflector, and a lens positioned at the first end;

a bottle opener positioned at the second end; and

a secondary light source positioned in the center section of the body, wherein the secondary light source extends over a majority of an overall length of the flashlight.

18. The flashlight of claim **17**, wherein the bottle opener is secured to the body by a cap that is molded onto the body.

19. The flashlight of claim **18**, wherein the bottle opener has a first arm and a second arm and wherein the first arm is longer than the second arm.

20. The flashlight of claim **17**, wherein the bottle opener has an opening centered upon a longitudinal centerline of the body forming a plurality of interior surfaces and wherein a portion of one of the interior surfaces is made of a polymer.

21. A flashlight comprising:

a body having a first end with a circular shape, a second end opposite the first end, and a center section spaced between the first end and the second end;

a primary light source located at the first end;

a bottle opener located at the second end that is secured to the body by a cap; wherein the bottle opener has a front surface, a rear surface and a side surface, and an opening through the front surface, wherein the opening is centered along a longitudinal centerline of the body; and wherein the side surface has a curvature that matches a curvature of the cap; and

wherein the bottle opener has a tooth that includes a front surface and a rear surface, wherein the rear surface is offset a fixed distance from the front surface of the bottle opener.

22. The flashlight of claim **21**, wherein a ratio of an overall length of the flashlight to an overall length of the bottle opener is within a range of 5.5:1 and 7:1.

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