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(54) **GRIPPING MECHANISM FOR GRIPPING PORTABLE OBJECT**

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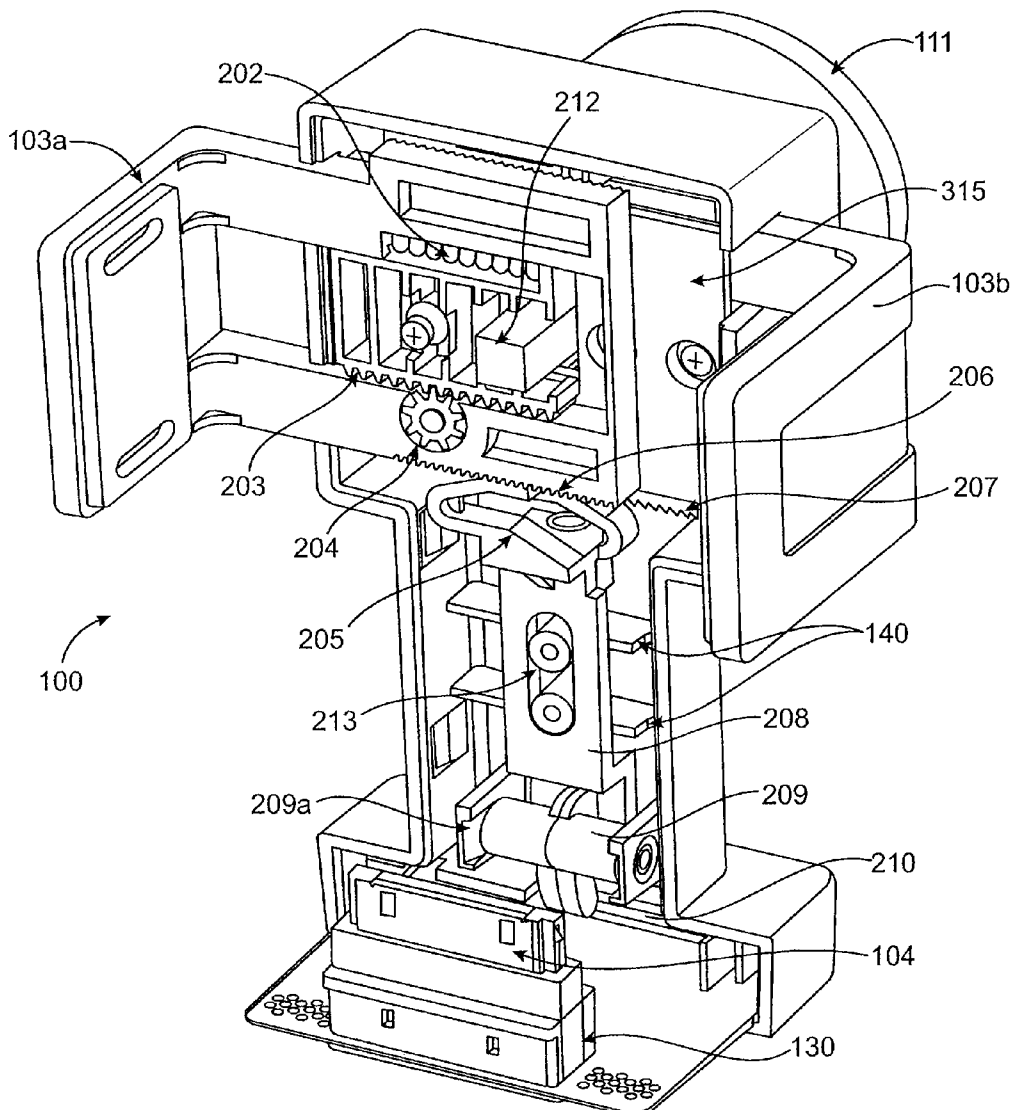
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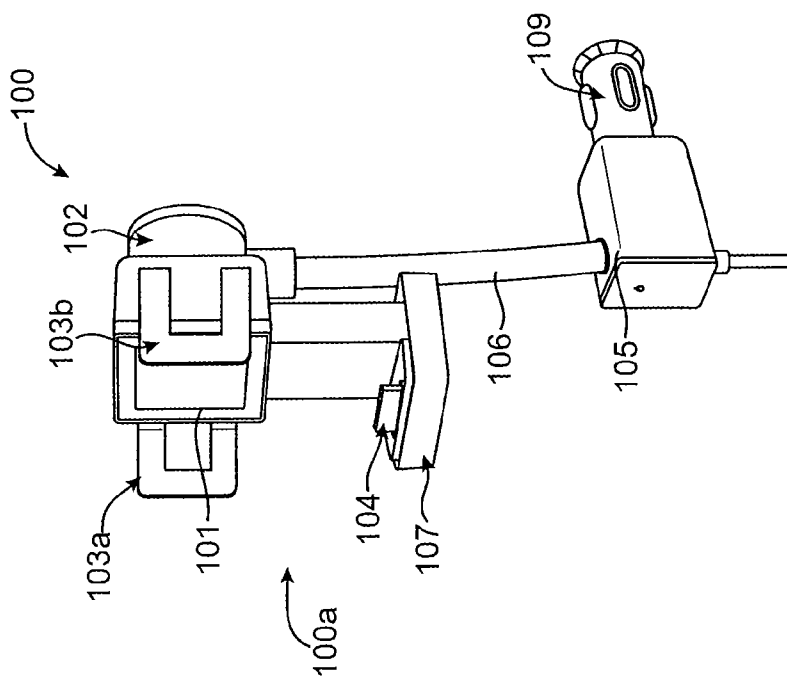
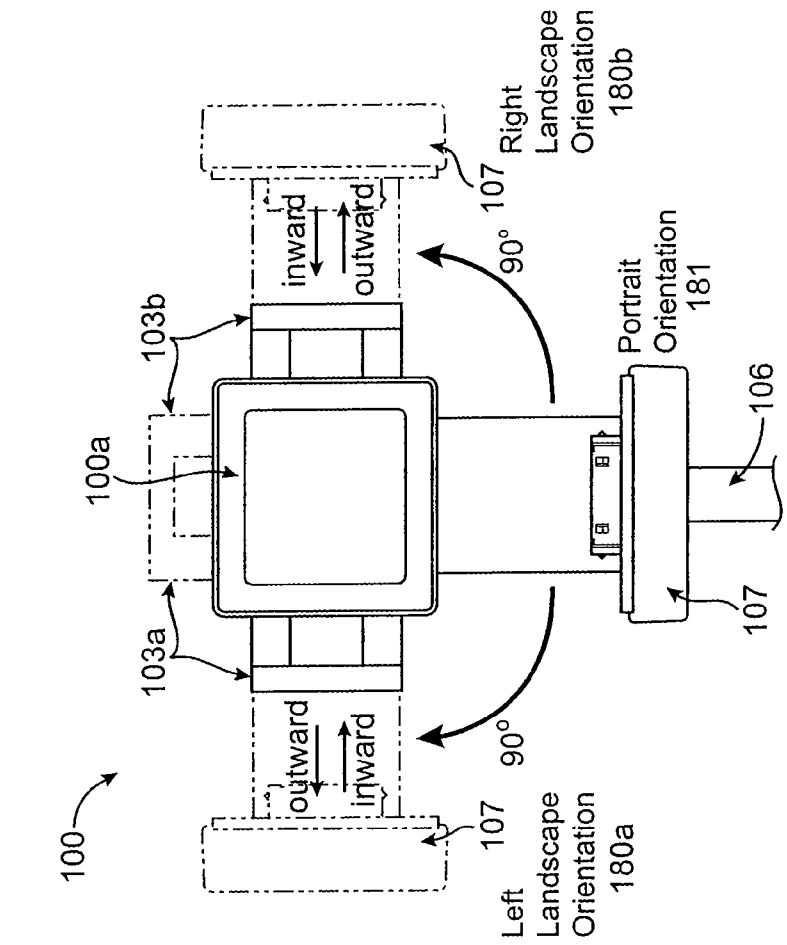
(57) **ABSTRACT**

A holding device. The holding device can hold portable objects such as MP3 players, mobile phones, navigation devices, etc. The holding device has one or more arms, which can grip the portable object. In predetermined orientations, one arm is prevented from moving outward, to prevent the held portable object from falling even when it is being inserted or removed from the holder.

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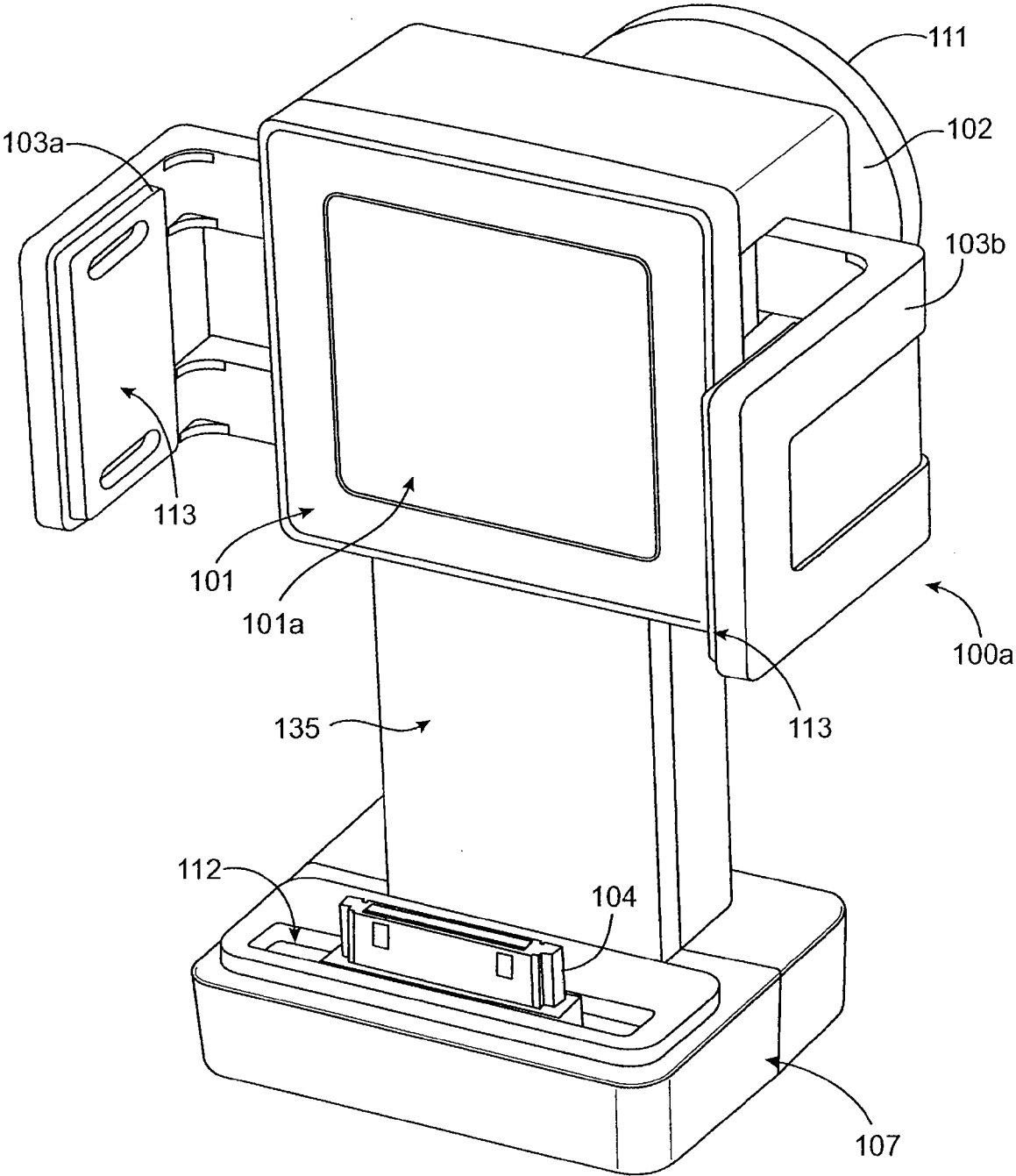


FIG. 3

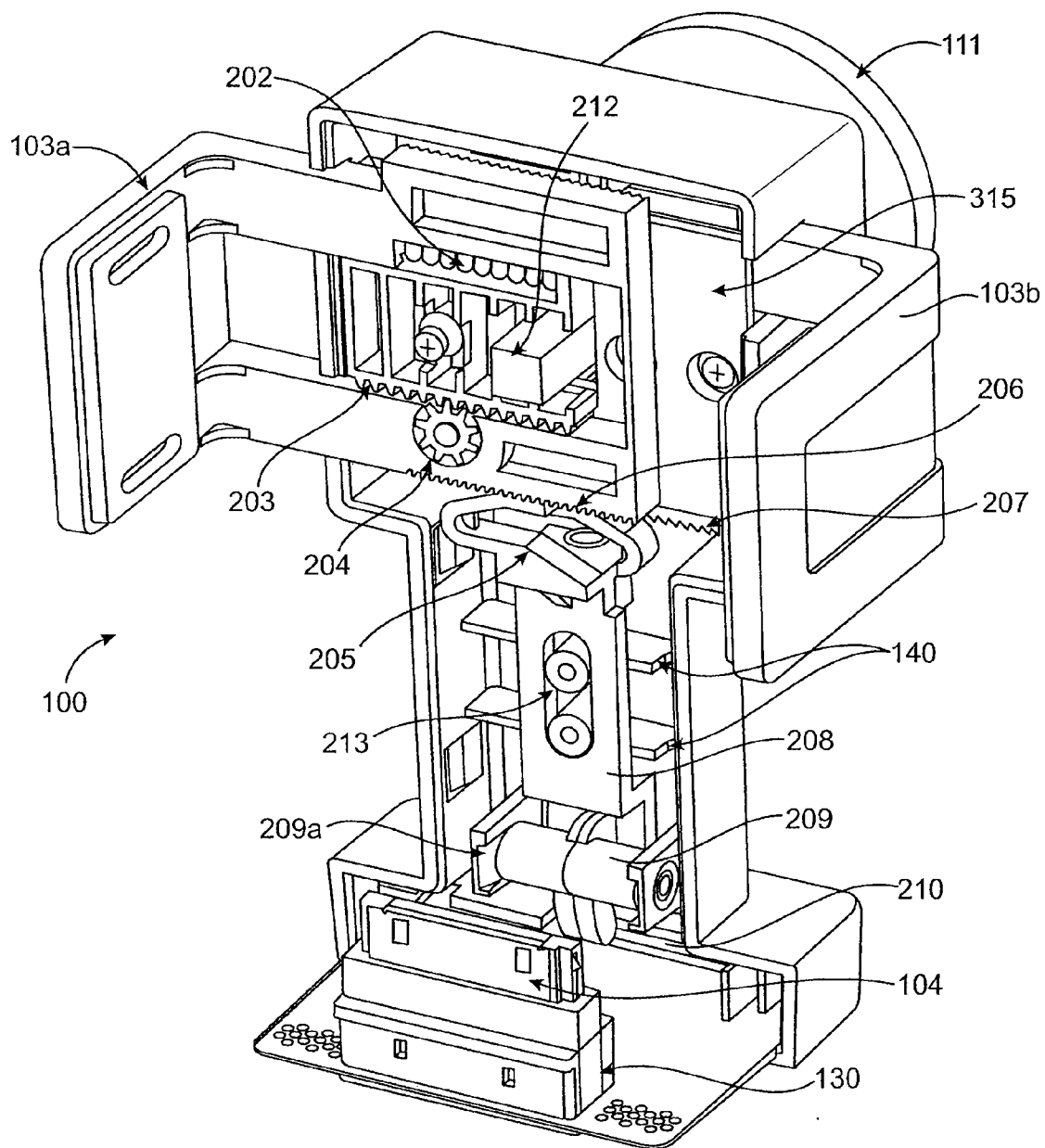


FIG. 4

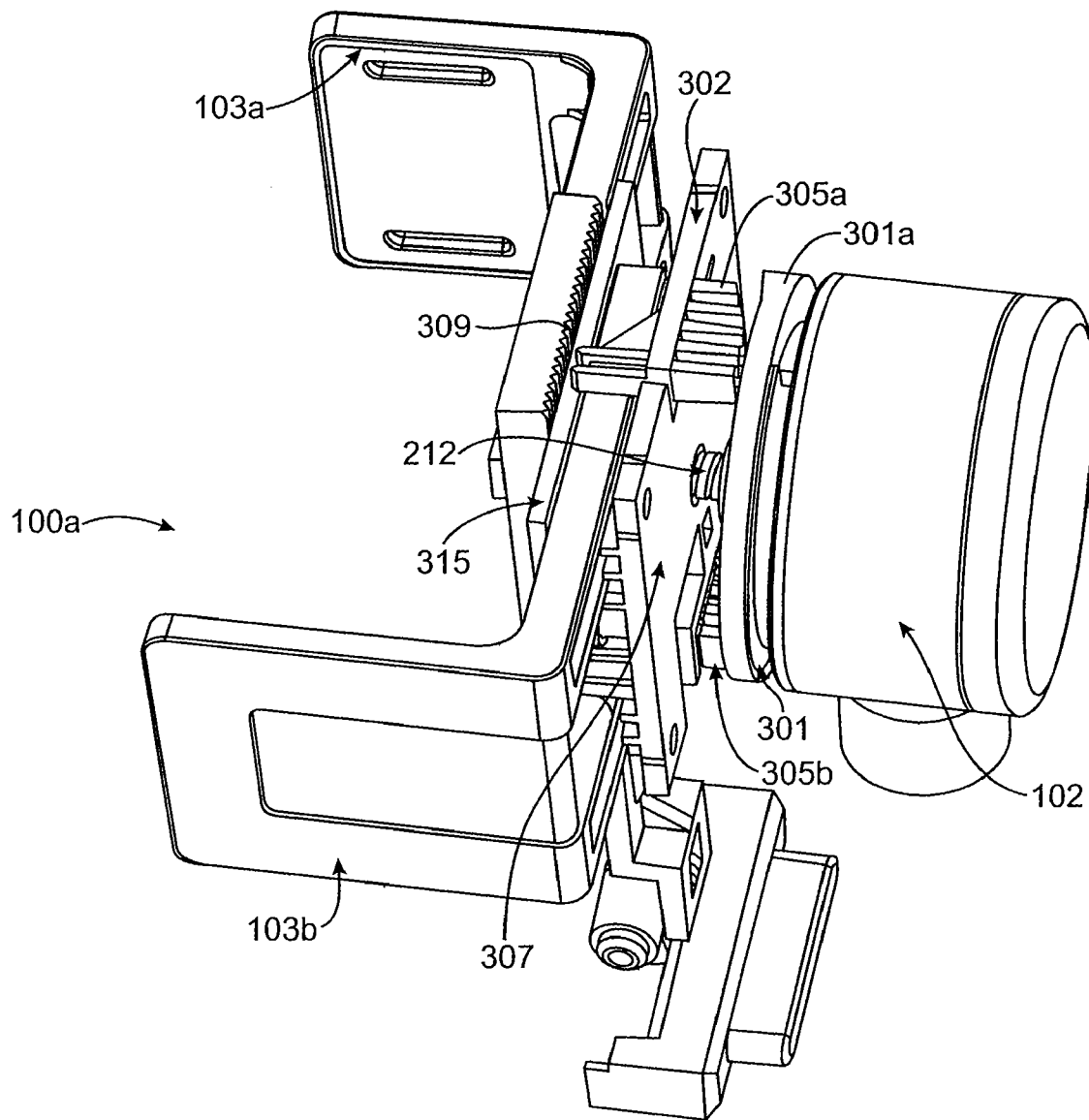


FIG. 5

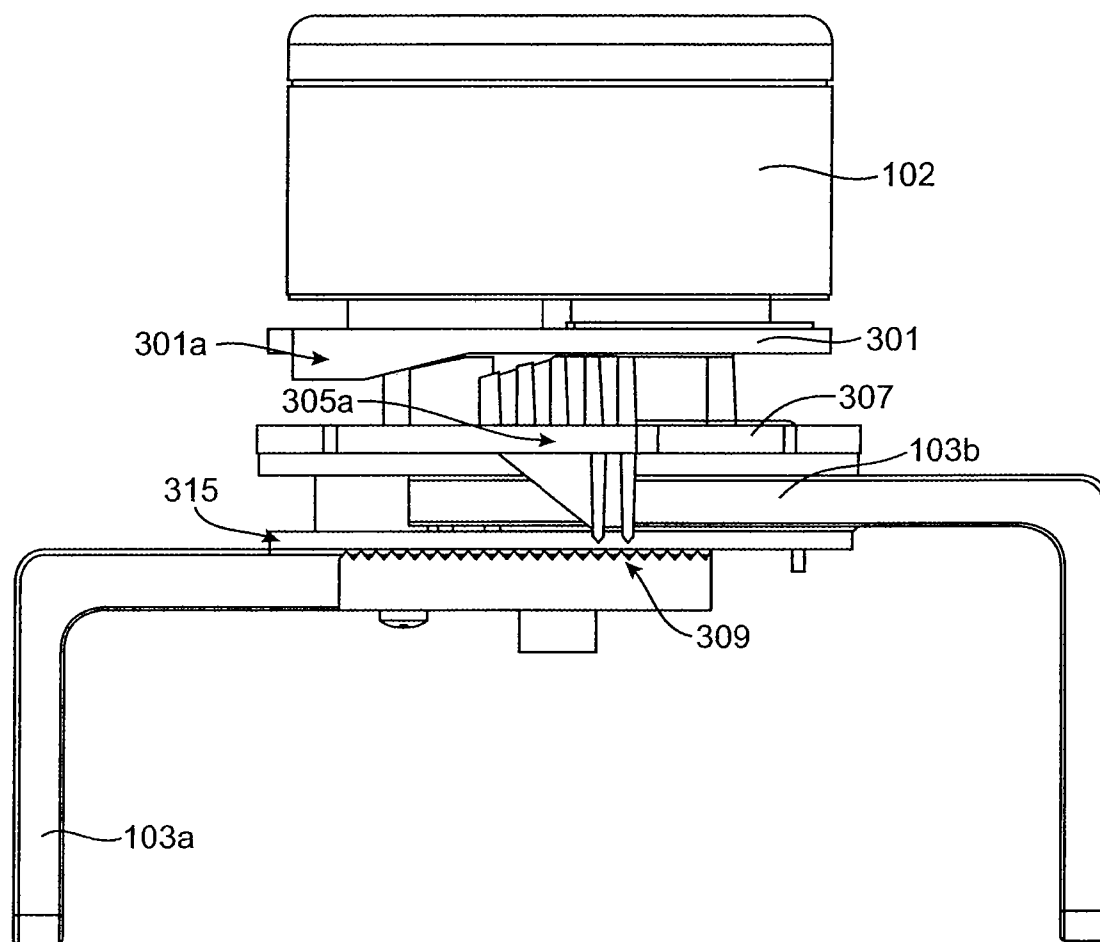


FIG. 6

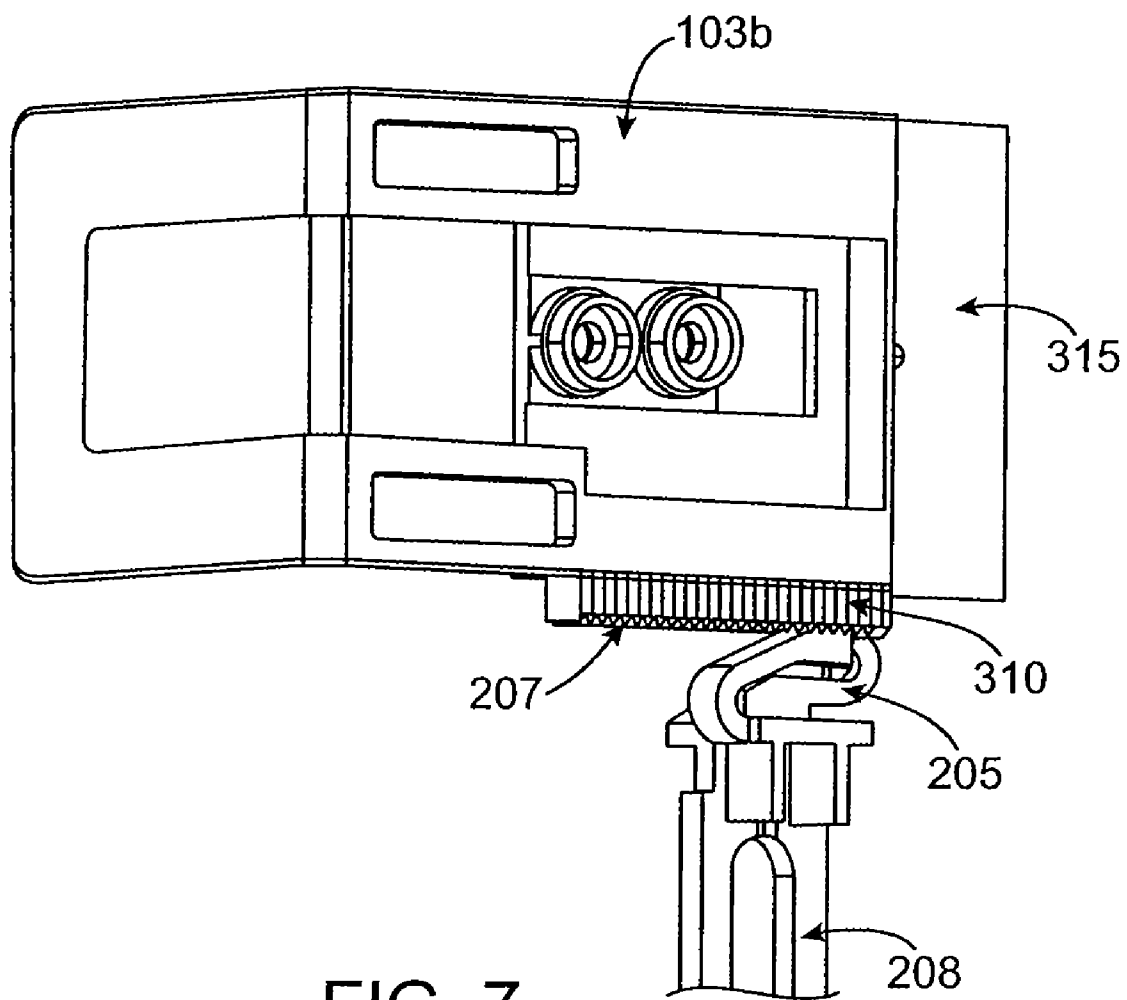
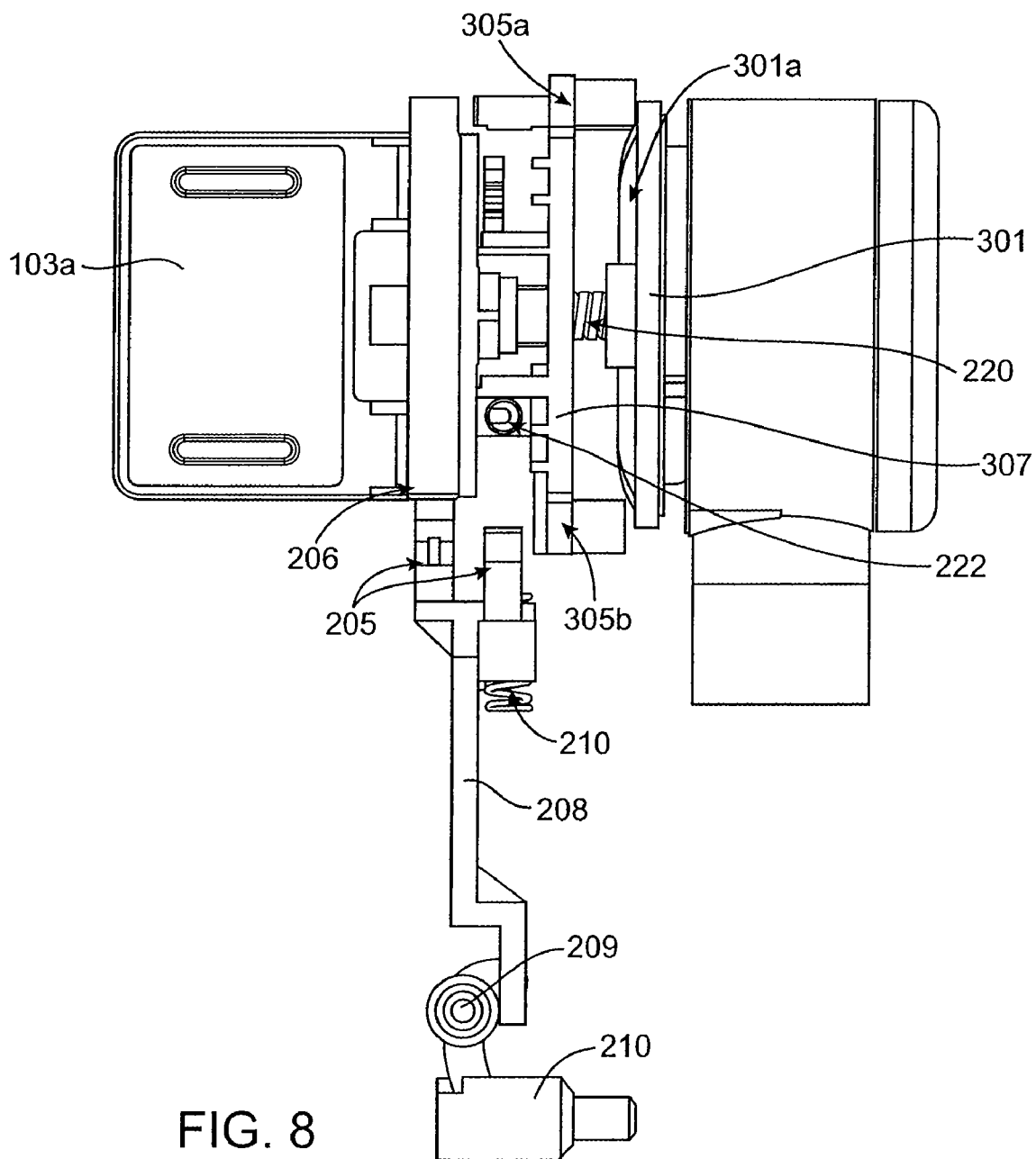


FIG. 7



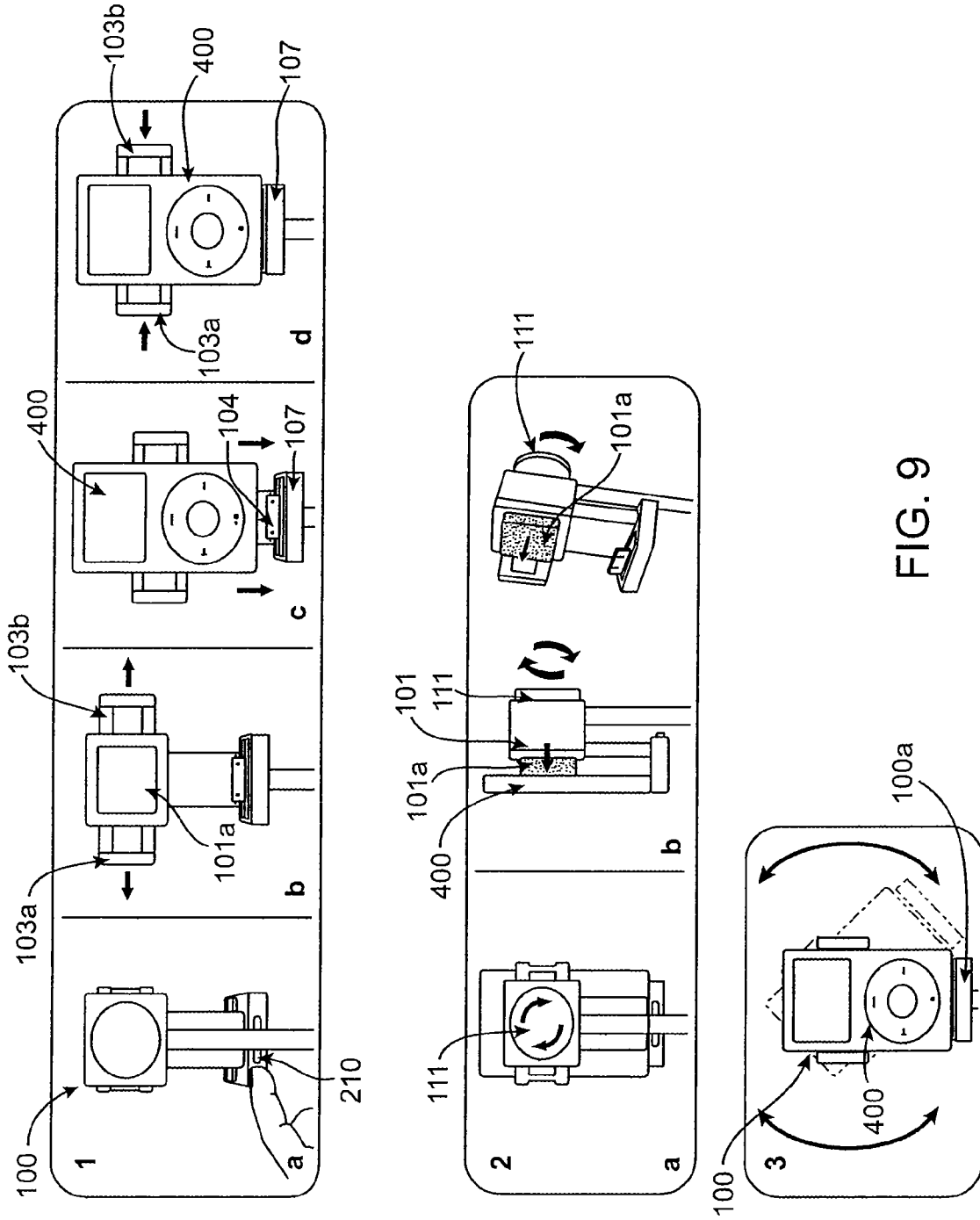


FIG. 9

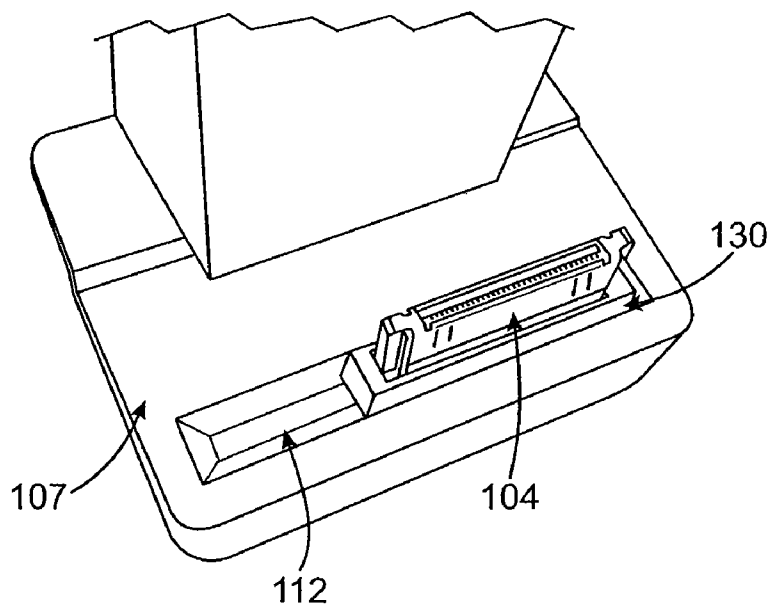


FIG. 10

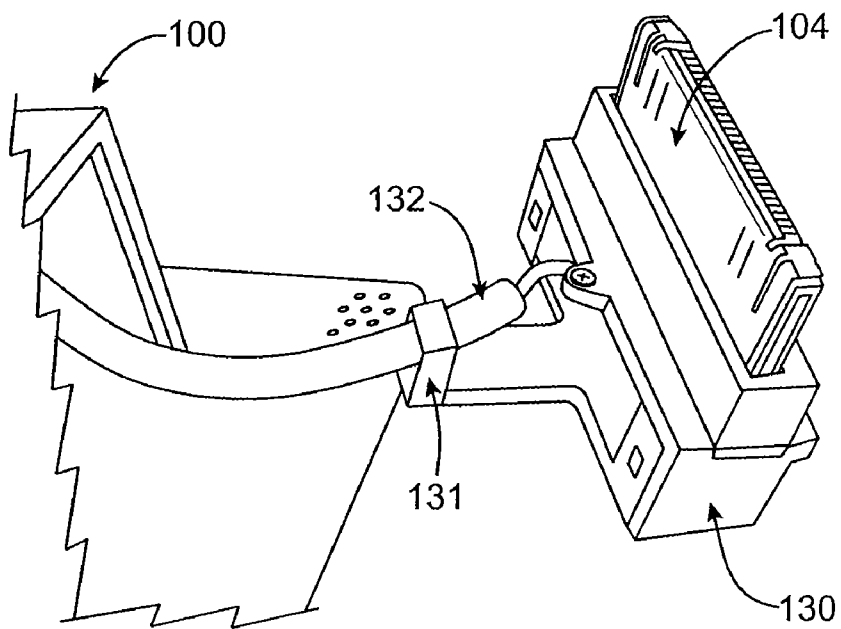


FIG. 11

GRIPPING MECHANISM FOR GRIPPING PORTABLE OBJECT

CROSS-REFERENCES TO RELATED APPLICATIONS

[0001] This patent application is a non-provisional of and claims the benefit of the filing date of U.S. provisional patent application No. 61/057,574 filed on May 30, 2008 which is herein incorporated by reference in its entirety for all purposes.

BACKGROUND

[0002] A number of devices for holding portable objects exist. Often a portable object, such as a mobile phone, a music player, a movie player, or other device (including combinations of the aforementioned) is used in an automobile or other location where hands-free operation is desirable. The purpose of such devices is to allow the portable object to be operated even when a user is occupied with other tasks. To accomplish hands-free operation, holders must both maintain a solid grip on the portable object, and provide a way to anchor the device and the holder so that they do not move in unintended ways.

[0003] It is difficult to maintain a solid grip on the portable object. Portable objects come in all shapes and sizes, and the holder needs to be able to accommodate any of them. One method known in the prior art uses a docking cavity that receives a portable object such as an MP3 player. However, the use of a docking cavity is of limited value, since it is sized to receive only one type of portable object. Furthermore, the prior art dock has limited flexibility, as a portable object within the dock cannot be placed at various viewing angles.

[0004] Embodiments of the invention address the above problems and other problems, individually and collectively.

BRIEF SUMMARY

[0005] Embodiments of the present invention include a holding device for holding portable objects.

[0006] One embodiment of the present invention includes a holding device comprising: a platform; a first arm attached to the platform; a second arm attached to the platform opposing the first arm, wherein the first arm or the second arm is capable of moving inward and outward; a first locking mechanism adapted to prevent the first arm or the second arm from moving outward; and a second locking mechanism adapted to prevent the first arm or the second arm from moving outward when the platform is in a predetermined orientation.

[0007] Another embodiment of the present invention includes a holding device comprising: a platform, wherein the platform has an adjustable rotation; a first arm attached to the platform; a second arm attached to the platform opposing the first arm, wherein the first arm or the second arm are disposed to move inward and outward; a first means for locking the first arm or the second arm from moving in the outward direction; means for releasing the first means for locking; and a second means for locking the first arm or the second arm when the platform is at a predetermined rotation relative to the surface.

[0008] Another embodiment of the present invention includes a method of using a holding device comprising: placing a portable object in the holding device comprising first and second arms; securing the portable object in the holding device using the first and second arms, wherein the object is in a portrait orientation; and rotating the portable

object so that it is in a landscape orientation while the portable object is held by the first and second arms.

[0009] These and other novel aspects of the present invention will be apparent to those of ordinary skill in the art upon review of the drawings and the remaining portions of the specification.

BRIEF DESCRIPTION OF THE DRAWINGS

[0010] FIG. 1 shows a perspective view of a holding device according to an embodiment of the invention.

[0011] FIG. 2 illustrates various positions the holding device of FIG. 1 can be placed in, and also the relative movement of the arms.

[0012] FIG. 3 shows a portrait view of a head unit according to an embodiment of the invention.

[0013] FIG. 4 shows an inside perspective view of an embodiment of a holding device.

[0014] FIG. 5 shows a back perspective view of a holding device according to an embodiment of the invention.

[0015] FIG. 6 shows an overhead view of some internal components of a holding device according to an embodiment of the invention.

[0016] FIG. 7 shows a rear view of an embodiment of an arm of a holding device.

[0017] FIG. 8 shows a side view of some internal components of a holding device according to an embodiment of the invention.

[0018] FIG. 9 shows a method of using a holding device according to an embodiment of the invention.

[0019] FIGS. 10-11 show close up views of an electrical connector.

DETAILED DESCRIPTION

[0020] Embodiments of the invention are directed to a holding device. The holding device can be used to grasp portable objects (e.g., portable electronic objects). Examples of portable objects that can be held by embodiments of the invention include phones, media players such as an IPOD™ or other MP3 and video players, navigation devices, and other suitable devices. In some implementations, a portable object that is held by the holding device can establish an electrical connection with an electronic connector present in the holding device. Electronics in the holding device can connect with an automobile or other power source, to recharge the batteries of the portable object and provide output signals.

[0021] Some portable objects can be used in multiple orientations and positions. For example, the iPhone™ produced by Apple, Inc. can be positioned in either a portrait mode or a landscape mode. In portrait mode, a portable phone such as the iPhone™ is positioned by a user with an orientation such that its vertical height is greater than its lateral width. In the landscape mode, the orientation of the phone is such that its lateral width is greater than its vertical height. However, many conventional holding devices are not able to hold a portable object in both a portrait or landscape orientation. Embodiments of the invention, on the other hand, allow the holding device to hold a portable object, and allow for rotation of the portable object from a portrait mode to landscape mode, and vice-versa. Embodiments of the invention are directed to a holding device that can hold a portable object in multiple orientations, such as portrait and landscape, but can also provide for greater holding ability without dropping the held portable object.

[0022] An exemplary holding device according to an embodiment of the invention includes a platform attached to two arms. The arms are capable of moving inward and outward relative to each other. There is a first locking mechanism adapted to prevent the arms from moving outward independent of orientation, and also a second locking mechanism adapted to prevent the arms from moving outward when the platform is in a predetermined orientation. This predetermined orientation can correspond to, for example, the landscape orientation of a portable electronic object. An object such as a portable phone can be placed on the platform, and then the arms can be pushed inward to grip the portable phone, and prevent it from falling out of the holding device. The arms are held in a predetermined position (i.e., prevented from sliding outwards) by the first locking mechanism. While held by the arms, the phone can be rotated from the portrait orientation to the landscape orientation, to access landscape features of the phone. If the user wants to remove the phone while it is held by the holding device in the landscape orientation, the user may push a release lever which will release the topmost arm, allowing the phone to be removed from the holding device. The arm that is at the bottom of the phone will remain in place, as it is held in a fixed predetermined position by the second locking mechanism. This provides a support for the phone so that it does not accidentally separate from the holding device. Embodiments of the invention will be described in greater detail below, with reference to the figures.

[0023] I. Functionality

[0024] FIG. 1 shows a perspective view of a holding device **100** according to an embodiment of the invention. In this implementation, holding device **100** is configured to hold an MP3 player such as an iPod™. However, in other implementations, holding device **100** can be configured to hold other kinds of portable objects. Holding device **100** connects to a power supply by means of power connector **109**. Power connector **109** can be a cigarette lighter adapter (CLA), that connects to the cigarette lighter outlet of a car. Holding device **100** can then power a held object by providing electricity from a car power source (e.g., a cigarette lighter), through the CLA **109**, to the held object.

[0025] The holding device **100** may also include an auxiliary connector **108**. Auxiliary connector **108** can be an auxiliary jack, which connects to an auxiliary connector in a car. If the auxiliary connector in the car receives signals (e.g., music signals) from the auxiliary connector **108**, this can allow the holding device **100** to output music or video data from the held portable object to an audio system in the car so that music or video can be played back by the car.

[0026] In this example, power connector **109** and auxiliary connector **108** can be attached to stand **105**. Wires or other connection means (not shown) can run inside of the holding device **100**, and can electrically couple both auxiliary connector **108** and electrical connector **109** to an electrical connector **104**. Electrical connector **104** can be designed to interface with the held portable object (not shown), and can both power the portable object and allow for signals to be transferred between the held object and the car.

[0027] Power connector **109** can serve to anchor the holding device **100**, by coupling device **100** to an outlet or other power source. Stand **105** attaches to power connector **109** and can function to support device **100** while it is holding a portable object. Stand **105** can connect to flexible support **106**. Any suitable flexible support **106** may be used in

embodiments of the invention. For example, an exemplary flexible support can be found in U.S. Pat. No. 7,004,596, which is herein incorporated by reference. The flexible support **106** can preferably maintain its position after being manipulated by a user. Such supports are particularly useful, since different automobiles may have cigarette lighters with different orientations and/or positions. In addition, different persons may have different heights and/or viewing preferences. By using a flexible support **106** (which may be referred to as a “gooseneck” in some cases), it is possible to adjust the held object in a desired position.

[0028] In other embodiments, a flexible support is not needed. For example, a rigid support could be used in certain embodiments of the invention.

[0029] Flexible support **106** connects to neck connector **102**, which in turn is rotatably coupled to head unit **100a**. Head unit **100a** functions to hold the portable object, and is able to rotate around neck connector **102**. The combination of rotation around neck connector **102** with the flexible support **106** provides for a large number of positions that a device held within head unit **100a** can be placed in. This allows for usage of holding device **100** by various different users who may have different location preferences, and also allows for great flexibility in location such as within a car.

[0030] Head unit **100a** includes a platform **101** upon which a portable object can rest, first and second arms **103a**, **103b**, on opposite sides of platform **101**, and a base **107**. An electrical connector **104** is coupled with the base **107**. A portable object such as an MP3 player (not shown) can interface with the electrical connector **104**, and the first and second arms can move inwards to grip the portable object. In this manner, the portable object can be supported from below by base **107**, in the back by platform **101**, and held on the sides by first and second arms **103a**, **103b**. The power connector **109** can be connected to the cigarette outlet of a car, and the auxiliary connector **108** can be connected to a radio input. This allows for use of the MP3 player in the car, with audio recordings stored on the MP3 player output through the car stereo.

[0031] FIG. 2 illustrates various positions the holding device **100** of FIG. 1 can be placed in, and also the relative movement of the arms. Both first arm (“left arm”) **103a** and second arm (“right arm”) **103b** can move inward (i.e., towards the platform **101**) and outward (i.e., away from platform **101**). In exemplary embodiments, inward and outward are directions independent of the rotation or position of device **100**. That is, the terms “inward” and “outward” signify motion of the arms relative to the platform **101** no matter what position the arms and the platform are in. In other embodiments, the terms “inward” and “outward” can be dependent on the orientation of the device **100**.

[0032] FIG. 1 shows holding device **100** in the portrait orientation **181**. In this orientation, the first arm **103a** and the second arm **103b** are laterally spaced apart from each other, and base **107** is located below the arms such that it is perpendicular to flexible support **106**. In the portrait orientation, there is a first locking mechanism (not shown) that will prevent both the first and second arm from moving outward.

[0033] Holding device **100** can also be placed in a predetermined configuration, such that a second locking mechanism (not shown) will prevent one of the first or second arms **103(a)**, **103(b)** from moving outward, even when the first locking mechanism has been released. As described above, this allows for the portable object to be removed without falling out of the holding device, while the holding device is

in a predetermined configuration. In some embodiments, the predetermined configuration can be an orientation such as a landscape orientation. This can occur when the head unit **100a** is rotated approximately 90 degrees about the neck connector **102** from the portrait orientation. In the example of FIG. 2, there can be two predetermined orientations. The left landscape orientation **180a** can be when the bottom of the head unit **100a** is rotated 90 degrees to the left, and the right landscape orientation **180b** can be when the bottom of the head unit **100a** is rotated 90 degrees to the right.

[0034] When holding device **100** is in a predetermined position, one of the arms **103a** or **103b** may not move outward, even if a release mechanism is activated. In exemplary implementations, arm **103b** can be so locked into a predetermined position when the holding device **100** is in left landscape orientation **180a**, and arm **103a** will be so locked when the holding device **100** is in right landscape orientation **180b**. In other embodiments, different arms can be locked. In one such example the arm closest to the ground can be locked.

[0035] FIG. 3 shows a portrait configuration of a head unit **100a** according to an embodiment of the invention. In this embodiment, a platform **101** is attached to left arm **103a**, right arm **103b**, and neck connector **102**. In some implementations, neck connector **102** can couple with a support and other connector structures (not shown). Also connected to platform **101**, by way of a stem **135**, is a base **107**. Coupled with the base **107** is an electrical connector **104**, which can be used to electrically and mechanically connect to a portable object (not shown). Electrical connector **104** can be configured to transmit power and data to the portable object, and to receive data from the portable object and transmit it to an output connector (not shown) for use with suitable devices, such as speaker systems, computers, car radios, etc. Electrical connector **104** is capable of sliding across base **107** in a lateral direction. This can be accomplished with a slot **112** formed within base **107**. Electrical connector **104** can have a portion or stand (not shown) that is wider than slot **112**. This allows electrical connector **104** to slide laterally within slot **112**, but not be removed. Electrical connector **104** may be any style of connector necessary to connect to portable objects, such as a standard 30 pin connector used to connect to an iPhone™.

[0036] FIGS. 10-11 show a close up view of electrical connector **104**. In FIG. 10, electrical connector **104** has been moved to one side of slot **112** within base **107**, to accommodate various portable objects. In FIG. 11, electrical connector **104** is shown removed from holding device **100**. Electrical connector **104** can sit on a portion **130** that is wider than slot **112** from FIG. 10. This allows the connector to slide within the slot **112** without falling out. A wire (i.e. a cable) **132** is attached at one end to electrical connector **104**, and can run through the holding device **100**. The other end of wire **132** can connect to a power connector. Wire **132** is guided by guidepost **131**. Guidepost **131** can hold wire **132** with a clip, and can prevent wire **132** from getting tangled while electrical connector **104** slides within the holding device.

[0037] Left arm **103a** and right arm **103b** of FIG. 3 can each have a contact pad **113** on the inside of the arm. To be held, a portable object is placed between the two arms, connected to electrical connector **104**, and then the arms may be moved inward until they grip the portable object. Contact pads **113** can be made of a soft material, and allow for the arms to maintain a strong grip on the portable object without damaging it. The contact pads may be made of any suitably resilient material such as rubber, foam, etc.

[0038] Further adding to the adjustability of the holding device is extendable platform **101a**. It is operatively coupled with thickness knob **111**. Rotation of thickness knob **111** (which can reside on the end of neck connector **102**) can extend the extendable platform **101a** out past the platform **101**. This allows the holding device to adjust for portable objects of various thicknesses. The combination of the moving arms **103a** and **103b**, the sliding electrical connector **104**, and the extendable platform **101a** results in a highly adjustable holding device. Examples such a holding device can conform to a wide variety of portable objects. Consumers will not need to purchase multiple holding devices to support their diverse collections of portable objects, as a single device according to embodiments of the invention can suffice.

[0039] II. Locking Mechanisms

[0040] The inside mechanisms of an exemplary holding device will be explained with reference to FIGS. 4-8. FIG. 4 shows a perspective view of an embodiment in which the front of holding device **100** is not shown. On the back of device **100** can be seen thickness knob **111**. This is coupled with bar **212** such that rotation of the thickness knob **111** results in bar **212** extending in or out by means of a screw mechanism. Bar **212** can be attached to an extendable platform, which can then extend along with bar **212** as described above with reference to extendable platform **101a**. Towards the bottom of holding device **100** can be seen electrical connector **104**, residing on stand **130**. Stand **130** can have portions that are wider than lateral slot **112** in FIG. 3. Stand **130** may float freely within slot **112** with electrical connector **112** extending above the slot to allow for coupling with a portable object. There can be a cable (not shown) coupled on one end with electrical connector **104**. The cable can run along the inside of holding device **100**, guided by grooves **140**, and the other cable end can extend outside the holding device. In one example, the cable may run through the head unit of the device, into the support structure, and may connect with both a power connector and an auxiliary connector (not shown).

[0041] A left arm **103a** and a right arm **103b** are attached to a platform **101**, such that both arms may move inward and outward. The arms can be held apart by plate **315**, which can serve to maintain the plates in their positions and can be attached by screws (or other means known in the art) to the inside of the housing or to the brake plate (not shown). Coupled with left arm **103a** is a biasing member **202**, such as a spring. Biasing member **202** provides an outward force against the left arm **103a**. It can be coupled on one end with (i.e., push against) the left arm **103a**, and on the other end it can couple with an interior portion of platform **101**, or some other relatively fixed object. A second biasing member such as a spring (not shown) can be located behind left arm **103a**, and provide outward force against right arm **103b**. In certain embodiments, a single biasing member may provide outward force against both the right and the left arms. Plate **315** may include a rack **203**, which couples with gear **204** located on left arm **103a**. Rack **203** may be attached to, or formed as part of, plate **315**. Gear **204** rotates relatively slowly, which can retard the outward sliding motion of arm **103a**. Gear **204** can be coated with a viscous grease, or may rotate slowly by other means well known in the art. Right arm **103b** can similarly have a gear (not shown) coupled with a rack (such as located on brake plate of FIG. 5) to slow the outward motion.

[0042] A first locking mechanism may prevent the left arm **103a** or the right arm **103b** from moving outward. It may prevent one or both both arms **103a**, **103b** from moving

outward. When the first locking mechanism is engaged, it couples with the first arm or the second arm and prevents one or both arms from moving outward. There is a release mechanism that releases the first locking mechanism, allowing the left arm **103a** or the right arm **103b** to move outward (due to the force of their respective biasing members). The release mechanism includes a release button **210**, which is accessible to a user from outside the body of holding device **100**. When a user depresses the release button **210**, it can push against the lower portion of release lever **209** causing it to rotate. Release lever **209** can be rotatably attached to a support post **209a** on the inside of holding device **100**, and its rotation can pull release link **208** lower. Guides **213** can hold release link **208** in place laterally while allowing it to move vertically.

[0043] Release link **208** can couple with either or both of left arm **103a** and right arm **103b** by means of locking tabs **205**. Locking tabs **205** include teeth (not shown), that can mate with left primary rack **206** and right primary rack **207**. When locking tabs **205** are engaged with left primary rack **206** and right primary rack **207**, the left arm **103a** or the right arm **103b** can be held in position such that they cannot move outward.

[0044] The first release mechanism can operate as follows: when the release button **210** is activated, it rotates release lever **209**, which can lower release link **208**. This can disengage the locking tabs **205** from the right primary rack **207** or the left primary rack **206**. In certain embodiments, the teeth on the primary racks **206**, **207** can be right angle triangles, where the angled side of the teeth faces inward and the opposing sides of the teeth are approximately vertical. In this aspect, the first locking mechanism can prevent the arms from moving outward. However, the arms can still move inward even while the first locking mechanism is engaged. In other embodiments, the teeth may include other shapes, such as isosceles triangle- or square-like shapes, as will be well known to one skilled in the art.

[0045] FIG. 5 shows a back perspective view of a holding device according to an embodiment of the invention. The outer shell of the holding device is not shown in order to further explicate the second locking mechanism. At the same time that the left arm **103a** and the right arm **103b** (sandwiching plate **315**) can be engaged with a first locking mechanism, there is a second locking mechanism that can engage when the holding device is at a predetermined orientation. In exemplary embodiments, the predetermined position occurs when the head unit **100a** rotates around the neck connector **102** to reach a landscape orientation. Head unit **100a** can rotate about screw **212**, which can be attached to neck connector **102** and inner pivot **301**. In this manner, both the neck connector **102** and the inner pivot **301** can remain stationary relative to the rotating head unit. The circular shaped inner pivot **301** can reside within an outer housing (not shown), while the neck connector **102** can reside outside the housing. As the head unit **100a** rotates around screw **212**, the brake plate **307** rotates with the head unit. Attached on the brake plate **307** can be cam followers **305a** and **305b**. They can be attached to portions **302** of brake plate **307** that is pliable. In one example, brake plate **307** can be made of a plastic. Portions **302** can be surrounded by etchings within the brake plate, allowing portions **302** to move relative to the brake plate **307**.

[0046] Inner pivot **301** can feature a protrusion **301a** on approximately half of its circumference. Protrusion **301a** can be less than a third to over half of the circumference of inner pivot **301**. In certain implementations, inner pivot **301** can

have multiple protrusions. In exemplary embodiments, protrusion **301a** is approximately half the circumference of inner pivot **301**, with the thickness of the protrusion increasing from its edges towards its center. The protrusion **301a** can couple with an auxiliary rack located on the left arm **103a** or the right arm **103b**. As brake plate **307** rotates around screw **212**, protrusion **301a** can engage with cam follower **305a** or **305b**. In certain implementations, protrusion **301a** may engage with the cam followers when the holding device is in a landscape orientation. When the holding device is in the right landscape orientation, protrusion **301a** can engage with cam follower **305a**. This can cause the cam follower **305a** to extend outward, to mate with auxiliary rack **309**. Once the cam follower **305a** mates with auxiliary rack **309**, the left arm **103a** is held from moving outward. Similarly for the right arm **103b**, when the holding device is in the left landscape orientation, protrusion **301a** can engage with cam follower **305b**. This can cause the cam follower **305b** to extend outward, to engage with an auxiliary rack (not shown) located on the bottom portion of right arm **103b**. Once the cam follower **305b** mates with the auxiliary rack, the right arm **103b** is held from moving outward. Rotation of the holding device back to the portrait orientation can serve to disengage the cam follower from protrusion **301a**, releasing the second locking mechanism.

[0047] FIG. 6 shows an overhead view of some internal components of a holding device according to an embodiment of the invention. Left arm **103a** and right arm **103b** are held spaced apart by plate **315** and can be capable of holding a portable object. Auxiliary rack **309** may be attached to, or formed as part of, left arm **103a**. Cam follower **305a** may be attached to, or formed as part of, brake plate **307**, and is capable of engaging with auxiliary rack **309** as described above. The brake plate **307** and arms **103a**, **103b** can rotate relative to inner pivot **301**, which can be attached to neck connector **102**. A protrusion **301a** can be attached to, or formed as part of, inner pivot **301**. When the holding device is in a predetermined orientation (such as a landscape orientation), the protrusion **301a** can couple with auxiliary rack **309** by pushing the cam follower **305a** to mate with the teeth of the auxiliary rack **309**.

[0048] FIG. 7 shows a rear view of an embodiment of right arm **103b**. Behind right arm **103b** is separator plate **315**, which can serve to keep apart the right arm **103b** from the left arm. Auxiliary rack **310** and right primary rack **207** can both be coupled to (including by attachment or formed as a part of) right arm **103b**. A first locking mechanism, including locking tabs **205** coupled to release link **208**, is engaged with right primary rack **207**. This can prevent right arm **103b** from moving outward while it is a part of a holding device.

[0049] FIG. 8 shows a side view of some internal components and the left arm **103a** of a holding device according to an embodiment of the invention. Coupled with left arm **103a** is a left primary rack **206**. The first locking mechanism, including locking tabs **205** and release link **208**, can engage with the left primary rack **206** and also a right primary rack (not shown). The first locking mechanism is held up by a biasing member **210**, such as a spring. This will keep the first locking mechanism engaged with the primary racks. Activation of the release button **210**, for example by pushing it inwards, can rotate release lever **209**, which can cause locking tabs **205** to disengage from the primary racks. This can release the first locking mechanism, while the release button is activated. The left arm **103a** or the right arm (not shown) can be

coupled with the biasing member **222**, which can provide outward force to the arms such that they can move outward when the first locking mechanism is released.

[0050] The device can rotate about screw **220**. When in a predetermined position such as a landscape orientation, a protrusion **301a** located on inner pivot **301** can couple with an auxiliary rack located on the left arm **103a** or the right arm. The protrusion **301a** can engage a cam follower **305a** or **305b** (for the right landscape orientation or the left landscape orientation, respectively) located on brake plate **307**, which will in turn engage with the auxiliary rack.

[0051] In certain exemplary embodiments, the secondary locking mechanism includes protrusions coupling with auxiliary racks, in order to prevent a first arm or a second arm (ie, including one or both arms) from moving outward. However, the secondary locking mechanism can include any suitable mechanism known to those skilled in the art. In one example, the secondary locking mechanism can comprise a ball bearing disposed within a trough or tube within a holding device. The tube can have the shape of the letter “v”, or any suitable shape. When the device of the example is in a predetermined position, such as being rotated sideways with an arm substantially parallel with the ground, gravity will pull the ball bearing to the lower end of the tube. In this position, the ball bearing can jam the first or the second arm, such that it cannot move outward. Rotating the holding device back to a portrait position can pull, due to gravity, the ball bearing back to the center of the tube.

[0052] III. Method of Use

[0053] FIG. **9** shows a method of using a holding device **100** according to an embodiment of the invention. In step **1a**, the release button **210** is pushed. This releases a first locking mechanism connected to the left arm **103a** or the right arm **103b**, allowing them to move outward as shown in step **1b**. In step **1c**, a portable object **400** can be placed in the holding device **100**. Portable object **400** can connect to electrical connector **104**, located on base **107**. In step **1d**, the left arm or the right arm can be moved inward. The device is thereon held by the grip of the left and right arms **103a**, **103b**, and the support of base **107**.

[0054] Step **2** shows how the holding device can be adjusted to hold various sized portable objects. In step **2a**, the thickness knob **111** can be rotated. This can cause extendable platform **101a** to extend out from platform **101**, until it is able to support portable object **400** as shown in step **2b**. Step **3** shows the rotation of head unit **100a**, from a portrait orientation to a predetermined orientation such as a left landscape orientation or a right landscape orientation. In the predetermined orientations, a second locking mechanism is adapted to prevent the left arm **103a** or the right arm **103b** from moving outward.

[0055] Embodiments of the invention may have two separate locking mechanisms including a primary and a secondary locking mechanism. Some embodiments may have a single locking mechanism that can perform the function of both a primary and a secondary locking mechanism. Exemplary embodiments may have a primary and secondary locking mechanism that appear as a single mechanism, however all functions of a primary and secondary locking mechanism can be performed.

[0056] Embodiments of the invention can securely hold and connect to a wide variety of portable objects. Portable objects come in an array of shapes and sizes. Even portable objects made by the same manufacturer can have varying sizes across

model ranges. Embodiments of the holding device have movable arms, a sliding electrical connector, and an extendable back platform. Adjusting these can lead to a large number of combinations, capable of coupling with many portable objects. Furthermore, certain portable objects can be used in various orientations, such as portrait and landscape modes. Embodiments of the invention provide for a holding device that can rotate to allow use of a held portable object in any desired orientation. One of the arms of the holding device may be prevented from moving outward when in a landscape orientation, while the other one of the arms may be allowed to move outward. This provides for easy insertion and removal of a portable object from within the holder, yet the non-moving lower arm also provides for a stable platform. As such, portable objects are more securely held and more easily removed without being dropped.

[0057] Holding devices according to embodiments of the invention may be formed by appropriate means as is known to one skilled in the art. Portions of the holding device may be formed from molded plastic, metal, or other suitable materials. The portions may be fastened together using glue, screws, nails, or any suitable fastening means. Various portions may be formed from a single continuous material, or may be formed in several pieces and fastened together. For example, the primary and secondary racks may be formed as part of the left and right arms, or may be formed separated and attached thereto. The protrusion on the inner pivot may be a separate material glued or otherwise fastened thereto, or the inner pivot may be formed (by molding or other suitable means) inherently with a suitable protrusion.

[0058] The terms and expressions which have been employed herein are used as terms of description and not of limitation, and there is no intention in the use of such terms and expressions of excluding equivalents of the features shown and described, or portions thereof, it being recognized that various modifications are possible within the scope of the invention claimed.

[0059] Moreover, any one or more features of any embodiment of the invention may be combined with any one or more other features of any other embodiment of the invention, without departing from the scope of the invention.

[0060] All patent applications, patents, and publications mentioned above are herein incorporated by reference in their entirety for all purposes. None is admitted to be prior art.

[0061] Any reference to “a”, “an” or “the” is intended to include “one or more” unless specifically indicated to the contrary.

What is claimed is:

1. A holding device comprising:
 - a platform;
 - a first arm attached to the platform;
 - a second arm attached to the platform opposing the first arm, wherein the first arm or the second arm is capable of moving inward and outward;
 - a first locking mechanism adapted to prevent the first arm or the second arm from moving outward; and
 - a second locking mechanism adapted to prevent the first arm or the second arm from moving outward when the platform is in a predetermined orientation.
2. The holding device of claim **1**, further comprising:
 - a release mechanism for releasing the first locking mechanism.

- 3. The holding device of claim 1, further comprising: a biasing member coupled with the first arm and or second arm, wherein the biasing member is configured to provide outward force.
- 4. The holding device of claim 3, wherein the biasing member is a spring.
- 5. The holding device of claim 1, further comprising: a flexible support member coupled with the platform
- 6. The holding device of claim 1, wherein both the first arm and the second arm are capable of moving inward and outward, and further wherein the first locking mechanism is adapted to prevent the first arm and the second arm from moving outward.
- 7. The holding device of claim 1, wherein the predetermined orientation comprises a rotation of the platform such that the platform is in a landscape orientation.
- 8. The holding device of claim 1, wherein the first locking mechanism comprises:
 - a primary rack coupled to the first arm or the second arm; locking tabs capable of engaging with the primary rack; and
 - a release lever coupled with the locking tabs, wherein rotation of the release lever results in the locking tabs disengaging from the primary rack.
- 9. The holding device of claim 1, wherein the second locking mechanism comprises:
 - an auxiliary rack coupled to the first arm or the second arm; and
 - a circular shaped inner pivot, wherein approximately half the circumference of the inner pivot comprises a protrusion and further wherein the platform is capable of rotating relative to the inner pivot such that the protrusion couples with the auxiliary rack, when the platform is in the predetermined orientation.
- 10. The holding device of claim 8, wherein the protrusion couples with the auxiliary rack by means of a cam follower, wherein at the predetermined orientation of the platform, the protrusion engages the cam follower such that the cam follower mates with the auxiliary rack.
- 11. The holding device of claim 9, wherein the auxiliary rack is a first auxiliary rack coupled to the first arm, the holding device further comprises a second auxiliary rack coupled to the second arm, wherein the protrusion couples one of the first auxiliary rack or the second auxiliary rack when the platform is in the predetermined orientation.
- 12. The holding device of claim 1, further comprising:
 - a base attached to the platform;
 - an electrical connector coupled with the base; and
 - a cable having two ends, wherein one cable end is coupled to the electrical connector and the other cable end is coupled to a power connector.
- 13. The holding device of claim 12, wherein the electrical connector is capable of connecting to a portable media device.
- 14. The holding device of claim 12, wherein the electrical connector is capable of sliding across the base in a lateral direction.
- 15. The holding device of claim 14, further comprising:
 - a lateral slot across the base;
 - a stand disposed within the slot, wherein the connector is attached to the stand; and

- a clip coupled to the stand, wherein the clip is configured to guide the cable.
- 16. The holding device of claim 1, wherein the second locking mechanism comprises:
 - a tube disposed within the platform, wherein the tube has two ends and wherein at least one tube end couples with the first arm or the second arm; and
 - a ball bearing disposed within the tube, wherein the ball bearing is forced by gravity to the at least one tube end when the platform is in the predetermined orientation.
- 17. The holding device of claim 16, wherein the predetermined location occurs when the first arm or the second arm is substantially parallel with the ground.
- 18. The holding device of claim 16, wherein the ball bearing holds in place the first arm or the second arm coupled with the at least one tube end, when the platform is at the predetermined orientation.
- 19. The holding device of claim 19, further comprising:
 - at least one biasing member coupled with at least one of the first arm and the second arm, wherein the biasing member is configured to provide force in the outward direction.
- 20. The holding device of claim 1, wherein both the first arm and the second arm are capable of moving inward and outward, and further wherein the second locking mechanism is adapted to prevent the first arm and the second arm from moving outward when the platform is in predetermined orientations.
- 21. A holding device comprising:
 - a platform, wherein the platform has an adjustable rotation; a first arm attached to the platform;
 - a second arm attached to the platform opposing the first arm, wherein the first arm or the second arm are disposed to move inward and outward;
 - a first means for locking the first arm or the second arm from moving in the outward direction;
 - means for releasing the first means for locking; and
 - a second means for locking the first arm or the second arm when the platform is at a predetermined rotation relative to the surface.
- 22. The holding device of claim 21, wherein the first arm and the second arm are disposed to move inward and outward; the first means includes means for locking the first arm and the second arm from moving in the outward direction; and the second means includes means for locking the first arm and the second arm when the platform is at predetermined rotations relative to the surface.
- 23. The holding device of claim 21, wherein the predetermined rotation comprises a left landscape orientation or a right landscape orientation.
- 24. A method of using a holding device comprising:
 - placing a portable object in the holding device comprising first and second arms;
 - securing the portable object in the holding device using the first and second arms, wherein the object is in a portrait orientation; and
 - rotating the portable object so that it is in a landscape orientation while the portable object is held by the first and second arms.

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