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(54) **GOLF DISC**

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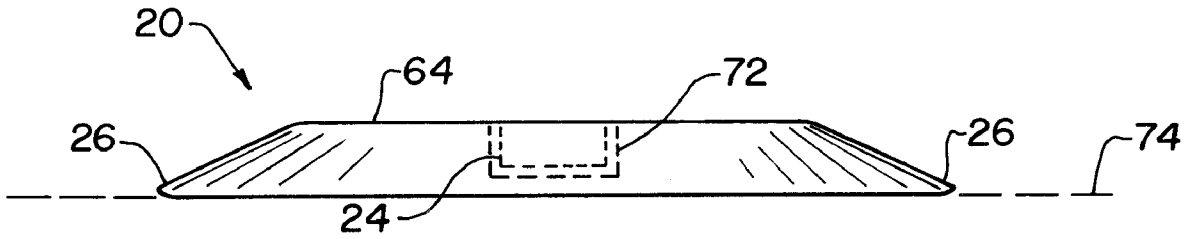
(57) **ABSTRACT**

A golf disc assembly includes a disc configured for flying upon being cast into the air and a sonic finding unit which is attached to the disc and which emits a sonic locating signal after the sonic finding unit conducts a delay of a predetermined amount of time.



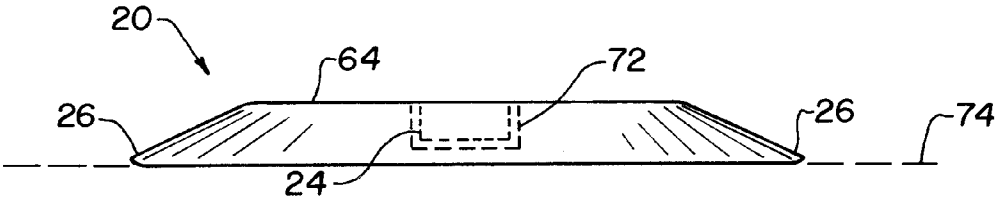

20
64
72
26
26
74
24

Fig. 1

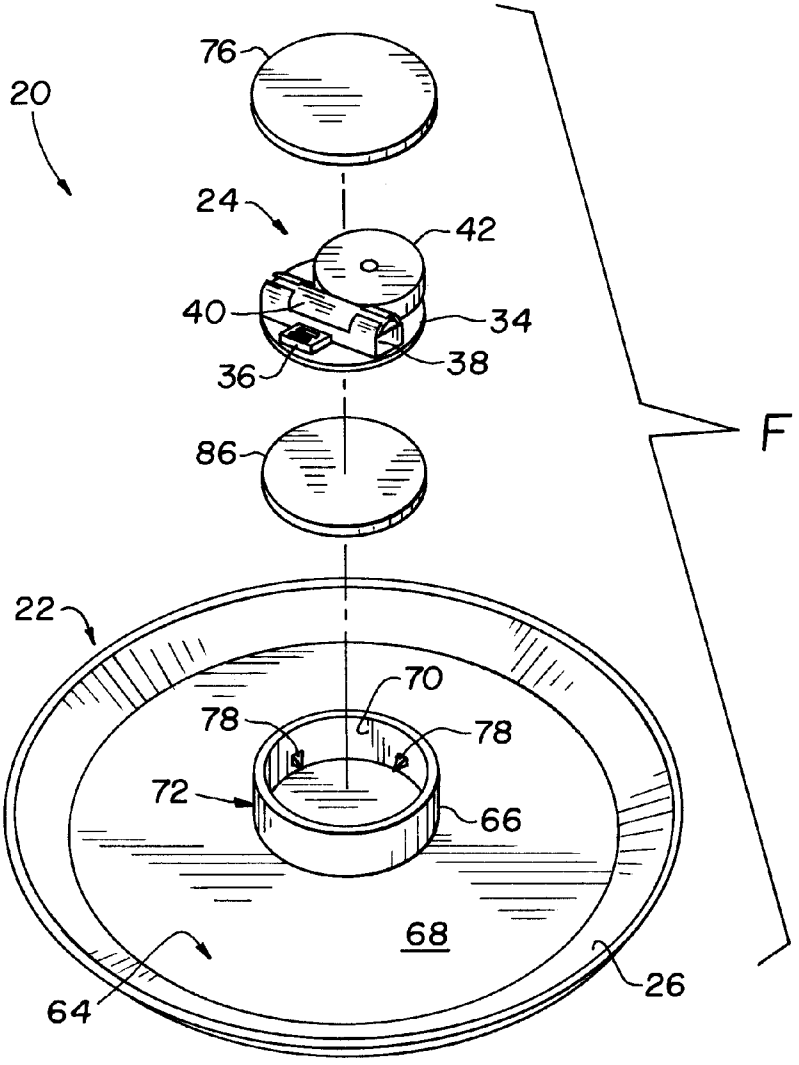

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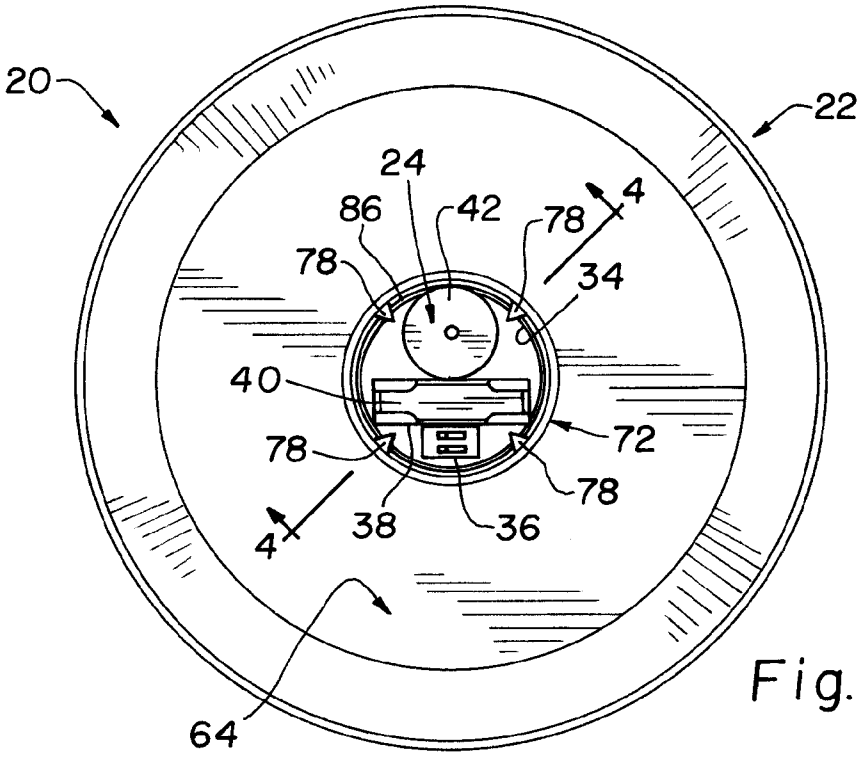
Fig. 2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72
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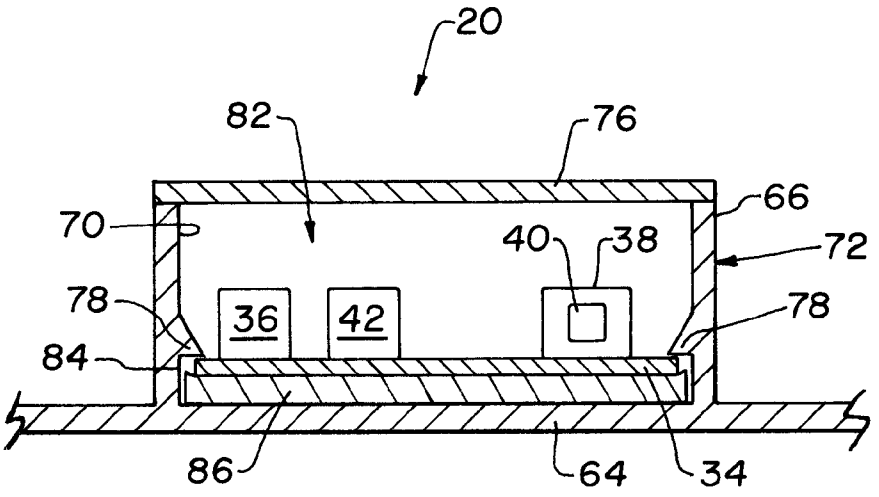
Fig. 3


20
82
76
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38
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36
42
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64
34

Fig. 4

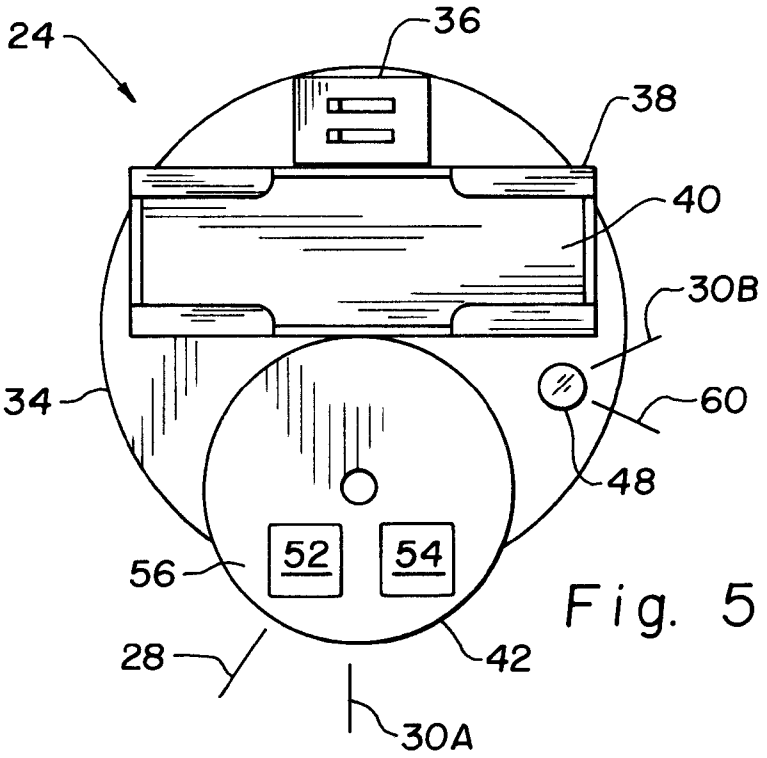


Fig. 5

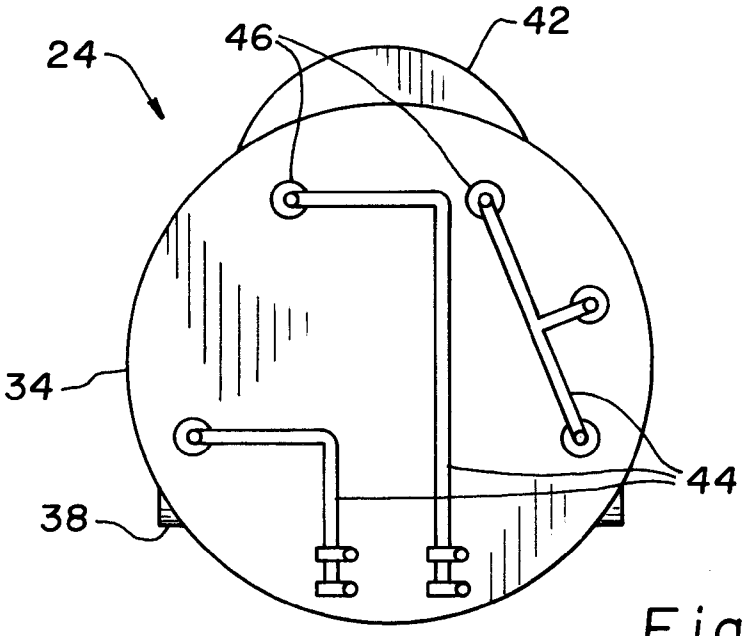


Fig. 6

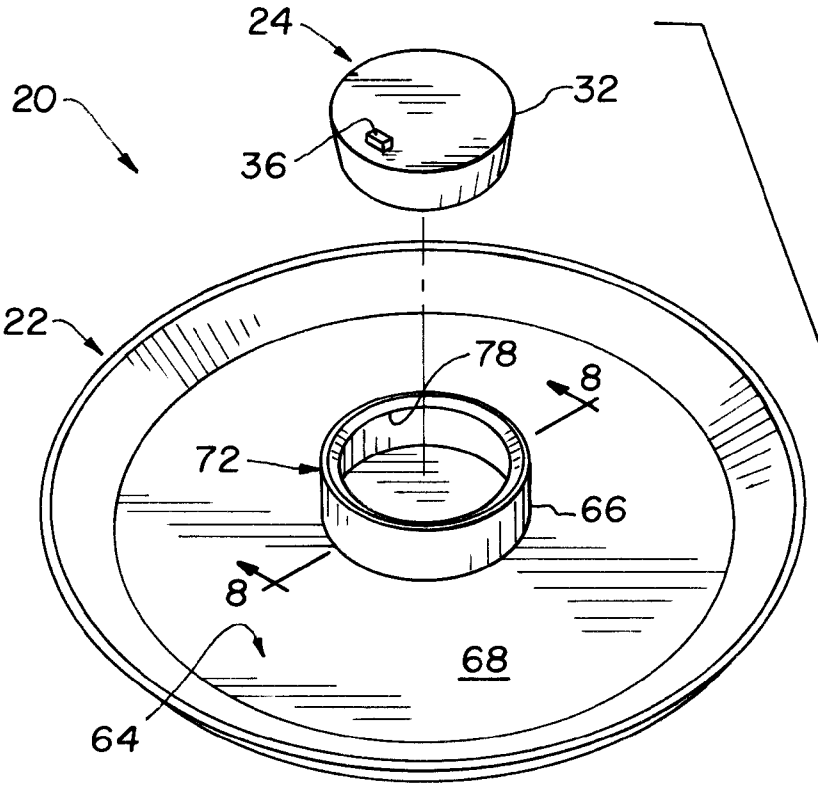


Fig. 7

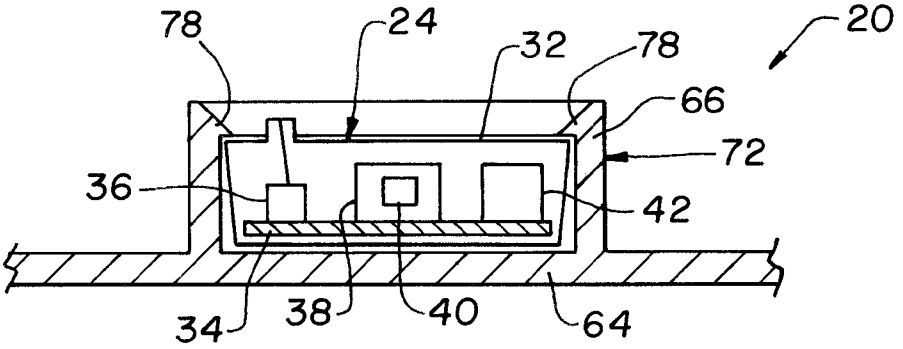
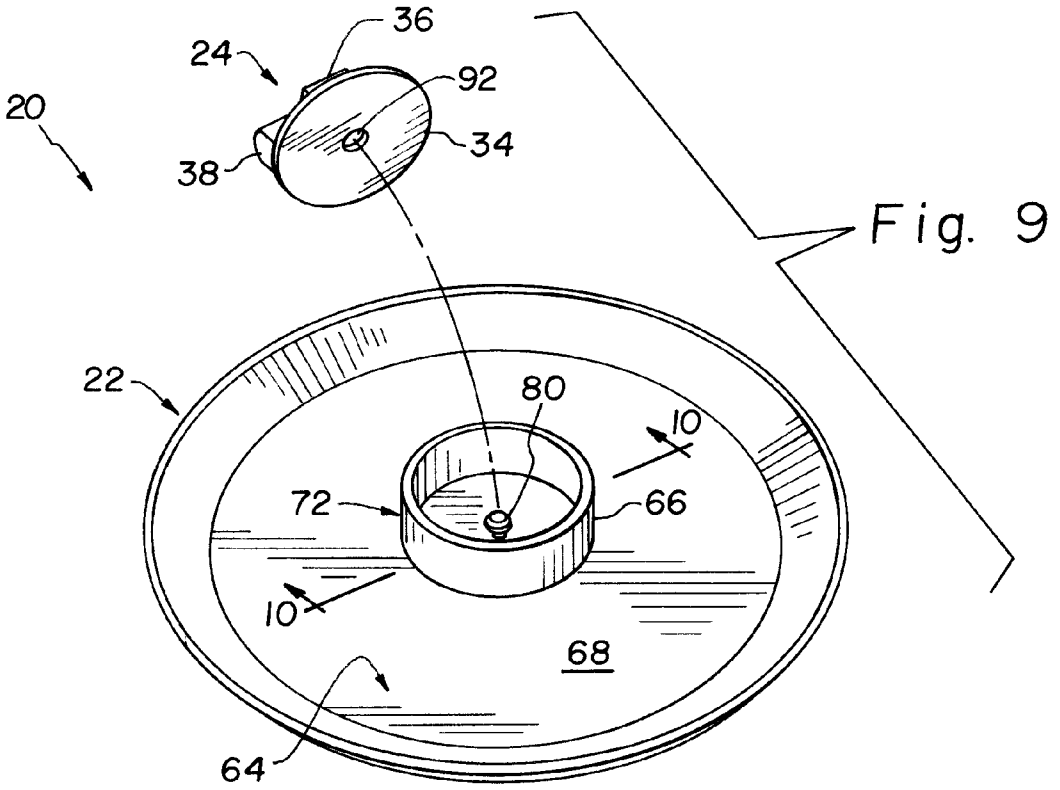


Fig. 8


36
24
92
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38
22
80
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72
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10
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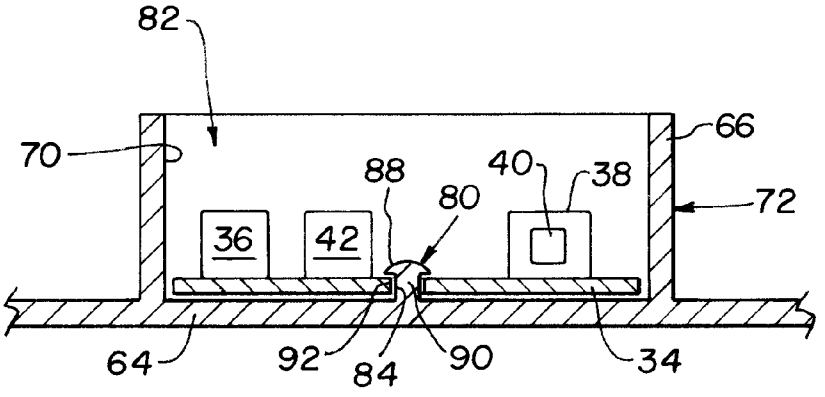
Fig. 9


82
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92
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90
34

Fig. 10

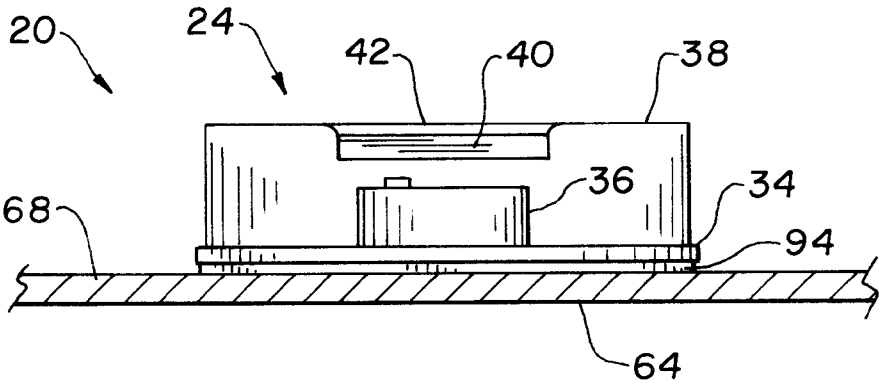

Fig. 11

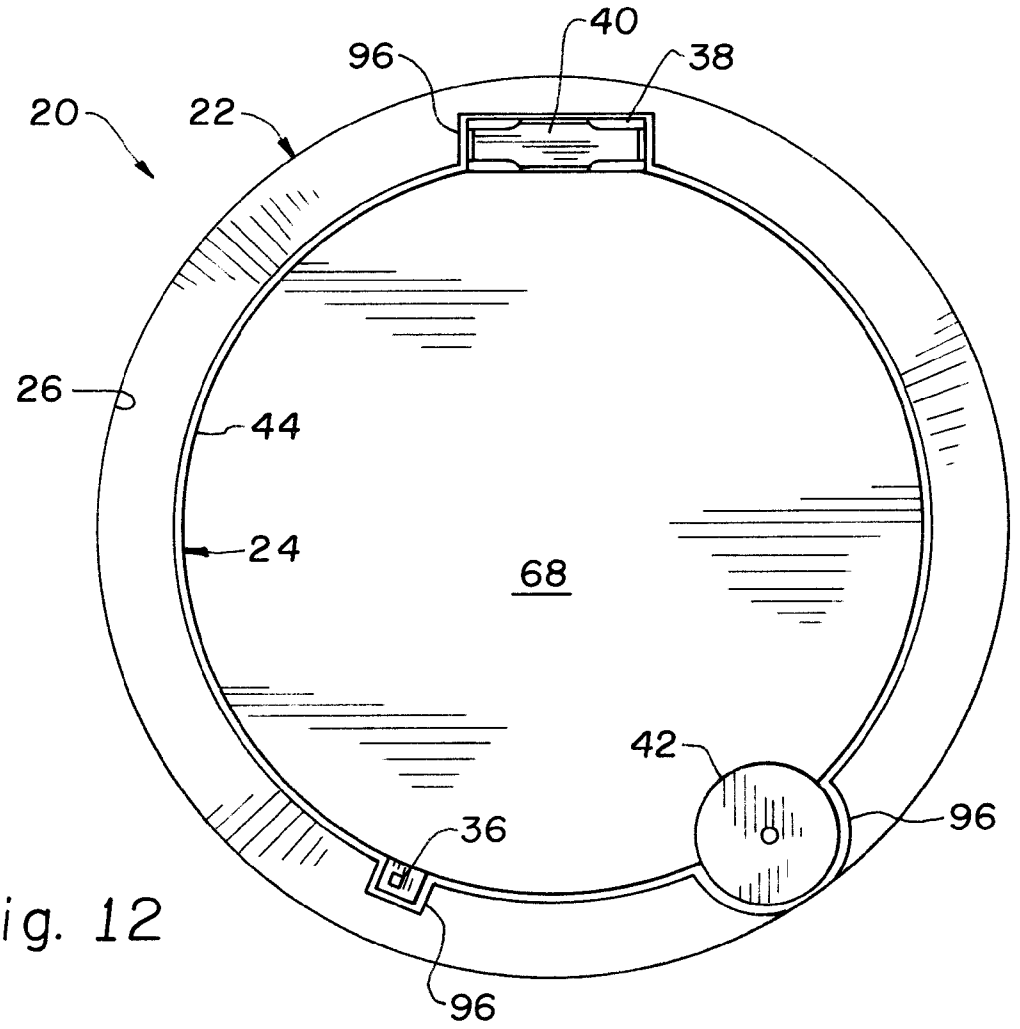

Fig. 12

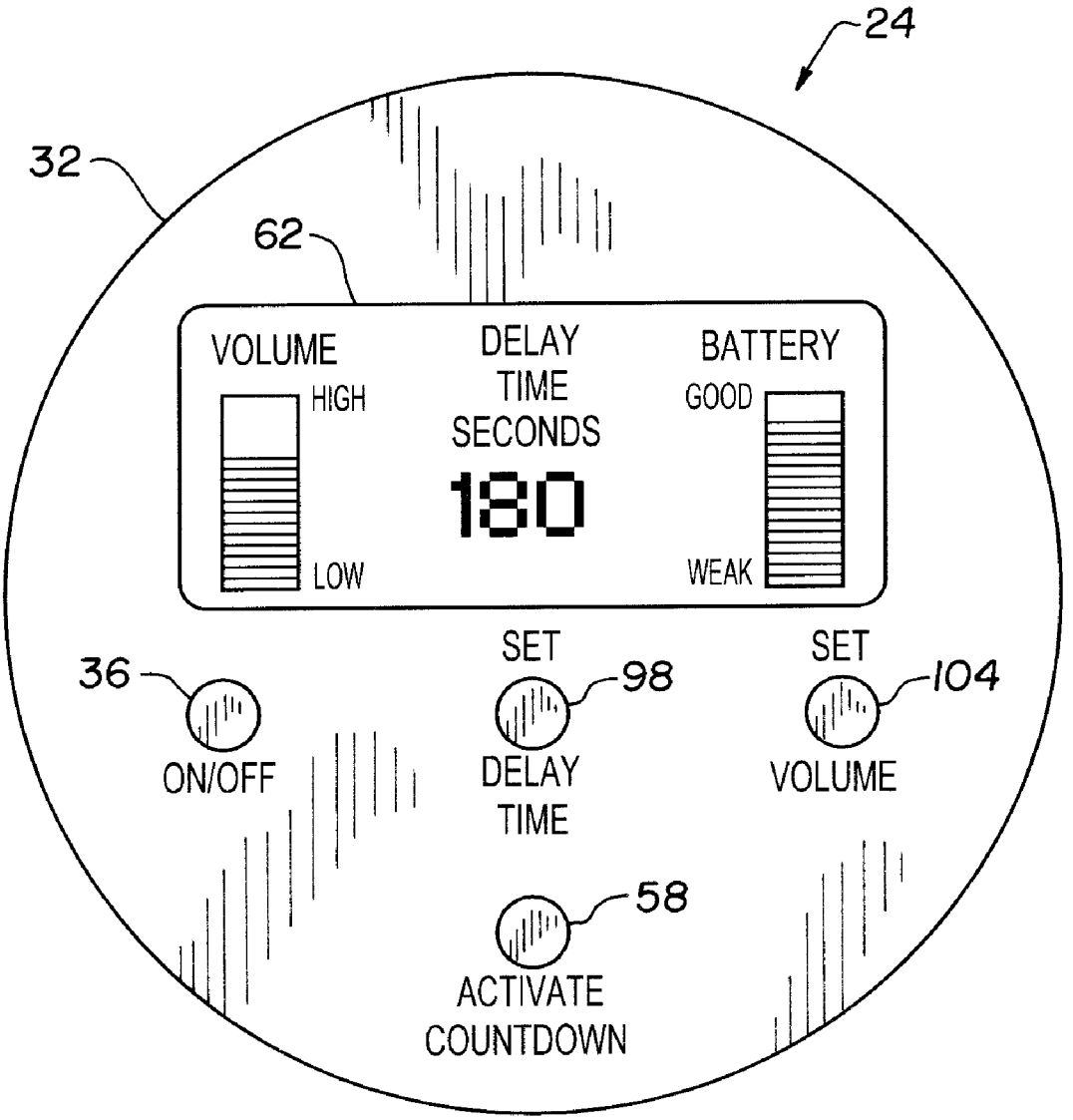
24
32
62
VOLUME
HIGH
LOW
DELAY
TIME
SECONDS
180
BATTERY
GOOD
WEAK
36
ON/OFF
SET
98
DELAY
TIME
SET
104
VOLUME
58
ACTIVATE
COUNTDOWN

Fig. 13

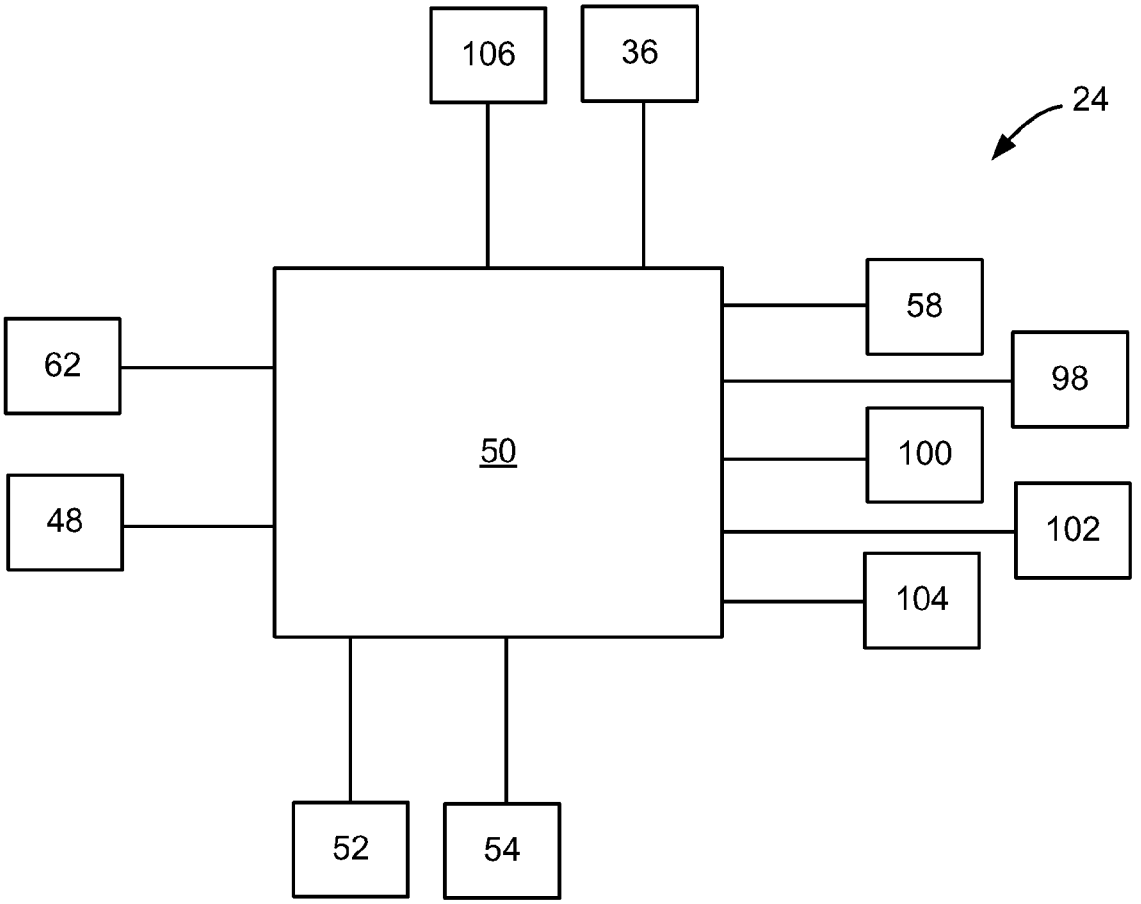

FIG.14

GOLF DISC

CROSS REFERENCE TO RELATED APPLICATIONS

[0001] This is a non-provisional application based upon U.S. provisional patent application Ser. No. 61/239,258, entitled "SONIC FINDING GOLF DISC", filed Sep. 2, 2009, which is incorporated herein by reference.

BACKGROUND OF THE INVENTION

[0002] 1. Field of the Invention

[0003] The present invention relates to flying objects, and, more particularly, to golf discs.

[0004] 2. Description of the Related Art

[0005] Disc golf is an international recreational and professional sport. The game is similar to the traditional game of golf, except the "ball" is a flying disc thrown by the player and the "hole" is a basket or other predetermined target. Once thrown, a traditional disc must be found visually. Fairways of established disc golf courses must be suitably mowed and maintained to allow for visual finding of discs during play.

[0006] Disc golf courses are often located in multi-use parks that invariably have some fairways with closely adjacent rough areas with tall grass, thick leaves, or brush. Discs thrown into these types of roughs are difficult to find and are often lost. A lost golf disc delays the game while the player(s) search, and if not found, the lost disc must be replaced with a new purchase. Many internet web sites exist with pages dedicated to "lost and found" golf discs.

[0007] In addition to the annoyance and expense of losing golf discs on established courses, the locations where the traditional golf disc can be played is currently limited to public and private parks having large mowed areas allowing for visual finding of thrown discs. This prevents establishment of courses in otherwise available public natural areas because they do not permit or desire large areas to be mowed for suitable disc golf fairways. Those same currently unavailable natural areas for the game of golf disc are often underused, with their managers desiring to increase public access.

[0008] What is needed in the art is a golf disc which carries a sonic beacon in a suitable manner, the sonic beacon being delay-activated.

SUMMARY OF THE INVENTION

[0009] The present invention provides a golf disc which carries a sonic beacon in a suitable manner, the sonic beacon being delay-activated.

[0010] The invention in one form is directed to a golf disc assembly which includes a disc configured for flying upon being cast into the air and a sonic finding unit which is attached to the disc and which emits a sonic locating signal after the sonic finding unit conducts a delay of a predetermined amount of time.

[0011] The invention in another form is directed to a method of using a golf disc assembly, the method including the steps of: providing a disc with a sonic finding unit attached thereto; flying the disc upon casting the disc into the air; conducting a delay of a predetermined amount of time by the sonic finding unit; and emitting, by the sonic finding unit, a sonic locating signal after the sonic finding unit conducts the delay.

[0012] An advantage of the present invention is that the sonic golf disc makes possible the development of courses in natural areas without detriment to the conservation values the park seeks to promote. For example, in a public park managed for tall grass prairie it would be improbable and extremely frustrating to play traditional disc golf because most throws will result in a visually lost disc. However, within this same natural area, a sonic finding golf disc makes enjoyable play possible along already established hiking trails, with thrown discs easily found in adjacent roughs by way of the sonic beacon.

[0013] Another advantage of the present invention is that it provides a golf disc with an attachment device that can be used to attach not only a sonic finding unit but also a variety of other accessories, such as, for example, a light element.

[0014] Yet another advantage of the present invention is that it provides a fully functional sonic finding unit and method for incorporating the sonic finding unit into the structure of a golf disc.

BRIEF DESCRIPTION OF THE DRAWINGS

[0015] The above-mentioned and other features and advantages of this invention, and the manner of attaining them, will become more apparent and the invention will be better understood by reference to the following description of embodiments of the invention taken in conjunction with the accompanying drawings, wherein:

[0016] FIG. **1** is a side view of the golf disc assembly according to the present invention;

[0017] FIG. **2** is an exploded perspective view of the golf disc assembly of FIG. **1**, but also including a shock-absorbing element and a cover;

[0018] FIG. **3** is a bottom view of the golf disc assembly of FIG. **2**, but omitting the cover;

[0019] FIG. **4** is a cross-sectional side view of the golf disc assembly of FIG. **2** taken along line **4-4** of FIG. **3**, the golf disc assembly including the shock-absorbing element and the cover, portions of the disc being broken away;

[0020] FIG. **5** is a top view of a sonic finding unit of FIG. **2**, but also including a lighting element;

[0021] FIG. **6** is a bottom view of the sonic finding unit of FIG. **5**;

[0022] FIG. **7** is an exploded perspective view of another embodiment of the golf disc assembly according to the present invention;

[0023] FIG. **8** is a cross-sectional side view of the golf disc assembly of FIG. **7** with the golf disc assembly in an assembled condition, the cross-section being taken along line **8-8** of FIG. **7**, portions of the disc being broken away;

[0024] FIG. **9** is an exploded perspective view of another embodiment of the golf disc assembly according to the present invention;

[0025] FIG. **10** is a cross-sectional side view of the golf disc assembly of FIG. **9** with the golf disc assembly in an assembled condition, the cross-section being taken along line **10-10** of FIG. **9**, portions of the disc being broken away;

[0026] FIG. **11** is a side view of another embodiment of the golf disc assembly according to the present invention, the disc of golf disc assembly being shown in section, with portions broken away;

[0027] FIG. **12** is a bottom view of another embodiment of the golf disc assembly according to the present invention;

[0028] FIG. **13** is a top view of the sonic finding unit according to another embodiment of the present invention; and

[0029] FIG. **14** is a schematic view of the sonic finding unit according to another embodiment of the present invention.

[0030] Corresponding reference characters indicate corresponding parts throughout the several views. The exemplifications set out herein illustrate embodiments of the invention, and such exemplifications are not to be construed as limiting the scope of the invention in any manner.

DETAILED DESCRIPTION OF THE INVENTION

[0031] Referring now to the drawings, and more particularly to FIGS. **1-4**, there is shown a golf disc assembly **20** which generally includes a disc **22** and a sonic finding unit **24**, sonic finding unit being shown schematically in FIG. **1**. Disc **22** can be, for example, a golf disc used in the game of disc golf. Disc **22** is configured for flying upon being cast into the air, cast being a general term for being thrown or otherwise hurled into the air. Disc **22** is a flying disc which glides through the air and is, thus, a disc-shaped glider which includes an outer circumferential portion **26** (rim **26**) shaped as an airfoil, disc **22** flying through the air as it rotates. While FRISBEE® is trademark, it is also understood that disc **22** can be referred to generically as a frisbee. Disc **22** can be made of a plastic material (such as urethane) and can be injection molded. Thus, the terms "disc" **22** and "golf disc" **22** are used herein to describe any circular disc which is generally manufactured from molded plastic and is intended to be thrown for any recreational purpose, including the game of disc golf.

[0032] Sonic finding unit **24** is attached to disc **22**. Sonic finding unit **24** is a unit which emits a sound (a sonic locating signal **28**) so that disc assembly can be found by way of the emitted sound. Thus, sonic finding unit **24** emits sonic locating signal **28** (the sound/noise, which can also be referred to as a sonic beacon **28**) which is loud enough to enable a person with normal hearing abilities to hear the sound from at least 50 feet to 100 feet away from sonic finding unit **24** for average conditions (or at least 120 decibels ten centimeters away from sonic finding unit **24**); the sound **28** should not be so loud that the sound **28** is audible at the tee by following disc golfers. Upon hearing sonic locating signal **28**, the person can locate disc assembly **20**. Traditional golf discs are often visually lost during play on fairways with adjacent difficult natural or rough areas such as tall grass, heavy leaves, or brush. The present invention solves this problem. Thus, if the disc **22** is equipped with sonic finding unit **24**, the disc **22** can be easily found through audible ways in those same conditions. Further, sonic finding unit **24** emits sonic locating signal **28** after sonic finding unit **24** conducts a delay of a predetermined amount of time. The delay can be considered a countdown to initiating emission of sonic locating signal **28**. Disc **22** is designed to retain and protect sonic finding unit **24** from damage during play without significantly affecting the flight capabilities and aerodynamic qualities of disc **22**. Sonic finding unit **24** can be small, lightweight, weight balanced and built into a water and shock resistant round low profile disc **22** or shell/case **32** which can optionally be wafer-shaped and plastic. Disc assembly **20** can use a lower end weight discs **22**. Though the weight of disc assembly **20** can be very minimal, the reduction on gyroscopic effect from the centered rotational mass can be offset by selecting a disc **22** from models that already have the lightest interior centered mass so that the added unit and connector mass is offset by the comparatively increased weight at outer edge (rim **26**) of discs **22**. Sonic finding unit **24** can be formed so as not to exceed ten grams total weight.

[0033] According to one embodiment of sonic finding unit **24**, sonic finding unit **24** includes a printed circuit board **34**, a first switch **36**, a battery holder **38**, a battery **40** attached to said battery holder **38**, and a programmable sonic beacon and timer device **42**. FIGS. **2-4** show such a sonic finding unit. FIG. **4** shows components **36**, **38**, **40**, and **42** schematically, it being understood that a non-schematic cross-sectional view in FIG. **4** taken along line **4-4** of FIG. **3** would not show first switch **36**. FIGS. **5** and **6** show sonic finding unit **24** of FIGS. **2-4** but now also including light element **48**. FIG. **5** shows sounder **54** and timer **52** of sonic beacon and timer device **42** shematically. FIGS. **7** and **8** show sonic finding unit of FIGS. **2-4** but now enclosing components **34**, **36**, **38**, and **40** within case **32**. FIG. **8** shows components **36**, **38**, **40**, and **42** schematically, it being understood that a non-schematic cross-sectional view in FIG. **8** taken along line **8-8** of FIG. **7** would not necessarily show all components **36**, **38**, **40**, and **42** since half of circuit board **34** is included in FIG. **8**. It is also understood that case **32** could house additional components of sonic finding unit **24**, as discussed below. FIGS. **9** and **10** show sonic finding unit **24** of FIGS. **2-4**. FIG. **10** shows components **36**, **38**, **40**, and **42** shematically, it being understood that a non-schematic cross-sectional view in FIG. **10** taken along line **10-10** of FIG. **9** would not necessarily show all components **36**, **38**, **40**, and **42** since half of sonic finding unit **24** is included in FIG. **10**. FIG. **11** shows a side view of sonic finding unit **24** of FIGS. **2-4**.

[0034] First switch **36**, battery holder **38**, and sonic beacon and timer device **42** are mounted to printed circuit board **34**. Printed circuit board **34** is a frame or substrate which mechanically supports first switch **36**, battery holder **38**, and sonic beacon and timer device **42**. Printed circuit board **34** can include electrical circuitry **44** which electrically powers any of the components of sonic finding unit **24** which are or can be powered by electricity **44** (such as any of the components of sonic finding unit **24** shown in the drawings). FIG. **6** shows that peg and solder attachments **46** can be used to attach, for example, first switch **36**, battery holder **38** and/or battery **40**, and sonic beacon and timer device **42** to printed circuit board **34**. Printed circuit board **34** can include conducting layers of copper foil embedded in an insulating board which is made of laminated woven glass and epoxy resin. The components of sonic finding unit **24** can be electrically connected in series or parallel relative to one another as desired; for instance, in a simple design choice, first switch **36**, battery **40**, sonic beacon and timer device **42**, and a light element **48** can be electrically connected in series. First switch **36** is an on/off switch which enables an end-user to turn the power on and off for sonic finding unit **24**; that is, first switch **36** allows battery **40** to electrically power any of the components of sonic finding unit **24** which are or can be powered by electricity. Thus, first switch **36** is configured for selectively activating and deactivating (turning on and off, respectively) sonic finding unit **24** and thereby for selectively activating and deactivating (turning on and off, respectively) sonic beacon and timer device **42**. First switch **36** can be one or more buttons, a dial, a slide, or the like. Battery holder **38** is a housing mechanism for holding and thus housing battery **40**. Battery holder **38** can include electrical contacts which are electrically connected to circuitry **44** of printed circuit board **34** and thus also to battery **40** when battery **40** is installed in battery holder **38**. Battery **40**

can be a size N battery and produce 12 volts, for example. The end-user of disc assembly **20** can insert battery **40** into battery holder **38**, remove battery **40** from battery holder **38**, and replace battery **40** with another similar battery **40** into battery holder **38**. FIGS. **5**, **6**, and **14** show that sonic finding unit **24** can include light element **48** and associated electronic circuitry **44**. Light element **48**, however, is optional and may be omitted from sonic finding unit **24**, as shown in FIGS. **2-4**, for instance.

[0035] Sonic beacon and timer device **42** is programmable and thus includes a controller **50**. Sonic beacon and timer device **42** is electronic. Sonic beacon and timer device **42** further includes a sounder **52** (which can also be referred to as a sonic beacon, a noisemaker) and a timer **52**. Sonic beacon and timer device **42** can further include a housing **56** which wholly or at least partly encloses sounder **52**, timer **54**, and a controller which controls the interrelationship of sounder **52** and timer **54**. The controller of device **42**, sounder **52**, and timer **54** can be electrically powered by battery **40**. The controller of device **42** can be controller **50** shown in FIG. **14**(*for* example, when sonic finding unit **24** includes other electrical devices) or can be a lower level controller (relative to controller **50**) which is assigned only to sounder **52** and timer **54**. Sounder **52** is a noisemaker. Timer **54** is a timekeeping device—not necessarily in the sense of keeping the time of day but in the sense of tracking at least seconds. Timer **54** tracks the delay from initiation of the delay until completion of the delay, sonic locating signal **28** starting to sound immediately upon completion of the delay. Optionally, timer/sounder device **42** can be an off-the-shelf Sunbeam kitchen timer which sounds an alarm upon expiration of time (such a timer can weigh 27 grams, be 5 cm×6 cm in width and length, and be 1 cm thick) and be installed on 179 gram Rocs; a lighter weight timer/sounder device **42**, however, can be used.

[0036] Sonic finding unit **24** is configured for emitting at least one initial signal **30** when first switch **36** is activated (when switch **36** is turned on to power sonic finding unit **24**) and thereby for indicating a power level of battery **40**. Initial signal **30** is different from sonic locating signal **28**. Initial signal **30** can be a sound **30**A produced by sounder **52**, this sound being of relatively short duration; thus, sonic beacon and timer device **42** is configured for emitting at least one sonic signal **30**A as at least one initial signal **30**. Initial signal **30** can be used to indicate that sonic finding unit **24** is on, functioning, and has sufficient battery strength. If battery strength is low, then initial sonic signal **30**A can have a correspondingly weaker sound than if battery **40** is at full strength; in other words, lower voltage from battery **40** causes sounder **52** to emit a weaker sound (both for the initial sonic signal **30**A and for sonic locating signal **28**). Initial signal **30** can be any variety of sonic signals of various durations. Sonic finding unit **24** can optionally include a light element **48** which is attached to printed circuit board **34** such that initial signal **30** can be a light **30**B produced by light element **48**, this light **30**B being of relatively short duration or being continuous; thus, sonic finding unit **24** includes light element **48** which is mounted to printed circuit board **34** and is configured for emitting a light signal **30**B as at least one initial signal **30** alternatively or in addition to the initial sonic signal **30**A. Light element **48** can optionally be controlled by controller **50**. Thus, sonic finding unit **24** can be provided such that when sonic finding unit **24** is activated sonic finding unit **24** does not audibly sound but instead displays a light **30**B from light element **48** to indicate that sonic finding unit **24** is on and has sufficient battery strength. As the initial signal **30**, light **30**B of light element **48** can be displayed to indicate that sonic finding unit **24** is on, functioning, and has sufficient battery strength. A low battery strength could be indicated by light element **48** not illuminating or a distinctive sound when battery strength is near exhaustion. Light element **48** can be reasonably impact/shock resistant and reasonably water resistant to dews or lightly wet surfaces. Light element **48** can be a bright light emitting diode (LED) device or other low energy high lumen light. Light element **48** can be situated so that light element **48** can shine through both top and bottom of case of sonic finding unit **24**. Further, a small LED light element **48** can blink to confirm sonic finding unit **24** is on, that the time delay countdown has started, and that sufficient power exists for the audible sound/alarm **28**. If sonic finding unit **24** is turned off, the LED light element **48** can be off as well. Optionally, if battery power is low but sounder **52** is still operable, then LED light element **48** can come on but not blink. Alternatively, a lighted display **62** (such as a liquid crystal display **62**) can serve as the light element of the present invention which provides the initial light signal **30**B which confirms disc assembly **20** is ready to be thrown.

[0037] Sonic beacon and timer device **42** is configured for initiating the delay when first switch **36** is activated (when first switch **36** and thus sonic finding unit **24** is turned on). Alternatively, sonic beacon and timer device **42** is configured for initiating the delay when a second switch **58** of sonic finding unit **24** is selectively activated following first switch **36** being activated, as shown in FIG. **13**. Second switch **58** can be a button, for example, and can provide input to controller **50** (or directly to timer **54**, depending upon design choice) to activate the delay. Sonic beacon and timer device **42** emits sonic locating signal **28** after sonic beacon and timer device **42** conducts the delay, the emission of sonic locating signal **28** lasting until first switch **36** is deactivated (or unit battery power completely expires).

[0038] According to another embodiment of the present invention, light element **48** can emit a light signal **60** when sonic locating signal **28** is actuated, the light signal **60** being a repeating light or a continuous light. Stated another way, light element **48** can actuate at the same time as the repeating sonic beacon **28** (sonic locating signal **28**) actuates. Thus, both sound and light can be used by end-user to locate disc assembly **20**. Light element **48** can optionally be controlled by controller **50**. Light element **48** can be a colored light.

[0039] Disc **22** includes a first wall **64** and a second wall **66**. First wall **64** is disc **22** less second wall **66**. Second wall **66** can be formed monolithically with first wall **64** by way of injection molding, first and second walls **64**, **66** being made of the same plastic material (such as urethane); all of retaining cup **72** can be made of the same plastic material, such as urethane. First wall **64** includes an underside **68** and a rim **26**. Rim **26** is the outer circumferential portion **26** of first wall **64**. Second wall **66** depends from underside **68** and thus extends below underside **68**. Second wall **66** includes an inside surface **70**. First and second walls **64**, **66** together at least partly form a retaining cup **72**. Retaining cup **72** is shown in broken lines in FIG. **1**. Retaining cup **72** is centrally located on underside **68** of disc **22**. That portion of first wall **64** which is within the interior of second wall **66** forms a bottom wall of retaining cup **72**; stated another way, the bottom wall of retaining cup **72** is a part of first wall **64**. Rim **26** defines a substantially horizontal plane **74** which is positioned entirely below second wall **66** when disc **22** is in an upright position

(FIG. **1** shows horizontal plane **74**, and it is understood that horizontal plane **74** extends perpendicularly to the plane of the page of FIG. **1**). Stated another way, the distal extent of second wall **66** is positioned above horizontal plane **74** when viewing disc **22** in the upright position; the outer transverse edge of second wall **66** is the distal extent of second wall **66**, the transverse edge and thus also the distal extent of second wall **66** being the furthest portion of second wall **66** from first wall **64** relative to where second wall **66** connects to first wall **64**. FIG. **1** shows disc **22**, and thus also disc assembly **20**, in the upright position. The upright position of disc **22** generally corresponds to the position of disc **22** during flight. Alternatively, the distal extent of second wall **66** can be formed even with horizontal plane **74**. No part of second wall **66**, despite the design option chosen, extends below horizontal plane **74**; this configuration prevents second wall **66** from entering the drag stream during flight and protects the components of sonic finding unit **24** from underside strikes during play or storage. Second wall **66** forms a cylinder which is closed on the end of retaining cup **72** facing disc **22** and can be open or closed on the end of retaining cup **72** facing away from disc **22**. Thus, retaining cup **72** can be open at its distal end (the end of second wall **66** which is furthest from first wall **64**), as shown in FIGS. **3**, **7**, **8**, **9**, **10**. Alternatively, retaining cup **72** can include a removable protective cover **76** which attaches to second wall **66** by way of a snap-fit arrangement or an interference fit. Cover **76** (which can be referred to as a lid) is shown as a circular shaped piece which is configured to match the shape of the top of retaining cup **72**. The snap-fit arrangement (not shown) for cover **76** and second wall **66** can provide that cover **76** has a male friction protrusion around the interior circumference of cover **76** that snaps/catches on a reciprocal female groove on second wall **66**; such a female groove can be defined by inside surface **70** of second wall **66**, in the top/distal edge of second wall **66**, or on the outer surface of second wall **66**. Cover **76**, which is shown in FIGS. **2** and **4**, can be positioned so that cover **76** also lies above or even with horizontal plane **74** such that no part of second wall **66** or cover **76** lies below horizontal plane **74**. Second wall **66** can be made of the same material as disc **22** and can be injection molded with disc **22** (so as to be formed monolithically with disc **22**) or otherwise fastened to disc **22**. Cover **76** can be made of the same material as disc **22** as well. Thus, retaining cup **72** can include alternatively a removable lid or cover **76** that snaps or otherwise fastens over second wall **66** of disc **22** to add further protection of sonic finding unit **24** during play and/or storage. Retaining cup **72** is shaped to capture sonic finding unit **24** (more specifically, printed circuit board **34**, or a case **32** of sonic finding unit **24**) and to retain sonic finding unit **24** with at least one attachment or retention feature **78**, **80** of retaining cup **72**. Retaining cup **72** easily accepts, securely retains, and protects electronics of sonic finding unit **24** from damage during play.

[0040] Retaining cup **72** defines an interior space **82** and includes a retention feature **78**, **80** which retains sonic finding unit **24** entirely within interior space **82**. As shown in FIGS. **2**, **4**, **7**, **8**, **9**, **10**, second wall **66** is formed as a cylinder extending from first wall **64**.

[0041] Second wall **66** of disc **22** protects the electronics of sonic finding unit **24** from underside strikes with ground objects during landing and elevated objects during flight. Objects or protrusions positioned on underside **68** of disc assembly **20** that are above (as disc assembly **20** is oriented in FIG. **1**) horizontal plane **74** of disc rim **26** are wind friction neutral or drag neutral during flight. Therefore, the extension of second wall **66** on underside **68** of disc **22** is provided at or above (as disc assembly **20** is oriented in FIG. **1**) horizontal plane **74** of disc rim **26** to avoid added wind resistance or drag during flight. The weight of sonic finding unit **24**, retaining cup **72**, and/or retention features **78**, **80** are provided to be as low as practical, but still allowing for a sonic finding unit **24** that is capable of reliably powering a suitably loud beacon **52** for extended use while minimizing weight located in the center of disc assembly **20**.

[0042] According to one alternative of retention feature, retention feature **78**, **80** includes a ramped projection **78** projecting inwardly from inside surface **70** into interior space **82**. Ramped projection **78** is essentially a triangular structure including a ramped section and a bottom section which is generally parallel with first wall **64**. The ramped section slopes radially inwardly from second wall **66** into interior space **82** in a direction running from the distal end of second wall **66** toward the proximal end of second wall **66** (the proximal end being that portion of second wall **66** which is attached to first wall **64**), ramped projection **78** thereby providing that retaining cup **72** can easily receive at least a portion of sonic finding unit **24**. While FIGS. **2** and **3** show ramped projections **78** each forming a point at their respective distal ends (the free ends), the distal end of each ramped projection **78** could alternatively form a line which is as wide as the width of the base of ramped projection at the proximal end of ramped projection **78**. Ramped projection **78** thus receives and retains sonic finding unit **24** within interior space **82**. FIGS. **2**, **4**, and **5** show one embodiment of ramped projection **78**, and FIGS. **7** and **8** show another embodiment of ramped projection **78**. FIGS. **2** and **3** show that retaining cup **72** includes four ramped projections **78** spaced evenly around inside surface **70** of second wall **66**, each ramped projection **78** positioned nearer first wall **64** than the distal extent of second wall **66**. The four ramped projections **78** together form a friction lip **78** extending around inside surface **70** of retaining cup **72**. As sonic finding unit **24** is inserted into retaining cup **72**, the edge of printed circuit board **34** can compress or press back ramped projections **78**. Once printed circuit board **34** passes bottom section of ramped projections **78**, printed circuit board **34** enters a capture groove **84**, and ramped projection **78** snaps back (or expands back) over the top of printed circuit board **34** to securely retain sonic finding unit **24** in place. Printed circuit board **34** can thus snap-fit over ramped projections **78**. Ramped projections **78**, second wall **66**, and first wall **64** together define capture groove **84** which captures printed circuit board **34**.

[0043] Capture groove **84** can be sized to provide space between printed circuit board **34** and first wall **64**, that space being sized to hold a shock-absorbing element **86** (which can also be referred to as a shock-absorbing pad **86**). Thus, disc assembly **20** can further include shock-absorbing element **86** positioned within interior space **82** between sonic finding unit **24** and first wall **64**. FIG. **4** shows shock-absorbing element **86** positioned between printed circuit board **34** and underside **68**. Shock absorbing pad **86** can be formed by an adhesive caulk, such as the super-elastomeric adhesive caulk referred to as Lexel. As a further example, shock absorbing pad **86** can be formed by silicone. The interior dimensions of retaining cup **72** and ramped projections **78** should securely capture sonic finding unit **24** but allow sufficient clearance to prevent sonic finding unit **24** from being too rigidly seated in retaining cup **72** and to allow flex between sonic finding unit **24** and

disc **22** during hard rim strikes. This clearance is also used to accommodate shock absorbing pad **86** of pliable/flexible/elastic material between sonic finding unit **24** and first wall **64** which allows controlled flex between sonic finding unit **24** and first wall **64** during hard rim strikes. Thus, shock-absorbing pad **86** forms a shock-absorber between disc **22** and sonic finding unit **24** which reduces the potential for impact damage from rim strikes with fixed objects during play. That is, space between printed circuit board **34** first wall **64** of retaining cup **72** is substantially filled by shock-absorbing pad **86**. The lateral clearance between the circumferential edge of printed circuit board **34** and inside surface **70** of second wall **66** of retaining cup **72**, in one embodiment of the present invention, is not filled either; in other words, a space as shown in FIG. **4** remains between printed circuit board **34** and second wall **66** when printed circuit board **34** is centered in retaining cup **72** relative to inside surface **70** of second wall **66**. The lateral clearance or space can remain open (providing for outer impact clearances) so that there is room for controlled movement of sonic finding unit **24** independent of disc **22**. If the outer/lateral clearance/space is completely filled, then sonic finding unit would be too rigidly seated in retaining cup **72** and not have the ability for controlled movement within retaining cup **72** on impact. The clearance around the edge of sonic finding unit **24** is designed to allow for that movement. Thus, the clearance allows the impact shock to pass through disc **22** and to be directed around, instead of through, sonic finding unit **24**. A suitable amount of adhesive flexible material forming the shock absorbing pad **86** can be located in the retaining cup **72** between disc **22** and sonic finding unit **24**. This design including the clearance and shock-absorbing pad **86** reduces the potential for impact damage from hard strikes with fixed objects during play. It is understood that shock-absorbing element **86** can also be used with the embodiments of the present invention shown in FIGS. **7**, **8**, **9**, **10**, and **12**.

[0044] FIGS. **7** and **8** show that retaining cup **72** alternatively includes a single ramped projection **78** about inside surface **70** of the distal end of second wall **66**. This version of ramped projection **78** provides for a larger capture groove **84** defined by ramped projection **78**, second wall **66**, and first wall **64**. A sonic finding unit **24** including a case **32** for holding the remaining components of sonic finding unit **24** wholly or at least partially within case **32** is shown in FIGS. **7** and **8** as being used with ramped projection **78**. Case **32** can be waterproof (at least to dew and light rain). Case **32** can be made of urethane. Case **32** can optionally be a small wafer having a substantially flat top and bottom (but for any switches, displays, or control devices thereon). Case **32** can be formed so as not to exceed one centimeter in depth, not to exceed four centimeters in diameter, be sufficiently durable to allow case **32** and its contents to be mechanically pressed into retaining cup **72**, be capable of withstanding regular insult from impact, and be reasonably transparent so that light element **48** can shine through case **32** (top and bottom sides of case, for instance, can be transparent). Top of case **32** (the side on which display **62** and any other devices as shown in FIGS. **13** and **14** can be positioned) can have, for example, a diameter of forty millimeters, the opposing bottom side having a diameter of thirty-eight millimeters (the two millimeter difference providing a slightly inverted sonic finding unit edge to enhance the ability to press sonic finding unit **24** into a molded plastic retaining cup **72**). Display **62** and any other devices shown in FIGS. **13** and **14** on top of case **32**, as well as any battery hatch allowing access to battery **40** via case **32** (the battery hatch can be located on the top side as well), can be set back from the edge at least five millimeters. A clearance between sonic finding unit **24** and first wall **64** can be provided, which can optionally be filled with shock-absorbing element **86**; a lateral clearance can also be provided between sonic finding unit **24** and second wall **66**. Thus, sonic finding unit **24** can optionally include case **32**, which can be waterproof and which encloses, for example, printed circuit board **34**, first switch **36**, battery holder **38**, battery **40**, and sonic beacon and timer device **42**. A button associated with first switch **36** can be provided such that it extends from but is otherwise still enclosed by case **32** so as to be able to actuate sonic finding unit **24** inside case **32**. Ramped projection **78** shown in FIGS. **7** and **8** functions similarly to ramped projections **78** shown in FIGS. **2-4** so as to capture case **32** and thus sonic finding unit **24**. Ramped projections **78** can also be referred to as friction lips.

[0045] According to another alternative of retention feature **78**, **80** as shown in FIG. **8**, retention feature **78**, **80** of retaining cup **72** includes a projection **80** projecting inwardly from underside **68** of first wall **64** into interior space **82**. Projection **80** can include a head **88** and a stem **90**, head **88**, stem **90**, and first wall **64** defining capture groove **84** which captures printed circuit board **34**. Head **88** can be sloped generally hemispherically. Projection **80** can also be referred to as a friction stud and can be positioned in the center of retaining cup **72**. Printed circuit board **34** defines a through-hole **92** which receives projection **80** and thereby attaches sonic finding unit **24** to disc **22**, through-hole **92** being a mating friction receiver. Head **88** of projection **80** can extend all the way through through-hole **92** and then snap-fit over printed circuit board **34**. As sonic finding unit **24** is inserted into retaining cup **72**, printed circuit board **34** forming through-hole **92** can compress head **88**. Once printed circuit board **34** passes the lower edge of head **88**, printed circuit board **34** enters capture groove **84**, and the lower portion of head **88** snaps back (or expands back) over the top of printed circuit board **34** to securely retain sonic finding unit **24** in place. Thus, disc **22** can be modified to retain and protect sonic finding unit **24** by employing one or more projections **80** on disc **22** that fit into corresponding through-holes **92** on sonic finding unit **24**. Conversely, one or more projections **80** can be provided on sonic finding unit **24** (i.e., on the bottom of printed circuit board **34**), and corresponding holes (blind or through-holes) can be provided on disc **22** itself to capture these projections **80** (this embodiment of the present invention is not shown). A clearance between sonic finding unit **24** and first wall **64** can be provided, which can optionally be filled with shock-absorbing element **86**; a lateral clearance can also be provided between sonic finding unit **24** and second wall **66**. Other attachment ways can be used to attach sonic finding unit **24** to retaining cup **72**; the essential criteria is that sonic finding unit **24** and retaining cup **72** be reciprocally shaped for easy capture and reliable retention of sonic finding unit **24** within retaining cup **72**.

[0046] According to another embodiment of disc assembly **20** as shown in FIG. **11**, disc assembly **20** does not include retaining cup **72**. Rather, sonic finding unit **24** is simply attached to an unmodified disc **22** using an adhesive material **94**. FIG. **11** shows a side view of sonic finding unit **24** of FIGS. **2-4** but shows first wall **64** of disc **22** in cross-section (along a sectional line taken in front of sonic finding unit **24** and not through unit **24**), other portions of disc **22** being broken away in FIG. **11**. Hook-and-loop fasteners, for

example, can be used as adhesive material **94**. Female VELCRO® can be located on the bottom of sonic finding unit **24**, and male VELCRO® can be located on center underside **68** of disc **22**, or vice versa. The male and female VELCRO® segments can be adhered to or otherwise fastened to one another. Alternatively, synthetic glues, adhesive caulks, or adhesive foams, for example, can be used as adhesive material **94** and can be located between sonic finding unit **24** and golf disc **22** to adhere sonic finding unit **24** and golf disc **22** together. Thus, the present invention can employ any other way of attaching sonic finding unit **24** to golf disc **22**, including friction tape, adhesive, or VELCRO® as adhesive material **94** to affix sonic finding unit **24** to underside **68** center of any golf disc **22**, including an unmodified golf disc **22**. However, such attachment ways offer the least reliable attachment of sonic finding unit **24** to disc **22** and offer the least protection to sonic finding unit **24** during play. The present invention thus provides sonic finding unit **24** attached to or incorporated within golf disc **22** no matter what method of attachment is used. Thus, according to certain embodiments of the present invention, sonic finding unit **24** is attached to disc **22** not by way of a retaining cup **72** but by way of (a) a plurality of hook-and-loop fasteners **94** (i.e., VELCRO®), (b) a friction tape **94**, or (c) an adhesive **94**. FIG. **11** shows sonic finding unit **24** attached to underside **68** of disc **22** using such material **94**, which can be hook-and-loop fasteners **94**, friction tape **94**, or an adhesive material **94** (by way of example and not by way of limitation, synthetic glues, adhesive caulks, or adhesive foams). Optionally, sonic finding unit **24** can be attached to disc **22** using any way of attachment thereto, with or without retaining cup **72**, such ways including encapsulated molding of sonic finding unit **24** to disc **22** during manufacture of disc **22**, or post-manufacture attachment of sonic finding unit **24** to disc **22** using the above-described ways, such as friction tape, hook-and-loop fasteners, or any other adhesive.

[0047] According to another embodiment of the present invention, components of sonic finding unit **24** are placed about the circumference **26** (more specifically, rim **26**) of disc **22**, as shown in FIG. **12**. Thus, disc **22** includes a circumferential portion **26**. According to this embodiment of the present invention, sonic finding unit **24** does not include printed circuit board **34**. Rather, sonic finding unit **24** includes first switch **36**, battery holder **38**, battery **40** attached to battery holder **38**, and programmable sonic beacon and timer device **42**. First switch **36**, battery holder **38**, and sonic beacon and timer device **42** are distributed about and attached to circumferential portion **26**, first switch **36**, battery **40**, and sonic beacon and timer device **42** being electrically coupled with one another using electrical circuitry **44** (i.e., wiring). First switch **36** is configured for selectively activating and deactivating said sonic finding unit **24** and thereby for selectively activating and deactivating said sonic beacon and timer device **42**, as described above. Sonic beacon and timer device **42** is configured for emitting at least one initial signal **30** when first switch **36** is activated and thereby for indicating a power level of battery **40**. Sonic beacon and timer device **42** is configured for initiating the time delay when first switch **36** is activated or when sonic beacon and timer device **42** emits at least one initial sonic signal **30**. Sonic beacon and timer device **42** emits sonic locating signal **28** immediately after sonic beacon and timer device conducts the delay and until first switch **36** is deactivated. First switch **36**, battery holder **38** (and thus also battery **40**), sonic beacon and timer device **42**, and circuitry **44** can be distributed around the interior rim **26** of golf disc **22** and located to achieve an evenly distributed rim weight. Generally, weight balanced discs **22** that keep the ratio of center weight low compared to the rim weight are capable of greater flight because of the centrifugal force imparted to the disc rim **26** during the throw. Relocating and evenly distributing the weight of components of sonic finding unit **24** in or near rim **26** makes the manufacturing process more complex and will reduce survivability of components of sonic finding unit **24** from impact during play because they will be closer to the rim area where disc **22** first suffers impact with fixed objects. The tradeoff is enhanced flight characteristics by reducing the centrifugal drag otherwise created by locating the weight of the components of sonic finding unit **24** at the center of disc **22**. In this embodiment, the components of sonic finding unit **24** could be attached to golf disc **22** using any of the attachment ways described herein or by molding the components of sonic finding unit **24** directly into golf disc **22**. FIG. **12** shows underside of golf disc **22** and three spaced apart receiving/retaining sockets **96**—the battery holder receiving/retaining socket **96**, the first switch receiving/retaining socket **96**, and the sonic beacon and timer device receiving/retaining socket **96**. Battery holder **38** is received by battery receiving/retaining socket **96** and attached thereto. The on-off first switch **36** is received by switch receiving/retaining socket **96** and attached thereto. Sonic beacon and timer device **42** is received by sonic beacon and timer device receiving/retaining socket **96** and attached thereto. For instance, each of first switch **36**, battery holder **38**, and sonic beacon and timer device **42** can be at least partially overmolded with (encapsulated by) disc **22** during the injection molding process forming disc **22**; alternatively, each of these components **36**, **38**, **42** can be adhered to disc **22** within the corresponding sockets **96**, as discussed relative to the embodiment shown in FIG. **11**. Battery holder **38** (to which battery **40** can be removably connected), switch **36**, and sonic beacon and timer device **42** can be connected to one another by wiring/circuitry **44** positioned around the inside periphery of the disc rim **26**.

[0048] As shown in FIGS. **13** and **14**, sonic finding unit **24** can optionally include a device **98** configured for selectively setting the predetermined amount of time and thereby for selectively setting the delay until activation of sonic locating signal **28**. An end-user can use this device **98** (such as a switch) to set the delay time (the silent countdown) for a preferred length of time. This device **98** can be connected to printed circuit board **34**, to controller **50**, to timer **54**, and/or to other structure and include a button(s), dial, slide, or the like for an end-user to set the delay time. The delay options could be fixed options, such as thirty seconds, one minute, one and one-half minutes, and two minutes, for example. The first thrower in a group of disc golf players could set his/her time delay for the longest time delay option, while the last thrower in the group could set his/her time delay for the shortest time delay option (the group of players proceeding from the tee area after the last player throws his/her disc assembly). On the other hand, sonic finding unit **24** can omit this device **98**, and the delay time can be set by the manufacturer. FIG. **13** shows that end-user can set the delay time to, for example, 180 seconds.

[0049] As shown in FIG. **14**, sonic finding unit **24** can optionally include a device **100** configured for selectively setting a type of sound of said sonic locating signal **28**. An end-user can use this device **200** (such as a switch) to set the type of sound. Any sound can be provided as options for the

sound to be selected, such as beeps, whistles, sirens, bird noises, dog barks, cat meows, etc. This device **100** can be connected to printed circuit board **34**, to controller **50**, to sounder **52**, and/or to other structure and include a button(s), dial, slide, or the like for an end-user to set the type of sound. On the other hand, sonic finding unit **24** can omit this device **100**, and the type of sound can be set by the manufacturer.

[0050] As shown in FIG. **14**, sonic finding unit **24** can optionally include a device **102** configured for selectively setting a rate of sounding of said sonic locating signal **28**. An end-user can use this device **102** (such as a switch) to set the rate of sounding desired by the end-user, the rate of sounding being, for example, periodic and continuous; if the periodic option is desired, the rate of sounding may be pulsations of sound which occur every five seconds, every ten seconds, or at other intervals. This device **102** can be connected to printed circuit board **34**, to controller **50**, to sounder **52**, and/or to other structure and include a button(s), dial, slide, or the like for an end-user to set the rate of sounding. On the other hand, sonic finding unit **24** can omit this device, and the rate of sounding can be set by the manufacturer.

[0051] As shown in FIGS. **13** and **14**, sonic finding unit **24** can optionally include a device **104** configured for selectively setting a volume of the sonic locating signal **28**. An end-user can use this device **104** (such as a switch) to set the volume of the sonic locating signal **28** to a constant level (whenever sonic locating signal **28** is emitted, the sound is at the same volume) and to a level which increases over time (for example, the first few pulses of the sonic locating signal **28** can be at the same decibel level, but subsequent pulses of the sonic locating signal **28** can be at a higher volume). For instance, in conjunction with timer **54**, sounder **52** could emit a sound **28** at an elevated volume after a second programmed delay to assist in finding golf discs **20** thrown into the most difficult or blind locations. This device **104** can be connected to printed circuit board **34**, to controller **50**, to sounder **52**, and/or to other structure and include a button(s), dial, slide, or the like for end-user to set the volume of sonic locating signal **28** (the same volume control could also be used to set the volume of the initial sonic signal **30**A). The volume setting options can optionally be fixed options, such as low, medium, or high. On the other hand, sonic finding unit **24** can omit this device **104**, and the volume of sonic locating signal **28** (and, optionally, initial sonic signal **30**A as well) can be set by the manufacturer. FIG. **13** shows that end-user can set the volume, display **62** showing volume being set to a point that is closer to high than low.

[0052] Sonic finding unit **24**, as shown by FIG. **13** (and also in FIG. **14**), can optionally include a display **62** configured for displaying a volume level of sonic locating signal **28** (which can be shown on a graduated scale between low and high volume, as shown in FIG. **13**), a delay time countdown (displayed, for example, in seconds) to sonic locating signal **28** actuation, and/or a battery power strength (which can be shown on a graduated scale between weak and good), or other settings as well. These settings can be controlled by devices such as buttons, dials, slides, switches, controls, or the like; FIG. **13** shows a device **36** for turning sonic finding unit on and off, a device **98** for setting the amount of time delay to the predetermined time, a device **104** for setting the volume level, and a device **58** for activating the time delay countdown. In other words, the end-user can view information on this display **62** that informs the end-user of the status of sonic finding unit **24** and the status of these settings or other settings which are sent to display **62**. Display **62** can be connected to printed circuit board **34**, to controller **50**, and/or to an outer casing **32** (which can be waterproof) which houses the other components of sonic finding unit **24**. Display **62** can be a digital device. Display **62** can be a liquid crystal display (LCD) device or a like device that communicates the status of sonic finding unit **24** and settings. FIG. **13** shows that sonic finding unit **24** includes first switch **36**, device **98** for setting time delay, device **104** for setting volume, and device **58** for activating the countdown (the time delay), LCD display **62** showing the volume level, the time delay, and the strength of battery.

[0053] FIG. **14** shows one embodiment of a control system formed by sonic finding unit **24**. Sonic finding unit **24** can include each of these features or only some of these features. FIG. **14** shows that sonic finding unit **24** includes a programmable controller **50**. Controller **50** can receive inputs from the following devices: first switch **36**; a voltage and/or current sensor **106**; device **98** for setting delay time of timer **54**; device **100** for setting a type of sound; device **102** for setting the rate of sound emitted by sounder **52**; device **104** for setting volume of sounder **52**; and device **58** (second switch **58**) for activating the countdown (the delay time), as well as timer **54**. Controller **50** can send outputs to the following devices: timer **54**; sounder **52**; light element **48**; and display **62**. As an additional precaution, any of the user-activated devices **36**, **58**, **98**, **100**, **102**, **104** and display **62** of sonic control unit **24** can be slightly inset to avoid unintended activation.

[0054] According to another embodiment of the present invention, sonic finding unit **24** can be provided that when activated emits any variety of sonic signals of various durations to indicate that sonic finding unit **24** is on and has sufficient battery strength.

[0055] According to another embodiment of the present invention, sonic finding unit **24** can be provided that has timing and sounding components that are entirely mechanical and driven by a wind-up spring and timing gears. This embodiment is not shown.

[0056] In use according to one embodiment of the present invention, sonic finding unit **24** of the golf disc assembly **20** is activated by way of on-off first switch **36** prior to throwing disc assembly **20**. Upon activation of first switch **36**, sonic finding unit **24** can be programmed (for example, programmed by the manufacturer) to emit one audible initial sonic signal **30**A of one second duration to indicate that sonic finding unit **24** is on and has sufficient battery strength. Upon first switch **36** being activated or after initial sonic signal **30**A sounds, sonic finding unit **24** can be programmed (for example, programmed by the manufacturer) to automatically begin the timed silent countdown (which is the predetermined time delay) to allow undisturbed throws by multiple disc golf players; the timed silent countdown has a predetermined duration, which can be, for example, sixty seconds. After disc assembly **20** has been thrown and the silent countdown expires, sonic finding unit **24** can be programmed (for example, by the manufacturer) to begin emitting a one second sonic beacon **28** (i.e., a noise)—sonic locating signal **28**—which repeats every five seconds to allow the player to locate disc assembly **20** audibly. Thus, the repeating sonic locating signal **28** is delay-actuated, and can be so delay-actuated through use of a programmed electronic timer **54** operating within sonic finding unit **24** (specifically, within sonic beacon and timer device **42**). Once the time delay expires, sounder **52** of sonic beacon and timer device **42** is

electronically actuated and programmed to continue repeating sonic locating signal **28** until the end-user audibly locates disc assembly **22** and deactivates sonic finding unit **24**. That is, sonic finding unit **24** continues emitting the repeating sonic beacon **28** (sonic locating signal **28**) until the player finds golf disc assembly **20** and deactivates sonic finding unit **24** by returning first switch **36** to the "off" position.

[0057] The present invention further provides a method of using a golf disc assembly **20**. The method includes the steps of: providing a disc **22** with a sonic finding unit **24** attached thereto; flying the disc **22** upon casting the disc into the air; conducting a delay of a predetermined amount of time by sonic finding unit **24**; and emitting, by sonic finding unit **24**, a sonic locating signal **28** after sonic finding unit **24** conducts the delay. Sonic finding unit **24** can include printed circuit board **34**, first switch **36**, battery holder **38**, battery **40** attached to battery holder **38**, and programmable sonic beacon and timer device **42**, first switch **36**, battery holder **38**, and sonic beacon and timer device **42** being mounted to printed circuit board **34**. The method can further include (a) selectively activating and deactivating, using first switch **36**, sonic finding unit **24** and thereby selectively activating and deactivating sonic beacon and timer device **42**, (b) emitting, by sonic finding unit **24**, at least one initial signal **28** when first switch **36** is activated and thereby indicating a power level of battery **40**, and (c) initiating the delay using sonic beacon and timer device **42** when first switch **42** is activated or when a second switch **58** of sonic finding unit **24** is selectively activated following first switch **36** being activated, and (d) emitting, by sonic beacon and timer device **42**, sonic locating signal **28** after sonic beacon and timer device **42** conducts delay and until switch **36** is deactivated.

[0058] The embodiments of the present invention provide for a simple manufacturing process to attach electrical-mechanical components into golf disc **22**. Instead of a complex process of molding components into disc, the present invention provides easily achieved modifications to a golf disc **22** for reliable and simple ways of attachment as part of a final assembly **20**. In addition, the design of retaining cup **72** and related systems provide the highest level of protection of the components of sonic finding unit **24** from direct and indirect impact during play. The methods, structures, and/or ways disclosed herein for attaching an electrical-mechanical accessory to a golf disc **22** describe systems that are uniquely advantageous to the manufacturing process, uniquely advantageous to the survivability of the accessory components, and uniquely advantageous to the ability to add such components to a disc **22** with minimal or no loss of flight integrity. Therefore, the described ways for attaching accessories and their components to golf discs **22** are intended to cover not only attachment of the sonic finding device **24** described herein, but use of those ways for attaching any other accessory built into a recreational disc **22**, including, but not limited to, other possible accessories for use with golf discs such as IR locating chips, remotely activated finding devices, and lighting units. While several particular embodiments of the present invention have been described, numerous modifications could be made without departing from the spirit and scope of the invention. For example, the type of battery, volume and pattern of sonic beacon, length of silent countdown (the predetermined time delay), various controls, status indicators of the components of sonic finding unit **24**, shape of sonic finding unit **24**, type of frame or case and shape thereof which hold the components of sonic finding unit **24**, shape of retaining cup **82**, shape of projections **78**, **80** within retaining cup **72** and printed circuit board **34** can all be modified without significantly altering the overall structures described herein. The present invention is intended to cover all such changes and modifications. The ways of attachment described herein are for the purpose of retaining and protecting any type of electrical and/or mechanical device within a disc **22**, including lights, noisemakers, or other types of finding systems. The present invention also applies not just to discs **22** used in the game of disc golf but also to any other recreational throwing disc.

[0059] While this invention has been described with respect to at least one embodiment, the present invention can be further modified within the spirit and scope of this disclosure. This application is therefore intended to cover any variations, uses, or adaptations of the invention using its general principles. Further, this application is intended to cover such departures from the present disclosure as come within known or customary practice in the art to which this invention pertains and which fall within the limits of the appended claims.

What is claimed is:

1. A golf disc assembly, comprising:

a disc configured for flying upon being cast into the air; and

a sonic finding unit which is attached to said disc and which emits a sonic locating signal after said sonic finding unit conducts a delay of a predetermined amount of time.

2. The golf disc assembly according to claim **1**, wherein said sonic finding unit includes a printed circuit board, a first switch, a battery holder, a battery attached to said battery holder, and a programmable sonic beacon and timer device, said first switch, said battery holder, and said sonic beacon and timer device being mounted to said printed circuit board.

3. The golf disc assembly according to claim **2**, wherein said first switch is configured for selectively activating and deactivating said sonic finding unit and thereby for selectively activating and deactivating said sonic beacon and timer device, said sonic finding unit configured for emitting at least one initial signal when said first switch is activated and thereby for indicating a power level of said battery, said sonic beacon and timer device configured for initiating said delay one of when said first switch is activated and when a second switch of said sonic finding unit is selectively activated following said first switch being activated, said sonic beacon and timer device emitting said sonic locating signal after said sonic beacon and timer device conducts said delay and until said first switch is deactivated.

4. The golf disc assembly according to claim **3**, wherein at least one of:

(a) said sonic beacon and timer device is configured for emitting at least one sonic signal as at least one said initial signal, and

(b) said sonic finding unit includes a light element which is mounted to said printed circuit board and is configured for emitting a light signal as at least one said initial signal.

5. The golf disc assembly according to claim **3**, wherein said disc includes a first wall and a second wall, said first wall including an underside and a rim, said second wall depending from said underside, said first and second walls together at least partly forming a retaining cup, said retaining cup defining an interior space and including a retention feature which retains said sonic finding unit entirely within said interior

space, said rim defining a substantially horizontal plane which is positioned entirely below said second wall when said disc is in an upright position.

6. The golf disc assembly according to claim **5**, further including a shock-absorbing element positioned within said interior space between said sonic finding unit and said first wall.

7. The golf disc assembly according to claim **5**, wherein said second wall includes an inside surface, said retention feature of said retaining cup including a ramped projection projecting inwardly from said inside surface into said interior space and retaining said sonic finding unit within said interior space.

8. The golf disc assembly according to claim **5**, wherein said retention feature of said retaining cup includes a projection projecting inwardly from said underside of said first wall into said interior space, said printed circuit board defining a through-hole which receives said projection and thereby attaches said sonic finding unit to said disc.

9. The golf disc assembly according to claim **3**, wherein said sonic finding unit includes a waterproof case which encloses said printed circuit board, said first switch, said battery holder, said battery, and said sonic beacon and timer device.

10. The golf disc assembly according to claim **3**, wherein said sonic finding unit is attached to said disc not by way of a retaining cup but by way of one of (a) a plurality of hook-and-loop fasteners, (b) a friction tape, and (c) an adhesive.

11. The golf disc assembly according to claim **1**, wherein said disc includes a circumferential portion, said sonic finding unit including a first switch, a battery holder, a battery attached to said battery holder, and a programmable sonic beacon and timer device, said first switch, said battery holder, and said sonic beacon and timer device being distributed about and attached to said circumferential portion, said first switch, said battery, and said sonic beacon and timer device being electrically coupled with one another, said first switch configured for selectively activating and deactivating said sonic finding unit and thereby for selectively activating and deactivating said sonic beacon and timer device, said sonic beacon and timer device configured for emitting at least one initial sonic signal when said first switch is activated and thereby for indicating a power level of said battery, said sonic beacon and timer device emitting said sonic locating signal immediately after said sonic beacon and timer device conducts said delay and until said first switch is deactivated.

12. The golf disc assembly according to claim **1**, wherein said sonic finding unit includes a light element which emits a light signal when said sonic locating signal is actuated, said light signal being one of a repeating light and a continuous light.

13. The golf disc assembly according to claim **1**, wherein said sonic finding unit includes a device configured for selectively setting said predetermined amount of time and thereby for selectively setting said delay.

14. The golf disc assembly according to claim **1**, wherein said sonic finding unit includes a device configured for selectively setting a type of sound of said sonic locating signal.

15. The golf disc assembly according to claim **1**, wherein said sonic finding unit includes a device configured for selectively setting a rate of sounding of said sonic locating signal.

16. The golf disc assembly according to claim **1**, wherein said sonic finding unit includes a device configured for selectively setting a volume of said sonic locating signal one of to a constant level and to a level which increases over time.

17. The golf disc assembly according to claim **1**, wherein said sonic finding unit includes a display configured for displaying at least one of a volume level of said sonic locating signal, a delay time countdown, and a battery power strength.

18. A method of using a golf disc assembly, said method comprising the steps of:

providing a disc with a sonic finding unit attached thereto;

flying said disc upon casting said disc into the air;

conducting a delay of a predetermined amount of time by said sonic finding unit; and

emitting, by said sonic finding unit, a sonic locating signal after said sonic finding unit conducts said delay.

19. The method according to claim **18**, wherein said sonic finding unit includes a printed circuit board, a first switch, a battery holder, a battery attached to said battery holder, and a programmable sonic beacon and timer device, said first switch, said battery holder, and said sonic beacon and timer device being mounted to said printed circuit board.

20. The method according to claim **19**, further including (a) selectively activating and deactivating, using said first switch, said sonic finding unit and thereby selectively activating and deactivating said sonic beacon and timer device, (b) emitting, by said sonic finding unit, at least one initial signal when said first switch is activated and thereby indicating a power level of said battery, and (c) initiating said delay using said sonic beacon and timer device one of when said first switch is activated and when a second switch of said sonic finding unit is selectively activated following said first switch being activated, and (d) emitting, by said sonic beacon and timer device, said sonic locating signal after said sonic beacon and timer device conducts said delay and until said switch is deactivated.

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