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(71) Applicant: **Top Shelf Targets, LLC**
San Jose, CA 95120 (US)

(72) Inventor: **Herbst, Robert**
San Jose, California 95136 (US)

(74) Representative: **CSY London**
10 Fetter Lane
London EC4A 1BR (GB)

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(54) **PORTABLE PRACTICE TARGETS FOR PRACTICING HITTING A TARGET ATTACHED TO A GOAL POST OR CROSSBAR**

(57) A portable target assembly for use in a sport wherein a projectile is propelled at a goal, the portable target assembly comprises a front face and rear face separated by a solid material, and a magnet secured to the portable target assembly allowing the portable target assembly to be magnetically attached to a goal post or crossbar. A magnetically receptive material is coupled to a goal post or crossbar when the post or crossbar is not

made of a magnetic material. A method of sport training, comprising the steps of: providing a portable target assembly having a front face and a rear face separated by a solid material with a magnet secured thereto; securing the portable target assembly to a goal post or a cross bar of a goal such that the portable target assembly protrudes into a goal region of the goal; launching a projectile at the portable target assembly.

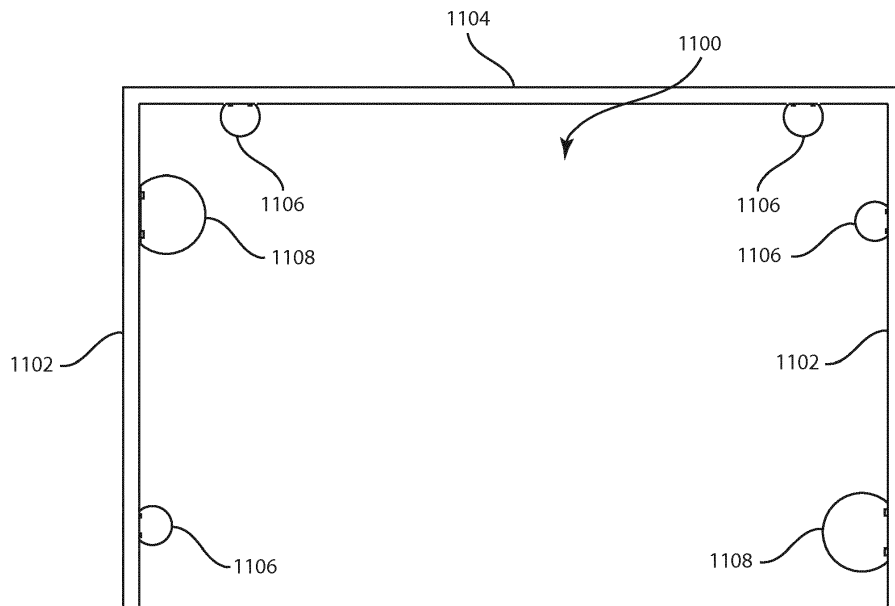


FIGURE 11

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Description**BACKGROUND OF THE INVENTION**

FIELD OF THE INVENTION

[0001] The present invention relates to an apparatus for practicing hitting a portable target assembly attached to a goal post or crossbar to improve a person's accuracy.

DESCRIPTION OF THE RELATED ART

[0002] In sports having a goal protected by a goalie there are areas around the perimeter of the goal that are more likely to result in a propelled object getting by the goalie. The perimeter of the goal opening is defined by two vertical goal posts separated by an upper crossbar and the playing surface. Practice targets are attached to the goal posts or crossbar for a player to aim at during a practice session.

[0003] U.S. Patent No. 4,842,283 by LeBel and Melendez discloses a contact member springly associated with a support arm which is used to mount a portable target assembly to a support which preferably includes the crossbar or posts of a standard hockey goal. The support arm is attached to the post or crossbar using a bolt making it difficult to quickly remove the portable target assembly. Also, the size reduces the portability of the target by a player.

[0004] U.S. Patent No. 5,509,650 by MacDonald discloses a target support sized to approximate the goal and at least two targets positioned thereon. The practice apparatus is preferably a freestanding apparatus supported by support legs. Due to the size of this practice assembly it is not easily portable by a player.

[0005] U.S. Patent No. 5,888,153 by Masin discloses a target which includes a band of steel with a pocket connected to the band of steel for catching an object. A spring is, at one end, connected to the target and, at the opposite end connected to a clamping device such that the entire assembly can be connected to a goal post or crossbar. The clamping device increased the size and amount of time to remove the target from the post or crossbar thus reducing the portability of the target.

[0006] U.S. Patent No. 7,252,604 by Birss discloses a target apparatus that includes a bracket for attachment to a goal frame member. The target apparatus being physically clamped to the post or crossbar increases the difficulty of removing the target and reduces its portability by a player.

SUMMARY OF THE INVENTION

[0007] The present invention has been developed in response to the present state of the art, and in particular, in response to the problems and needs in the art that have not yet been fully solved by currently available target assemblies.

[0008] A portable target assembly for use in a sport wherein a projectile is shot at a goal, the portable target assembly comprises a front face and rear face separated by a solid material, and at least one magnet secured to the portable target assembly allowing the portable target assembly to be magnetically attached to a goal post or crossbar. The magnet may be comprised of at least one permanent magnet or of a flexible magnetic strip. In one embodiment the magnet may be securely attached to a straight edge formed perpendicular to the front face and the rear face along the circumference of the portable target assembly, the width of the straight edge being the distance between the front face and the rear face. In yet another embodiment the magnetic material is secured to the rear face of the portable target assembly. In cases where the goal post and crossbar are not made from a magnetic material, a strip of magnetic receptive material may be secured to the goal post or crossbar thus allowing the portable target assembly to magnetically attach to the post or crossbar.

[0009] A method of sport training, comprising the steps of: providing a portable target assembly having a front face and a rear face separated by a solid material with a magnet secured thereto; securing the portable target assembly to a goal post or a cross bar of a goal such that the portable target assembly protrudes into a goal region of the goal; propelling a projectile at the portable target assembly. The method further comprising coupling a magnetically receptive material to a goal that is not magnetically receptive such that the magnet of the portable target assembly may be magnetically coupled thereto. The method wherein the portable target assembly includes a straight edge and the magnet is disposed on the portable target assembly near the straight edge thereof.

[0010] Reference throughout this specification to features, advantages, or similar language does not imply that all of the features and advantages that may be realized with the present invention should be or are in any single embodiment of the invention. Rather, language referring to the features and advantages is understood to mean that a specific feature, advantage, or characteristic described in connection with an embodiment is included in at least one embodiment of the present invention. Thus, discussion of the features and advantages, and similar language, throughout this specification may, but do not necessarily, refer to the same embodiment.

[0011] Furthermore, the described features, advantages, and characteristics of the invention may be combined in any suitable manner in one or more embodiments. One skilled in the relevant art will recognize that the invention can be practiced without one or more of the specific features or advantages of a particular embodiment. In other instances, additional features and advantages may be recognized in certain embodiments that may not be present in all embodiments of the invention.

[0012] These features and advantages of the present invention will become more fully apparent from the fol-

lowing description and appended claims, or may be learned by the practice of the invention as set forth hereinafter.

BRIEF DESCRIPTION OF THE DRAWINGS

[0013] In order for the advantages of the invention to be readily understood, a more particular description of the invention briefly described above will be rendered by reference to specific embodiments that are illustrated in the appended drawing(s). It is noted that the drawings of the invention are not to scale. The drawings are mere schematics representations, not intended to portray specific parameters of the invention. Understanding that these drawing(s) depict only typical embodiments of the invention and are not, therefore, to be considered to be limiting its scope, the invention will be described and explained with additional specificity and detail through the use of the accompanying drawing(s), in which:

Figure 1 illustrates one embodiment of a portable target assembly wherein permanent magnets are embedded in the portable target assembly.

Figure 2 illustrates yet another embodiment of a portable target assembly wherein a strip of magnetic material is secured to the portable target assembly.

Figure 3 illustrates yet another embodiment of a portable target assembly wherein permanent magnets are embedded in the rear face adjacent to the straight edge of the portable target assembly.

Figure 4 illustrates yet another embodiment of a portable target assembly wherein a strip of magnetic material is secured to the portable target assembly.

Figure 5 illustrates yet another embodiment of a portable target assembly wherein two permanent magnets are embedded in the portable target assembly.

Figure 6 illustrates different arrangements of the front face and rear face that may be used for the portable target assembly according to three embodiments of the invention.

Figure 7 illustrates additional configurations possible for the portable target assembly including a circle, rectangle, hexagon, or any other polygonal shape.

Figure 8 illustrates a portable target assembly attached to a goal post according to one embodiment of the invention.

Figure 9 illustrates a portable target assembly attached to a goal post made from a non-magnetic material according to one embodiment of the invention.

Figure 10 illustrates yet another embodiment of a target assembly 1000 wherein a receptive body 1012 is magnetically attached to a goal post or crossbar 1010, a removable target body 1002 being secured to the receptive body 1012.

Figure 11 illustrates the placement of target assemblies along a goal post or crossbar.

10 DETAILED DESCRIPTION OF THE INVENTION

[0014] For the purposes of promoting an understanding of the principles of the invention, reference will now be made to the exemplary embodiments illustrated in the drawing(s), and specific language will be used to describe the same. It will nevertheless be understood that no limitation of the scope of the invention is thereby intended. Any alterations and further modifications of the inventive features illustrated herein, and any additional applications of the principles of the invention as illustrated herein, which would occur to one skilled in the relevant art and having possession of this disclosure, are to be considered within the scope of the invention.

[0015] Reference throughout this specification to an "embodiment," an "example" or similar language means that a particular feature, structure, characteristic, or combinations thereof described in connection with the embodiment is included in at least one embodiment of the present invention. Thus, appearances of the phrases an "embodiment," an "example," and similar language throughout this specification may, but do not necessarily, all refer to the same embodiment, to different embodiments, or to one or more of the figures. Additionally, reference to the wording "embodiment," "example" or the like, for two or more features, elements, etc. does not mean that the features are necessarily related, dissimilar, the same, etc.

[0016] Each statement of an embodiment, or example, is to be considered independent of any other statement of an embodiment despite any use of similar or identical language characterizing each embodiment. Therefore, where one embodiment is identified as "another embodiment," the identified embodiment is independent of any other embodiments characterized by the language "another embodiment." The features, functions, and the like described herein are considered to be able to be combined in whole or in part one with another as the claims and/or art may direct, either directly or indirectly, implicitly or explicitly.

[0017] As used herein, "comprising," "including," "containing," "is," "are," "characterized by," and grammatical equivalents thereof are inclusive or open-ended terms that do not exclude additional unrecited elements or method steps. "Comprising" is to be interpreted as including the more restrictive terms "consisting of" and "consisting essentially of."

[0018] In general, the embodiments of this invention comprise securing a magnet to a portable target assem-

bly such that the portable target assembly is easily attached to a magnetic goal post or crossbar. The magnets comprise permanent magnets and flexible magnetic materials. These portable target assemblies may be used in sports having a goal such as hockey, lacrosse, ringette, broomball, and soccer. When the goal post or crossbar is not made from a magnetic material a magnetically receptive material may be secured to the goal post or crossbar in at least one area allowing the portable target assembly to be attached. The target assemblies of the present invention are easily removed from the goal post or crossbar and stored in player's gym bag or other carrying device. The portable target assembly comprises a front face, a rear face, and a solid material between the front and rear face forming the body of the portable target assembly. An edge is formed around the circumference of the portable target assembly allowing at least one magnet to be secured on the surface of the edge, or partially or wholly within the body of the target wherein the portable target assembly attaches to a goal post or crossbar along the edge of the portable target assembly. An alternative is to secure at least one magnet to the surface of the rear face, or partially or wholly within the body of the assembly so that the portable target assembly attaches to the goal post or crossbar at the rear face of the portable target assembly.

[0019] Figure 1 illustrates one embodiment of a portable target assembly 100 wherein permanent magnets 106 are embedded in the portable target assembly 100. In this embodiment the portable target assembly 100 is shown to be circular in shape with a portion of the circle missing along a chord of the circle to form a straight edge 103. The portable target assembly 100 shown has a front face 102 and a rear face 104 separated by a solid material. Two holes are depicted that have been created by removing material perpendicular to the straight edge 103, the holes being sized to securely receive two magnets 106. The magnets 106 are shown to be flush to the straight edge 103, but this is not a requirement as long as they are secured so they can't be pulled out of the portable target assembly 100.

[0020] Figure 2 illustrates yet another embodiment of a portable target assembly 200 wherein a strip of magnetic material 206 is secured to the portable target assembly 200. In this embodiment the portable target assembly 200 is shown to be circular in shape with a straight edge 203. The portable target assembly 200 shown has a front face 102 and a rear face 104 separated by a solid material. A magnetic strip 206 is secured to the straight edge 203 of the portable target assembly.

[0021] Figure 3 illustrates yet another embodiment of a portable target assembly 300 wherein discreet magnets 306 are embedded in the rear face 304 adjacent to the straight edge of the portable target assembly 300. Two holes are depicted that have been created by removing material parallel to the rear face 304, the holes being sized to securely receive two magnets 306. The magnets

306 are shown to be flush to the rear face 304, but this is not a requirement as long as they are secured so they can't be pulled out of the portable target assembly.

[0022] Figure 4 illustrates yet another embodiment of a portable target assembly 400 wherein a strip of magnetic material 406 is secured to the portable target assembly 400. In this embodiment the portable target assembly 400 is shown to be circular in shape with a straight edge 403. The portable target assembly 200 has a front face 102 and a rear face 104 separated by a solid material. A magnetic strip 206 is secured to the rear face 404 adjacent to the straight edge 403 of the portable target assembly 400.

[0023] Figure 5 illustrates yet another embodiment of a portable target assembly 500 wherein two permanent magnets 506 are embedded in the portable target assembly 500. In this embodiment the portable target assembly 500 is shown to be circular in shape with a straight edge 503. The portable target assembly 500 has a front face 502 and a rear face 504 separated by a solid material. There are two raised areas 505 on the front face 502 and the rear face 504 providing additional material in the area where the magnets are attached. Two holes are depicted that have been created by removing material perpendicular to the face of the straight edge 103 and centered in the raised areas 505, the holes being sized to securely receive two magnets 506. The magnets 506 are shown to be flush to the straight edge 103, but this is not a requirement as long as they are secured so they can't be pulled out of the portable target assembly.

[0024] Figure 6 illustrates different arrangements of the front face and rear face that may be used for the portable target assembly according to three embodiments of the invention. Target assemble 602 is formed from two separate pieces of material being securely connected at a right angle to each other. At least one magnet 606 is embedded in a short piece 601 attached to the target area, the target area having a front face 608 and a rear face 610 that are parallel and separated by a solid material.

[0025] A second portable target assembly 603 has a front face 608 and a rear face 610 that are not parallel to each other. At least one magnet 606 is embedded in a straight edge of the portable target assembly.

[0026] In a third portable target assembly 605 the shape is the same as portable target assembly 603 except the straight edge has been formed into a concave shape 612 to match the curvature of a goal post and crossbar.

[0027] Figure 7 illustrates different shapes that may be used for the portable target assembly. These shapes include but are not limited to a circle 702, a rectangle/square 704, and a hexagon 706. At least one magnet may be secured to the edge forming the circumference of the portable target assembly or on the rear face adjacent to a straight edge of the rectangle/square 704 or hexagon 706. In the case of a full circle 702 at least one magnet may be secured to the rear face along a chord

of the circle.

[0028] Figure 8 illustrates a portable target assembly attached to a goal post according to one embodiment of the invention. A circular portable target assembly 800 has two magnets 806 embedded in the solid material separating the front face 802 from the rear face 804. The magnets 806 securely hold the portable target assembly 800 to the goal post 810. The goal post 810 in this embodiment is made from a magnetic material such as steel.

[0029] Figure 9 illustrates a portable target assembly 900 attached to a goal post 910 made from a non-magnetic material according to one embodiment of the invention. In this case where the goal post and/or crossbar are not made from a magnetic material a magnetic receptive material must be attached to the goal post or crossbar in at least one position to allowing the attachment of a portable target assembly. In the illustration a strip of magnetic receptive material 912 is attached to the post 910. The magnets 906 of the portable target assembly 900 can then attach to the magnetic receptive strip 912. Magnetic receptive strips may be located at strategic points along the goal post and crossbar or a continuous magnetic receptive strip may be applied along the entire length of the goal posts and crossbar. The magnetic receptive strip may comprise flexible magnetic receptive materials as well as flexible magnetic materials.

[0030] Figure 10 illustrates yet another embodiment of a target assembly wherein a receptive body 1012 is magnetically attached to a goal post or crossbar 1010, a removable target body 1002 being secured to the receptive body 1012. Receptive body 1012 is magnetically attached to a goal post or crossbar 1010 by magnets 1006 secured to the receptive body 1012. In this embodiment a slot may be formed in the receptive body 1012 to accept a removable target body 1002. In one embodiment the removable target body 1002 is held in the slot by a compression fit. Other embodiments may include attaching the removable target body 1002 to the receptive body 1012 using screws 1014 or other means. In this manner different shapes and sizes of removable target bodies may be secured to the receptive body 1012. A player may start with a large removable target body and as they improve may change out the large removable target body for a smaller target body. The removable target bodies may be purchased or the player may use discarded materials such as compact discs, records, or other items.

[0031] Figure 11 illustrates the placement of target assemblies along a goal post 1102 or crossbar 1104 wherein the target assembly protrudes into the goal region 1100 of the goal. The goal region 1100 defined as area between two goal posts, the playing surface, and the crossbar attached to the upper ends of the two goal posts and the playing surface. The portable target assembly positions are illustrative only and not necessarily the optimal positions for the placement of the target assemblies. Small targets 1106 and large targets 1108 may be placed along the goal posts 1102 and the crossbar 1104. Depending on the skill level of a player, an advanced player

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may use small target assemblies 1106, whereas a beginning player may want to use a large portable target assembly 1108. All skill levels can be easily accommodated since the target assemblies can be easily and quickly placed anywhere along the perimeter of the goal opening. Once a play is finished the portable target assemblies can be quickly removed and stored in a gym bag or other carrying case.

[0032] A method of sports training comprises providing a portable target assembly having a front face and a rear face separated by a solid material with a magnet secured thereto, securing the portable target to a goal post or a crossbar of a goal such that the portable target assembly protrudes into the goal region of the goal, and launching a projectile at the portable target assembly. The method further comprises coupling a magnetically receptive material to a goal that is not magnetically receptive such that the magnet of the portable target assembly may be magnetically coupled thereto. The portable target assembly may include a straight edge and the magnet is disposed on the portable target assembly near the straight edge thereof.

[0033] The illustrative embodiments disclosed herein have been shown having two magnets or a single piece of magnetic material. It is not a requirement that two magnets or a single strip of magnetic material be used since any number of magnets or strips of magnetic material may be used as long as the portable target assembly can be easily attached to a goal post or crossbar and quickly and easily removed by a player. The magnet shape need not be round, but may be any shape or thickness as long as the portable target assembly can attach to a goal post or crossbar. The magnets are shown to be flush to a straight edge or in contact with the surface of the portable target assembly, but this is not a requirement as long as they are secured so they can't be pulled out of the portable target assembly. Magnets may be embedded in the portable target assembly but extend partially above the surface, or completely embedded within the body of the portable target assembly. As long as the result allows the portable target assembly to be magnetically attached to a goal post or crossbar.

[0034] It is understood that the above-described preferred embodiments are only illustrative of the application of the principles of the present invention. The present invention may be embodied in other specific forms without departing from its spirit or essential characteristics. The described embodiment is to be considered in all respects only as illustrative and not restrictive. The scope of the invention is, therefore, indicated by the appended claim rather than by the foregoing description. All changes which come within the meaning and range of equivalency of the claims are to be embraced within their scope.

[0035] Thus, while the present invention has been fully described above with particularity and detail in connection with what is presently deemed to be the most practical and preferred embodiment of the invention, it will be apparent to those of ordinary skill in the art that numerous

modifications, including, but not limited to, variations in size, materials, shape, form, function and manner of operation, assembly and use may be made, without departing from the principles and concepts of the invention as set forth in the claims. Further, it is contemplated that an embodiment may be limited to consist of or to consist essentially of one or more of the functions, features, structures, and/or methods described herein.

Claims

1. A portable target assembly for use in a sport wherein a projectile is propelled at a goal, the portable target assembly comprising:
 - a. a front face and rear face separated by a solid material; and
 - b. at least one magnet secured to the portable target assembly allowing the portable target assembly to be magnetically attached to a goal post or crossbar each made of a magnetic material.
2. The portable target assembly of claim 1, further comprising a straight edge formed perpendicular to the front face and the rear face along the circumference of the portable target assembly, the width of the straight edge being the distance between the front face and the rear face, and wherein the circumference of the portable target assembly is optionally in the shape of a polygon, or a circle.
3. The portable target assembly of claim 2, wherein the straight edge is shaped such that a section of the circle is missing along a chord of the circle forming a straight edge along the perimeter of the portable target assembly.
4. The portable target assembly of claim 2, wherein the magnet is secured to the straight edge of the portable target assembly.
5. The portable target assembly of claim 3, wherein the magnetic material is secured to the rear face of the portable target assembly in close proximity to the straight edge, or to the straight edge of the portable target assembly.
6. The portable target assembly of claim 2, wherein the magnetic material is secured to the rear face of the portable target assembly in close proximity to the straight edge.
7. The portable target assembly of claim 2, wherein the magnet is placed along the rear face of the portable target assembly along a chord of the circle.
8. The portable target assembly of claim 1, wherein the magnet is comprised of a permanent magnet, or a flexible magnetic strip.
9. The portable target assembly of claim 1, wherein the front face and the rear face are parallel to each other, or are not parallel to each other.
10. The portable target assembly of claim 1, further comprising a goal having at least one of a goal post and a cross bar, wherein the magnet is coupled to at least one of the goal post and cross bar.
11. The portable target assembly of claim 1, wherein the goal post or crossbar is not made of a magnetic material further requiring a magnetically receptive material to be attached to the goal post or crossbar allowing the portable target assembly to be magnetically attached to the goal post or crossbar.
12. The portable target assembly of claim 1, where in the portable target assembly is comprised of a receptive body and removable target body, wherein the receptive body may be magnetically attached to a goal post or crossbar and the target body may be secured to the receptive body.
13. A portable target assembly for use in a sport wherein a projectile is propelled at a goal, the portable target assembly comprising:
 - a. a front face and a rear face separated by a solid material wherein the front face and the rear face are essentially parallel; and
 - b. a means for magnetically attaching the portable target assembly to a goal post or crossbar.
14. A method of sport training, comprising the steps of:
 - a. providing a portable target assembly having a front face and a rear face separated by a solid material with a magnet secured thereto;
 - b. securing the portable target assembly to a goal post or a cross bar of a goal such that the portable target assembly protrudes into a goal region of the goal;
 - c. propelling a projectile at the portable target assembly.
15. The method of claim 13, further comprising coupling a magnetically receptive material to a goal that is not magnetically receptive such that the magnet of the portable target assembly may be magnetically coupled thereto.

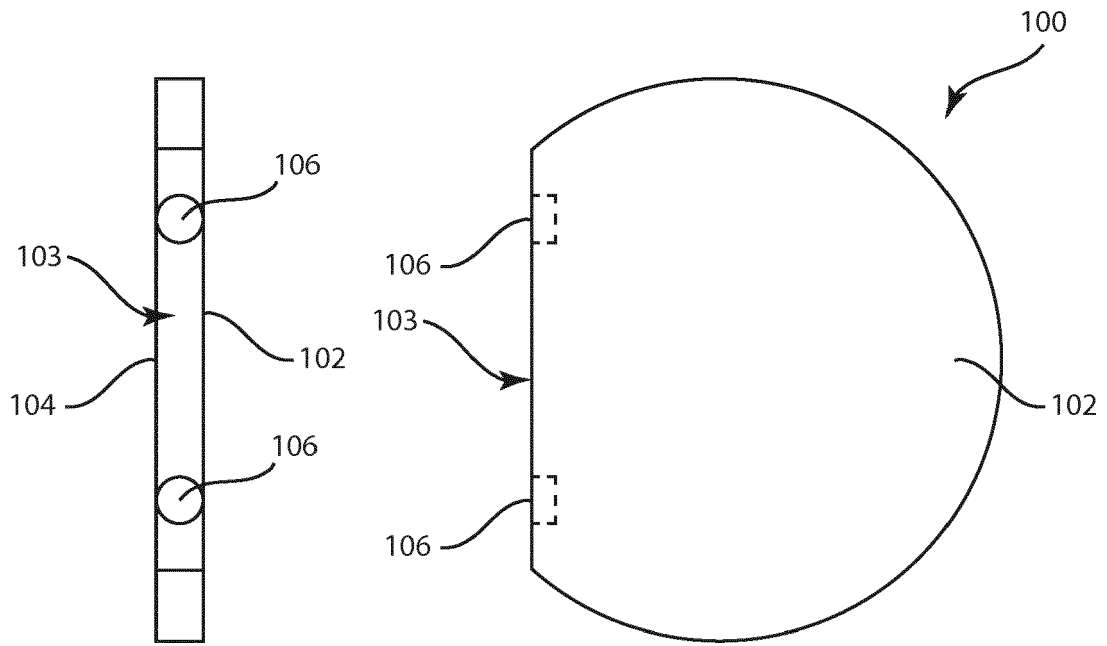


FIGURE 1

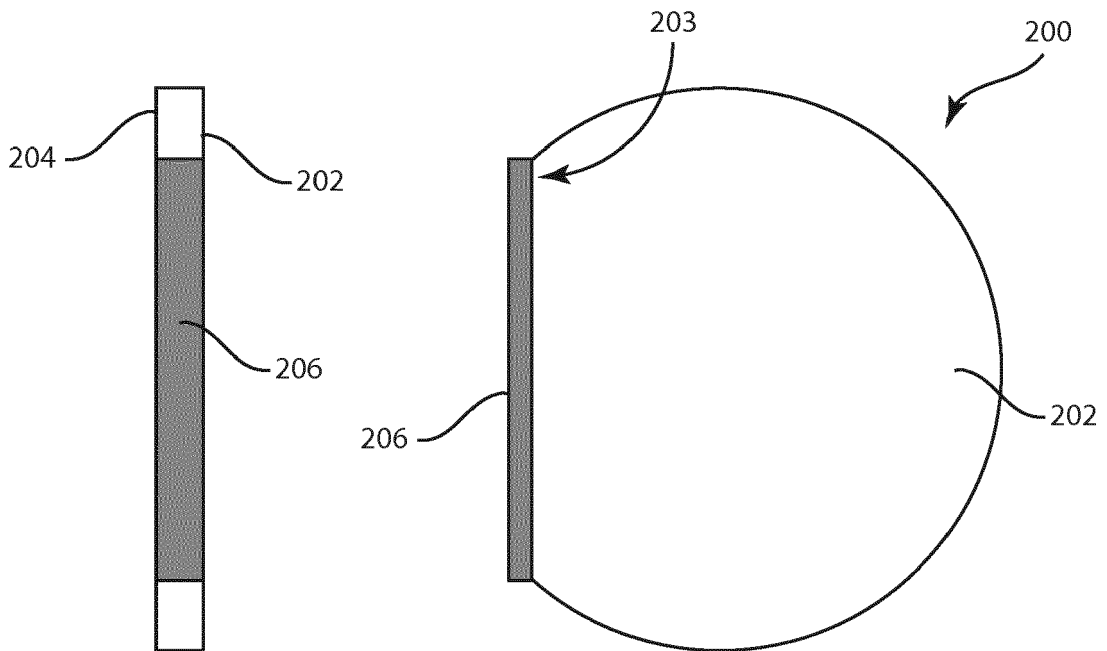


FIGURE 2

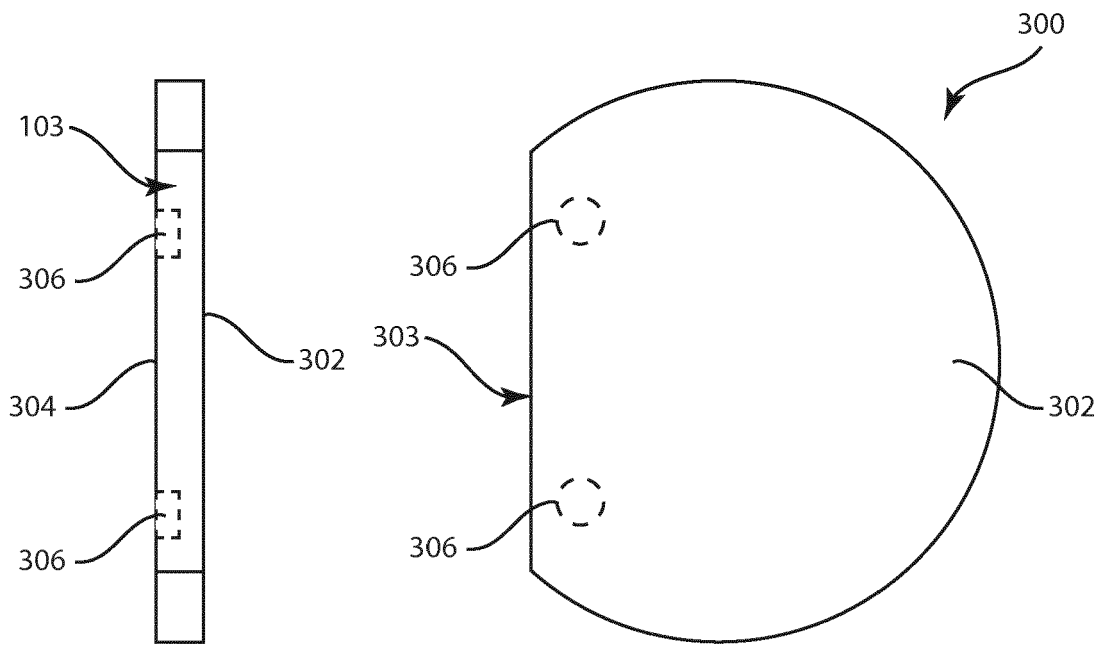


FIGURE 3

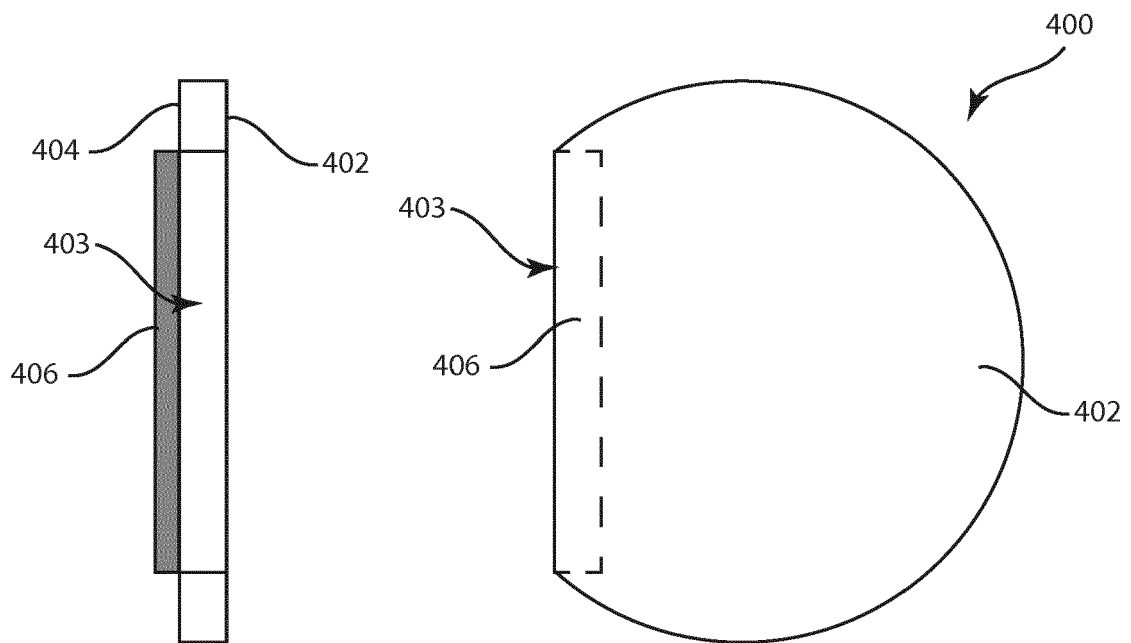


FIGURE 4

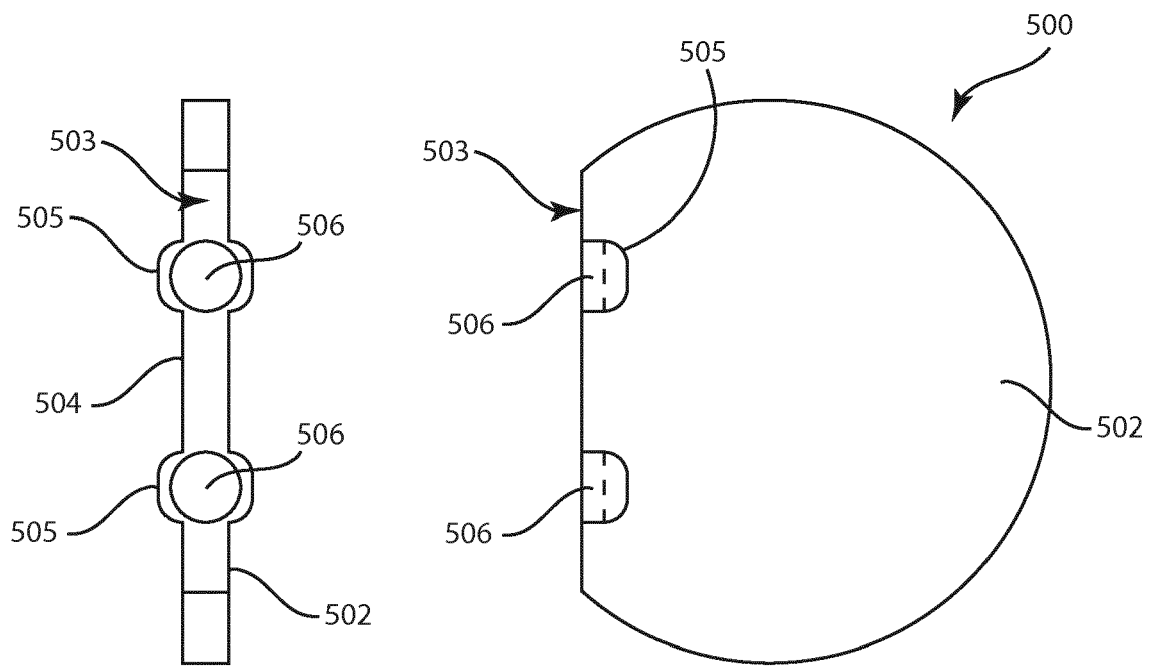


FIGURE 5

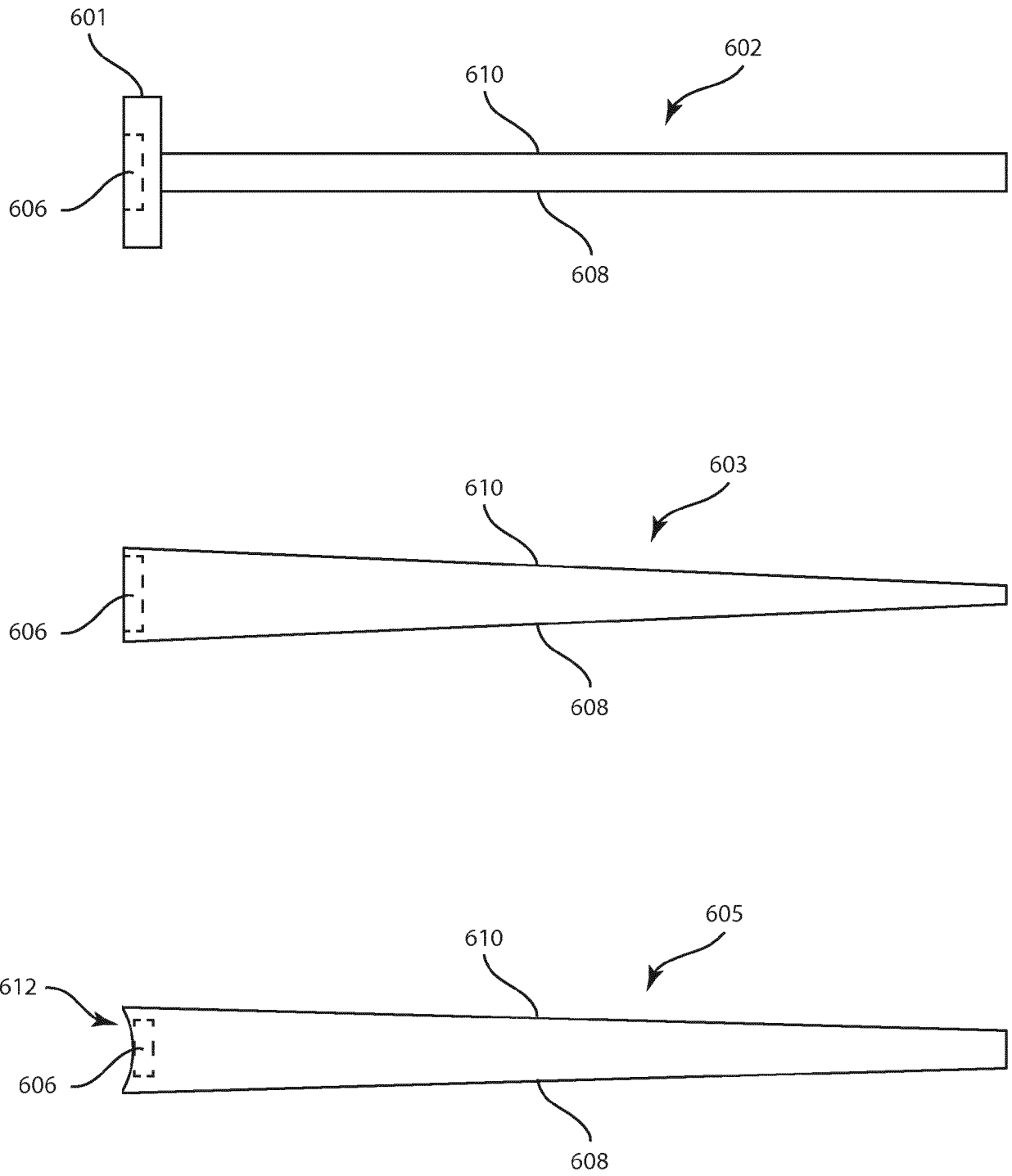


FIGURE 6

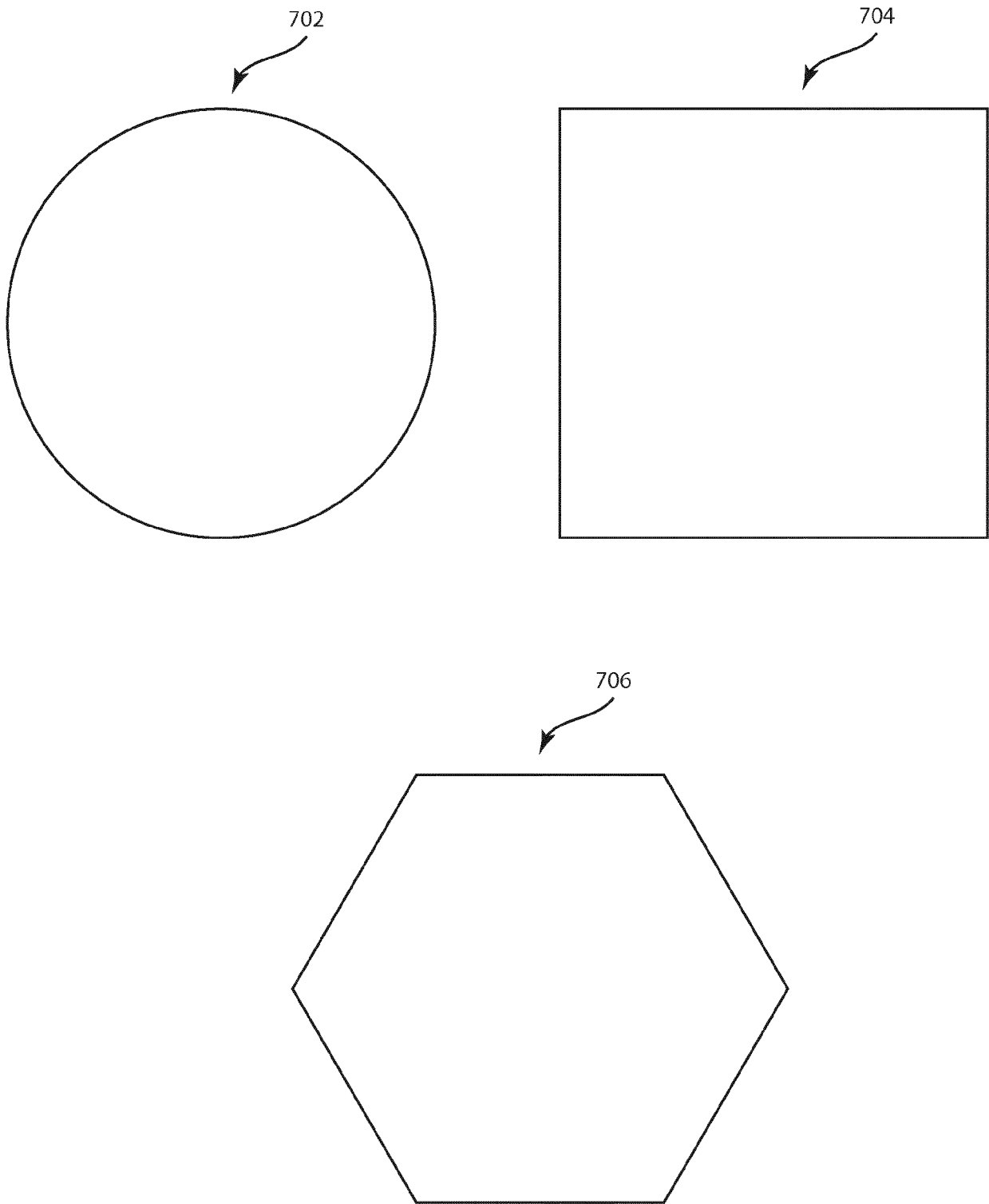


FIGURE 7

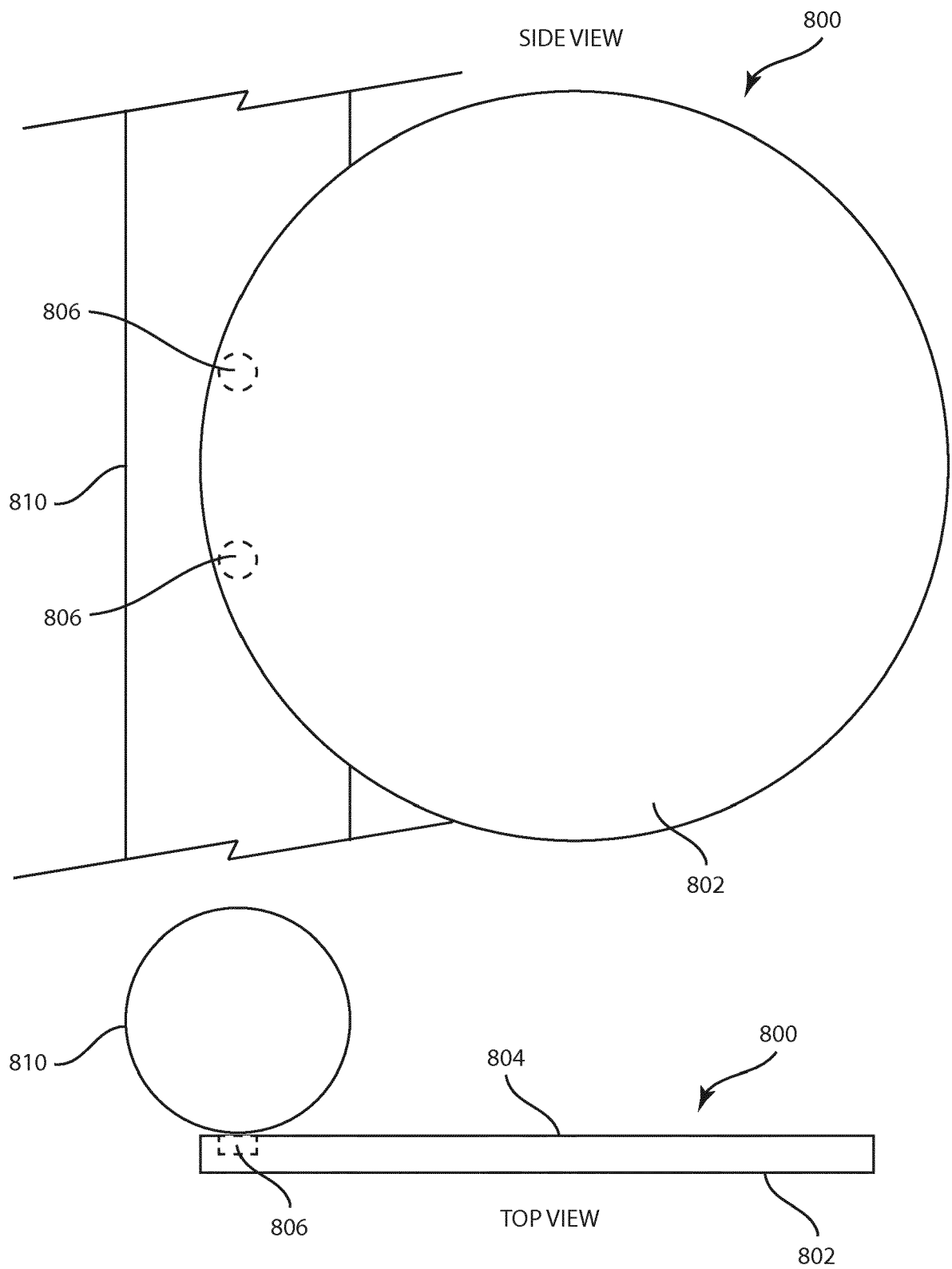


FIGURE 8

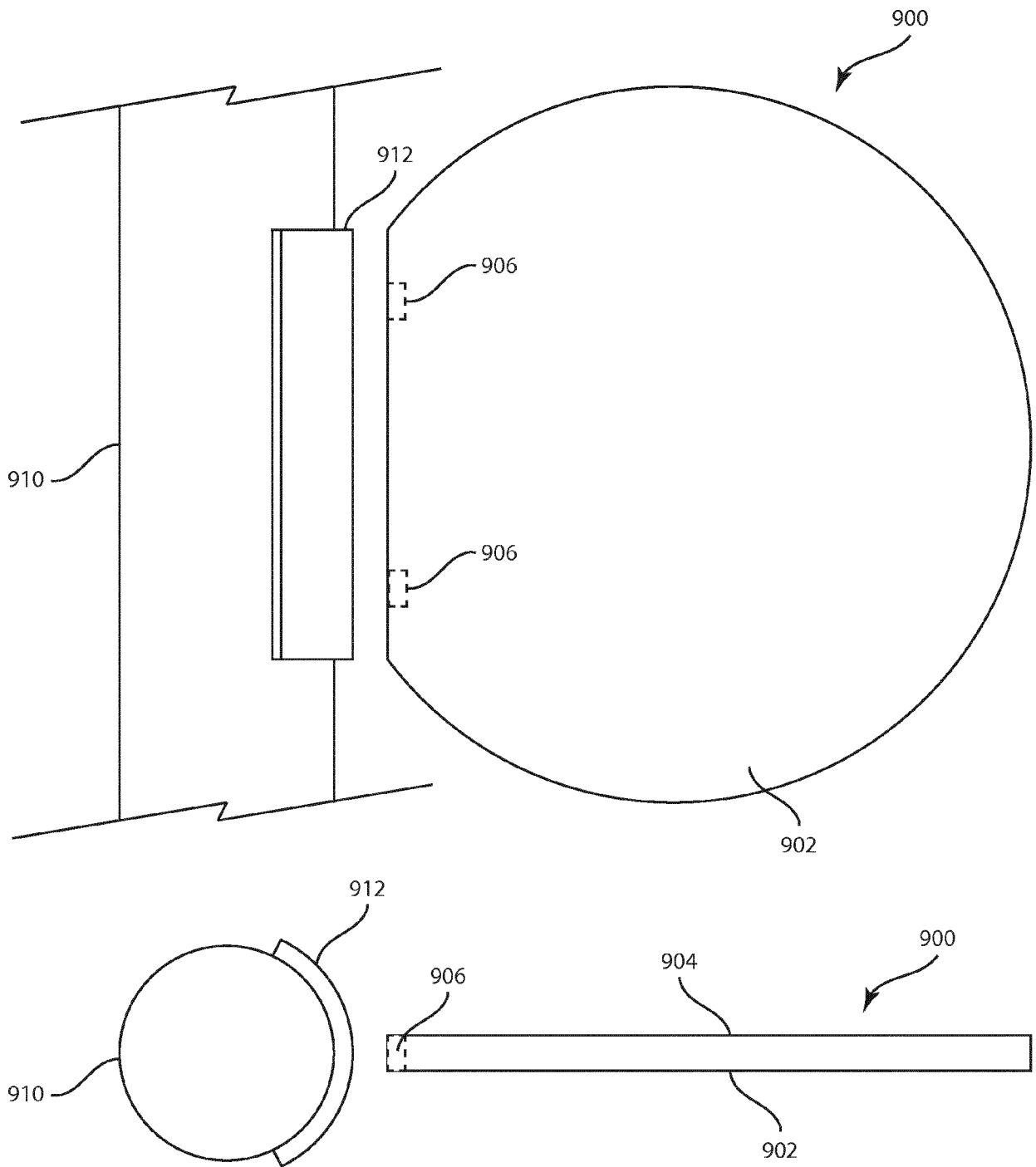


FIGURE 9

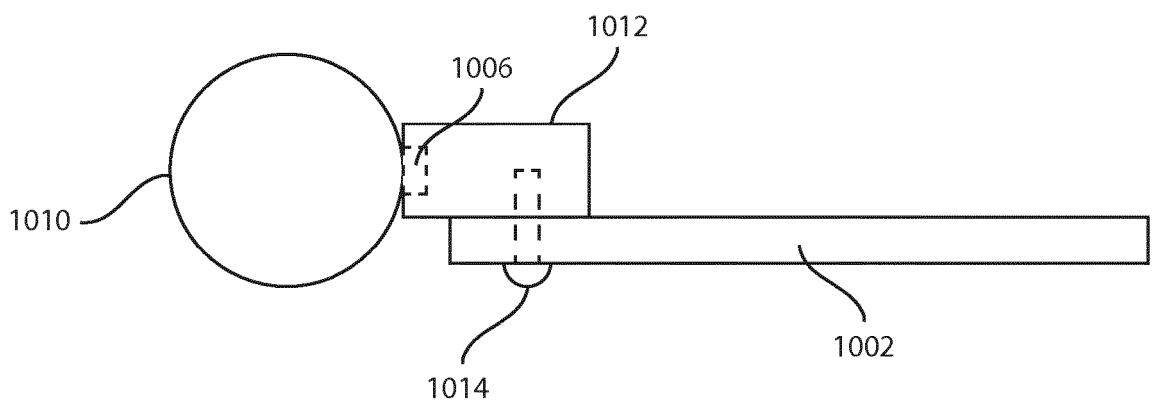
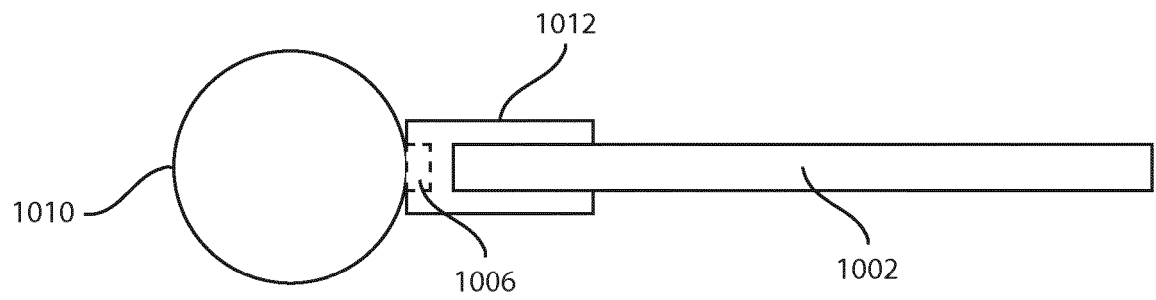
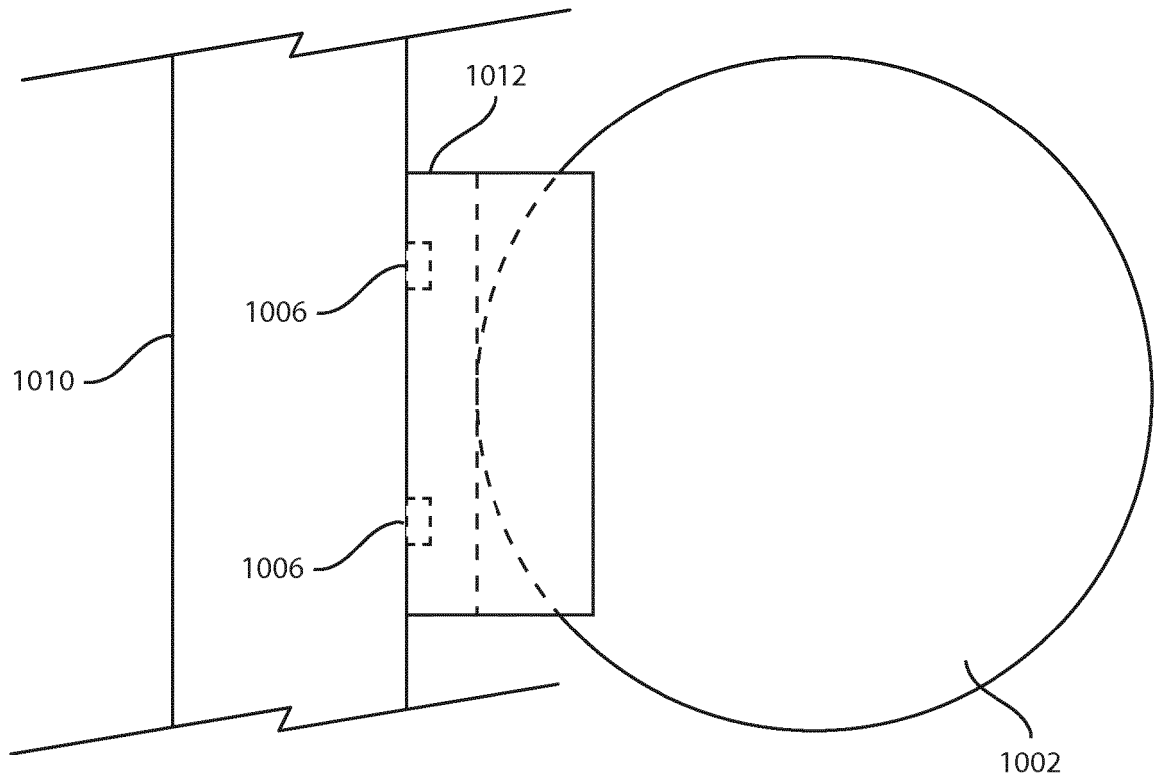


FIGURE 10

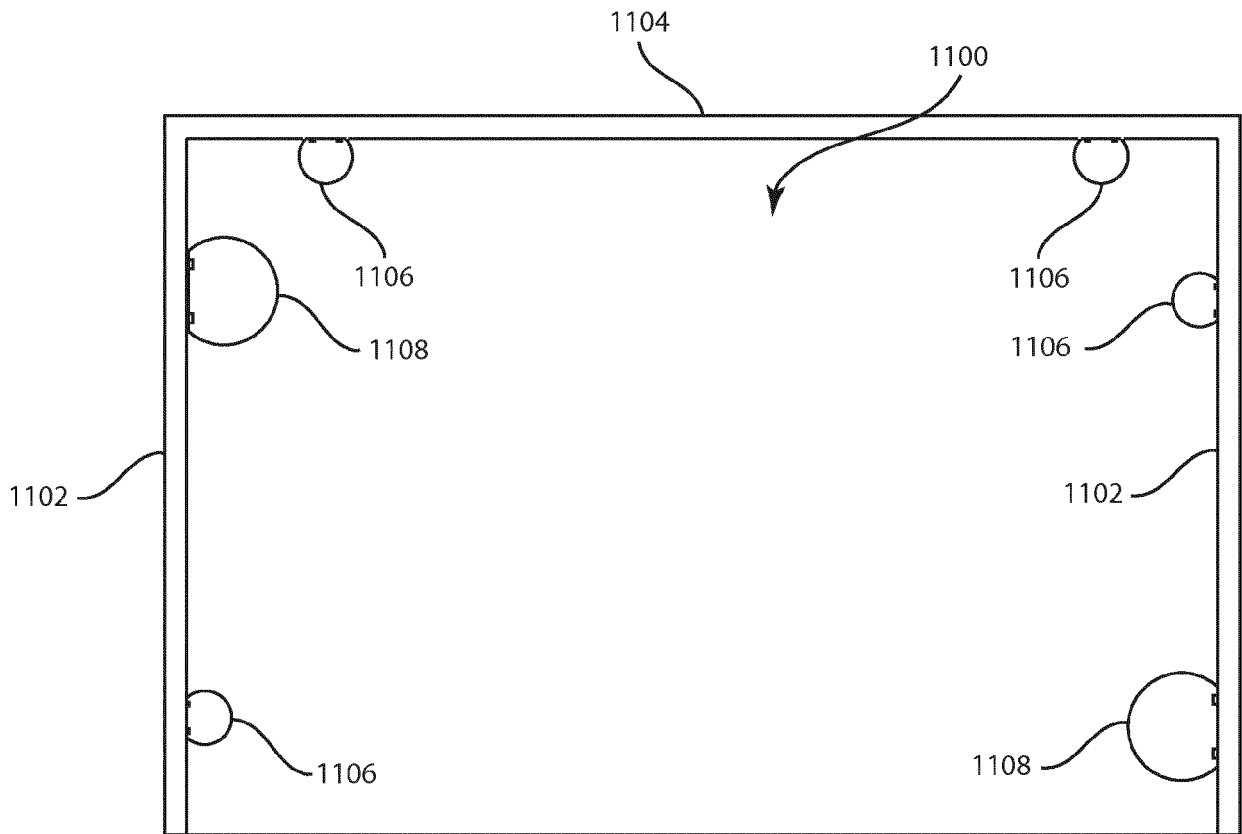


FIGURE 11



EUROPEAN SEARCH REPORT

Application Number
EP 17 15 7158

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DOCUMENTS CONSIDERED TO BE RELEVANT			
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (IPC)
X	US 2008/214331 A1 (TALAFOUS DEAN CHARLES [US] ET AL) 4 September 2008 (2008-09-04)	1-4, 8-15	INV. A63B63/00 A63B24/00
Y	* paragraph [0010] - paragraph [0022]; figures 1-7 *	5-7	
Y	----- US 2007/045964 A1 (PETRAS RONALD J [US]) 1 March 2007 (2007-03-01) * paragraph [0030]; figure 10 * -----	5-7	
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (IPC)
			A63B
Place of search		Date of completion of the search	Examiner
Munich		5 July 2017	Jekabsons, Armands
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**ANNEX TO THE EUROPEAN SEARCH REPORT
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5 This annex lists the patent family members relating to the patent documents cited in the above-mentioned European search report.
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US 2008214331 A1	04-09-2008	NONE	

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For more details about this annex : see Official Journal of the European Patent Office, No. 12/82

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