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(54) Title: MEDIA RETENTION

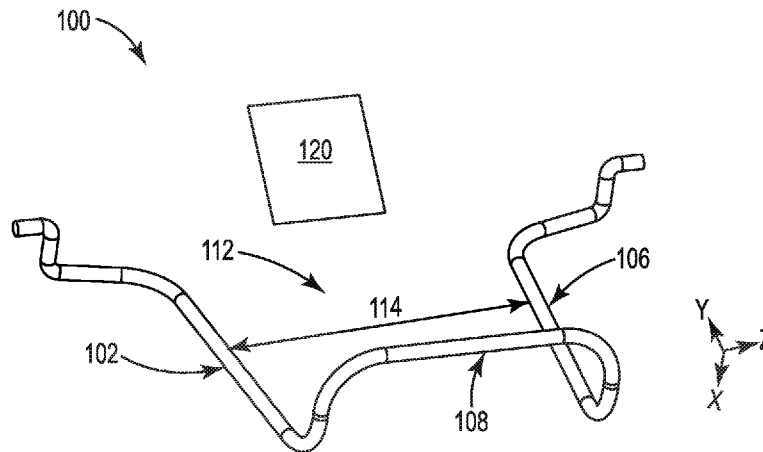


Fig. 1

(57) Abstract: In one example, a system including a rotatable output tray bail including a first arm, a second arm, and a back portion together defining a media receiving volume, where the back portion extends a distance along an X axis above a surface of the first arm and a surface of the second arm to retain media, when present, at least in a direction along a Y axis in the media receiving volume, and a tongue bias member extending at least partially into a media retention volume to position the media against the rotatable output tray bail and retain the media in the media retention volume.



Declarations under Rule 4.17:

- *as to the identity of the inventor (Rule 4.17(i))*
- *as to applicant's entitlement to apply for and be granted a patent (Rule 4.17(ii))*

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MEDIA RETENTION

Background

[0001] An imaging device, such as a printer, may be used to process and output a physical medium. For example, an imaging device may perform a print job comprising printing text and/or graphics by transferring ink, toner, and/or other material to the physical medium.

Brief Description of the Drawings

[0002] Figure 1 illustrates an example of a system consistent with the present disclosure.

[0003] Figure 2 illustrates an example of a printing system including an example of a system consistent with the present disclosure.

[0004] Figure 3 illustrates another example of a printing system including an example of a system consistent with the present disclosure.

[0005] Figure 4 illustrates an example of a printing system including an example of a system in a print position consistent with the present disclosure.

[0006] Figure 5 illustrates an example of a printing system including an example of a system in a storage position consistent with the present disclosure.

[0007] Figure 6 illustrates a portion of an example of a printing system consistent with the present disclosure.

[0008] Figure 7 illustrate a portion of another example of a printing system consistent with the present disclosure.

Detailed Description

[0009] Some imaging devices may utilize multiple physical media for a print job. As used herein, the term “imaging device” may, for example, refer to any hardware device, such as an imaging device, multifunction imaging device (MFP), or any other device with functionalities to physically produce representation(s) (e.g., text, images, models, etc.) on a medium. In examples, a “medium” may include paper, photopolymers, thermopolymers, plastics, composite, metal, wood, or the like. In some examples, an MFP may be capable of performing a combination of multiple different functionalities such as, for example, printing, photocopying, scanning, faxing, etc. For example, the function within an imaging device may be to reboot the imaging device, troubleshoot the imaging device, upgrade firmware, retrieve consumable level information, clone features, adjust security settings, perform a test, retrieve a scan, execute a print request, clear an alert, etc. As used herein, the term “print job” may, for example, refer to an application of ink, toner, and/or other material to a physical medium by an imaging device to process and output the physical medium. For example, an imaging device may process and output a physical medium including physical representations, such as text, images, models, etc.

[0010] In some examples, a print job may include application of printing material to multiple pieces of print media (e.g., multiple pages of paper). Each piece of print medium may be printed, moved from the imaging device, and stacked on a receiving surface of an enclosed output tray of the imaging device during the printing process for each piece of print medium in the print job. As used herein, the term “enclosed output tray” may, for example, refer to a case having an aperture extending continuously through two end portions and an inner portion of the case, where the aperture may receive a print medium from an imaging device such that the received print medium may move through the aperture of the inner portion of the case.

[0001] However, in some environments, such as in a micro-gravity (G) or zero-G environment, media that are ejected from an imaging device may not “fall” into an output tray due at least in part to an absence or reduced amount of gravity in the environments. Additionally, in some micro-G or zero-G environments (e.g., inside a space station) an amount of physical space may be limited.

[0002] Accordingly, present disclosure is directed to media retention. For example, a media retention may include a rotatable output tray bail including a first arm, a second arm, and a back portion together defining a media receiving volume, where the back portion extends a distance along an X axis above a surface of the first arm and a surface of the second arm to retain media, when present, at least in a direction along a Y axis in the media receiving volume and a tongue bias member extending at least partially into the media retention volume to position the media against the rotatable output tray bail and retain the media in the media retention volume.

[0003] The first arm, the second arm, and the back portion may in conjunction with the tongue bias member retain media in the media receiving volume, as detailed herein. Additionally, the rotatable output tray bail may, in contrast to some approaches employing a fixed output tray, rotate from a print position to a storage position to decrease a physical footprint of the system when an imaging device is not in use, as detailed herein.

[0004] Figure 1 illustrates an example of a system 100 consistent with the present disclosure. As illustrated in Figure 1, the system 100 may include a rotatable output tray bail 101 and a tongue bias member 120.

[0005] The rotatable output tray bail 101 may include a first arm 102, a second arm 106, and a back portion 108. As illustrated in Figure 1, the rotatable output tray bail 101 may be formed of a continuous member. For example, as illustrated in Figure 1 the back portion 108 may be integral with each of the first arm 102 and the second arm 106. However, the disclosure is not so limited. Rather, in some examples, the first arm 102, the second arm 106, and/or the back portion 108 may be separate and distinct components that may be interconnected (via a fastening mechanism) or may be separate and distinct components that are not interconnected (e.g., so the first arm 102, the second arm 106, and/or the back portion 108 may move independently), among other possibilities.

[0006] The rotatable output tray bail 101 may be comprised of a polymer such as a polyamide. Some specific examples of polyamides (PAs) include (e.g., PA 11 / nylon 11, PA 12 / nylon 12, PA 6 / nylon 6, PA 8 / nylon 8, PA 9 / nylon 9, PA 6,6 / nylon 6,6, PA 6,12 / nylon 6,12, PA 8,12 / nylon 8,12, PA 9,12 / nylon 9,12, PA12 GB or combinations thereof). Other specific examples of the polymer may include polyethylene, polyethylene terephthalate (PET), and an amorphous variation of these

materials. Still other examples of suitable materials of the rotatable output tray bail 101 may include polystyrene, polyacetals, polypropylene, polycarbonate, polyester, thermal polyurethanes, other engineering plastics, and blends of any two or more of the polymers listed herein. Core shell polymer particles of these materials may also be used. For instance, in some examples, the rotatable output tray bail 101 may be comprised of a polyamide and a particulate dispersed in the polyamide. For instance, in some examples the rotatable output tray bail 101 may be comprised of a polyamide and a glass particulate (e.g., a glass bead) dispersed in the polyamide, among other possibilities.

[0007] In some examples, each of the first arm 102, the second arm 106, and the back portion 108 may be formed of the same material such as a polyamide. However, in some examples, the first arm 102, the second arm 106, and /or the back portion 108 may be formed of different materials such as different polyamides, among other suitable materials.

[0008] As illustrated in Figure 1, the first arm 102, the second arm 106, and the back portion 108 may together form a media receiving volume 112. As used herein, the phrase "media receiving volume" refers to a volume that is bounded (e.g., by the first arm, the second arm, and/or the back portion) and sized to receive media such a paper media output from an imaging device. For instance, the media receiving volume 112 may be sized to receive A4 sized paper media, among other types and/or sizes of media. That is, the first arm 102 may be spaced a distance 114 away from the second arm 106 along a Z axis and the distance 114 may be varied depending on type and/or size of media.

[0009] The tongue bias member 120 may be formed of a flexible material. For example, tongue bias member 120 may be formed of a flexible material such that tongue bias member 120 may flex from a static position in response to contact with media, but return to the static position once contact of the media with tongue bias member 120 ceases. For instance, in some examples, tongue bias member 120 may be formed of a thermoplastic polymer resin. Examples of suitable thermoplastic polymer resins include ultra low density polyethylene, very low density polyethylene ("VLDPE"), linear low density polyethylene ("LLDPE"), low density polyethylene ("LDPE"), medium density polyethylene ("MDPE"), high density polyethylene ("HDPE"), polypropylene, isotactic polypropylene, highly isotactic polypropylene, syndiotactic polypropylene, random copolymer of propylene and ethylene and/or

butene and/or hexene, elastomers such as ethylene propylene rubber, ethylene propylene diene monomer rubber, neoprene, and blends of thermoplastic polymers and elastomers, such as for example, thermoplastic elastomers and rubber toughened plastics. In some examples, the tongue bias member 120 may be formed of polyethylene terephthalate (PET).

[0010] Figure 2 illustrates an example of a system 229 including an example of a system 200 consistent with the present disclosure. As illustrated in Figure 2, the system 229 may include an imaging device 230 and a rotatable output tray bail 201. The imaging device 230 may be a thermal inkjet imaging device, a piezoelectric imaging device, and/or a laser imaging device, among other types of imaging devices.

[0011] In various examples, a tongue bias member 220 may be coupled to the imaging device 230. For instance, as illustrated in Figure 2, tongue bias member 220 may be coupled to an enclosed output tray 234 of the imaging device 230.

[0012] Enclosed output tray 234 may receive printed media from the imaging device 230. For example, media (e.g., paper) which has been printed by the imaging device 230 may be moved from the imaging device to an output tray of the imaging device via aperture 236 of enclosed output tray 208. From the perspective of rear view of the imaging device 230 as illustrated in Figure 2, the printed media being moved through the imaging device 230 may be received by enclosed output tray 234 as the printed media passes into the aperture 236. In other words, enclosed output tray 234 includes aperture 236 such that enclosed output tray 234 may receive print media from the imaging device 230 through aperture 236.

[0013] As such, the tongue bias member 220 coupled to the enclosed output tray may contact media as it passes through the aperture 236 into a media receiving volume and while the media is in the media receiving volume. That is, in an environment such as microgravity and/or zero gravity, the tongue bias member 220 may prevent print media from floating out of the imaging device 230 and/or retain media in an output tray/media retention volume. As used herein, the terms "print medium" or "print media" may, for example, refer to paper, photopolymers, thermopolymers, plastics, composite, metal wood, compact-discs, digital video discs, Blu-ray discs, transparencies, photo paper, and/or stickers, among other types of print media which has had a print job performed on it.

[0014] In some examples, the tongue bias member 220 may extend by a distance in a range of from 10 millimeters (mm) to 200 millimeters from the enclosed output tray 234. For instance, in some examples the tongue bias member may extend 75 millimeters (mm) from the enclosed output tray 234 into aperture 236 of enclosed output tray 234, although examples of the disclosure are not limited to 75 mm. For example, tongue bias member 220 may extend into aperture 236 by a distance of more or less than 75 mm. Additionally, as illustrated in Figure 2, the tongue bias member may extend from the aperture 236 into the media retention volume 212. For instance, the tongue bias member may extend along a Y axis into the media retention volume 212 and may extend along a X axis into at least a portion of a total height of the media retention volume 212. In this manner, tongue bias member 220 may position media, when present in the media retention volume 212, with a force exerted on the media by the tongue bias member 220 present in the media retention volume 212.

[0015] Tongue bias member 220 may extend from the enclosed output tray 234 at an angle relative to the enclosed output tray 234. For example, tongue bias member 220 may extend into aperture 236 of enclosed output tray 234 at an angle of 45° relative to a surface of the enclosed output tray to which the tongue bias member 220 is coupled. In other words, an angle between tongue bias member 220 and the enclosed output tray 234 may be 45°. Although the angle between tongue bias member 220 and the enclosed output tray 234 is described as being 45°, examples of the disclosure are not so limited. For example, the angle between tongue bias member 220 and the enclosed output tray 234 may be more than 45° or less than 45° and/or due to an amount of flex in the tongue bias member 220 the angle may vary across the tongue bias member.

[0016] The imaging device 230 may include a first mount 238 and a second mount 239. The first mount 238 may define a first recess 240. Similarly, the second mount 239 may define a second recess 241. As illustrated in Figure 2, the first mount 238 and the second mount 239 may be located as substantially opposite ends of the enclosed output tray 234 of the imaging device 230.

[0017] As mentioned, the rotatable output tray bail 201 may include a first arm 202, a second arm 206, and a back portion 208. The first arm 202 may include a surface 204. The second arm 206 may include a surface 207. The back portion may include a surface 209.

[0018] In some examples, the surface 204 of the first arm 202 and the surface of the second arm together define at least a portion of a tray floor. As used herein, a tray floor refers to a surface, for instance a surface formed of surface 204 and surface 207 that media, when present, is positioned against by the tongue bias member 220. For example, tongue bias member 220 may position media, when present, against the tray floor with a force extending at least along the X axis in an amount sufficient to retain the media in the media receiving volume 212. In some examples, the surface 204 and the surface 207 may be coplanar (along the Y axis) as illustrated in Figure 2, among other possibilities.

[0019] The first arm 202 may include a distal end 203. Similarly, the second arm 206 may include a distal end 205. As illustrated in Figure 2, the distal end 203 may be coupled to the first mount 238 and the distal end may be coupled to the second mount 239. Stated differently, the distal end 203 may be disposed at least partially within the recess 240 defined by the first mount 238. Similarly, the distal end 205 may be disposed at least partially within the recess 241 defined by the second mount 239.

[0020] In this manner, the rotatable output tray bail 201 may be coupled to the imaging device 230 and yet remain rotatable about the first mount 238 and the second mount 239, as detailed herein. Notably, when coupled to the first mount 238 and the second mount 239 the rotatable output tray bail 201 may be subjected to forces such as forces imparted on the rotatable output tray bail when in a print position in a Y axis, X axis, and/or Z axis and yet remain coupled to the imaging device 230.

[0021] Figure 3 illustrates another example of a printing system 329 consistent with the present disclosure. As illustrated in Figure 3, the system 329 may include an imaging device 330 and a system 300 coupled to the imaging device 330. As mentioned, the system 300 may include a first arm 302 having a surface 304, a second arm (obscured by media 350) having a surface (obscured by media 350), and a back portion 308 having a surface 309. As detailed herein, the back portion may extend a height above the first arm 302 and the second arm 306 to retain in a media receiving volume of the system 300.

[0022] For instance, as illustrated in Figure 3, the tongue bias member 320 may be positioned upstream along a media path from a rotatable output tray bail 301 to contact media 350 output from the imaging device 330 and to maintain contact with

the media 350 when disposed in the media retention volume 312. That is, the tongue bias member 320 may extend at least partially into the media retention volume, as detailed herein.

[0023] Figure 4 illustrates an example of a printing system 429 including an example of a system 400 in a print position consistent with the present disclosure. As used herein, the phrase 'print position' refers to an orientation of the system 400 relative to an imaging device at which the 400 may receive media into a media receiving volume defined by a first arm 402, a second arm 406, and/or a back portion 408 of the system 400.

[0024] In various examples, the 400 may rotate about a first mount 438 and a second mount 438. For instance, the system 400 may rotate from a print position, as illustrated in Figure 4, to a storage position as described herein in greater detail and illustrated in Figure 5.

[0025] For instance, the rotatable output tray bail 401 is rotatable about the first mount 438 and the second mount (not illustrated for ease of illustration) in a range of from 15 degrees to 160 degrees. All individual values and sub-ranges between 15 degrees and 160 degrees are included. For instance, the rotatable output tray bail 401 may be rotatable by at least 90 degrees along an X axis between the print position (as illustrated in Figure 4) and the storage position (illustrated in Figure 5 about 90 degrees of rotation from the print position of Figure 4). Notably, the rotatable output tray bail 401 be inserted in a certain orientation so as to be freely rotatable between a print position and a storage position and yet remain installed in a first mount and a second mount at least in part due to the design of the first mount and/or the second mount that may make insertion (or removal) of the rotatable output tray bail 401 possible at a set angle (e.g., a 45 or 60 degree angle) but not possible at other angles between the print position and the storage position.

[0026] As illustrated in Figure 4, a back portion 408 may extend a height 447, above a plane of the first arm 402 and/or the second arm 406. Stated differently, a surface of the first arm and/or the second arm may be a distance (along the

[0027] Figure 5 illustrates an example of a printing system 529 including an example of a system 500 in a storage position consistent with the present disclosure. As used herein, the phrase "storage position" refers to an orientation of the system 500 relative to an imaging device 530 at which the system 500 cannot receive media

into a media receiving volume defined by a first arm 502, a second arm 506, and/or a back portion 508 of the system 500.

[0028] Figure 6 illustrates a portion of an example of a printing system 649 consistent with the present disclosure. As illustrated in Figure 6, the printing system 649 may include an imaging device 630 and a rotatable output tray bail 601. As mentioned, the rotatable output tray bail 601 may be formed of a flexible material such as PET, among other possibilities. Having the rotatable output tray bail 601 may promote installation of the rotatable output tray bail 601 in a mount on the imaging device 630.

[0029] For instance, having the rotatable output tray bail 601 form of a flexible material may promote installation of the rotatable output tray bail 601 into a first mount and/or a second mount, as described herein. For example, a distal end 603 may be inserted into a first recess 640 of a first mount 638. Similarly, a distal end may be inserted into a second recess of a second mount (not illustrated in Figure 6 for ease of illustration). It is noted that flexing and/or torsion of the rotatable output tray bail 601 formed of a flexible material may promote insertion and/or retention of the rotatable output tray bail 601 in a first mount and a second mount in contrast to other approaches that may employ rigid (metal/steel) members. Stated differently, in some examples the rotatable output tray bail 601 may be elastically deformed by a force applied to the rotatable output tray bail 601 during insertion into the first mount and/or the second mount and responsive to insertion into the first mount and/or the second mount the force may be removed and the rotatable output tray bail 601 may return to its non-deformed shape and remain retained in the first mount and/or the second mount at least in part due to the design of the first mount and/or the second mount that may make insertion (or removal) of the rotatable output tray bail 601 possible at a set angle (e.g., a 45 or 60 degree angle) but not possible at other angles between the print position and the storage position.

[0030] Figure 7 illustrate a portion of an example of a printing system 749 consistent with the present disclosure. As mentioned, a distal end 703 of a rotatable output tray bail 701 may be inserted and retained in a first recess 740 of a first mount 738, as illustrated in Figure 7. For instance, the distal end 703 of the first arm 702 may be a curved or hooked portion that extends into the first recess 740 of the first mount 738, as illustrated in Figure 7. Similarly, a distal end of the second arm may

be a curved or hooked portion to extend into a second recess of the second mount (e.g., as illustrated in Figure 2 for ease of illustration).

[0031] As mentioned, insertion of a distal end in a recess of a mount may for instance occur via flexing and/or torsion of the rotatable output tray bail 701. In some examples, a mount such as the first mount 738 may include a locking mechanism to lock the rotatable output tray bail 701 in a print position and/or in a storage position, among other possibilities. For example, as illustrated in Figure 7, the first mount 738 may include a detent 739 or other protrusion positioned to lock (position) the rotatable output tray bail 701 in a print position.

[0032] In some examples, the first mount 738 may include a detent (not shown for ease of illustration) or other protrusion positioned to lock (position) the rotatable output tray bail 701 in a storage position (at a given angle in a storage position). For instance, the first mount 738 may include two detents to lock the rotatable output tray bail 701 into a print position and a storage position, respectively. Similarly, in some examples a second mount may include a detent to lock the rotatable output tray bail 701 into a print position and/or a storage position.

[0033] The above specification, examples and data provide a description of the method and applications, and use of the system and method of the present disclosure. Since many examples may be made without departing from the spirit and scope of the system and method of the present disclosure, this specification merely sets forth some of the many possible example configurations and implementations.

[0034] The figures follow a numbering convention in which the first digit or digits correspond to the drawing figure number and the remaining digits identify an element or component in the drawing. Similar elements or components between different figures may be identified by the use of similar digits. For example, 102 may reference element "02" in Figure 1, and a similar element may be referenced as 202 in Figure 2.

What is claimed:

1. A system comprising:
 - a rotatable output tray bail including a first arm, a second arm, and a back portion together defining a media receiving volume, wherein the back portion extends a distance along an X axis above the first arm and the second arm to retain media, when present, at least in a direction along a Y axis in the media receiving volume; and
 - a tongue bias member extending at least partially into a media retention volume to position the media against the rotatable output tray bail and retain the media in the media retention volume.
2. The system of claim 1, wherein the first arm is spaced a distance away from the second arm along a Y axis.
3. The system of claim 1, wherein the back portion is integral with the first arm and the second arm.
4. The system of claim 1, wherein the surface of the first arm and the surface of the second arm together define at least a portion of a tray floor, and wherein the tongue bias member is to position at least a portion of the media, when present, against the tray floor.
5. The system of claim 1, wherein the rotatable output tray bail further comprises a continuous member including each of the first arm, the second arm, and the back portion.
6. The system of claim 1, wherein the rotatable output tray bail further comprises a polyamide.
7. The system of claim 1, wherein the tongue bias member further comprises a thermoplastic polymer resin.
8. A printing system comprising:

an imaging device;

a rotatable output tray bail including a first arm, a second arm, and a back portion together defining a media receiving volume when in a print position, wherein the back portion extends a distance along an X axis above a surface of the first arm and a surface of the second arm to retain media, when present, at least in a direction along a Y axis in the media receiving volume; and

a tongue bias member extending at least partially into a media retention volume to position media, when present, against the rotatable output tray bail to retain the media in the media retention volume.

9. The system of claim 8, wherein the tongue bias member is located upstream along a media path from the rotatable output tray bail to contact media output from the imaging device and to maintain contact with the media when disposed in the media retention volume.

10. A printing system comprising:

an imaging device including a first mount, a second mount, and an enclosed output tray;

a rotatable output tray bail including a first arm, a second arm, and a back portion together defining a media receiving volume when in a print position, wherein the back portion extends a distance along an X axis above a surface of the first arm and a surface of the second arm to retain media, when present, at least in a direction along a Y axis in the media receiving volume, wherein the first arm includes a distal end coupled to the first mount and the second arm includes a distal end coupled to the second mount; and

a tongue bias member extending at least partially into a media retention volume to position media, when present, against the rotatable output tray bail.

11. The printing system of claim 10, wherein the rotatable output tray bail is rotatable about the first mount and the second mount by at least 90 degrees along an X axis between the print position and a storage position.

12. The printing system of claim 10, wherein the tongue bias member is coupled to the enclosed output tray.

13. The printing system of claim 10, wherein the imaging device is selected from a group consisting of a thermal inkjet imaging device, a piezoelectric imaging device, and a laser imaging device.

14. The printing system of claim 10, wherein the distal end of the first arm and the distal end of the second arm further comprise a curved or hooked portion to extend into a first recess of the first mount and a second recess of the second mount, respectively.

15. The printing system of claim 10, wherein at least one of the first mount and the second mount includes a locking mechanism to lock the rotatable output tray bail into a print position.

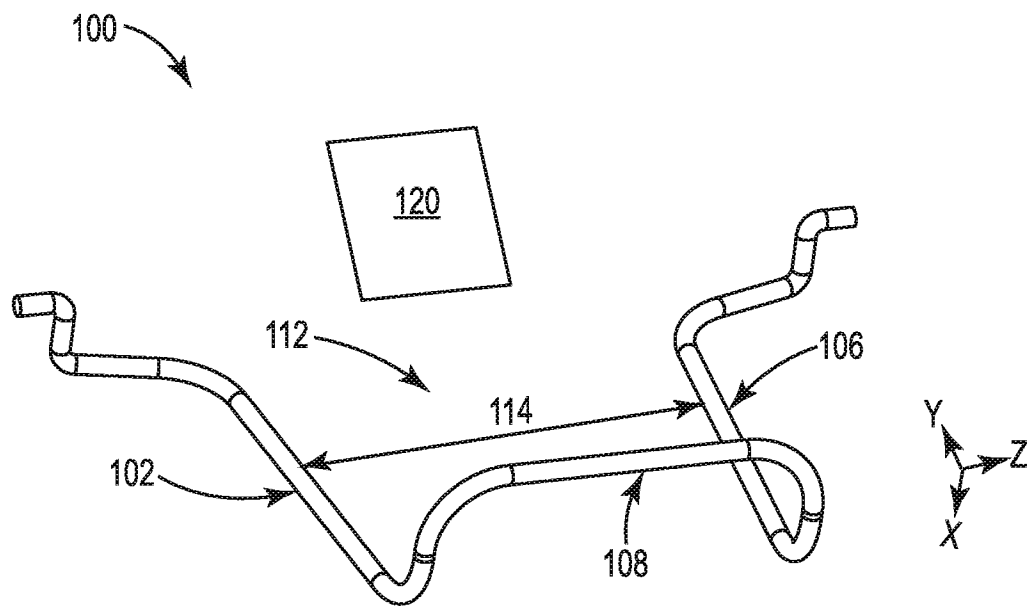


Fig. 1

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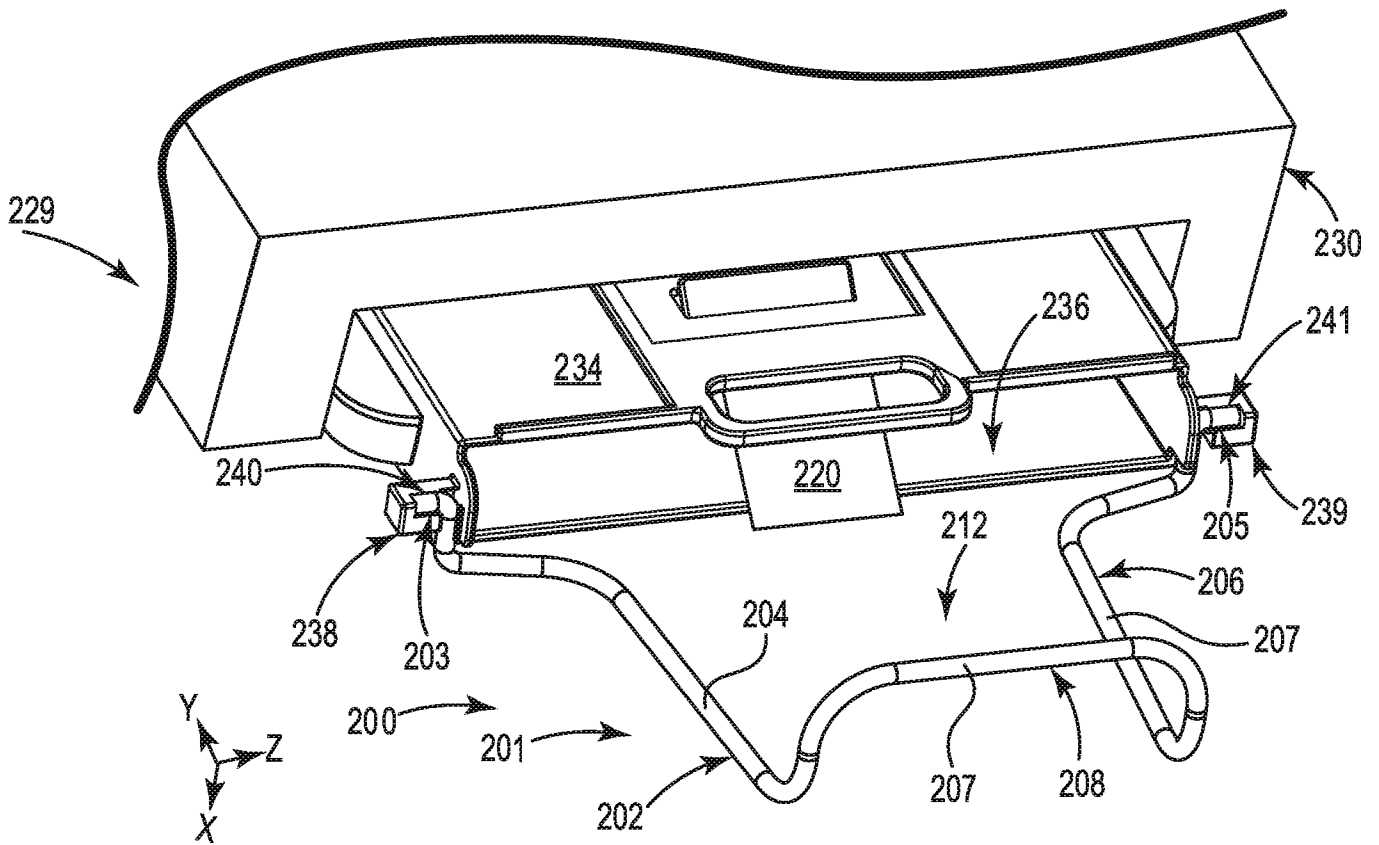


Fig. 2

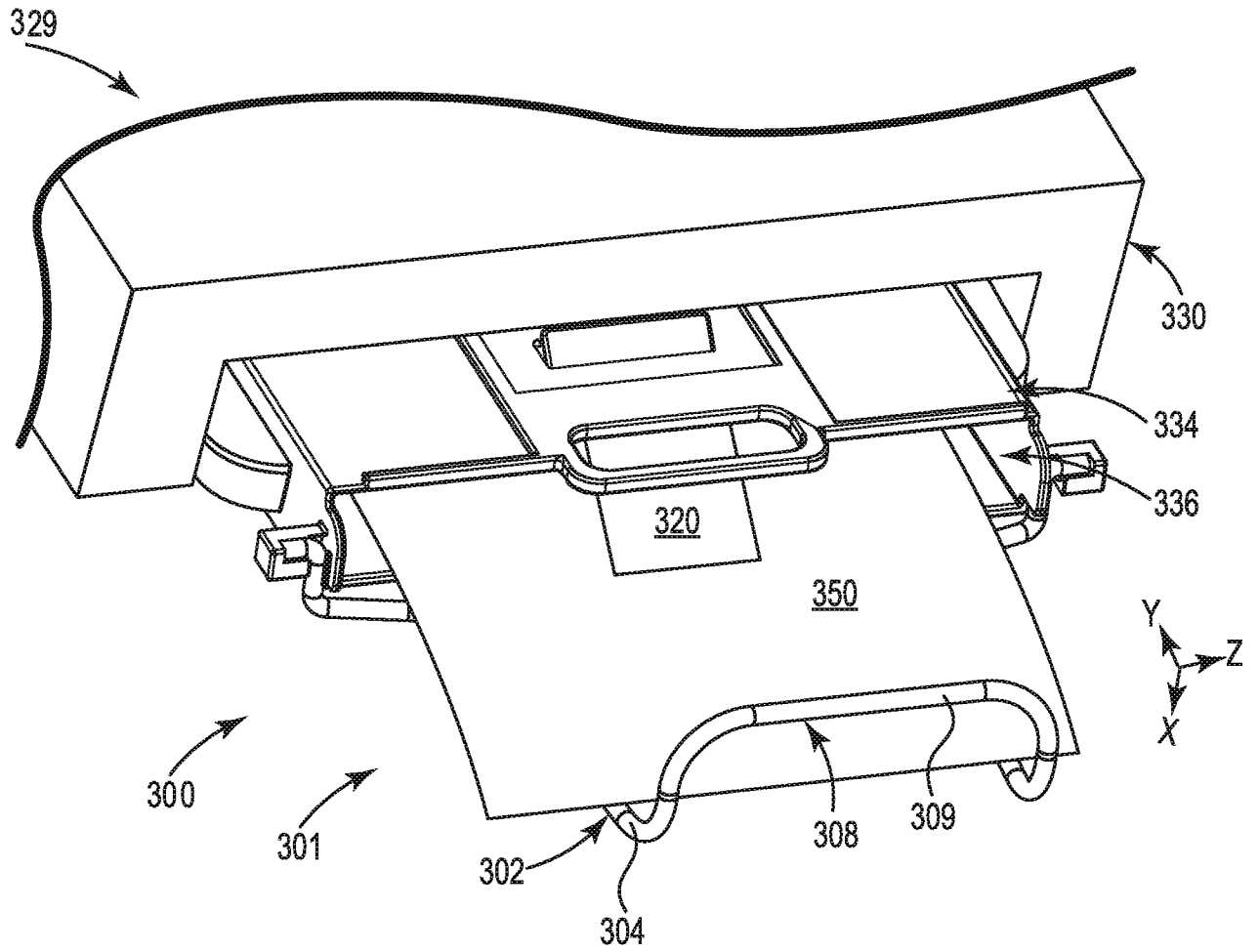


Fig. 3

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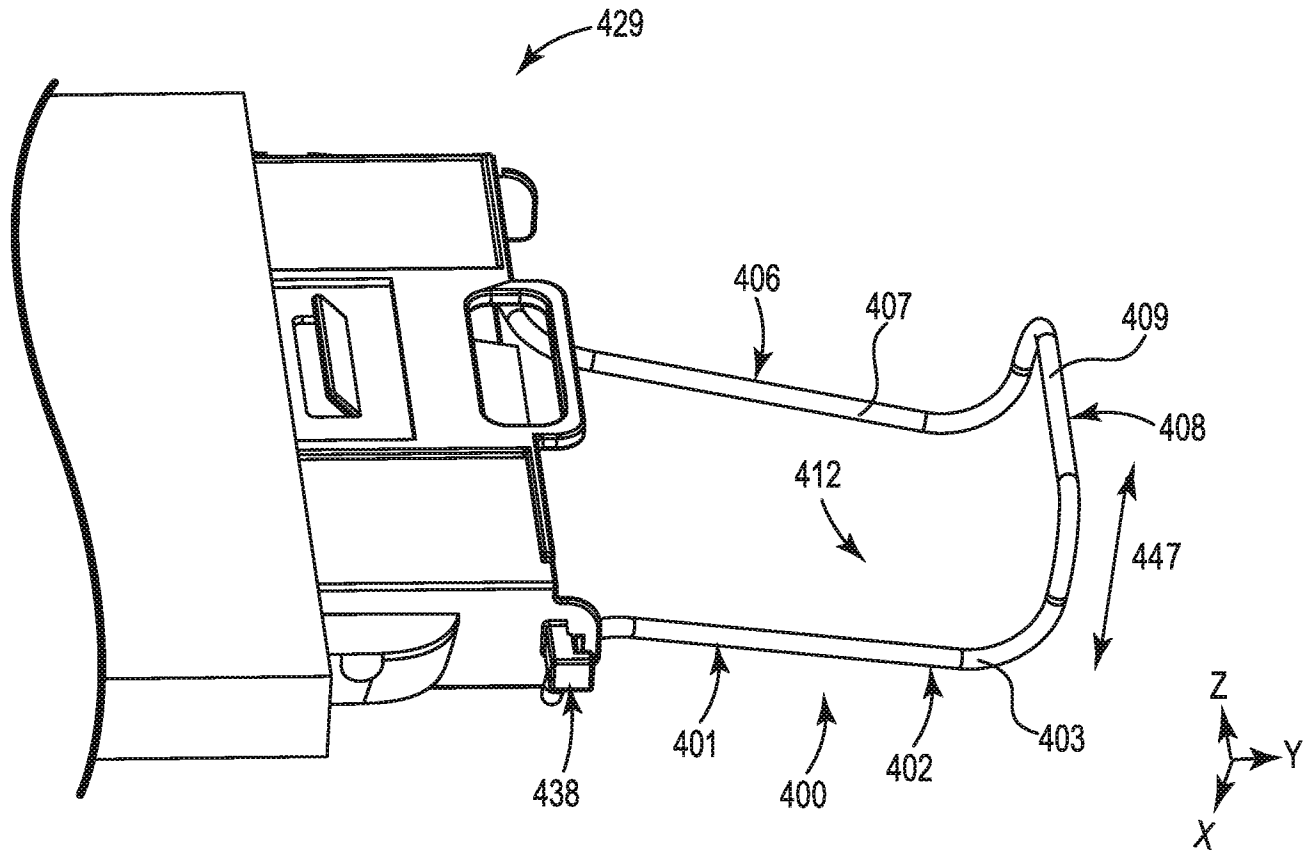


Fig. 4

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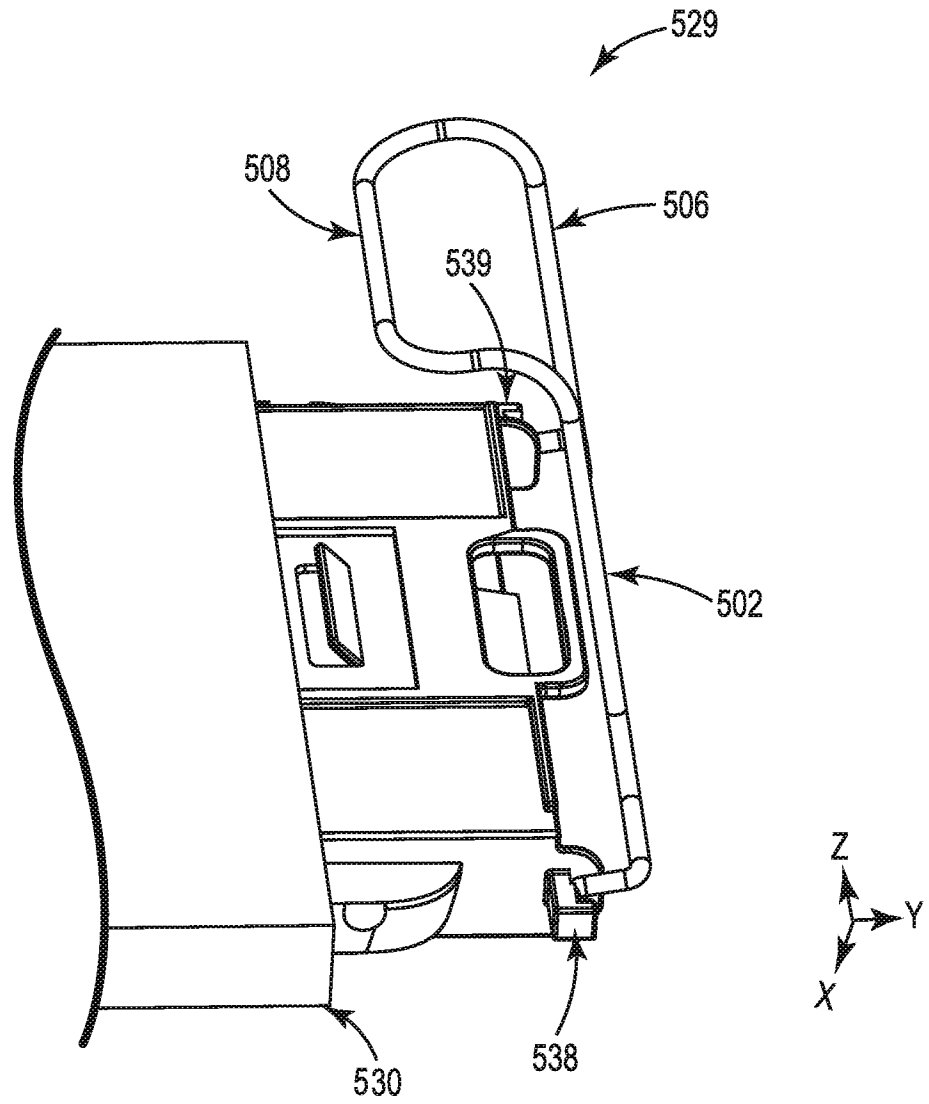


Fig. 5

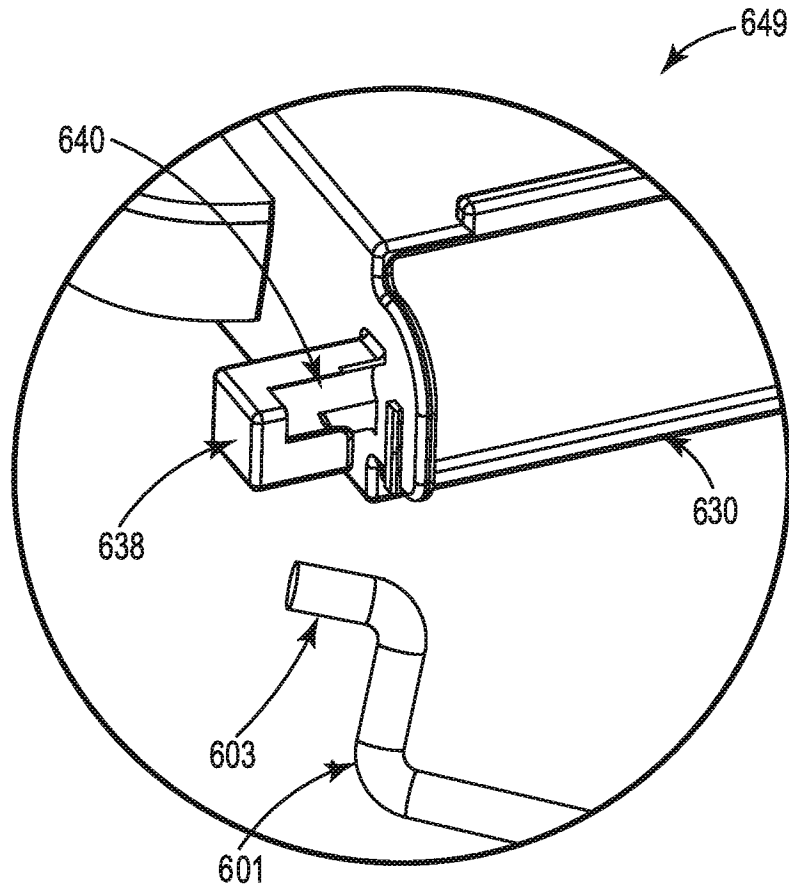


Fig. 6

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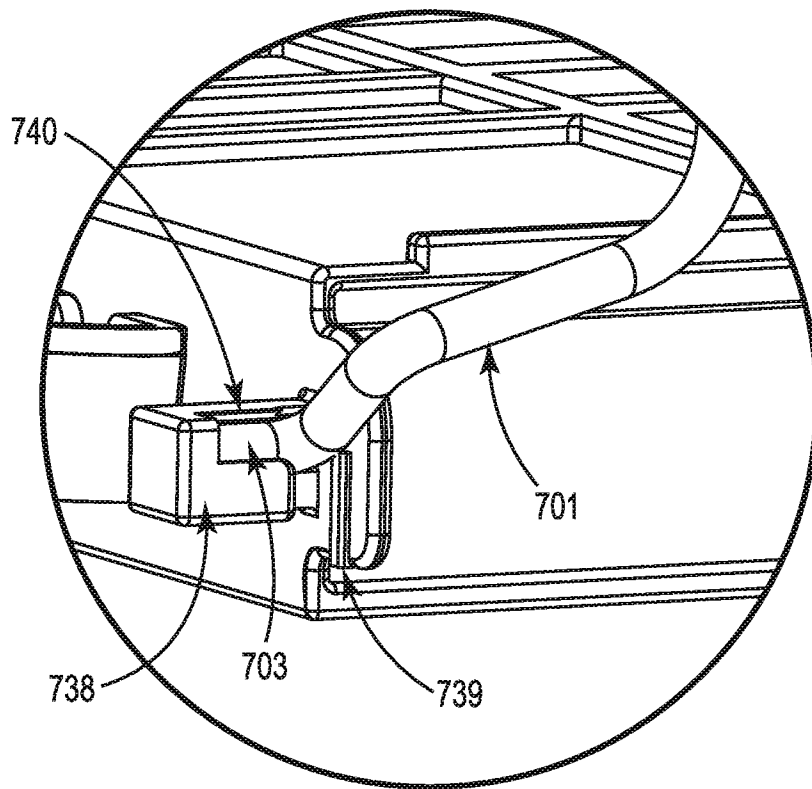


Fig. 7

INTERNATIONAL SEARCH REPORT

International application No.

PCT/US 2017/059738

A. CLASSIFICATION OF SUBJECT MATTER				
<i>B41J 13/10 (2006.01)</i>				
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)				
B41J 2/00, 2/045, 13/10, 13/22				
Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched				
Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)				
Esp@cenet, USPTO, RUPTO, PatSearch (RUPTO Internal)				
C. DOCUMENTS CONSIDERED TO BE RELEVANT				
Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.		
X	US 2008/0224383 A1 (ALEX FEYGELMAN) 18.09.2008, abstract, fig. 2. paragraphs [0001], [0052], [0067], [0075]-[0078], [0093], fig. 1A, 1B	1-10, 12-13		
Y		11, 14-15		
Y	US 5454553 A (HEWLETT PACKARD CO) 03.10.1995, claims 5, 6, col. 3, lines 25-37	11, 14-15		
A	US 2010/296853 A1 (CHICAGO TAG & LABEL) 25.11.2010	1-15		
<input type="checkbox"/> Further documents are listed in the continuation of Box C. <input type="checkbox"/> See patent family annex.				
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18 April 2018 (18.04.2018)		10 May 2018 (10.05.2018)		
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