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(54) **MOUNTABLE CRADLING APPARATUS FOR A HAND-HELD MEDIA PLAYER**

(52) **U.S. Cl. .... 248/214; 248/146; 248/371**

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(57) **ABSTRACT**

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A cradle for retaining therein an electronic media player includes a back support plate for interface against the back surface of the player, a first side wall formed along a first longitudinal edge of the back support plate, a second side wall formed along a second longitudinal edge of the back support plate, and a mounting mechanism removably attached on the rear surface of the back support plate for mounting the cradle with the player retained therein onto an aperture of a mechanical device or system. The side walls of the cradle extend inward at opposing ends for retaining the corners of the player to prevent the player from sliding upward or downward and out of the cradle while being retained in the cradle.

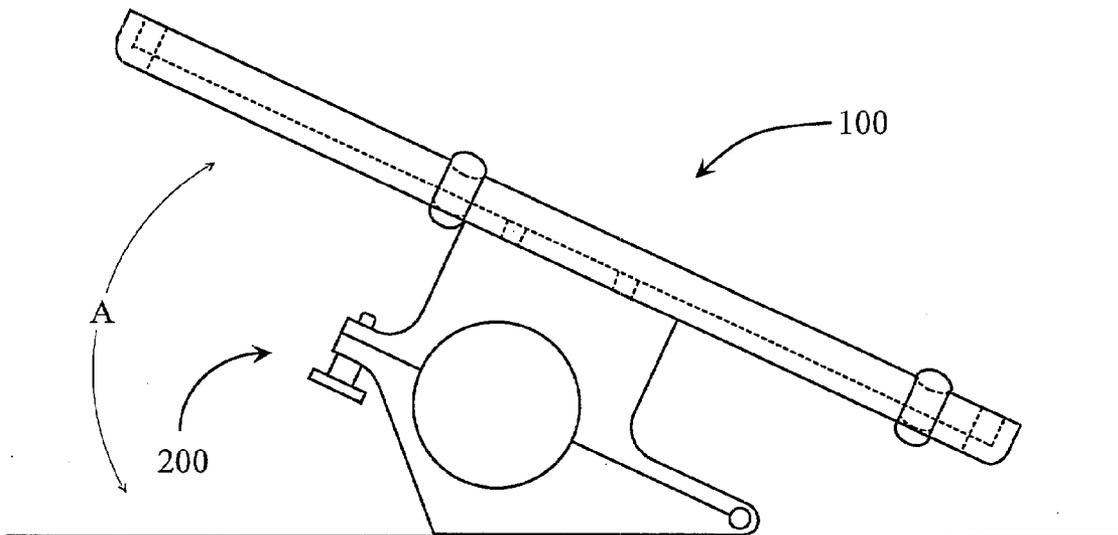
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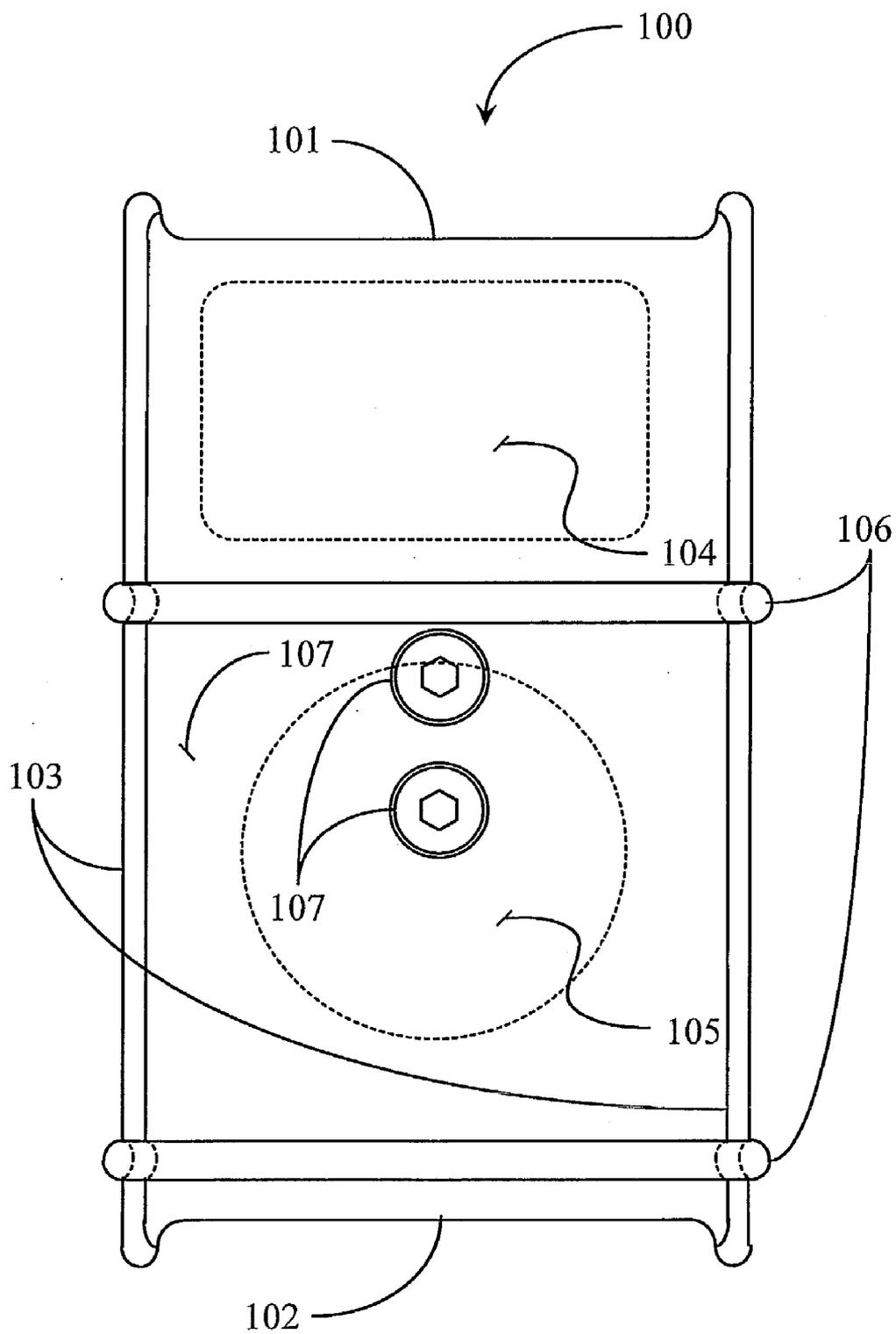
**Related U.S. Application Data**

(60) **Provisional application No. 60/730,253, filed on Oct. 25, 2005.**

**Publication Classification**

(51) **Int. Cl. A47G 23/02 (2006.01)**





*Fig. 1*

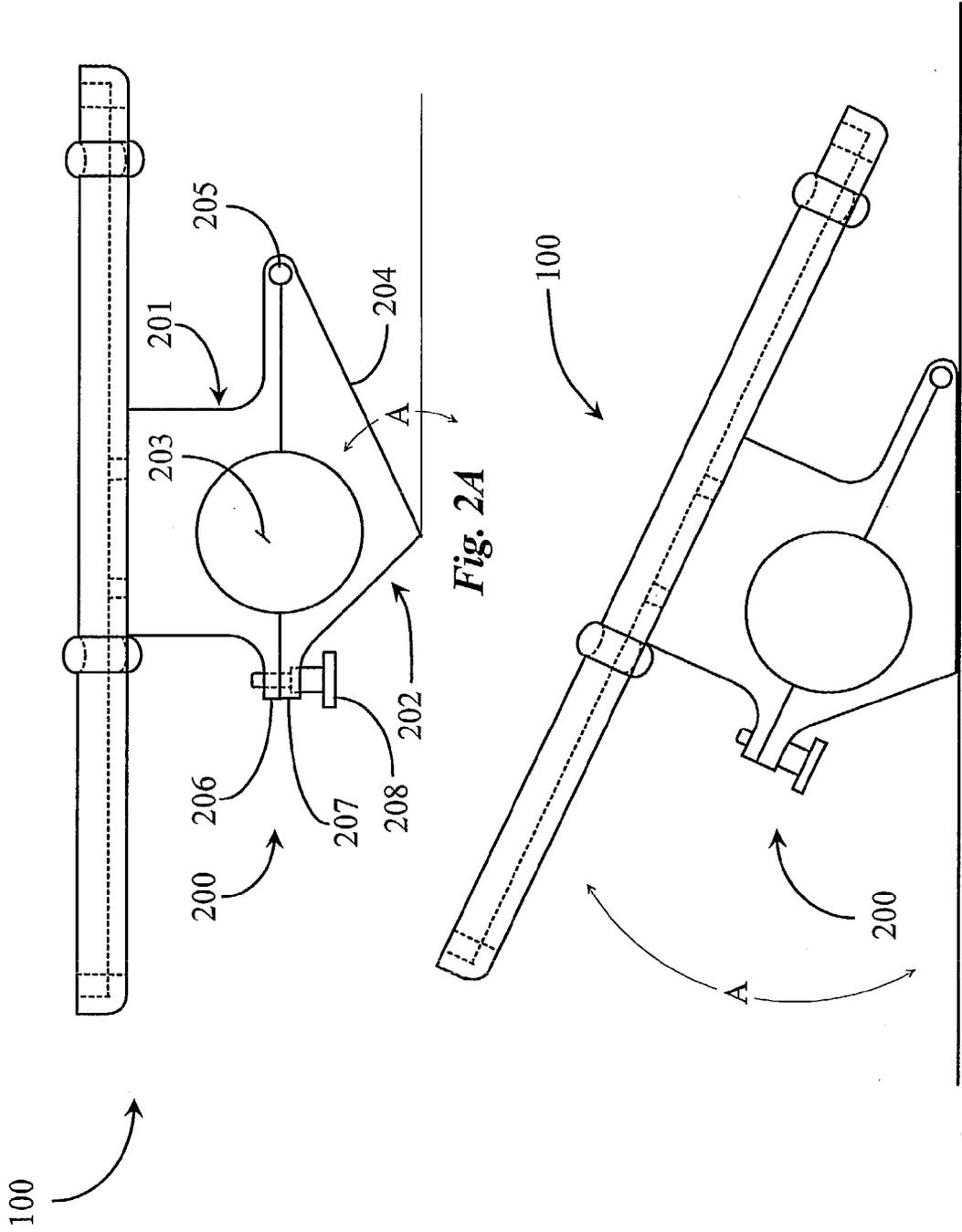


Fig. 2A

Fig. 2B

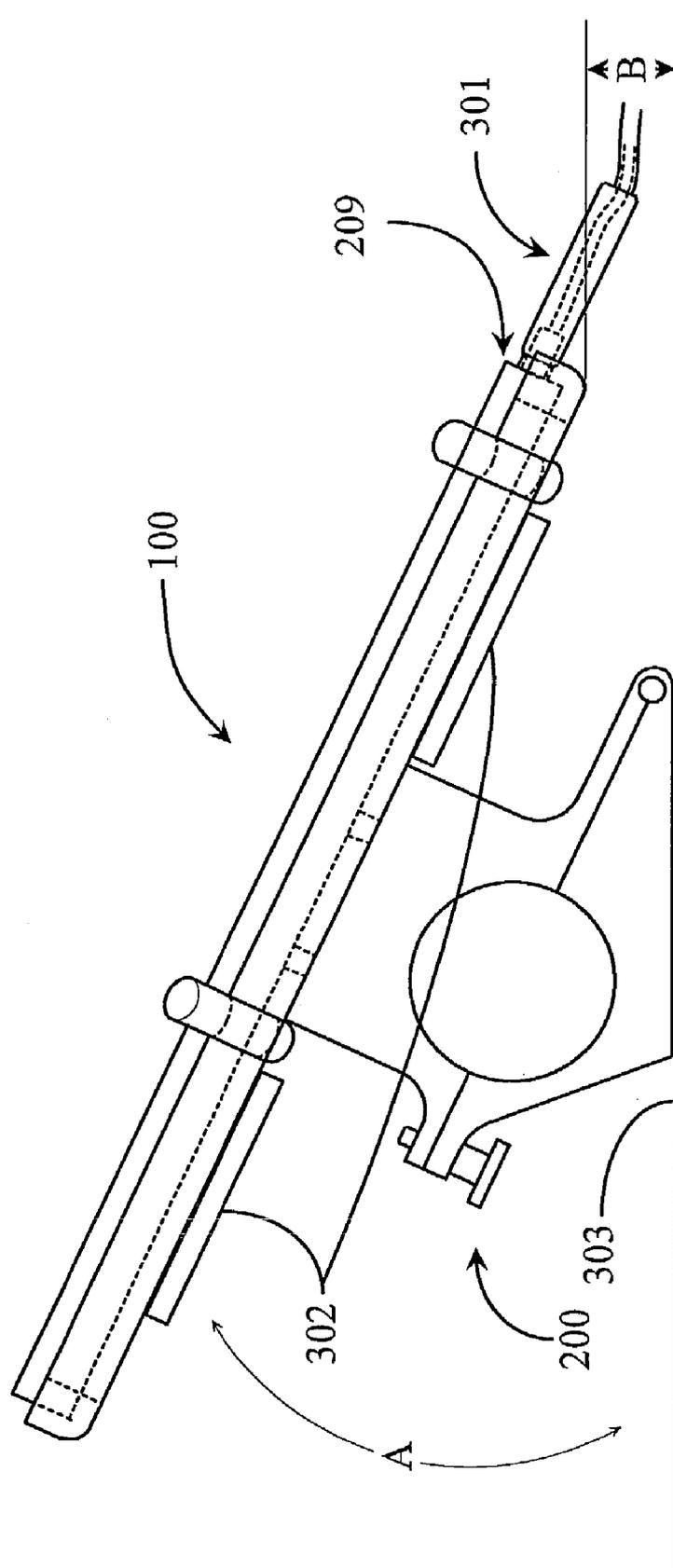
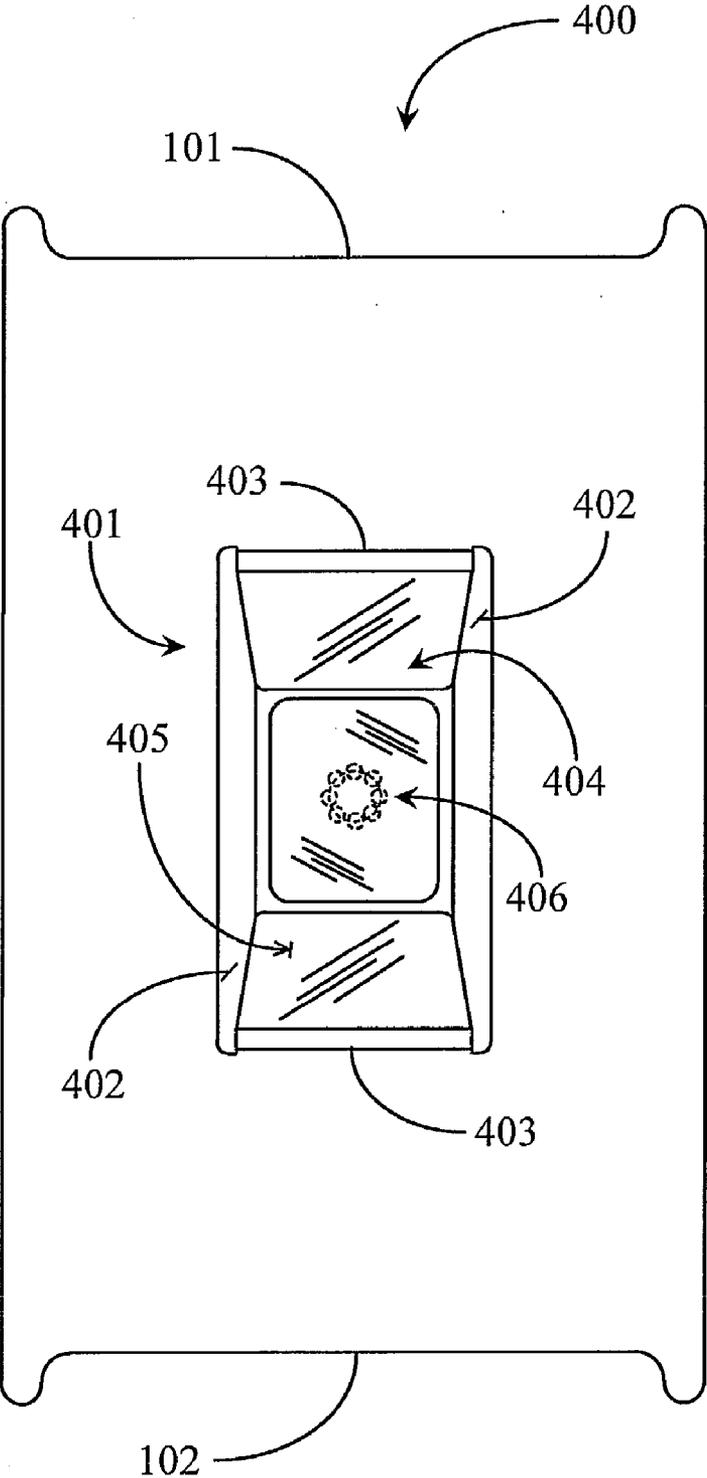
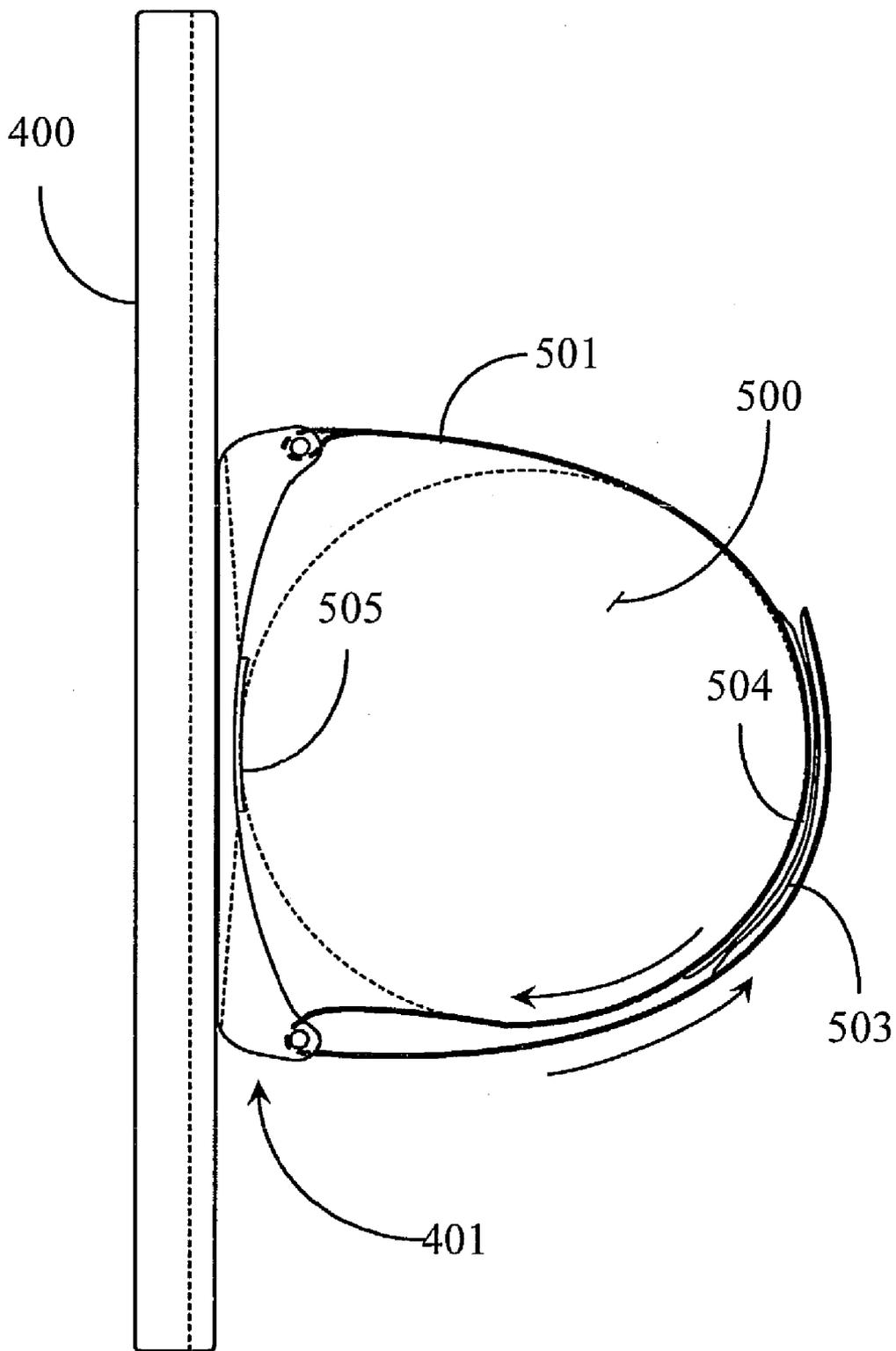


Fig. 3



**Fig. 4**



*Fig. 5*

**MOUNTABLE CRADLING APPARATUS FOR A HAND-HELD MEDIA PLAYER**

**CROSS-REFERENCE TO RELATED APPLICATIONS**

[0001] The present invention claims priority to a U.S. provisional patent application Ser. No. 60/730,253 filed on Oct. 25, 2005, entitled "DUEL USE CRADLING APPARATUS FOR AN ELECTRONICS DEVICE", which is included herein at least by reference.

**BACKGROUND OF THE INVENTION**

[0002] 1. Field of the Invention

[0003] The present invention is in the field of aftermarket cradles for electronics devices and pertains particularly to a duel use, mountable cradling device for a hand-held media player.

[0004] 2. Discussion of the State of the Art

[0005] There are a variety of electronic music players on the market that are sleek and small in design and are meant to be used as hand-held devices. One of the more notable and popular devices is the Ipod Nano™. Using an Ipod while recreating can be somewhat difficult and distracting for a user. The device may be placed on a table, in a user's pocket, or it may be docked in a charging bay on an aftermarket speaker system adapted to connect to the device. In these cases, flexibility for mobile use while engaging in certain activities is limited. For example, speaker enabled/charging stations are not mobile. Placing the device in a pocket or in a carrying cases fashioned to attach to a belt accomplishes mobility, but presents some limitations related to periodic access to the device if the user is engaged in some other activity while listening to the player.

[0006] What is clearly needed is a cradling device that is adapted to enable the player to be mounted on a wide variety of apparatus and that also enables full access to the device controls. Such a device would enable optimum flexibility for users who consume media stored on the device while also engaging in some other recreational or work-related activity.

**SUMMARY OF THE INVENTION**

[0007] A cradle is provided for retaining therein an electronic media player. The cradle includes a back support plate for interface against the back surface of the player, a first side wall formed along a first longitudinal edge of the back support plate, a second side wall formed along a second longitudinal edge of the back support plate, and a mounting mechanism removably attached on the rear surface of the back support plate for mounting the cradle with the player retained therein onto an aperture of a mechanical device or system. The side walls extend inward at opposing ends for retaining the corners of the player to prevent the player from sliding upward or downward and out of the cradle while being retained in the cradle.

[0008] In one embodiment, the cradle is fashioned from aluminum. In another embodiment, the cradle is molded from a rigid or semi-rigid polymer. In both embodiments, all of the player ports and controls are accessible while it is retained in the cradle.

[0009] In one embodiment, there are one or more elastic retention bands adapted to retain the player against the back support plate of the cradle. In this embodiment, the cradle includes one or more continuous groove features provided peripherally across the back surface plate and in the opposing side walls for locating and helping to seat the one or more elastic retention bands.

[0010] In one embodiment, the mounting mechanism is a two piece mechanism the pieces hinged together to form a bar-clamp for securing the cradle and player to the aperture, the aperture being an annular bar or tube. In this embodiment, the mounting mechanism is used as a cradle table top stand when not mounted to an aperture. In another embodiment, the cradle further includes one or more magnetic blocks for enabling a magnetic mount of the cradle without the mounting mechanism installed onto a magnetic surface.

[0011] In another embodiment, the mounting mechanism is a one piece mounting base to which one or more flexible straps are anchored at one or more anchor pins. In this embodiment, the one or more straps present a hook and loop connection. Also in this embodiment, the mounting mechanism is adjustably mountable to the back surface of the cradle and is adjustable axially to 180 degrees from vertical center.

[0012] In yet another embodiment, the cradle has two separate mounting mechanisms that are interchangeable and installable to the cradle. In this embodiment, one mounting mechanism is a bar-clamp and the other mounting mechanism is a cinch-clamp.

**BRIEF DESCRIPTION OF THE DRAWING FIGURES**

[0013] FIG. 1 is a front elevation view of a cradle for cradling an electronics device according to an embodiment of the present invention.

[0014] FIG. 2A is a right side elevation view of the cradle of FIG. 1 illustrating a mounting apparatus according to an embodiment of the present invention.

[0015] FIG. 2B is a right side elevation view of the cradle of FIG. 1 rotated for tabletop use according to an embodiment of the present invention.

[0016] FIG. 3 is a right side elevation view of the cradle of FIG. 1 rotated for tabletop use according to an embodiment of the present invention.

[0017] FIG. 4 is a rear view of a cradle according to another embodiment of the present invention.

[0018] FIG. 5 is a side view of the cradle of FIG. 4 with single strap.

**DETAILED DESCRIPTION**

[0019] According to embodiments of the present invention, the inventor provides a duel-use cradle device for an electronics device, which in a preferred embodiment, is an Ipod Nano™ device. The apparatus of the present invention and method of use thereof is described in enabling detail below.

[0020] FIG. 1 is a front elevation view of a cradle device 100 according to an embodiment of the present invention. Device 100 is a cradle device for an electronics music player

such as the Ipod Nano™ device that is becoming well known on the market. Device 100, which may be referred to hereinafter as cradle 100 may be manufacture of aluminum or some other rigid or semi-rigid material. In one embodiment, cradle 100 is machined of aluminum. In another embodiment, cradle 100 may be machined from a rigid or semi-rigid polymer such as delrin, perhaps nylon, or the like. In yet another embodiment, cradle 100 is molded from a plastic material.

[0021] Cradle 100 includes a back plate support 107 and cradle walls 103 on either longitudinal side opposite from one another. Cradle walls 103 extend up some distance above back plate 107, such distance slightly less than the overall thickness of the electronics device to be cradled. In one embodiment, walls 103 are contiguously formed with back plate 107 and are substantially parallel to one another and uniform in height dimension and thickness dimension. The width dimension from the inside surface of one wall 103 to the inside surface of the opposing wall is held to a dimension slightly larger than the overall width of the electronics device to be cradled. In a preferred embodiment, the device to be cradled, which is not illustrated in this example, is an Ipod Nano™ music player. However, cradle 100 may be used with another music player of similar form without departing from the spirit and scope of the present invention.

[0022] Cradle 100 is substantially symmetrical in overall featuring including opposing cutout features 101 and 102. Features 101 and 102 are formed, in one embodiment, by removing the opposing top and bottom walls of cradle 100 such as by machining. In another embodiment, they may be formed in a molding process by representing those features on a suitable plastics mold tooling.

[0023] Cut-out feature 101 functions to expose the upper edge surface of the device to be cradled to enable user access to a lock/unlock switch (not illustrated) provided on the music player that prevents inadvertent mode switching or selection switching of modes and functions that the player is capable of. On an Ipod Nano™, the switch is substantially left of center and on the upper edge surface of the device.

[0024] Cutout feature 102, like feature 103, may be provided through machining process or through molding process depending on the method of manufacture used. Feature 102 exposes a charge plug bay and an ear bud socket located on the bottom edge surface of the device to be cradled. Each sidewall 103 of cradle 100 has opposing corner-grabbing features (2 each) provided thereto to further cradle the electronics device at its corners. The corner-grabbing features are substantially identical to one another and are presented in mirror image of one another across the cradle. In one embodiment, the corner-grabbing features are provided by leaving extra material on the inside surface of each sidewall 103 at opposing ends. In another embodiment, such features may be provided through molding by including those features in a suitable mold tooling.

[0025] in a preferred embodiment, the electronics device to be cradled is placed into cradle 100 from a superior vantage point and the device fits in side cradle 100 with some play but it cannot slide upwardly and out or downwardly and out because of the corner-grabbing features described above. Walls 103 prevent lateral movement, therefore the device to be cradles is held within cradle device 100.

[0026] Cradle device 100 has at least 2 elastic bands or retaining rings 106 provided thereto in removable fashion. Rings 106 may be acquired from a suitable supplier and are known to and available to the inventor. Rings 106 are provided of a diameter somewhat smaller in periphery than the overall combined periphery of cradle 100 and a cradled electronics device, which may protrude above the free surfaces of the walls to a certain extent. Opposing ring grooves are strategically provided in each sidewall 103 on the upper edge surfaces and on the outer wall surfaces to facilitate seating of each retainer ring 106 at its intended location. In this example there are 2 retainer rings 106.

[0027] Cradle 100 with an electronics device placed therein exhibits a thickness dimension that is larger that that of the cradle itself. Therefore, when the electronics device is placed within cradle 100, rings 106 may be installed by manually stretching those over the combined devices and then seating them into their appropriate ring-grooves. The elasticity of rings 106 hold the electronics device in place with sufficient force to prevent it from falling out of cradle 100. Rings 106 are oriented in such a way as not to obstruct the user interface areas of the electronic device when installed within cradle 100. For example, a screen area 104 logically represents the area taken by the display of the electronics device. Likewise, a circular space or area 105 logically represents the area taken by the control interface of the same electronics device.

[0028] Cradle 100 has a back mounting apparatus (not illustrated here) that enables a user to bar-mount the cradle to, for example, the handle bar feature of a motorcycle or a lawn mower. The back mounting apparatus, which will be detailed further below, is removeably affixed to cradle 100 using screws 107, which may be recessed into back plate 107. In this case, screws 107 are Allen-head screws. In another embodiment, screws 107 may be flathead screws or Phillips head screws. There are many possibilities.

[0029] FIG. 2A is a right side elevation view of the cradle of FIG. 1 illustrating a mounting apparatus according to an embodiment of the present invention. FIG. 2B is a right side elevation view of the cradle of FIG. 1 rotated for tabletop use according to an embodiment of the present invention.

[0030] Referring now to FIG. 2A, cradle 100 includes a back-mount 200, which in this case is adapted for mounting around a handlebar feature. Back-mount 200 may be manufactured from aluminum or it may be molded from a durable polymer as was described further above with reference to cradle 100. Back mount 200 includes a solid base 201, which is affixed to the back surface of cradle 100. Back-mount 200 includes an openable bar-clamp 202 that is rotably hinged to solid base 201 via a hinge pin 205 in this example. Back mount 200 defines an opening 203 that is slightly smaller in diameter than an outside diameter of a handle feature that the cradle will mount to. The actual size of opening 203 will depend upon the size of the feature it will be mounted to.

[0031] Back mount 200 includes a clamp wing 206 on solid base 201 and an opposing clamp wing 207 on bar-clamp 202. When back mount 200 is closed, wings 206 and 207 align and support a through opening for accepting a shoulder screw 208 in this example. Shoulder screw 208 may be knurled about its head for facilitating finger and thumb turning to tighten back mount 200 of a handle feature.

[0032] In a preferred embodiment, bar-clamp 202 has an angled surface 204 that presents at an angle A (about 25

degrees) counter clockwise from the longitudinal center of cradle **100** profiled in a horizontal plane. Surface **204** is adapted to function as a cradle support when set upon a substantially flat surface such as a table or desk. Using cradle **100** in this embodiment enables the electronic device to be presented for use as a tabletop device such that a convenient angle for using the device is presented to a user. Mounting device **100** to a handlebar feature on a motorcycle, for example, facilitates use of the cradles device from any convenient angle. It is important to note herein that the angle rotation of 25 degrees from horizontal is exemplary only. The actual angle of surface **204** with respect to horizontal may be more or less than 25 degrees with departing from the spirit and scope of the present invention.

[0033] Referring now to FIG. 2B, cradle **100** may be dismounted from a handlebar feature and may be presented on a tabletop or other substantially flat surface such that mount **200** rests on the angled surface **204** previously described above. The land area of surface **204** shall be sufficient as to stabilize cradle **100** and an electronics device cradled for use. When sitting on a tabletop, cradle **100** presents at angle A, which is substantially the same angle A described with respect to FIG. 2A. Mount **200** may, in one embodiment, be weighted so as to further stabilize an electronics device cradled within cradle **100** so as to prevent tipping the device when in use.

[0034] FIG. 3 is a right side elevation view of cradle **100** of FIG. 1 rotated for tabletop use according to an embodiment of the present invention. Cradle **100** is illustrated in a seated position on a suitably flat surface **303** via angled back-mount **200** in this example. Also in this example, an electronics device **209** is cradled and retained for use. When mounted and cradled, electronics device **209** shall be elevated from flat surface **303** a distance B, which is sufficient enough to enable application of standard apparatus **301** consisting of a device charging plug and cord and an ear bud, which connect to device **209** at the down-slope end of cradle **100**. In this configuration, a user may bring his or her Ipod Nano™, which may have been mounted to a motorcycle handlebar, for example, and set the device down squarely on any tabletop and continue to use the device without requiring removal of device **209** from cradle **100**.

[0035] In one embodiment of the present invention, cradle **100** has magnet blocks **302** affixed thereto on the anterior surface of the back plate. Magnetic blocks **302** may be glued onto cradle **100** or may otherwise be affixed thereto in removable or permanent fashion. Blocks **302** may extend above the anterior surface of cradle **100** a dimension larger than the height profile of the retaining rings when in place. In this example, the back-mount screws may be removed to disassemble back mount **200** from cradle **100**. Electronics device **209** may then be cradled and the cradled device may be placed in position on any magnetically capable surface retaining the cradle and device at the placed position by virtue of the magnetic blocks.

[0036] In still another embodiment where tabletop presentation is desired, charge plug and ear bud (**301**) may be manufactured with an angled side profile instead of a linear profile to enable back-mount **200** to be provided with a lower height requirement. There are many possibilities.

#### Cinch-Clamp Mount

[0037] According to another embodiment of the present invention, the inventor provides an alternate mounting

mechanism and technique for mounting cradle **100** to an aperture of an existing mechanical system or device.

[0038] FIG. 4 is a rear view of a cradle **400** according to another embodiment of the present invention. Cradle **400** is analogous to cradle **100** discussed further above with an exception that an alternate mounting mechanism is provided in place of mechanism **200** described above with reference to FIG. 2. Therefore, all of the features and embodiments described previously with respect to cradle **100** are applicable to cradle **400**.

[0039] Cradle **400** has a mounting mechanism **401** installed on the back surface thereof using machine screws in this example. The exact location of the installation may vary somewhat according to design consideration. Generally mechanism **401** is somewhat centered on the back surface of cradle **400**. Mounting mechanism **401** is, in this example, a one-piece mounting base that may be machined from, steel, aluminum, brass, or some other machine metal. In one embodiment, mechanism **401** may be machined from a rigid polymer or some other rigid or semi-rigid material.

[0040] Mounting mechanism **401** is symmetrical in design and has two similar or identical pocket features **404** located at opposing ends of the mechanism. Pocket features **404** are adapted to provide relief and an anchoring structure for one or more material cinch straps that are used to cinch cradle **400**, via mechanism **401** to an aperture serving as a desired mounted location for the system including the electronic player. An aperture may be a handle bar of a bike or motorcycle, an aperture of an exercise machine, stroller, or a vehicle gear shift lever, or any other like apertures generally perceived as some bar structure or extension that is elongated and has a diameter.

[0041] Pocket features **404**, once machined, exhibit side support fingers **402**, which are spaced apart according to pocket dimensioning and which are presented symmetrically. Features **402** are formed partly from the machining operation to produce the pocket features. One mirrored pair of support fingers is located at the one end and one mirrored pair at the other end of mechanism **401**. Each pair of support fingers **402** retains a cotter pin or a steel dowel pin, which is installed between support fingers **402** through openings provided in the support fingers. In a preferred embodiment, pins **403** are pressed into the openings and are retained in a substantially horizontal position to serve as cinch strap anchors.

[0042] Mounting mechanism **401** has a trapezoidal base **405** including a land portion **408**. Base **405** is formed as a result of machining pocket features **404**. Land portion **408** has an inwardly accurate surface generally conforming to an annular surface of an aperture to which the cradle is mounted. It is noted herein that the radius of land **408** does not have to conform exactly to any radius of an aperture. Likewise, an aperture is not required to have a true annular surface for mechanism **401** to be successfully cinch-clamped to it. Likewise, the aperture may exhibit an octagonal, hexagonal, triangular, or rectangular profile without significantly affecting a successful cinch mount using mechanism **401** and one or more provided cinch straps (not illustrated here).

[0043] A bolt circle pattern of tapped openings **406** is provided on the rear surface of trapezoidal base portion **405**.

The openings are blind holes and may be tapped to accept 8-32, 6-32, 4-40, or some other size of machine screw. A similar bolt circle pattern of through openings is provided through the back wall of cradle **400** to accept screws inserted from the inside of the cradle. In pattern **406**, there are 8 tapped holes equally spaced apart. In this example, only 4 of those tapped holes are used in mounting mechanism **401** to cradle **400**. Therefore, any angular disposition of an equally spaced 4-hole pattern may be used to install mechanism **401** to cradle **400**. In this way, the cradle may be mounted in the same linear axis as an aperture, perpendicularly to the linear axis of an aperture, or at a 45 degree angle from the linear axis of an aperture. In other words, the cradle with player may be mounted on an aperture at 0, 45, 90, and 180 degrees from the longitudinal axis of the aperture. For a stroller cross bar, the mounting position would be perpendicular or 90 degrees from the linear axis of the stroller cross bar in order to present the player vertically.

[0044] In one embodiment, mechanism **401** may be axially mounted to the rear surface of cradle **400** such that it may be freely rotated. In this case, a pressure washer and nut, or compression spring washer may be used to stop the rotation at a desired degree of rotation from the longitudinal axis of an aperture serving as the mounting location of the cradle. One with skill in the art will appreciate that there are still other ways to achieve an adjustable mount.

[0045] In a further embodiment, mounting mechanism **401** may include a ball/socket friction interface between the base and the rear surface of the cradle enabling some limited angular horizontal or vertical swing adjustment of the face of the player while it is seated into the cradle and mounted to an aperture.

[0046] Land **408** has a sheet of elastic material **407** affixed thereto for use as a friction pad. Friction pad **407** may be a sheet of rubber or some other material with sponge like or elastic properties that will be resistant to slippage when the cradle and player are mounted to an aperture. Material **407** may be affixed to land **408** using an adhesive adapted for the purpose. In this example, an elastic retention band is not illustrated, but may be assumed present when a player is being retained within cradle **400** as was described further above. One or more grooves may be provided for seating such an elastic band and the placement of such a band is not affected by the location of the mounting mechanism or the installation of the mechanism in alternate rotated positions. Only one elastic retention band, such as band **106** described with reference to FIG. 1 is required to retain a player within the cradle.

[0047] FIG. 5 is a side view of cradle **400** of FIG. 4 with a single cinch strap. In this view, cradle **400** is viewed with the open face of the cradle facing to the left in this view and mounting mechanism **401** installed on the back surface in line with the longitudinal axis of the cradle. The sloping surfaces of base **405** of the mechanism are illustrated herein with broken lines. Rubber sheeting **407** is provided as a friction pad that helps prevent slippage when mounted to an aperture.

[0048] In this example, mounting mechanism **401** has a single cinch strap **501** provided thereto and anchored around one of the two cotter pins **403**. The end of cinch strap **501** is wrapped around the cotter and then sewn to itself to achieve the anchor. The free end of cinch strap **501** is

wrapped around an aperture referenced herein as aperture **500**, and then threaded under and around the opposite cotter pin, which functions as a tightening leverage pin. Cinch strap **501** has a hook and loop connection comprising a loop connector **504** and a hook connector **503**. The hook and loop connection is industrial strength and greatly resists parting once applied with a tight cinch. Mechanism **401** with cinch strap **501** installed functions as a cinch-clamp. Cinch strap **501** is sufficiently long to accommodate different diameters of apertures. Likewise the method of hook and loop connection provides overlap ability to accommodate the different diameters and still achieve a snug fit.

[0049] Only a single cinch strap is shown in this example. However, in one embodiment, there are two cinch straps, one anchored to each cotter pin. In this embodiment, one strap presents the hook material of the hook and loop connection while the opposing strap presents the loop material. The difference in the two embodiments lies in the way that the cinching is accomplished. In the case of the single strap, a user places cradle **400** with or without the player into position against an aperture with the strap hanging free at one end. The user may then cinch wrap the strap around the aperture and the free end of the strap under and around the remaining pin. By pulling back on the free end, cinching is accomplished. When the strap is sufficiently tight around the aperture, the hook and loop connection is made.

[0050] In the case of two cinch straps, the user places the cradle with or without the player in position against an aperture as describe above with both straps hanging free. The user may then take both straps wrapping them part way about the aperture and towards each other. When enough pull pressure is applied to achieve a sufficiently tight wrap, the hook and loop connection is made.

[0051] It will be apparent to one with skill in the art that certain changes in materials and configuration of the invention may be made without departing from the spirit and scope of the invention. For example, in one embodiment, the cinch strap is a hard but flexible rubber strap that has the hook and loop tabs molded into it. In this embodiment, the rubber strap provides friction against slippage and a friction pad is not required. In another embodiment cinch-clamp mounting apparatus and bar-clamp mounting apparatus are interchangeable with the cradle so that a user may prepare the cradle for virtually any type of mounting situation.

[0052] The methods and apparatus of the present invention should be afforded the broadest scope as the invention is limited only by the following claims.

What is claimed is:

1. A cradle for retaining therein an electronic media player comprising:

- a back support plate for interface against the back surface of the player;
- a first side wall formed along a first longitudinal edge of the back support plate;
- a second side wall formed along a second longitudinal edge of the back support plate; and
- a mounting mechanism removably attached on the rear surface of the back support plate for mounting the cradle with the player retained therein onto an aperture of a mechanical device or system;

characterized in that the side walls extend inward at opposing ends for retaining the corners of the player to prevent the player from sliding upward or downward and out of the cradle while being retained in the cradle.

- 2. The cradle of claim 1, fashioned from aluminum.
- 3. The cradle of claim 1, molded from a rigid or semi-rigid polymer.
- 4. The cradle of claim 1, wherein all of the player ports and controls are accessible while it is retained in the cradle.
- 5. The cradle of claim 1, wherein there are one or more elastic retention bands adapted to retain the player against the back support plate of the cradle.
- 6. The cradle of claim 5, further including one or more continuous groove features provided peripherally across the back surface plate and in the opposing side walls for locating and helping to seat the one or more elastic retention bands.
- 7. The cradle of claim 1, wherein the mounting mechanism is a two piece mechanism the pieces hinged together to form a bar-clamp for securing the cradle and player to the aperture, the aperture being an annular bar or tube.
- 8. The cradle of claim 7, wherein the mounting mechanism is used as a cradle table top stand when not mounted to an aperture.

9. The cradle of claim 1, further including one or more magnetic blocks for enabling a magnetic mount of the cradle without the mounting mechanism installed onto a magnetic surface.

10. The cradle of claim 1, wherein the mounting mechanism is a one piece mounting base to which one or more flexible straps are anchored at one or more anchor pins.

11. The cradle of claim 10, wherein the one or more straps present a hook and loop connection.

12. The cradle of claim 10, wherein the mounting mechanism is adjustably mountable to the back surface of the cradle and is adjustable axially to 180 degrees from vertical center.

13. The cradle of claim 1, including two separate mounting mechanisms that are interchangeable and installable to the cradle.

14. The cradle of claim 13 wherein one mounting mechanism is a bar-clamp and the other mounting mechanism is a cinch-clamp.

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