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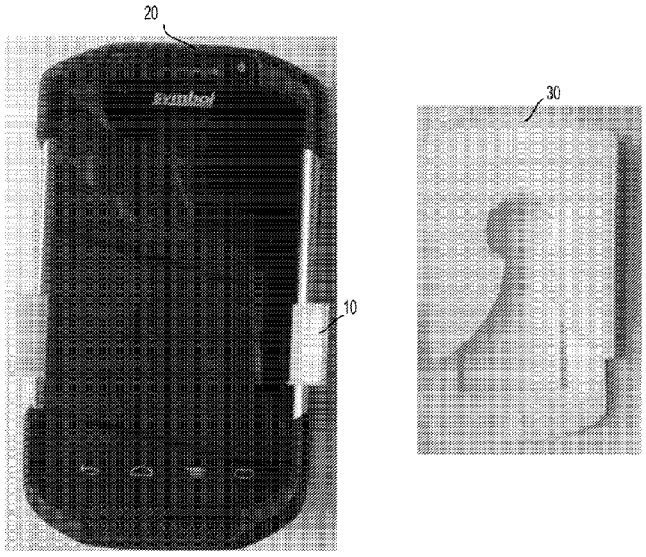

FIG. 1

(57) Abstract: A device for holding a hand-held computer is provided. The device includes a holder and a mount for receiving and locking the holder. The holder includes a clamp for holding the hand-held computer, a short peg extending from a surface of the clamp, and a circular engaging end attaching to a distal end of the short peg. The mount includes a front wall, a back wall separated from the front wall by side walls, a slot being formed in the front wall and having two opposite arcing side walls, and a circular engaging opening in the slot terminating at respective first ends of the two opposite arcing side walls to lock the short peg and the circular engaging end.

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DEVICE FOR HOLDING HAND-HELD COMPUTER

BACKGROUND

1. Technical Field

[0001] The present disclosure relates to a case for a computer device. More specifically, the present disclosure relates to devices for holding hand-held computers.

2. Introduction

[0002] At a distribution center (e.g., a retailer's warehouse), items/products are scanned for further being redistributed to retailers, wholesalers, or directly to customers, when the items are delivered at the distribution center. A barcode scanner, such as a scanning gun, is usually employed to scan the items. However, a hand-held computer is gaining its popularity for scanning items and is replacing the barcode scanner, due to its multiple uses for advanced data capture and mobility. Accordingly, a device is needed to hold the hand-held computer onto a distribution center personnel for facilitating scanning items. For example, the hand-held computer may be attached via the device to hip of an associate, such that hands of the associate can be freed to handle the item while the item is being scanned by the hand-held computer.

[0003] What is needed are devices for holding a hand-held computer to efficiently facilitate capturing information about items in a distribution center, retail store, or other environments.

SUMMARY

[0004] Disclosed herein are devices for holding a hand-held computer, which overcome at least some drawbacks known in the art. An example device for holding a hand-held device can include a holder. The holder can include a clamp for attaching to and holding the hand-held computer by clamping on a portion of the hand-held computer without impacting features of the hand-held computer, a short peg extending from a surface of the clamp and having a polygonal cross-section, and a circular engaging end attaching to a distal end of the short peg from the surface of the clam and having a diameter greater than a width of the polygonal cross-section. The device can further include a mount for receiving and locking the holder. The

mount can include a front wall and a back wall separated from the front wall by side walls. A recess is defined by the front wall, the back wall and the side walls, and the side walls leave an open portion into the recess. The mount can also include a slot being formed in the front wall at the open portion. The slot has two opposite arcing side walls and is configured for receiving the short peg and the circular engaging end. The mount can further include a circular engaging opening in the slot terminating at respective first ends of the two opposite arcing side walls to lock the short peg and the circular engaging end. The respective first ends are separated by a distance slightly smaller than the width of the polygonal cross-section. The short peg and the circular engaging end are locked in the circular engaging opening such that the holder is in place in the mount.

[0005] An exemplary mount for receiving and locking a holder is also disclosed herein. The holder can include a clamp, a short peg extending from a surface of the clamp and having a polygonal cross-section, and a circular engaging end attaching to a distal end of the short peg from the surface of the clam and having a diameter greater than a width of the polygonal cross-section. The mount can include a front wall, and a back wall separated from the front wall by side walls. A recess is defined by the front wall, the back wall and the side walls, and the side walls leave an open portion into the recess. A slot is formed in the front wall at the open portion. The slot has two opposite arcing side walls and is configured for receiving the short peg and the circular engaging end. The mount can also include a circular engaging opening in the slot terminating at respective first ends of the two opposite arcing side walls to lock the short peg and the circular engaging end. The respective first ends are separated by a distance slightly smaller than the width of the polygonal cross-section. The short peg and the circular engaging end are locked in the circular engaging opening such that the holder is in place in the mount.

[0006] Additional features and advantages of the disclosure will be set forth in the description which follows, and in part will be obvious from the description, or can be learned by practice of the herein disclosed principles. The features and advantages of the disclosure can be realized and obtained by means of the instruments and combinations particularly pointed out in the appended claims. These and other features of the disclosure will become more fully apparent

from the following description and appended claims, or can be learned by the practice of the principles set forth herein.

BRIEF DESCRIPTION OF THE DRAWINGS

[0007] Embodiments of this disclosure are illustrated by way of an example and not limited in the figures of the accompanying drawings, in which like references indicate similar elements and in which:

[0008] FIG. 1 illustrates a front view of a device with a hand-held computer clamped thereon according to one example embodiment;

[0009] FIG. 2 illustrates a rear view of the device with the hand-held computer clamped thereon of Fig. 1 according to one example embodiment;

[0010] FIG. 3 illustrates a perspective review of a device for holding a hand-held computer according to an example embodiment;

[0011] FIG. 4 illustrates another perspective review of the device of Fig. 3 according to an example embodiment;

[0012] FIG. 5 illustrates a perspective view of a device for holding a hand-held computer in which a holder of the device slides into a mount of the device according to one example embodiment;

[0013] FIG. 6 illustrates a perspective view of the device in which the holder of the device is positioned in the mount of the device of Fig. 5 according to one example embodiment;

[0014] FIG. 7 illustrates another perspective view of the device in which the holder of the device is positioned in the mount of the device of Fig. 5 according to one example embodiment;

[0015] FIG. 8 illustrates a top view of a mount of a device for holding a hand-held computer according to one example embodiment;

[0016] FIG. 9 illustrates a top view of a mount of a device for holding a hand-held computer according to another example embodiment; and

[0017] FIG. 10 illustrates a perspective view of a holder of a device for holding a hand-held computer according to one example embodiment.

DETAILED DESCRIPTION

[0018] Various configurations and embodiments of the disclosure are described in detail below. While specific implementations are described, it should be understood that this is done for illustration purposes only. Other components and configurations may be used without parting from the spirit and scope of the disclosure.

[0019] The concepts and embodiments described herein are for providing devices for holding a hand-held computer. As used herein, a hand-held computer may include, but is not limited to, a smart phone, a computing tablet, a wearable mobile computer, a phone-size mobile computer, and the like. The hand-held computer can be configured to function as a barcode scanner that reads one-dimensional, two-dimensional, and/or quick response (QR) codes. Additionally, the hand-held computer can also be configured to have other features such as photographing, taking video, and/or walkie-talkie. A device for holding a hand-held computer can include a holder (also referred to as a clip) and a mount (also referred to as a holster) for receiving and locking the holder in place. The hand-held computer can be attached to and held by the holder.

[0020] FIG. 1 illustrates a front view of a device with a hand-held computer clamped thereon according to one example embodiment. The device can include a holder 10 that attaches to and holds the hand-held computer 20 (a front review of the hand-held computer 20). The holder 10 is configured to clamp on a portion of the hand-held computer 20 without impacting functioning features of the hand-held computer 20, such as scanning and photographing. The device can also include a mount 30 paring with the holder 10. The mount 30 can be configured to receive and lock the holder 10 such that the hand-held computer 20 can be attached via the mount 30 to a body of an associate. For example, the associate may carry the hand-held computer 20 via the device on his belt while scanning items using the hand-held computer 20.

[0021] FIG. 2 illustrates a rear view of the device with the hand-held computer clamped thereon. As shown in Fig. 2, a back view of the hand-held computer 20 and the holder 10 is illustrated. A width W of the holder 10 is significantly less than a length L of the hand-held computer 20, such that the holder 10 can be clamped on any portion of the hand-held computer 20 along the length L without effecting functioning features of the hand-held computer 20.

The holder 10 is also configured to have an engaging end 40 to engage an engaging opening 50 in the mount 30 to secure the hand-held computer 20 to the mount 30.

[0022] FIG. 3 illustrates a perspective view of a device 300 for holding a hand-held computer according to an example embodiment. The device 300 can include a holder 302 holding the hand-held computer and a mount 304 for pairing with the holder 302. For example, the holder 302 can slide into and lock into the mount 304 when the device 300 is used by store associates.

[0023] The holder 302 can be configured to include a curved clamp 306 having an inner surface 308 and an outer surface 310, a short peg 312 extending outwardly from the outer surface 310, and a circular engaging end 314 having a thickness.

[0024] The curved clamp 306 can be used to attach to and/or hold the hand-held computer with the inner surface 308 engaging the hand-held computer. A width W_c of the curved clamp 306 can be significantly smaller than a length of the hand-held computer such that functioning features of the hand-held computer are not blocked by the curved clamp 306 when the hand-held computer is held by the curved clamp 306. The curved clamp 306 can have a form factor corresponding to the hand-held computer. In addition, the curved clamp 306 can be configured to have one or more steps 316 on the inner surface 308 to facilitate securing the hand-held computer. The curved clamp 306 can also include two opposite finger protrusions 318 extending inwardly from the inner surface 308 to facilitate receiving and holding the hand-held computer in place. Two opposite finger protrusions 320 extending outwardly form the outer surface 310 can also be configured on the curved clamp 306 to facilitate installing and uninstalling the hand-held computer. The two opposite finger protrusions 320 each correspond to the two opposite finger protrusions 318, respectively.

[0025] The short peg 312 can have a polygonal cross-section, such as a square or a rectangle. The short peg 312 can also have a length corresponding to a depth of a recess in the mount 304 to securely position the holder 302 into the mount 304.

[0026] The circular engaging end 314 can attach to a distal end of the short peg 312 from the outer surface 310, and have a diameter greater than a width of the polygonal cross-section. The circular engaging end 314 may facilitate the short peg 312 sliding into and out of the mount 304. The short peg 312 and the circular engaging end 314 can both slide into the mount 304

[0027] The mount 304 is configured to receive and lock the holder 302. The mount 304 can include a front wall 322 having a top surface and a bottom surface, and a back wall 324 separated from the front wall 322 by side walls 326. A recess 328 is defined by the front wall 322, the back wall 324 and the side walls 326. The side walls 326 can further leave an open portion into the recess 328 on the front wall 322.

[0028] A slot 330 can be formed in the front wall 322 at the open portion for receiving the short peg 312 and the circular engaging end 314 of the holder 302. The slot 330 is also defined by two opposite arcing side walls/surfaces 332 that extend from corresponding opposite side walls 326 of the mount 304. That is, respective first ends of the two opposite arcing side walls 332 terminate at the corresponding side walls 326 of the mount 304.

[0029] The slot 330 can also include a circular engaging opening 334 that terminates at respective second ends 336 of the two opposite arching side walls 332. The respective second ends 336 may be separated by a distance/clearance/gap W_e slightly smaller than or equal to a width of the polygonal cross-section of the short peg 312. The short peg 312 can slide into the slot 330 along the two opposite arching side walls 332, and is snap fit into the circular engaging opening 334 by the respective second ends 336. The respective second ends 336 can facilitate holding the top of the short peg 312 in place in the mount 304.

[0030] The circular engaging opening 334 is configured to facilitate locking the short peg 312 and the circular engaging end 314. A diameter of the circular engaging opening 334 can be less than the diameter of the circular engaging end 314. Further, the diameter of the circular engaging opening 334 can equal to or slightly greater than a width of the polygonal cross-section of the short peg 312. In such a way, the short peg 312 and the circular engaging end 314 can be facilitated to lock in the circular engaging opening, causing the holder 302 to be in place in the mount 304.

[0031] The recess 328 may have a height measuring from a back/bottom surface of the front wall 322 to a front/top surface of the back wall 324. The height can equal to or slightly greater than a thickness of the circular engaging end 314, such that the circular engaging end 314 may be secured once it sits in the recess 328 under the circular engaging opening 334.

[0032] The front wall 322 may has a thickness equaling to or slightly less than a length of the short peg 312, such that the outer surface 310 of the curved clamp 306 engages the top surface of the front wall 322 when the holder 302 is in place in the mount 304.

[0033] The back wall 324 may further include some business information on the top surface of the back wall 324, such as logo 338, symbol, text, art design, and the like.

[0034] A snap-on clip 340 may also be included on the bottom surface of the back wall 324 for mounting the mount 304 to, for example a waist belt of an associate.

[0035] The holder 302 and/or the mount 304 may be made of any suitable materials, including but is not limited to, metals, glasses, elastomers, thermoplastic polymers (e.g., epoxy and phenolic), thermosetting polymers (e.g., nylon, polyethylene, and polystyrene), photopolymers, or combinations thereof. The holder 302 and the mount 304 may be made of the same or different materials.

[0036] Any suitable manufacturing process can be used to manufacture the holder 302 and/or the mount 304. The manufacturing process may include, but is not limited to, a moulding process, a three-dimensional (3D) printing process, a CNC milling process, or a lamination pressing process. The moulding process may include extrusion moulding, die casting, metal injection moulding, thin-wall injection moulding, reaction injection moulding, or rotational moulding. In addition, laser etching may also be employed for, for example logos, symbols, texts, and art designs on the top surface of the back wall 326.

[0037] FIG. 4 illustrates another perspective view of the device 300 according to an example embodiment. In Fig. 4, more details of the holder 302, such the inner surface 308 and the circular engaging end 314, are illustrated. Also further features of the mount 304 may also be displayed.

[0038] FIG. 5 illustrates a perspective view of the device 300 in which the holder 302 slides into the mount 304 according to one example embodiment. In Fig. 5, the polygonal cross-section of the short peg 312 is a rectangular, so the distance W_e between the two opposite second ends 336 of the two arching side walls 332 can be slightly smaller than the width (e.g., the short edge of the rectangular) of the polygonal cross-section. As shown in Fig. 5, the holder 302 can be aligned with respect to the slot 330 and slides into the mount 20 along the slot 330

indicated by an arrow direction 342. An extra slight force may be required to push the short peg 312 through the width W_e.

[0039] FIG. 6 illustrates a perspective view of the device 300 in which the holder 302 is positioned in the mount 304 according to one example embodiment. After sliding through the slot 330, the curved clamp 306 sits on the top surface of the front wall 322 with the outer surface 310 of the curved clamp 306 engaging the top surface of the front wall 322. The short peg 312 and the circular engaging end 314 are placed inside the circular engaging opening 334.

[0040] Another perspective view of the device 300 in which the holder 302 is positioned in the mount 304 is illustrated in Fig. 7 according to one example embodiment. A more detailed view of engagement between the holder 302 and the mount 304 can be seen. The circular engaging end 314 is well beneath the front wall 322 with a top surface of the circular engaging end 314 engaging the bottom surface of the front wall 322. Because the diameter of the top surface of the circular engaging end 314 is greater than the diameter of the circular engaging opening 334, the circular engaging end 314 is well prevented from vertically falling out of the circular engaging opening 334, thus facilitating securing the holder 302 into the mount 304. Further, since the width of the polygonal cross-section of the short peg 312 is slightly greater than the distance W_e between the two opposite second ends 336 of the two arching side walls 332, the short peg 312 can be protected from horizontally sliding out of the circular engaging opening 334 without an external force facilitating the sliding, thus further securing the holder 302 into the mount 304. In addition, cooperation an relative dimensions between the depth of the recess 328, the thickness of the front wall 322, the length of the short peg 312, and the thickness of the circular engaging end 314, can further ensure a well locking of the holder 302 inside the mount 304.

[0041] In some embodiments, after the holder 302 is slid into the mount 304, the holder 302 may be further rotated in a certain degrees (e.g., clockwise or counter clockwise) to orient the hand-held computer with respect to items to be scanned by the hand-held computer. For example, the holder 302 may be rotated a 90 degree with respect to the mount 304, such that the hand-held computer orients horizontally while the mount 304 can be vertically oriented when it is mounted on a waist belt of an associate working in a store or a distribution center.

Further, the rotation can cause the long edge of the rectangular cross-section of the short peg 312 to be more aligned with the direction of the distance W_e between the two opposite second ends 336 of the two arching side walls 332, further protecting the short peg 312 from horizontally sliding out of the circular engaging opening 334 without an external force facilitating the sliding, which further secures the holder 302 into the mount 304. In such cases, this may be done when the width W_e greater than the width of the peg.

[0042] FIG. 8 illustrates a top view of a mount 800 of a device for holding a hand-held computer according to one example embodiment. The mount 800 is significantly similar to the mount 304 of the device 300, except that no portion of a top surface of a back wall 824 is provided for business information, such as the logo 338 on the mount 304. As such, detailed description about the mount 800 can be referred to the above description with respect to the mount 304.

[0043] FIG. 9 illustrates a top view of a mount 900 of a device for holding a hand-held computer according to another example embodiment. Comparing to the mount 800, a rectangle or square opening 934 is configured in a slot 930, rather than s circular opening 834 in a slot 830 of the mount 800. As such, detailed description about the mount 900 can be referred to the above description with respect to the mount 304.

[0044] FIG. 10 illustrates a perspective view of a holder 1000 of a device for holding a hand-held computer according to one example embodiment. Comparing to the holder 302 of the device 300, the holder 1000 is configured to have an extra portion 1110 extending sideway from a side wall 1112 of a curved clamp 1114. A short peg 1116 extends outwardly from the extra portion 1110, and a circular engaging end 1118 connects to a distal end of the short peg 1116 accordingly. Other than the extra portion 1110, the holder 1000 is significantly similar to the holder 302. As such, detailed description about the holder 1000 can be referred to the above description with respect to the holder 302.

[0045] The various embodiments described above are provided by way of illustration only and should not be construed to limit the scope of the disclosure. Various modifications and changes may be made to the principles described herein without following the example embodiments

and applications illustrated and described herein, and without departing from the spirit and scope of the disclosure.

CLAIMS

We claim:

1. A device for a hand-held computer, comprising:

a holder including:

a clamp for attaching to and holding the hand-held computer by clamping on a portion of the hand-held computer without impacting functional features of the hand-held computer;

a short peg extending from a surface of the clamp and having a polygonal cross-section and two opposite sides having a first length; and

a circular engaging end attaching to a distal end of the short peg from the surface of the clam and having a diameter greater than a width of the polygonal cross-section; and

a mount for receiving and locking the holder including:

a front wall;

a back wall separated from the front wall by side walls, wherein a recess is defined by the front wall, the back wall and the side walls, and the side walls leave an open portion into the recess;

a slot being formed in the front wall at the open portion, the slot having two opposite arcing side walls and configured for receiving the short peg and the circular engaging end; and

a circular engaging opening in the slot terminating at respective first ends of the two opposite arcing side walls to lock the short peg and the circular engaging end, the respective first ends being separated by a distance smaller than the first length of the peg,

wherein the short peg is rotated and the circular engaging end are locked in the circular engaging opening such that the holder is in place in the mount.

2. The device of claim 1, wherein a diameter of the circular engaging opening is less than the diameter of the circular engaging end.

3. The device of claim 1, wherein a diameter of the circular engaging opening equals to is slightly greater than the width of the polygonal cross-section.

4. The device of claim 1, wherein the hand-held computer is one of a smart phone or a computing tablet.

5. The device of claim 1, wherein respective second ends of the two opposite arcing side walls of the slot terminate at the side walls of the mount.

6. The device of claim 1, wherein the back wall includes business information on a surface of the back wall.

7. The device of claim 1, wherein the recess has a height measuring from a back surface of the front wall to a front surface of the back wall, the height equaling to or slightly greater than a thickness of the circular engaging end.

8. The device of claim 1, wherein the front wall has a thickness equaling to or slightly less than a length of the short peg such that the surface of the clamp engages a front surface of the front wall when the holder is in place in the mount.

9. The device of claim 1, wherein the back wall includes a clip on a back surface of the back wall for mounting the mount.

10. The device of claim 1, wherein the holder is slid into the mount along the two opposite arcing side walls of the slot.

11. The device of the claim 1, wherein the clamp includes two opposite finger protrusions extending outwardly from the clamp for facilitating installing and uninstalling the hand-held computer .

12. The device of the claim 1, wherein the clamp includes two opposite protrusions extending inwardly from the clamp for facilitating receiving and holding the hand-held computer.

13. The device of claim 1, wherein the holder and the mount are injection-molded.

14. The device of claim 1, wherein the holder and the mount are made of same materials.

15. The device of claim 1, wherein the holder and the mount are made of different materials.

16. A mount for receiving and locking a holder wherein the holder includes a clamp, a short peg extending from a surface of the clamp and having a polygonal cross-section, and a circular engaging end attaching to a distal end of the short peg from the surface of the clam and having a diameter greater than a width of the polygonal cross-section, comprising:

a front wall;

a back wall separated from the front wall by side walls, wherein a recess is defined by the front wall, the back wall and the side walls, and the side walls leave an open portion into the recess;

a slot being formed in the front wall at the open portion, the slot having two opposite arcing side walls and configured for receiving the short peg and the circular engaging end; and

a circular engaging opening in the slot terminating at respective first ends of the two opposite arcing side walls to lock the short peg and the circular engaging end, the respective first ends being separated by a distance slightly smaller than the width of the polygonal cross-section,

wherein the short peg and the circular engaging end are locked in the circular engaging opening such that the holder is in place in the mount.

17. The mount of claim 16, wherein a diameter of the circular engaging opening is less than the diameter of the circular engaging end.

18. The mount of claim 16, wherein a diameter of the circular engaging opening equals to is slightly greater than the width of the polygonal cross-section.

19. The mount of claim 16, wherein the mount is made one of a plastic material or a metal material.

20. The mount of claim 16, wherein the mount is injection-molded.

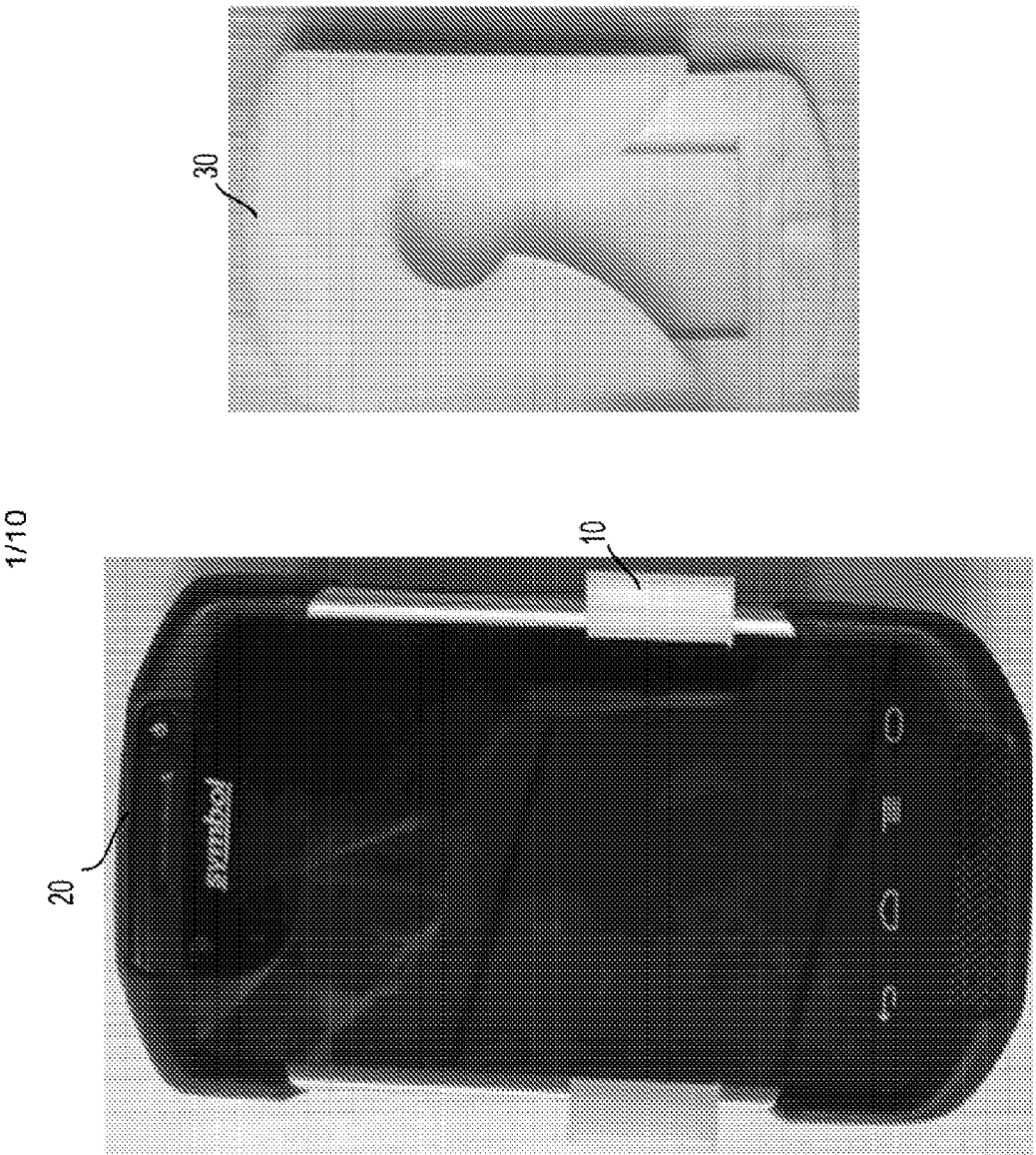
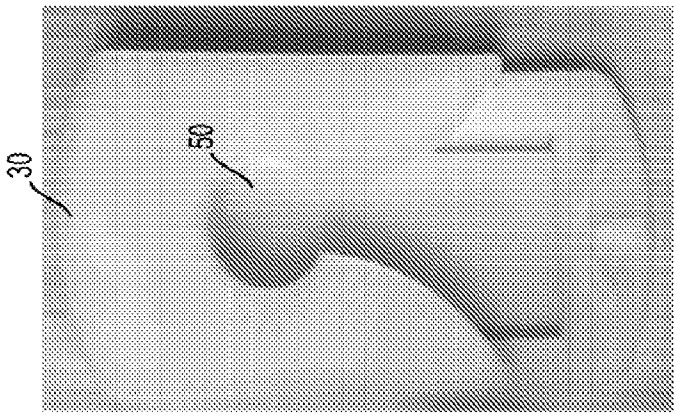


FIG. 1



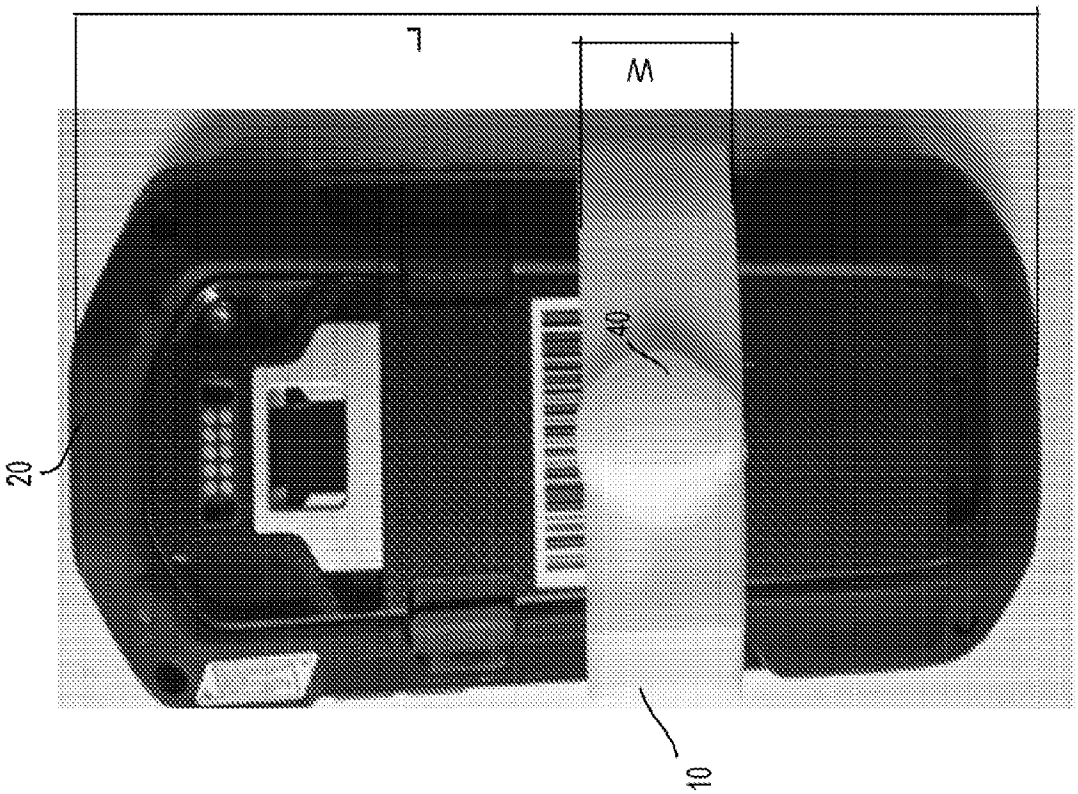


FIG. 2

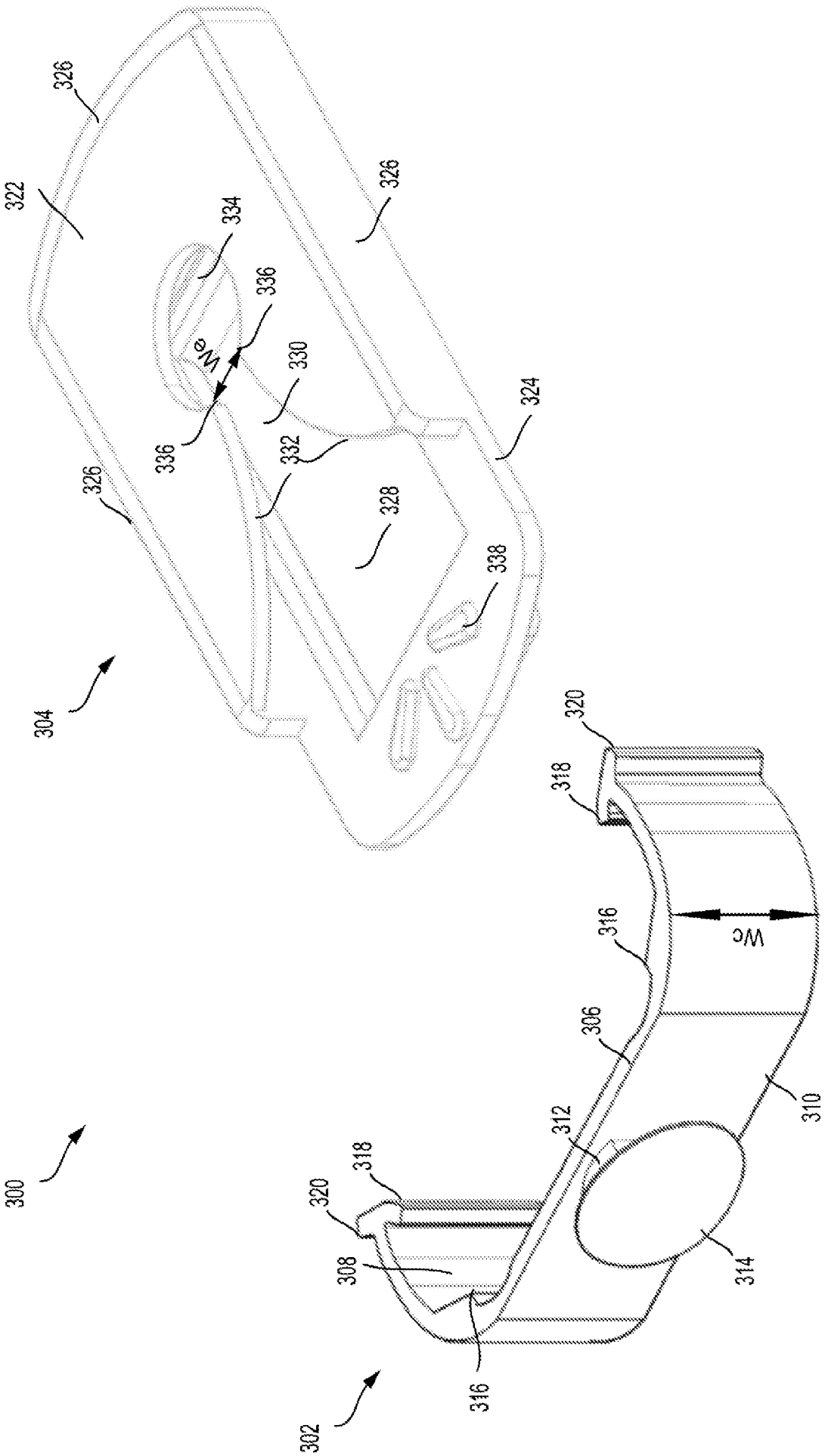

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FIG. 3

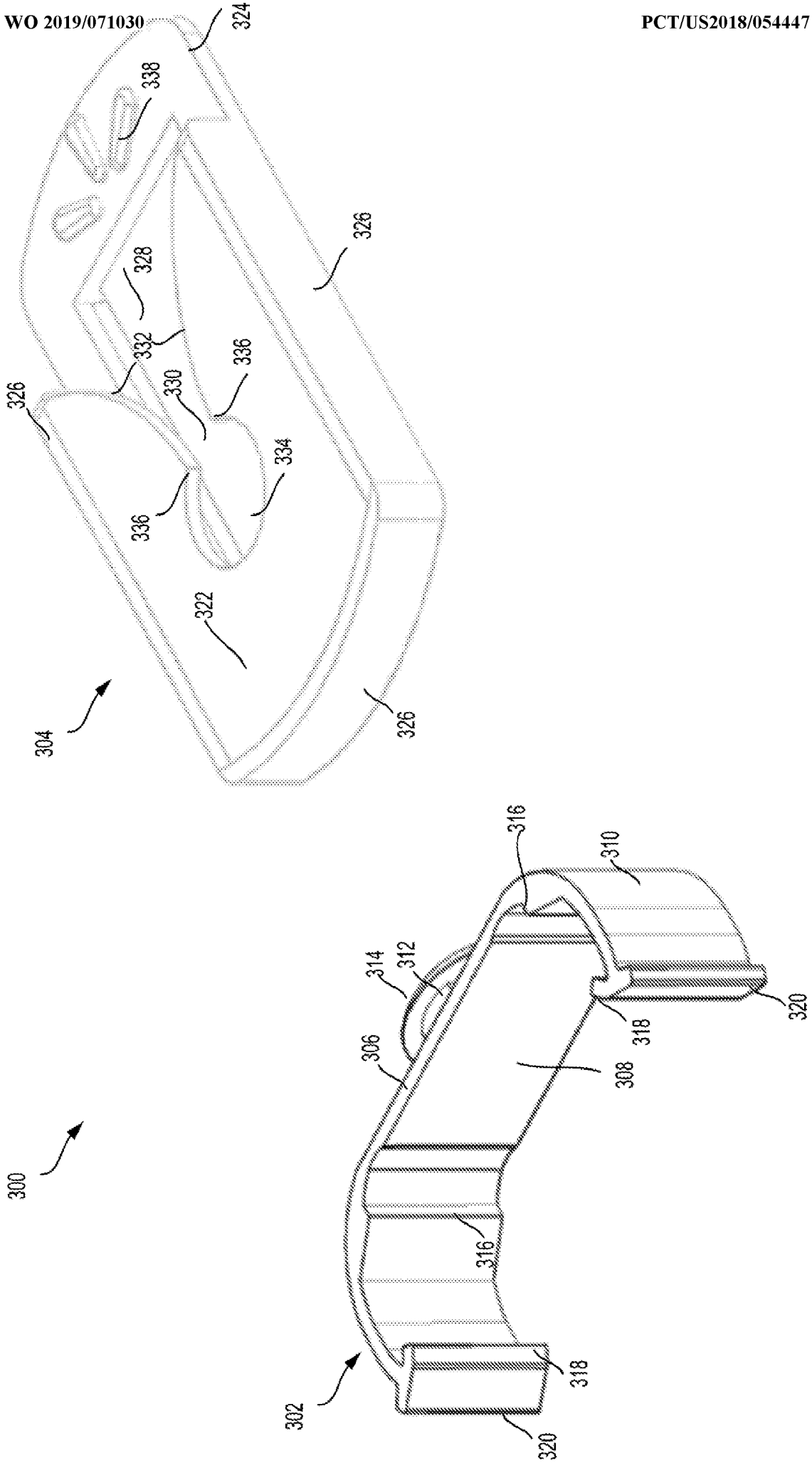
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FIG. 4

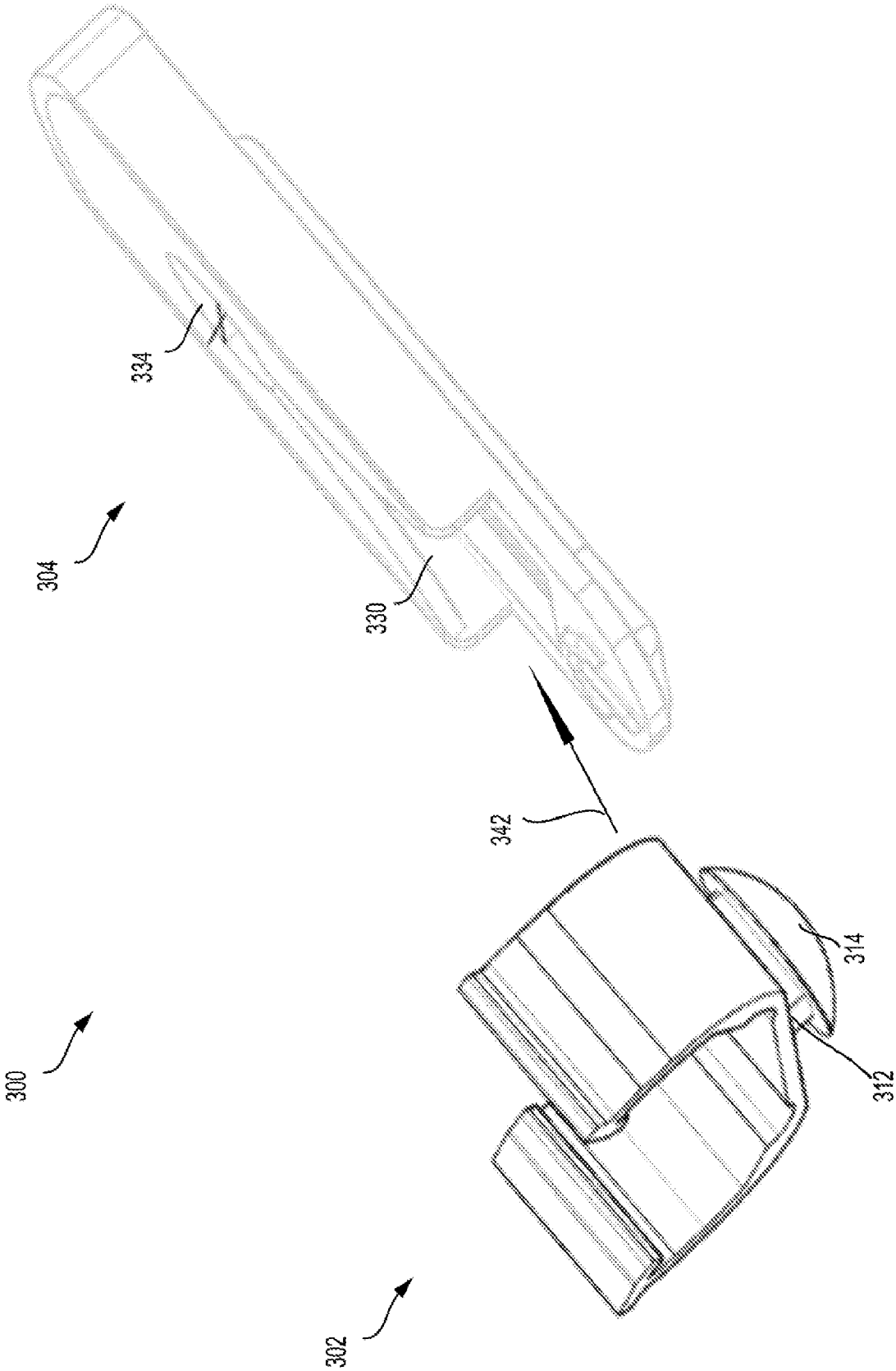

FIG. 5

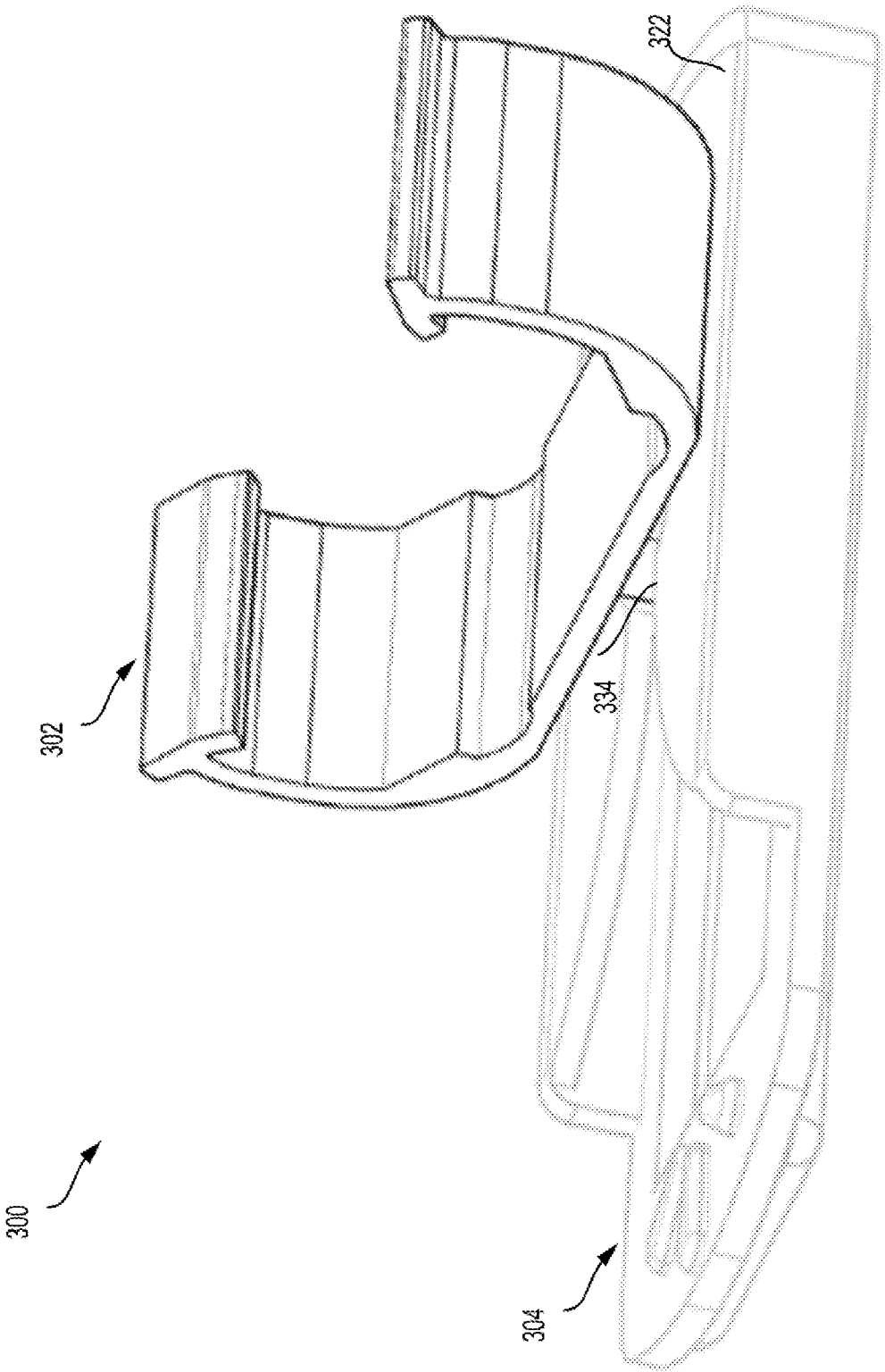

FIG. 6

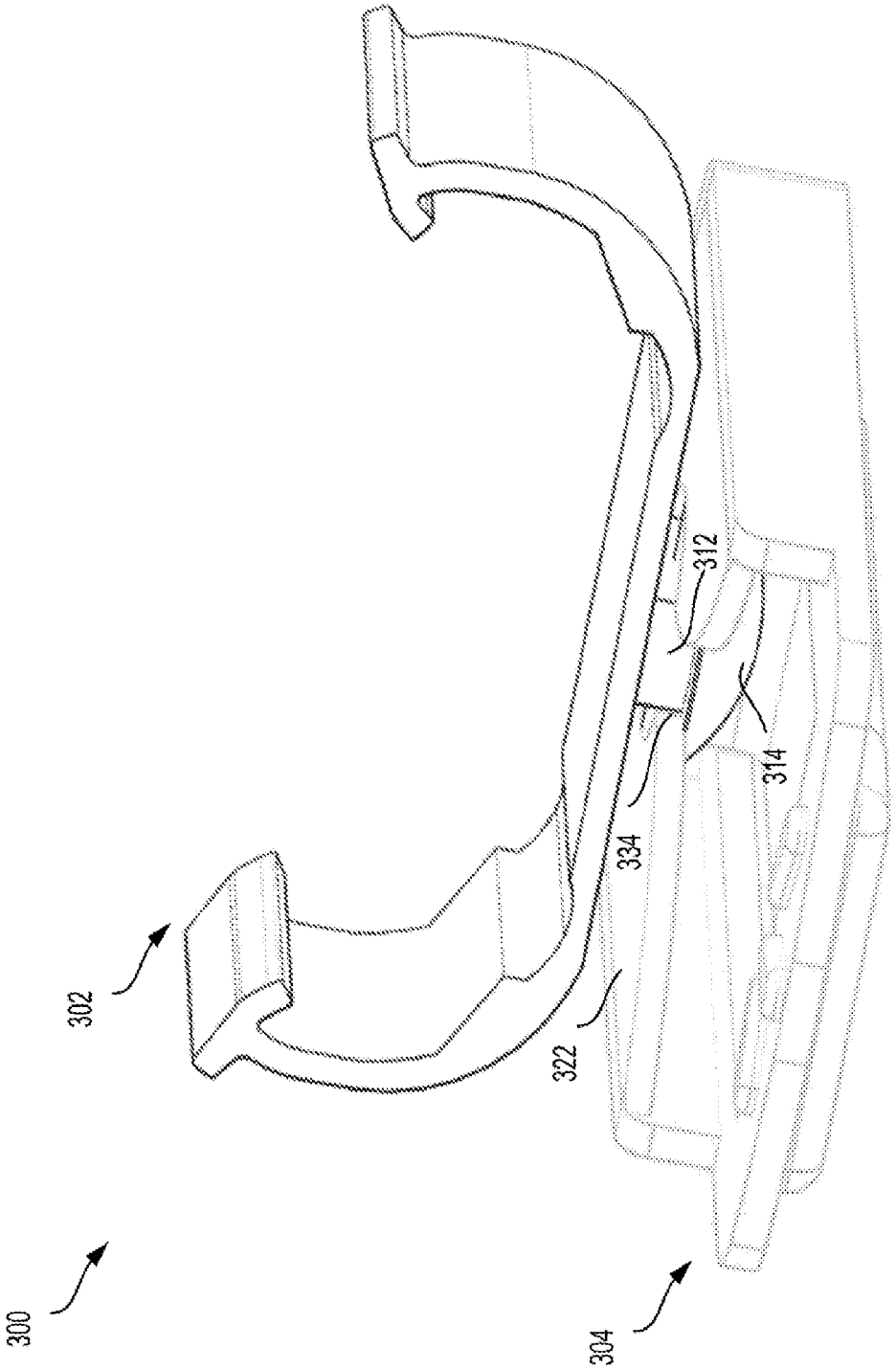

FIG. 7

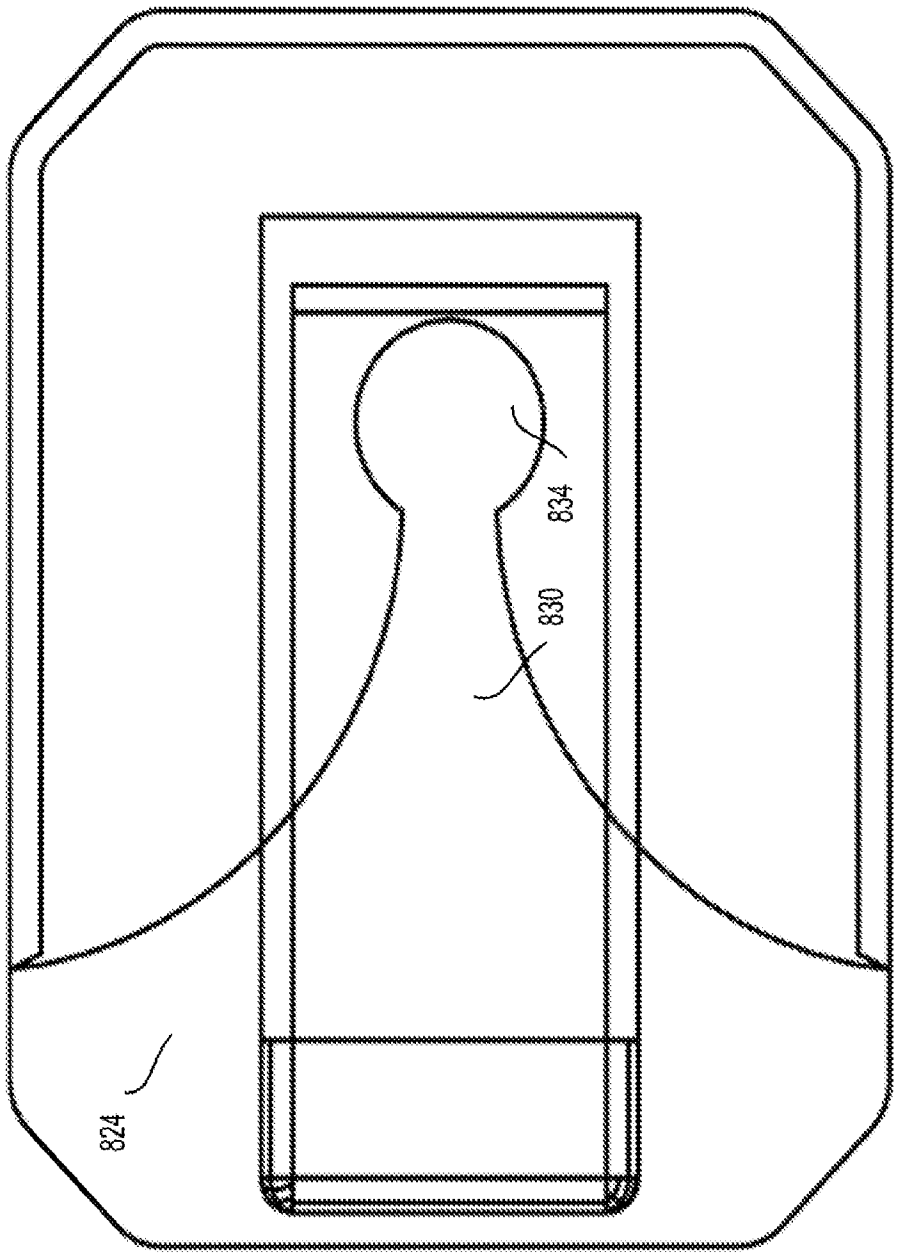

FIG. 8

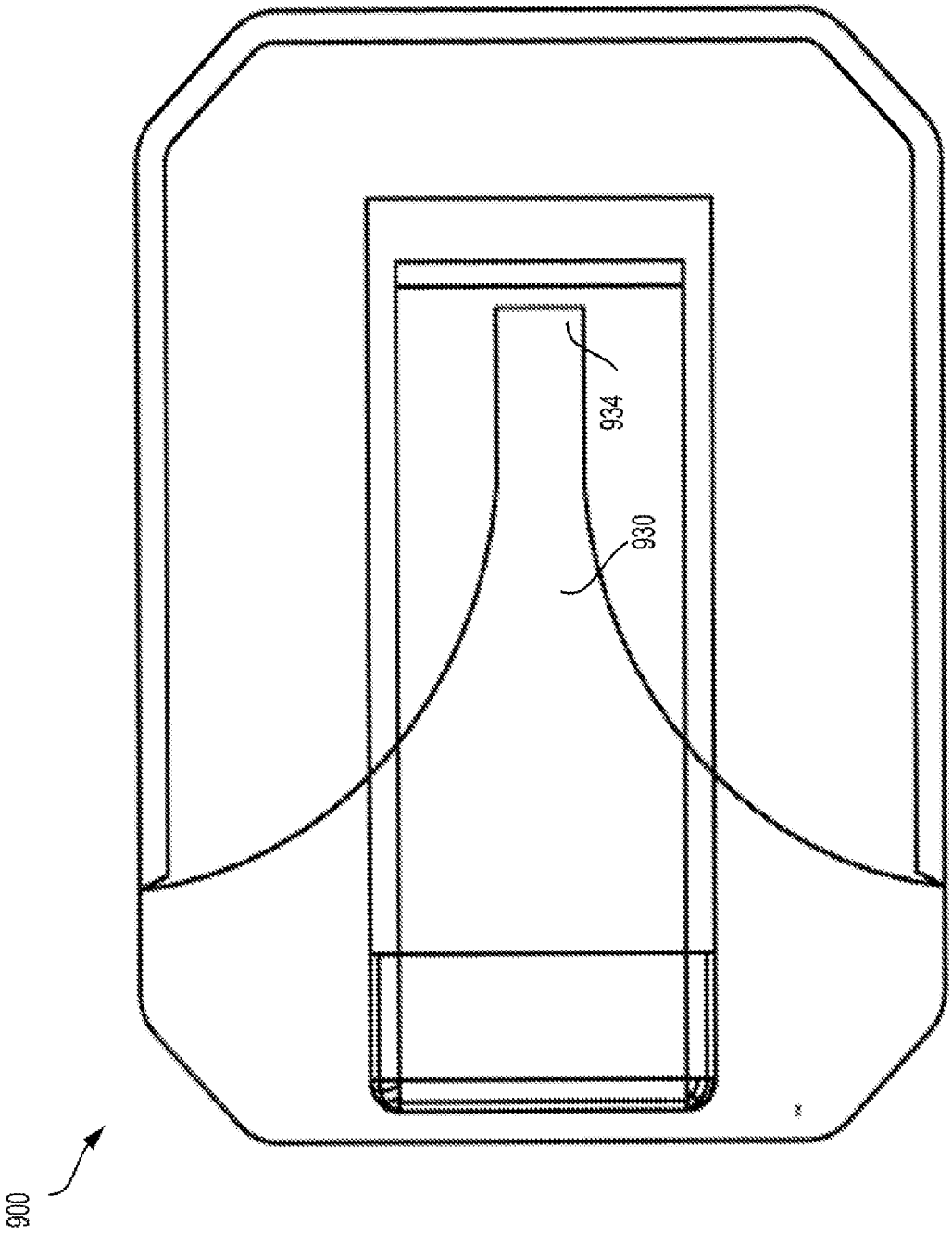

FIG. 9

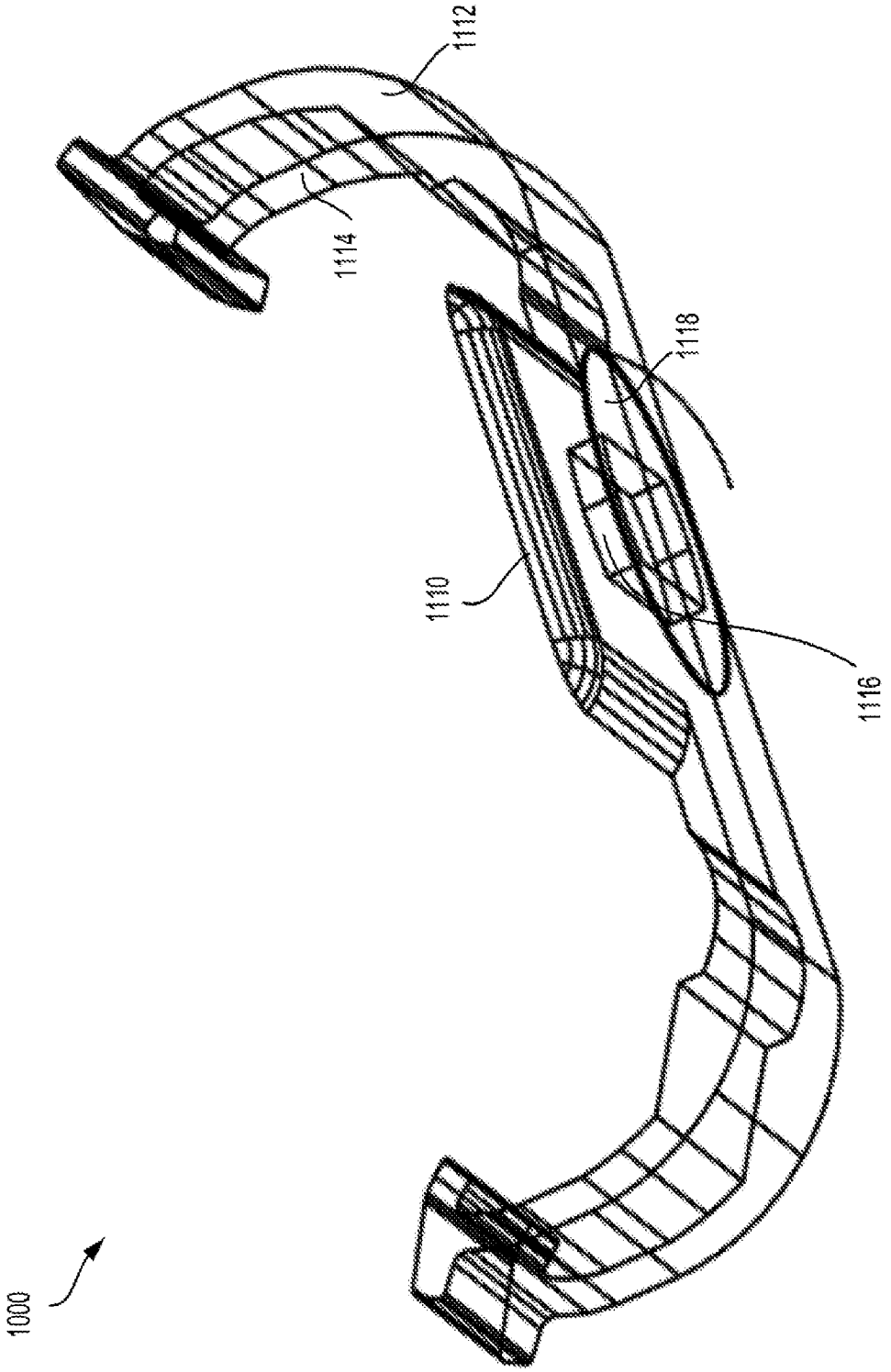

FIG. 10

INTERNATIONAL SEARCH REPORT

International application No.
PCT/US2018/054447

A. CLASSIFICATION OF SUBJECT MATTER
IPC(8) - A45F 5/02; A45C 11/00; A45F 5/00 (2018.01)
CPC - A45F 5/021; A45F 2005/025; A45F 2200/0516 (2018.08)

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
See Search History document

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
USPC - 455/575.1; 455/575.4; 455/575.6 (keyword delimited)

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)
See Search History document

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 6,578,745 B1 (TAYLOR et al) 17 June 2003 (17.06.2003) entire document. See pg. 9 of ISA/237.	1-20
Y	US 5,697,071 A (FAN) 09 December 1997 (09.12.1997) entire document	1-20
A	US 6,736,136 B2 (CHEN-LIEH) 18 May 2004 (18.05.2004) entire document	1-20
A	US 7,624,901 B1 (MOZES) 01 December 2009 (01.12.2009) entire document	1-20

☐ Further documents are listed in the continuation of Box C. ☐ See patent family annex.

* Special categories of cited documents:
"A" document defining the general state of the art which is not considered to be of particular relevance
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"O" document referring to an oral disclosure, use, exhibition or other means
"P" document published prior to the international filing date but later than the priority date claimed
"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art
"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
08 November 2018	14 DEC 2018
Name and mailing address of the ISA/US Mail Stop PCT, Attn: ISA/US, Commissioner for Patents P.O. Box 1450, Alexandria, VA 22313-1450 Facsimile No. 571-273-8300	Authorized officer Blaine R. Copenheaver PCT Helpdesk: 571-272-4300 PCT OSP: 571-272-7774