



(86) Date de dépôt PCT/PCT Filing Date: 2002/01/08

(87) Date publication PCT/PCT Publication Date: 2002/07/25

(45) Date de délivrance/Issue Date: 2009/10/06

(85) Entrée phase nationale/National Entry: 2003/07/17

(86) N° demande PCT/PCT Application No.: AU 2002/000018

(87) N° publication PCT/PCT Publication No.: 2002/057082

(30) Priorité/Priority: 2001/01/17 (AU PR 2563)

(51) Cl.Int./Int.Cl. *B41J 3/46* (2006.01),
G06F 3/12 (2006.01), *G06T 5/00* (2006.01)

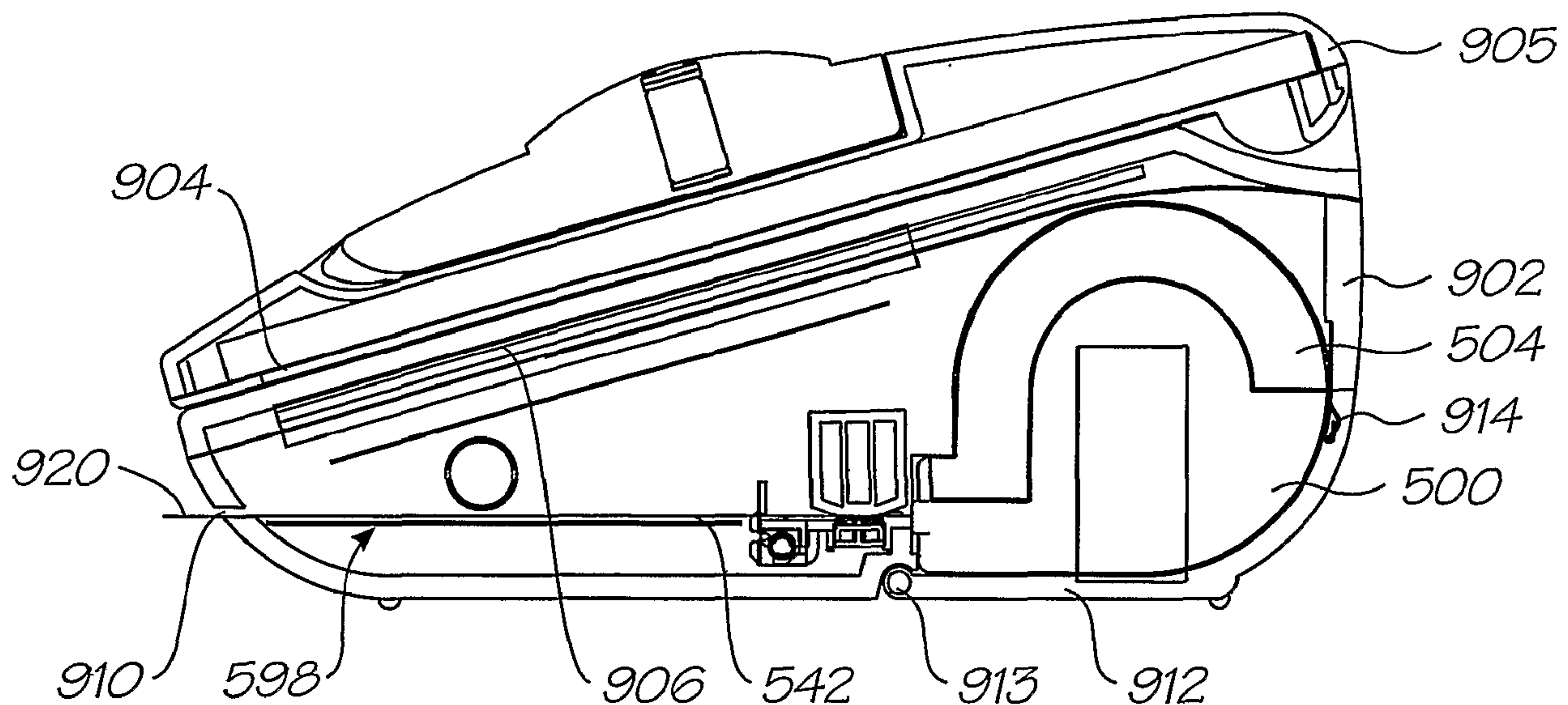
(72) Inventeurs/Inventors:
SILVERBROOK, KIA, AU;
KING, TOBIN ALLEN, AU

(73) Propriétaire/Owner:
SILVERBROOK RESEARCH PTY LTD, AU

(74) Agent: BERESKIN & PARR LLP/S.E.N.C.R.L.,S.R.L.

(54) Titre : ALBUM PHOTO NUMERIQUE A AMELIORATION D'IMAGES ET IMPRIMANTE INTEGREE

(54) Title: DIGITAL PHOTO ALBUM WITH IMAGE ENHANCEMENT AND INTERNAL PRINTER



(57) Abrégé/Abstract:

A digital photo album (901) has image enhancement provided by a pre-programmed set of characteristics on a removable image enhancement card and includes a body section (902) connected to a display screen (904). The body (902) houses control circuitry for operating the digital photo album and an internal printer (500) for printing displayed images. The printer (500) has a removable ink/print media cartridge (504) and prints images of equal size to those displayed.

(12) INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(19) World Intellectual Property Organization
International Bureau

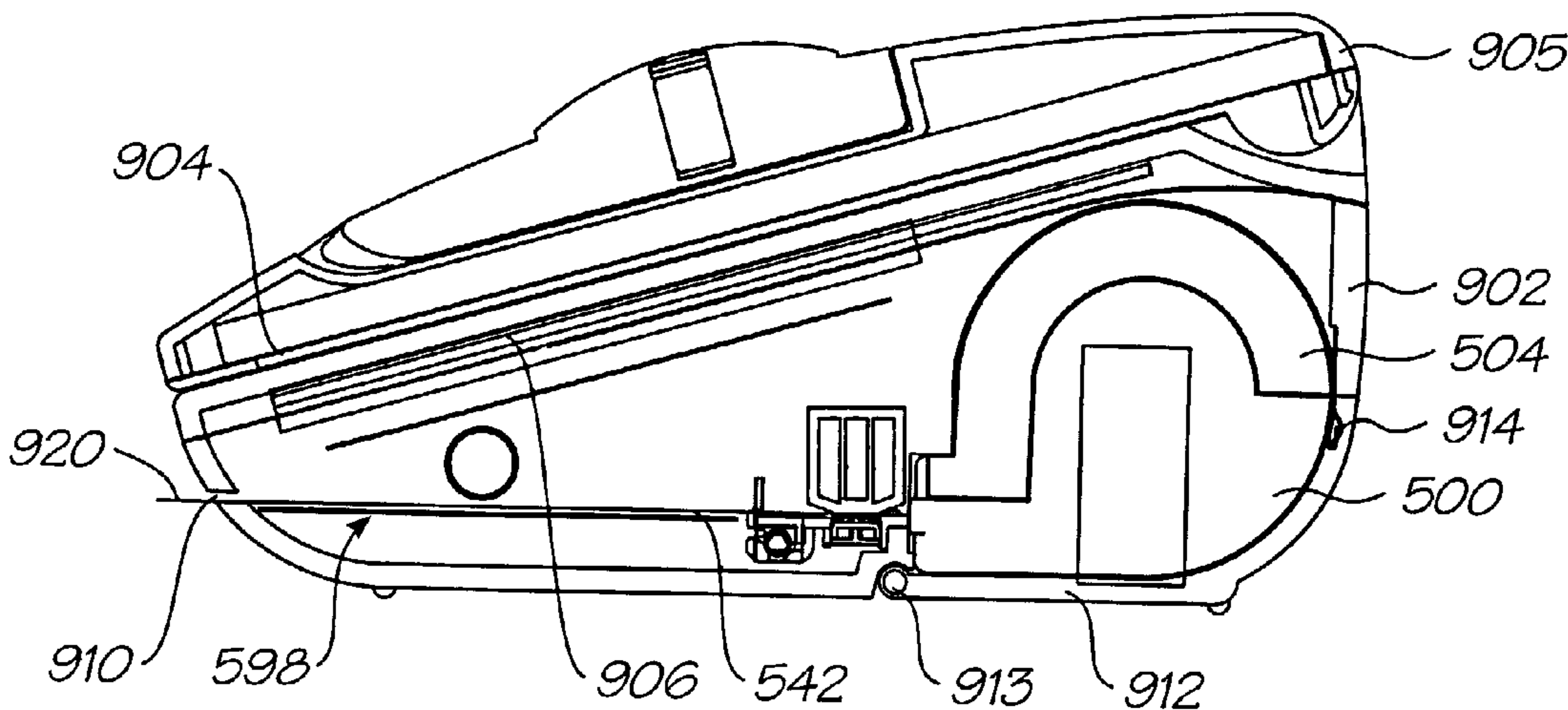


(43) International Publication Date
25 July 2002 (25.07.2002)

PCT
(10) International Publication Number
WO 02/057082 A1

- (51) International Patent Classification⁷: **B41J 2/01**, 2/175, G06F 3/12
- (74) Agent: **SILVERBROOK, KIA**; Silverbrook Research Pty Ltd, 393 Darling Street, Balmain, New South Wales 2041 (AU).
- (21) International Application Number: PCT/AU02/00018
- (22) International Filing Date: 8 January 2002 (08.01.2002)
- (25) Filing Language: English
- (26) Publication Language: English
- (30) Priority Data:
PR 2563 17 January 2001 (17.01.2001) AU
- (81) Designated States (*national*): AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZM, ZW.
- (84) Designated States (*regional*): ARIPO patent (GH, GM, KE, LS, MW, MZ, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE, TR), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).
- (71) Applicant (*for all designated States except US*): **SILVERBROOK RESEARCH PTY LTD** [AU/AU]; 393 Darling Street, Balmain, New South Wales 2041 (AU).
- (72) Inventors; and
- (75) Inventors/Applicants (*for US only*): **SILVERBROOK, Kia** [AU/AU]; Silverbrook Research Pty Ltd, 393 Darling Street, Balmain, New South Wales 2041 (AU). **KING, Tobin, Allen** [AU/AU]; Silverbrook Research Pty Ltd, 393 Darling Street, Balmain, New South Wales 2041 (AU).
- Published:
— with international search report
- For two-letter codes and other abbreviations, refer to the "Guidance Notes on Codes and Abbreviations" appearing at the beginning of each regular issue of the PCT Gazette.*

(54) Title: DIGITAL PHOTO ALBUM WITH IMAGE ENHANCEMENT AND INTERNAL PRINTER



(57) Abstract: A digital photo album (901) has image enhancement provided by a pre-programmed set of characteristics on a removable image enhancement card and includes a body section (902) connected to a display screen (904). The body (902) houses control circuitry for operating the digital photo album and an internal printer (500) for printing displayed images. The printer (500) has a removable ink/print media cartridge (504) and prints images of equal size to those displayed.

WO 02/057082 A1

Digital Photo Album with Image Enhancement and Internal Printer

BACKGROUND OF THE INVENTION

5 The following invention relates to a digital photo album with an internal printer. More particularly though not exclusively, the invention relates to a digital photo album having a pagewidth drop-on-demand ink jet printhead and a source of print media located in the body of the digital photo album.

10 A digital photo album is typically a portable electronic device that receives an electronic memory card on which is stored one or more digital images. A card reader inside the digital photo album retrieves image data from the card and displays an image on an electronic display screen forming part of the digital photo album.

15 Digital photo albums thus provide a convenient way for transporting digital images in a manner that allows for their quick and spontaneous display. Furthermore, digital photo albums can include image manipulation software that modify stored images in accordance with a programmed set of characteristics. These image enhancement techniques can be used to create artistic effects as well as enabling the addition of text, labels, etc. Image enhancement can also be by way of removing unwanted portions of an image such as obvious dirt marks and by making rotational and vibrational corrections.

20 Much of the benefit of such portable prior art photo albums is lost however if a print-out of any one or more images is required. To print an image, prior art digital photo albums must be connected to a print device compatible with the photo album which requires additional cabling to be carried thus reducing the portability of the photo album. Alternatively the digital storage medium that stores the images within the digital photo
25 album can be transferred to another computer having compatible software for reading the images and which is connected to a printer. Each of the above alternatives can only be

- 2 -

implemented if these other computing devices are readily at hand. The prior art digital photo albums are thus yet to reach their maximum potential as a functional medium for transporting digital images.

OBJECT OF THE INVENTION

It is an object of the present invention to provide a digital photo album having image enhancement capabilities and an in-built printer.

DISCLOSURE OF THE INVENTION

According to the invention there is provided a digital photo album including a body portion, digital image storage means within the body portion for storing an image, means for applying an image enhancement effect to the stored image, in which display means for electronically displaying the enhanced image, printer means within the body portion for printing enhanced image and image control means permitting a user to selectively display and print enhanced images stored by the image storage means. The image display means is pivotally connected to the body portion about a hinge joint and the image display means pivots between a closed position in which the image display means lies adjacent the body section and an open position in which the image display means is visible to a user. The printer includes a print roll, a print head for printing an image onto the print roll, a cutter wheel for severing a printed image from the print roll and a cutter motor for driving the cutter wheel. The image is enhanced in accordance with a pre-programmed set of characteristics stored on a removable medium. The digital photo album further includes means for retrieving the set of characteristics from the removable medium.

Preferably a printhead of the printer is as monolithic pagewidth printhead.

Preferably the printhead is an ink jet printhead.

-3 -

Preferably the digital photo album includes a control panel including means for operating the printer.

Preferably the printer is disposed within the body such that when the digital photo album is placed on a horizontal surface the control panel is substantially inclined to the horizontal.

Preferably the body includes a releasable cover portion through which a portion of the printer including the print media and/or ink cartridge can be removed.

BRIEF DESCRIPTION OF THE DRAWINGS

The invention will now be described by way of example with reference to the accompanying diagrammatic drawings in which:-

Figure 1 shows a three dimensional view of a print engine, including components in accordance with the invention;

Figure 2 shows a three dimensional, exploded view of the print engine;

Figure 3 shows a three dimensional view of the print engine with a removable print cartridge used with the print engine removed;

Figure 4 shows a three dimensional, rear view of the print engine with the print cartridge shown in dotted lines;

Figure 5 shows a three dimensional, sectional view of the print engine;

Figure 6 shows a three dimensional, exploded view of a printhead sub-assembly of the print engine;

Figure 7 shows a partly cutaway view of the printhead sub-assembly;

Figure 8 shows a sectional end view of the printhead sub-assembly with a capping mechanism in a capping position;

Figure 9 shows the printhead sub-assembly with the capping mechanism in its uncapped position;

Figure 10 shows an exploded, three dimensional view of an air supply arrangement of the print engine;

Figure 11 shows a digital photo album having a built in printer;

Figure 12 shows the internal components of a digital photo album having a built in printer;

Figure 13 shows a digital photo album with a releasable cover portion; and

Figure 14 is a schematic block diagram of components incorporated into a digital

-4 -

photo album having a built-in printer.

DESCRIPTION OF THE PREFERRED EMBODIMENT

In Figures 1 to 10 of the accompanying drawings, reference numeral 500 generally designates a print engine, in accordance with the invention. The print engine 500 includes a print engine assembly 502 on which a print roll cartridge 504 is removably mountable.

The print cartridge 504 is described in greater detail in our co-pending applications PCT/AU00/00741 and PCT/AU00/00742, the contents of that disclosure being specifically incorporated herein by reference.

The print engine assembly 502 comprises a first sub-assembly 506 and a second, printhead sub-assembly 508.

The sub-assembly 506 includes a chassis 510. The chassis 510 comprises a first molding 512 in which ink supply channels 514 are molded. The ink supply channels 514 supply inks from the print cartridge 504 to a printhead 516 (Figures 5 to 7) of the printhead sub-assembly 508. The printhead 516 prints in four colors or three colors plus ink which is visible in the infra-red light spectrum only (hereinafter referred to as 'infra-red ink'). Accordingly, four ink supply channels 514 are defined in the molding 512 together with an air supply channel 518. The air supply channel 518 supplies air to the printhead 516 to inhibit the build up of foreign particles on a nozzle guard of the printhead 516.

The chassis 510 further includes a cover molding 520. The cover molding 520 supports a pump 522 thereon. The pump 522 is a suction pump, which draws air through an air filter in the print cartridge 504 via an air inlet pin 524 and an air inlet opening 526. Air is expelled through an outlet opening 528 into the air supply channel 518 of the chassis 510.

The chassis 510 further supports a first drive motor in the form of a stepper motor 530. The stepper motor 530 drives the pump 522 via a first gear train 532. The stepper motor 530 is also connected to a drive roller 534 (Figure 5) of a roller assembly 536 of the print cartridge 504 via a second gear train 538. The gear train 538 engages an engageable element 540 (Figure 2) carried at an end of the drive roller 534. The stepper motor 530 thus controls the feed of print media 542 to the printhead 516 of the sub-assembly 508 to enable an image to be printed on the print media 542 as it passes beneath the printhead 516. It also to be noted that, as the stepper motor 530 is only operated to advance the print media 542, the pump 522 is only operational to blow air over the printhead 516 when printing takes place on the print media 542.

-5 -

The molding 512 of the chassis 510 also supports a plurality of ink supply conduits in the form of pins 544 which are in communication with the ink supply channels 514. The ink supply pins 544 are received through an elastomeric collar assembly 546 of the print cartridge 504 for drawing ink from ink chambers or reservoirs 548 (Figure 5) in the print cartridge 504 to be supplied to the printhead 516.

A second motor 550, which is a DC motor, is supported on the cover molding 520 of the chassis 510 via clips 552. The motor 550 is provided to drive a separating means in the form of a cutter arm assembly 554 to part a piece of the print media 542, after an image has been printed thereon, from a remainder of the print media. The motor 550 carries a beveled gear 556 on an output shaft thereof. The beveled gear 556 meshes with a beveled gear 558 carried on a worm gear 560 of the cutter assembly 554. The worm gear 560 is rotatably supported via bearings 562 in a chassis base plate 564 of the printhead sub-assembly 508.

The cutter assembly 554 includes a cutter wheel 566, which is supported on a resiliently flexible arm 568 on a mounting block 570. The worm gear 560 passes through the mounting block 570 such that, when the worm gear 560 is rotated, the mounting block 570 and the cutter wheel 566 traverse the chassis base plate 564. The mounting block 570 bears against a lip 572 of the base plate 564 to inhibit rotation of the mounting block 570 relative to the worm gear 560. Further, to effect cutting of the print media 542, the cutter wheel 566 bears against an upper housing or cap portion 574 of the printhead sub-assembly 508. This cap portion 574 is a metal portion. Hence, as the cutter wheel 566 traverses the capped portion 574, a scissors-like cutting action is imparted to the print media to separate that part of the print media 542 on which the image has been printed.

The sub-assembly 506 includes an ejector mechanism 576. The ejector mechanism 576 is carried on the chassis 510 and has a collar 578 having clips 580, which clip and affix the ejector mechanism 576 to the chassis 510. The collar 578 supports an insert 582 of an elastomeric material therein. The elastomeric insert 582 defines a plurality of openings 584. The openings 584 close off inlet openings of the pins 544 to inhibit the ingress of foreign particles into the pins 544 and, in so doing, into the channels 514 and the printhead 516. In addition, the insert 584 defines a land or platform 586 which closes off an inlet opening of the air inlet pin 524 for the same purposes.

A coil spring 588 is arranged between the chassis 510 and the collar 578 to urge the collar 578 to a spaced position relative to the chassis 510 when the cartridge 504 is

-6 -

removed from the print engine 500, as shown in greater detail in Figure 3 of the drawings. The ejector mechanism 576 is shown in its retracted position in Figure 4 of the drawings.

The printhead sub-assembly 508 includes, as described above, the base plate 564. A capping mechanism 590 is supported displaceably on the base plate 564 to be displaceable
5 towards and away from the printhead 516. The capping mechanism 590 includes an elongate rib 592 arranged on a carrier 593. The carrier is supported by a displacement mechanism 594, which displaces the rib 592 into abutment with the printhead 516 when the printhead 516 is inoperative. Conversely, when the printhead 516 is operational, the displacement mechanism 594 is operable to retract the rib 592 out of abutment with the
10 printhead 516.

The printhead sub-assembly 508 includes a printhead support molding 596 on which the printhead 516 is mounted. The molding 596, together with an insert 599 arranged in the molding 596, defines a passage 598 through which the print media 542 passes when an image is to be printed thereon. A groove 700 is defined in the molding 596 through which
15 the capping mechanism 590 projects when the capping mechanism 590 is in its capping position.

An ink feed arrangement 702 is supported by the insert 599 beneath the cap portion 574. The ink feed arrangement 702 comprises a spine portion 704 and a casing 706 mounted on the spine portion 704. The spine portion 704 and the casing 706, between them,
20 define ink feed galleries 708 which are in communication with the ink supply channels 514 in the chassis 510 for feeding ink via passages 710 (Figure 7) to the printhead 516.

An air supply channel 711 (Figure 8) is defined in the spine portion 704, alongside the printhead 516.

Electrical signals are provided to the printhead 516 via a TAB film 712 which is
25 held captive between the insert 599 and the ink feed arrangement 702.

The molding 596 includes an angled wing portion 714. A flexible printed circuit board (PCB) 716 is supported on and secured to the wing portion 714. The flex PCB 716 makes electrical contact with the TAB film 712 by being urged into engagement with the TAB film 712 via a rib 718 of the insert 599. The flex PCB 716 supports busbars 720
30 thereon. The busbars 720 provide power to the printhead 516 and to the other powered components of the print engine 500. Further, a camera print engine control chip 721 is supported on the flex PCB 716 together with a QA chip (not shown) which authenticates that the cartridge 504 is compatible and compliant with the print engine 500. For this

-7 -

purpose, the PCB 716 includes contacts 723, which engage contacts 725 in the print cartridge 504.

As illustrated more clearly in Figure 7 of the drawings, the printhead itself includes a nozzle guard 722 arranged on a silicon wafer 724. The ink is supplied to a nozzle array
5 (not shown) of the printhead 516 via an ink supply member 726. The ink supply member 726 communicates with outlets of the passages 710 of the ink feed arrangement 702 for feeding ink to the array of nozzles of the printhead 516, on demand.

In Figure 10, the air supply path for supplying air to the printhead 516 is shown in greater detail. As illustrated, the pump 522 includes an impeller 728 closed off by an end
10 cap 730. The cover molding 520 of the chassis forms a receptacle 732 for the impeller 728. The cover molding 520 has the air inlet opening 734 and the air outlet opening 736. The air inlet opening 734 communicates with the pin 524. The air outlet opening 736 feeds air to the air supply channel 518 which, in Figure 10, is shown as a solid black line. The air fed from the air supply channel 518 is blown into the printhead 516 to effect cleaning of the
15 printhead. The air drawn in via the pump 522 is filtered by an air filter 738, which is accommodated in the print cartridge 504. The air filter 738 has a filter element 740 which may be paper based or made of some other suitable filtering media. The filter element 740 is housed in a canister, having a base 742 and a lid 744. The lid 744 has an opening 746 defined therein. The opening 746 is closed off by a film 748 which is pierced by the pin
20 524. The advantage of having the air filter 738 in the print cartridge 504 is that the air filter 738 is replaced when the print cartridge 504 is replaced.

It is an advantage of the invention that an air pump 522 is driven by the stepper motor 530, which also controls feed of the print media to the printhead 516. In so doing, fewer components are required for the print engine 500 rendering it more compact. In
25 addition, as the same motor 530 is used for operating the air pump 522 and for feeding the print media 542 to the printhead 516, fewer power consuming components are included in the print engine 500 rendering it more compact and cheaper to produce.

It is also to be noted that, in order to make the print engine 500 more compact, the size of the print engine assembly 502 is such that most of the components of the assembly
30 502 are received within a footprint of an end of the print cartridge 504.

In Figure 11 there is depicted a digital photo album having an internal printer. The digital photo album 901 includes a body section 902 housing the printer and the main circuitry of the photo album. A display screen 904, preferably photo size, ie 6" x 4", is

-8 -

pivotably connected to the body section 902 about a hinge joint 905. The screen 904 pivots between a closed position (Fig. 12) where the screen lies adjacent the body section 902 thus allowing safe transport, and an open position (Fig. 11) where the screen 904 is visible to a user.

5 Disposed in the side of the body 902 is a first slot 908 for receiving a memory card 909 having digital images stored on it. A second slot 915 receives an image enhancement card 916 containing a set of image modification characteristics. Within the body 902 is a memory card reader (not shown) compatible with the memory card 908 that is used to retrieve stored image data from the memory card 908. A similar card reader retrieves
10 image modification characteristics from the image enhancement card 916.

The characteristics programmed into the image enhancement card may modify an image in any one or more of many known methods, eg. by adding standard backgrounds or text, by blurring, duplication, colour modifications etc.

The body section 902 includes a control panel 906 on an upper surface thereof that
15 includes all buttons required to operate the functions of the photo album including the functions of the printer. Using this control panel, a user can selectively view any of the images stored on the memory card 909, manipulate an image using the programmed image enhancement software, add text and/or labels and selectively print any of the displayed or stored images.

20 A slot 910 in the front edge of the body is used for ejecting printed images.

In Figure 14 there is schematically depicted in block diagram form the key internal components of a digital photo album having an internal printer. The printer would typically utilize a monolithic printhead 814 which could be the same as described above with reference to Figures 1 to 10, but could alternatively be another compact printhead capable
25 of printing on photograph-sized print media. Image data from the memory cards 909 runs via an image enhancement process 815 to the display screen 904. Images from the display screen 904 or the enhancement process 815 are fed to a print engine controller 813 which controls the printhead 814.

A micro-controller 807 associated with the print engine controller controls a motor
30 driver 809 which in turn drives a media transport device 810. This might be the same as stepper motor 530 described earlier.

The micro-controller 807 also controls a motor driver 811 which in turn controls a guillotine motor 812 to sever a printed sheet from an in-built roll of print media after an

-9 -

image is printed. A sheet being driven by media transport device 810 is shown at 920 in Figure 11. The guillotine might be of the form of cutter wheel 566 described earlier.

When ready, printer control buttons on the control panel can be depressed to activate the print engine controller to print a modified image either from memory or as a screen dump from the display screen. This would in turn activate the micro-controller 807 to activate the media transport 810 and guillotine 812.

Figure 12 shows an internal view of the digital photo album in its closed position. The printer engine 500 described previously is disposed towards the back edge of the body section 902 with the print medium passage 598 through which print media 542 passes leading to the print media ejector slot 910. Since the printer engine, and in particular the print roll cartridge 504 is the largest component within the body, placing the print engine 500 towards the back of the body results in the control panel 906 being inclined when the photo album is placed on a horizontal surface, a configuration that is comfortable for a user.

The body 902 includes a releasable portion 912 pivotably connected through a hinge 913 and secured in a closed position by a catch 914. Opening of this portion (Fig. 13) allows the print roll cartridge 504 to be removed. Further details of a removable print roll cartridge are described in our co-pending application docket no. CA02 mentioned earlier.

The size of the screen 904 is matched to the width of the printhead so that the displayed and printed images are equal sizes. Preferably the screen displays a regular 6" × 4" photo image and the printer uses a 4" printhead.

While particular embodiments of this invention have been described, it will be evident to those skilled in the art that the present invention may be embodied in other specific forms without departing from the essential characteristics thereof. The present embodiments and examples are therefore to be considered in all respects as illustrative and not restrictive, the scope of the invention being indicated by the appended claims rather than the foregoing description, and all changes which come within the meaning and range of equivalency of the claims are therefore intended to be embraced therein. It will further be understood that any reference herein to known prior art does not, unless the contrary indication appears, constitute an admission that such prior art is commonly known by those skilled in the art to which the invention relates.

PATENT COOPERATION TREATY

PCT

NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Canadian Patent Office
The Commissioner of Patents
Ottawa
Ontario K1A 0C9
CANADA

in its capacity as elected Office

Date of mailing:

25 July 2002 (25.07.02)

International application No.:

PCT/AU02/00018

Applicant's or agent's file reference:

AP15

International filing date:

08 January 2002 (08.01.02)

Priority date:

17 January 2001 (17.01.01)

Applicant:

SILVERBROOK RESEARCH PTY LTD

1. The designated Office is hereby notified of its election made:



in the demand filed with the International preliminary Examining Authority on:

16 May 2002 (16.05.02)



in a notice effecting later election filed with the International Bureau on:

2. The election ☒ was

was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

The International Bureau of WIPO
34, chemin des Colombettes
1211 Geneva 20, Switzerland

Facsimile No.: (41-22) 740.14.35

Authorized officer:

J. Zahra

Telephone No.: (41-22) 338.83.38

PATENT COOPERATION TREATY
PCT
INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference AP15	FOR FURTHER ACTION	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416).
International Application No. PCT/AU02/00018	International Filing Date (day/month/year) 8 January 2002	Priority Date (day/month/year) 17 January 2001
International Patent Classification (IPC) or national classification and IPC Int. Cl. ⁷ B41J 2/01, 2/175, G06F 3/12		
Applicant SILVERBROOK RESEARCH PTY LTD et al		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.

2. This REPORT consists of a total of **3** sheets, including this cover sheet.

☒ This report is also accompanied by ANNEXES, i.e., sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of **3** sheet(s).

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand 16 May 2002	Date of completion of the report 11 February 2003
Name and mailing address of the IPEA/AU AUSTRALIAN PATENT OFFICE PO BOX 200, WODEN ACT 2606, AUSTRALIA E-mail address: pct@ipaaustralia.gov.au Facsimile No. (02) 6285 3929	Authorized Officer JAGDISH WABLE Telephone No. (02) 6283 2638

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.
PCT/AU02/00018

I. Basis of the report**1. With regard to the elements of the international application:***

- ☐ the international application as originally filed.
- ☒ the description, pages 1-9, as originally filed,
pages , filed with the demand,
pages , received on with the letter of
- ☒ the claims, pages , as originally filed,
pages , as amended (together with any statement) under Article 19,
pages , filed with the demand,
pages 10-12, received on 13 January 2003 with the letter of 9 January 2003
- ☒ the drawings, pages 1/12-12/12, as originally filed,
pages , filed with the demand,
pages , received on with the letter of
- ☐ the sequence listing part of the description:
pages , as originally filed
pages , filed with the demand
pages , received on with the letter of

2. With regard to the language, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language which is:

- ☐ the language of a translation furnished for the purposes of international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of the translation furnished for the purposes of international preliminary examination (under Rules 55.2 and/or 55.3).

3. With regard to any nucleotide and/or amino acid sequence disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished

4. ☐ The amendments have resulted in the cancellation of:

- ☐ the description, pages
- ☐ the claims, Nos.
- ☐ the drawings, sheets/fig.

5. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed, as indicated in the Supplemental Box (Rule 70.2(c)).**

* Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to this report since they do not contain amendments (Rules 70.16 and 70.17).

** Any replacement sheet containing such amendments must be referred to under item 1 and annexed to this report

INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No.

PCT/AU02/00018

V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

Novelty (N)	Claims 1-23	YES
	Claims	NO
Inventive step (IS)	Claims 1-23	YES
	Claims	NO
Industrial applicability (IA)	Claims 1-23	YES
	Claims	NO

2. Citations and explanations (Rule 70.7)

EP 1129388 A

This document discloses a digital camera (1) with a DVD as a digital photo album having an internal printer (12) as shown in figure 1. It fails to disclose a processor that modifies at least one of the images in accordance with at least one of the at least one set of instructions. Therefore the claimed invention is novel, involves an inventive step and is industrially applicable.

INTERNATIONAL SEARCH REPORT

International application No.

PCT/AU02/00018

A. CLASSIFICATION OF SUBJECT MATTERInt. Cl. ⁷: B41J 2/01, 2/175, G06F 3/12

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)

REFER TO ELECTRONIC DATABASE CONSULTED BELOW

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)

DWPI IPC G06F 3/-, G06K 15/-, G06T, B41J, B42D, B42F & keywords: photo, digital, print, display, storage, modify and similar terms

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 1129388 A (SILVERBROOK RESEARCH PTY LYD) 18 May 2000 Whole document	1-14

☐

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

"E" earlier application or patent but published on or after the international filing date

"L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)

"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

7 March 2002

Date of mailing of the international search report

14 MAR 2002

Name and mailing address of the ISA/AU

AUSTRALIAN PATENT OFFICE
 PO BOX 200, WODEN ACT 2606, AUSTRALIA
 E-mail address: pct@ipaustalia.gov.au
 Facsimile No. (02) 6285 3929

Authorized officer

JAGDISH WABLE

Telephone No : (02) 6283 2638

INTERNATIONAL SEARCH REPORT
Information on patent family members

International application No.
PCT/AU02/00018

This Annex lists the known "A" publication level patent family members relating to the patent documents cited in the above-mentioned international search report. The Australian Patent Office is in no way liable for these particulars which are merely given for the purpose of information.

Patent Document Cited in Search Report		Patent Family Member	
EP	1129388	WO 0028379	AU 15337/00
			BR 9915168
END OF ANNEX			

-10 -

CLAIMS

1. A digital photo album including digital image storage means, means for modifying a stored image, image display means for electronically displaying a modified image,
5 in-built printer means for printing a modified image and image control means permitting a user to selectively display and print modified images stored by said image storage means.
2. A digital photo album according to claim 1 wherein an image is modified in
10 accordance with a pre-programmed set of characteristics.
3. A digital photo album according to claim 2 wherein said pre-programmed set of characteristics are stored on a removable medium, said digital photo album further including means for retrieving said set of characteristics from said removable
15 medium.
4. The digital photo album of claim 1 including a body connected to said image display means, the body housing said printer means and said digital image storage means.
20
5. The digital photo album of claim 4 wherein said digital image storage means is removable from said body.
6. The digital photo album of claim 4 wherein said printer means includes a supply of
25 print media.
7. The digital photo album of claim 6 wherein the body includes a releasable cover portion through which a portion of said printer means including said print media and/or an ink cartridge can be removed.
30
8. The digital photo album of claim 4 wherein the body includes a control panel including means for operating said printer means.

-11 -

9. The digital photo album of claim 8 wherein said printer means is disposed within the body such that when the digital photo album is placed on a horizontal surface the control panel is inclined to the horizontal.

5 10. The digital photo album of claim 1 wherein the size of a displayed image and the size of a printed image printed by said printer means are substantially equal.

11. The digital photo album of claim 10 wherein the size of a printed image is substantially 6" x 4".

10

12. The digital photo album of claim 1 wherein said printer means includes a monolithic pagewidth printhead.

13. The digital photo album of claim 12 wherein said printhead is an ink jet printhead.

15

14. The digital photo album of claim 12 wherein said printhead is substantially 4" wide.

- 10 -

CLAIMS

1. A digital photo album including a body portion, digital image storage means within said body portion for storing an image, means for applying an image enhancement effect to the stored image, image display means for electronically displaying the enhanced image, printer means within said body portion for printing the enhanced image and image control means permitting a user to selectively display and print enhanced images stored by said image storage means, wherein said image display means is pivotably connected to the body portion about a hinge joint and wherein the image display means pivots between a closed position in which the image display means lies adjacent the body section and an open position in which the image display means is visible to a user; wherein said printer means includes a print roll, a printhead for printing an image onto said print roll, a cutter wheel for severing a printed image from said print roll and a cutter motor for driving said cutter wheel;

wherein the image is enhanced in accordance with a pre-programmed set of characteristics; and wherein said pre-programmed set of characteristics is stored on a removable medium said digital photo album further including means for retrieving said set of characteristics from said removable medium.

2. The digital photo album of claim 1 wherein said digital image storage means is removable from said body.

3. The digital photo album of claim 1 wherein the body includes a releasable cover portion through which a portion of said printer means including said print media and/or an ink cartridge can be removed.

4. The digital photo album of claim 1 wherein the body includes a control panel for operating said printer means.

5. The digital photo album of claim 4 wherein said printer means is disposed within the body such that when the digital photo album is placed on a horizontal surface the control panel is inclined to the horizontal.

- 11 -

6. The digital photo album of claim 1 wherein the size of a displayed image and the size of a printed image printed by said printer means are substantially equal.
7. The digital photo album of claim 6 wherein the size of a printed image is substantially 6"x4".
8. The digital photo album of claim 1 wherein said printer means includes a monolithic page width printhead.
9. The digital photo album of claim 8 wherein said printhead is an ink jet printhead.
10. The digital photo album of claim 8 wherein said printhead is substantially 4" wide.

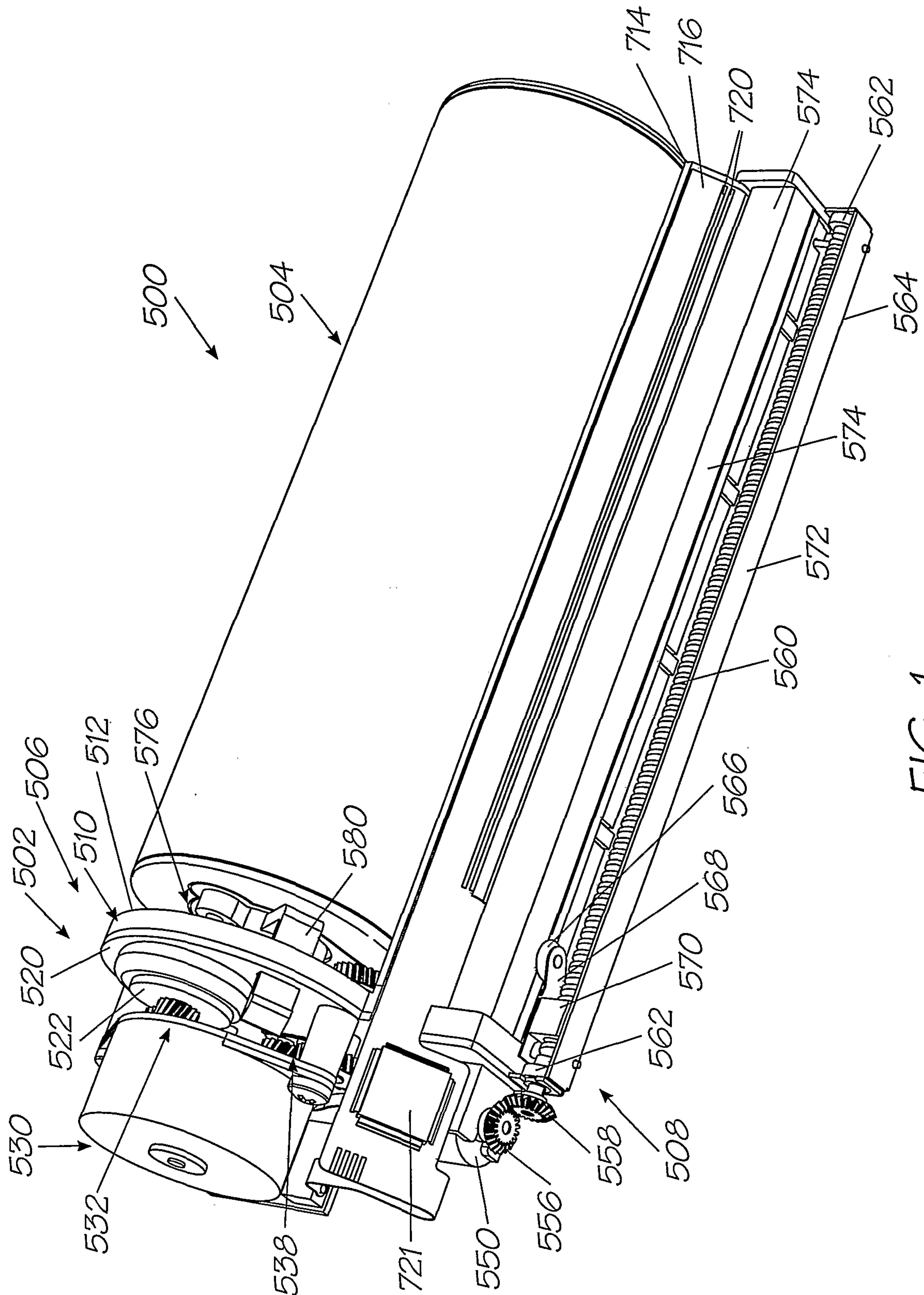


FIG. 1

3/12

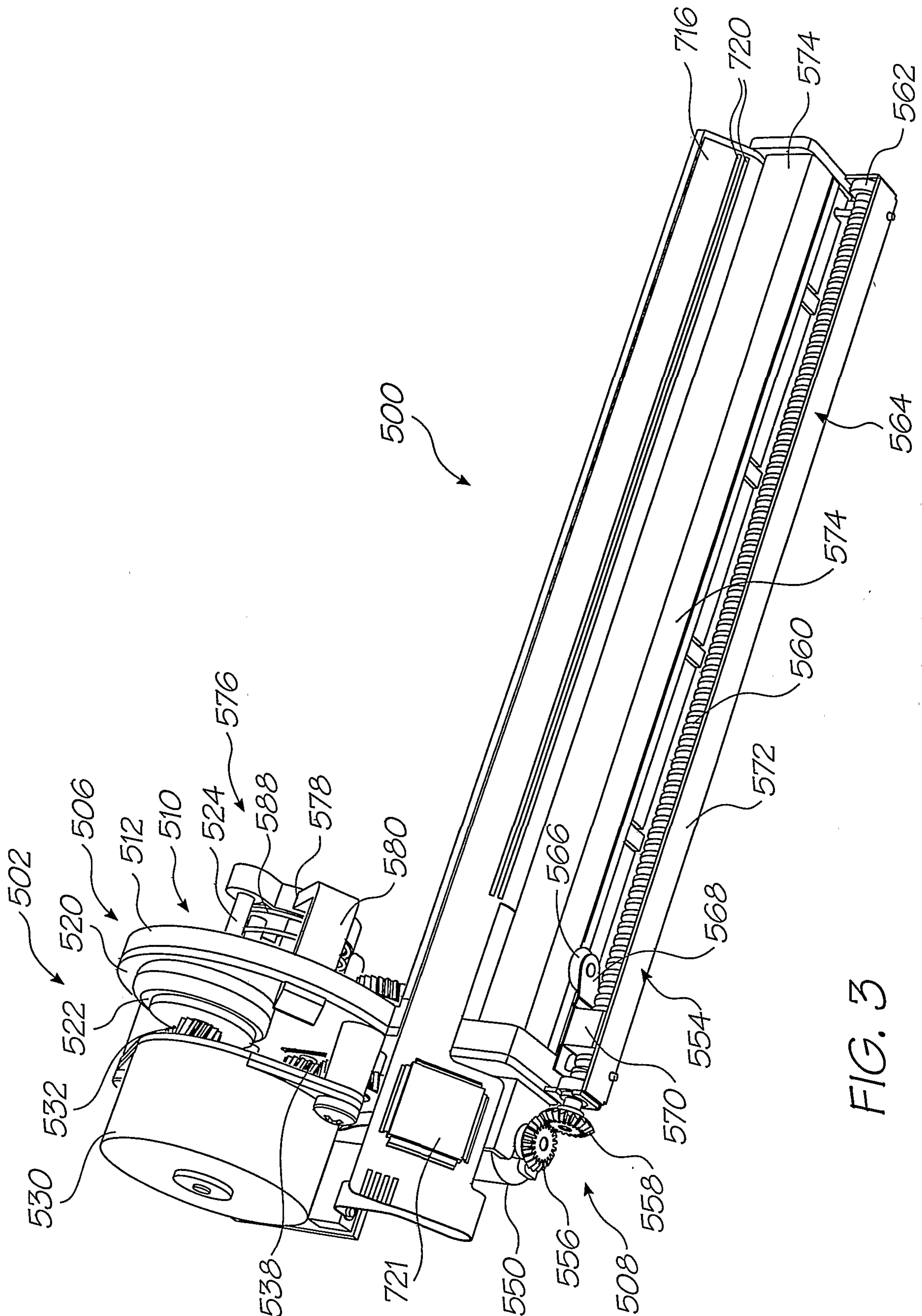


FIG. 3

4/12

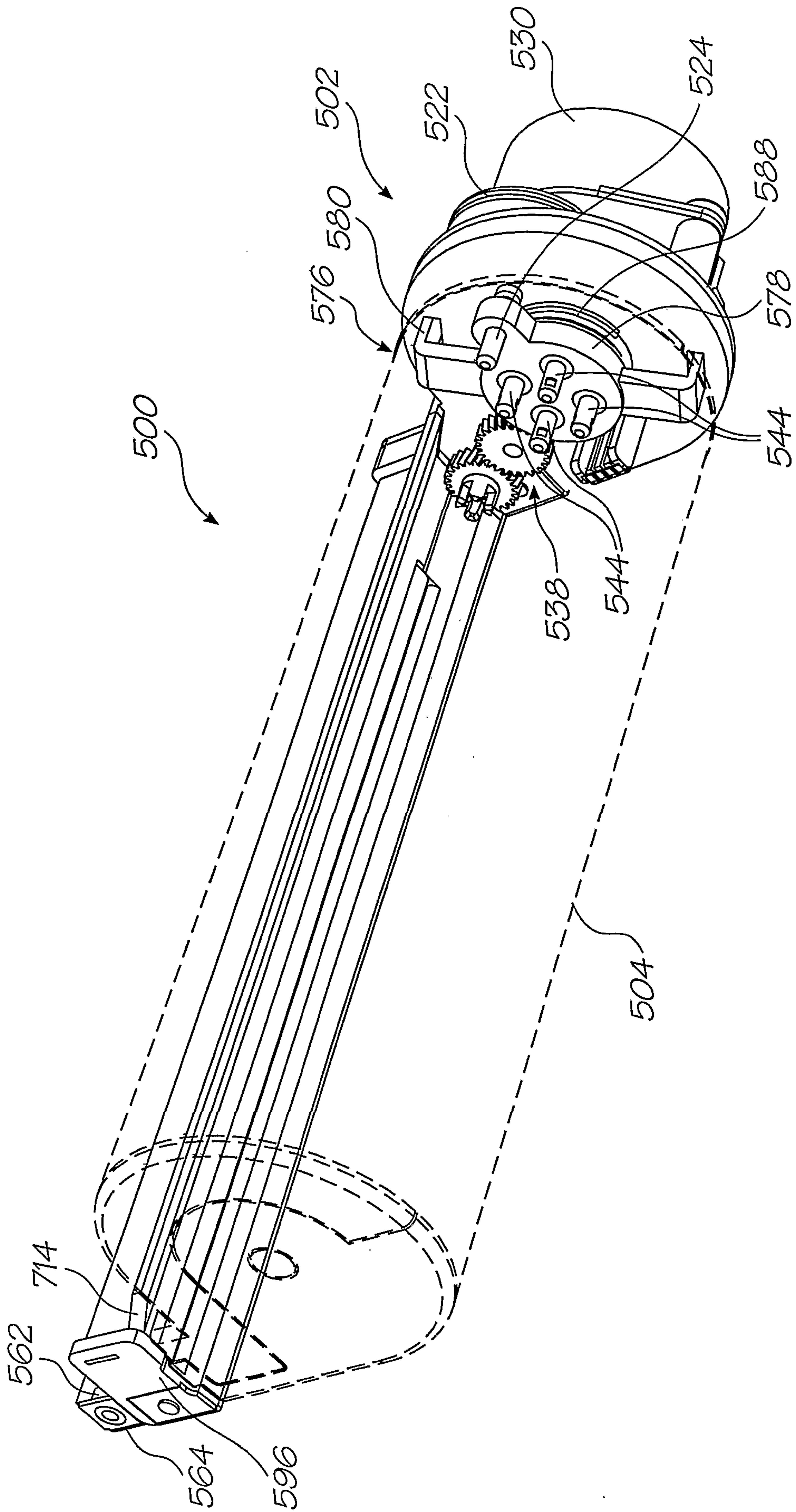


FIG. 4

5/12

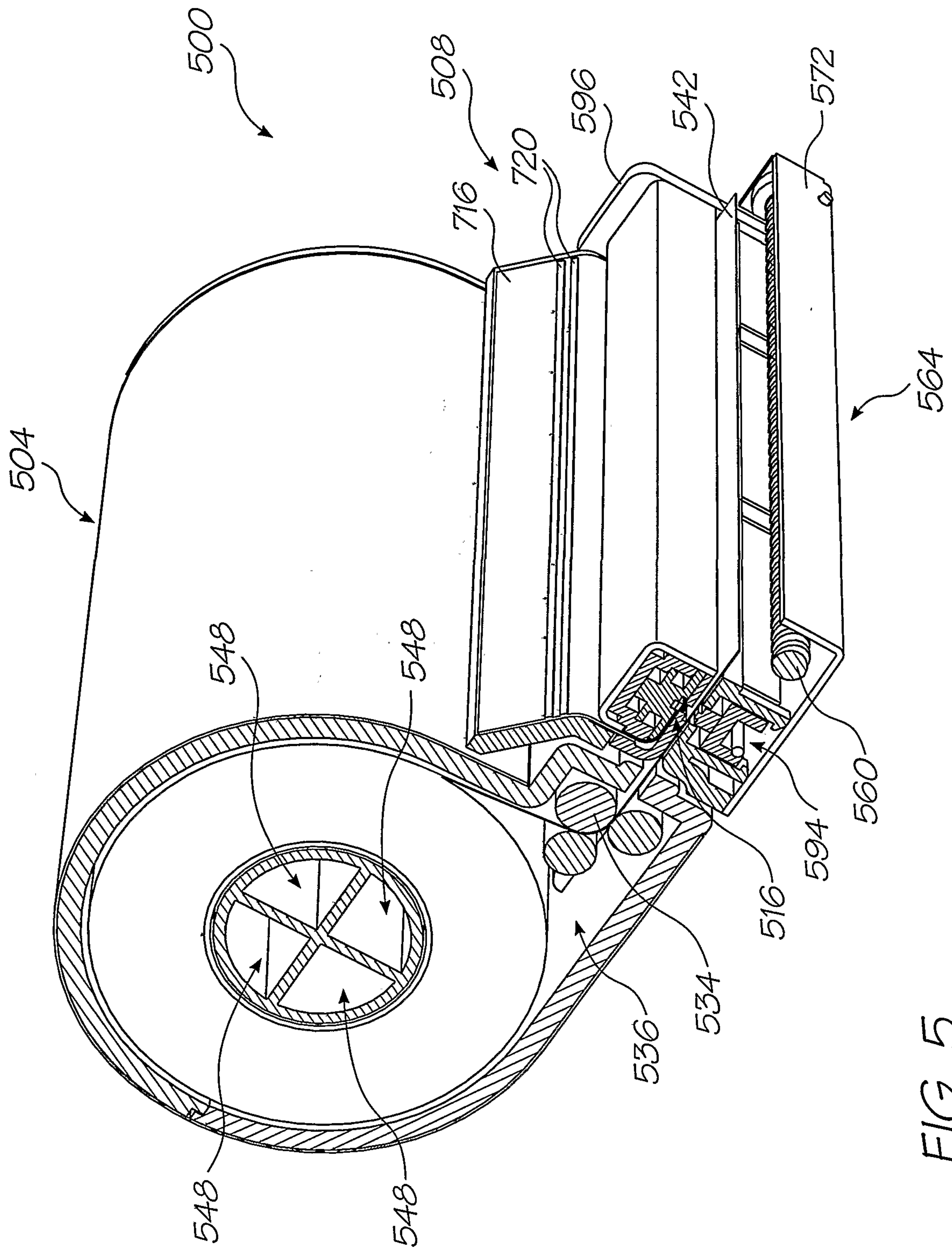


FIG. 5

6/12

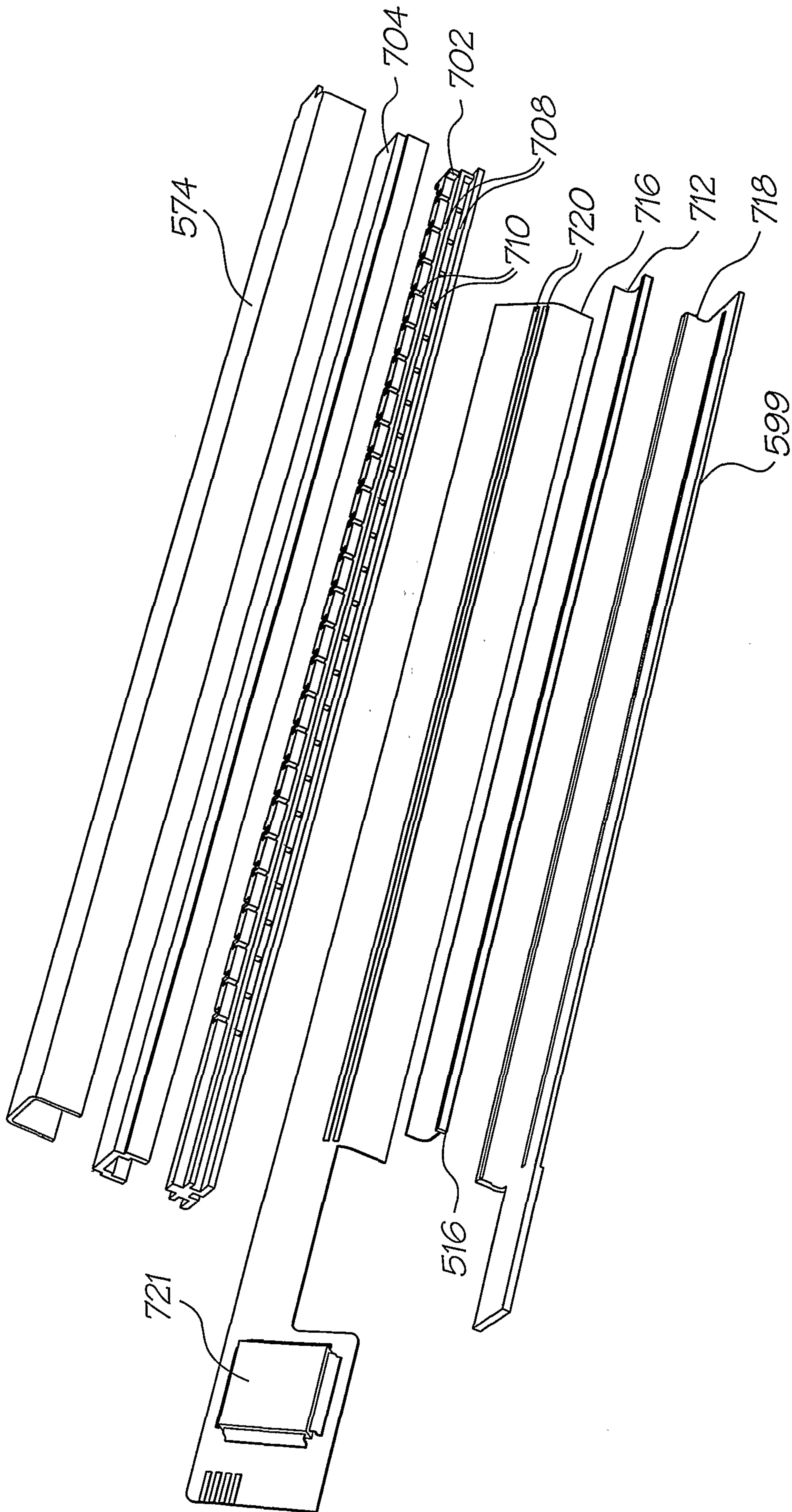


FIG. 6

7/12

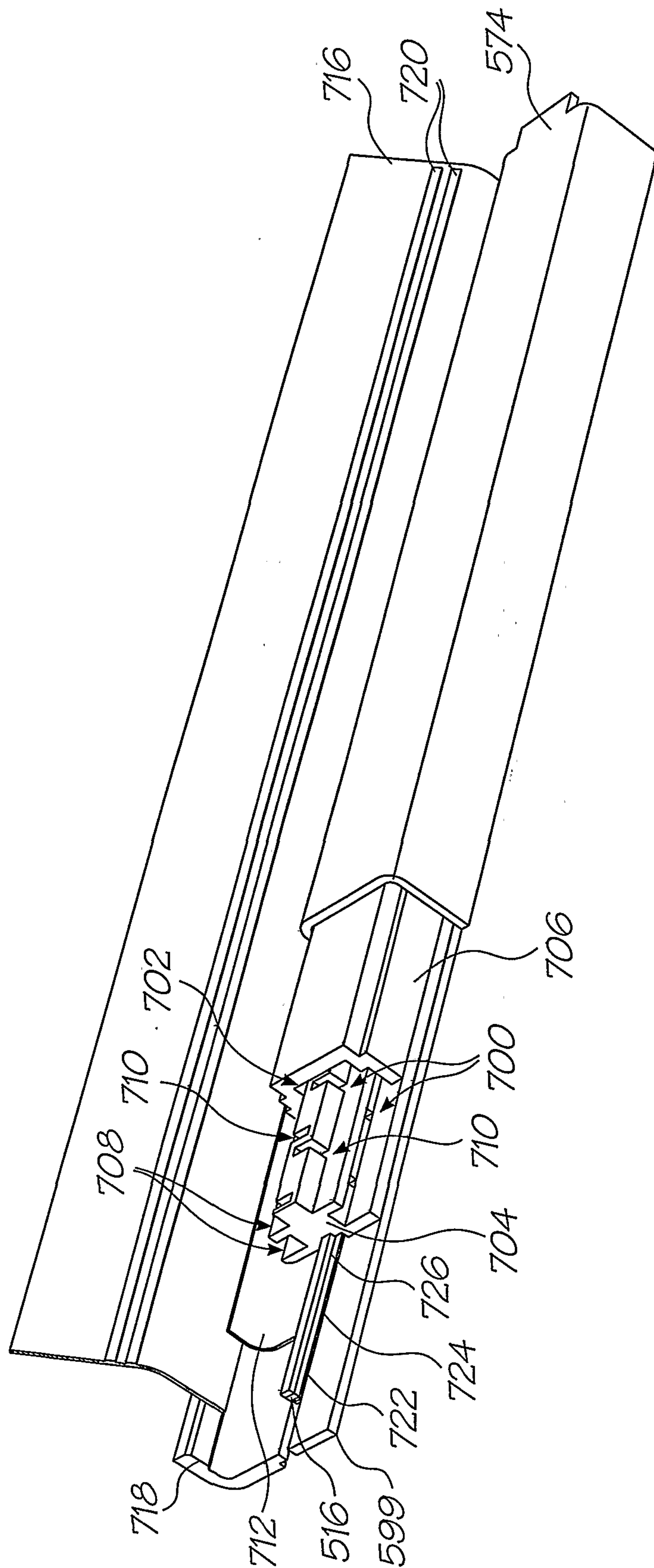


FIG. 7

8/12

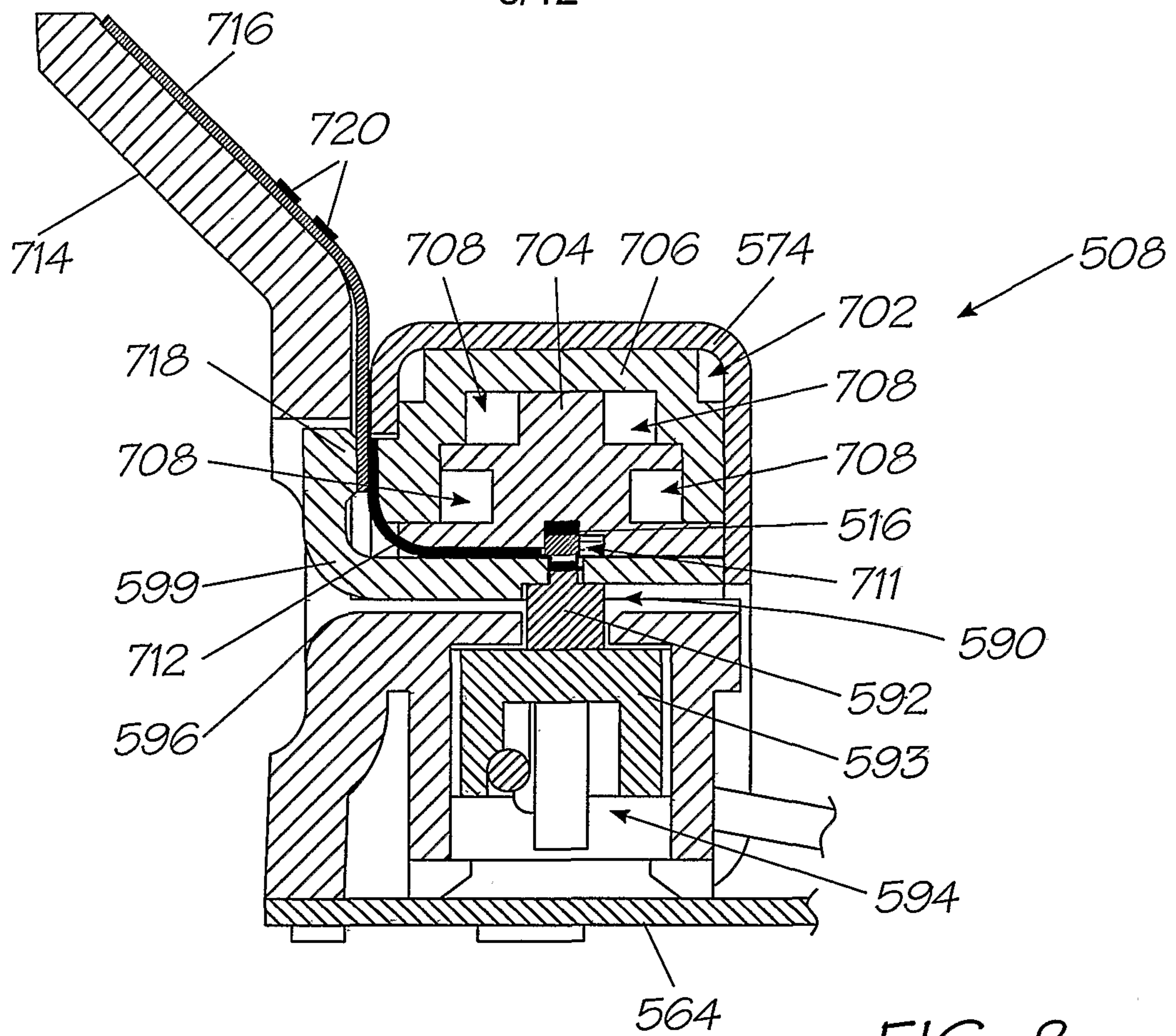


FIG. 8

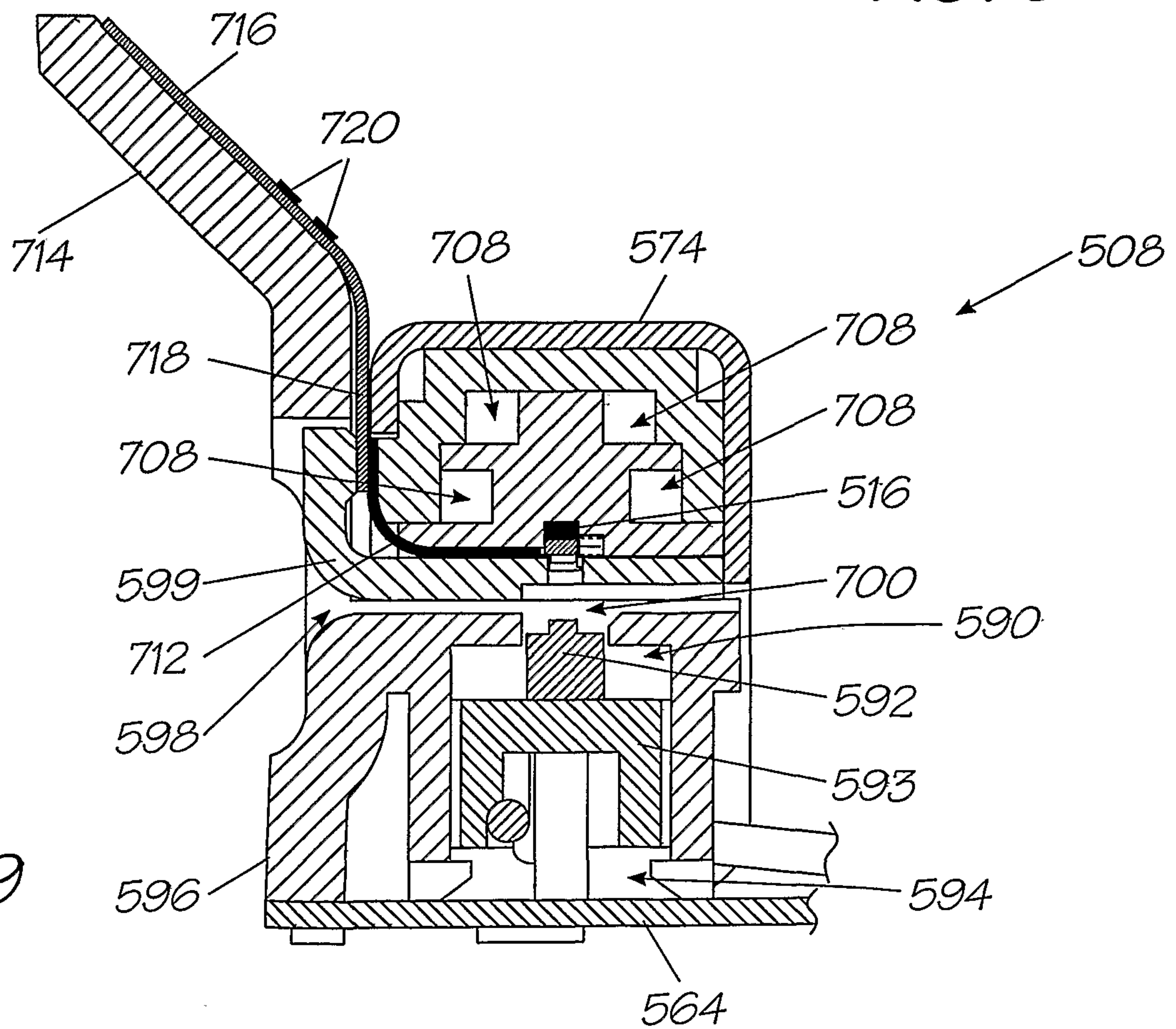


FIG. 9

9/12

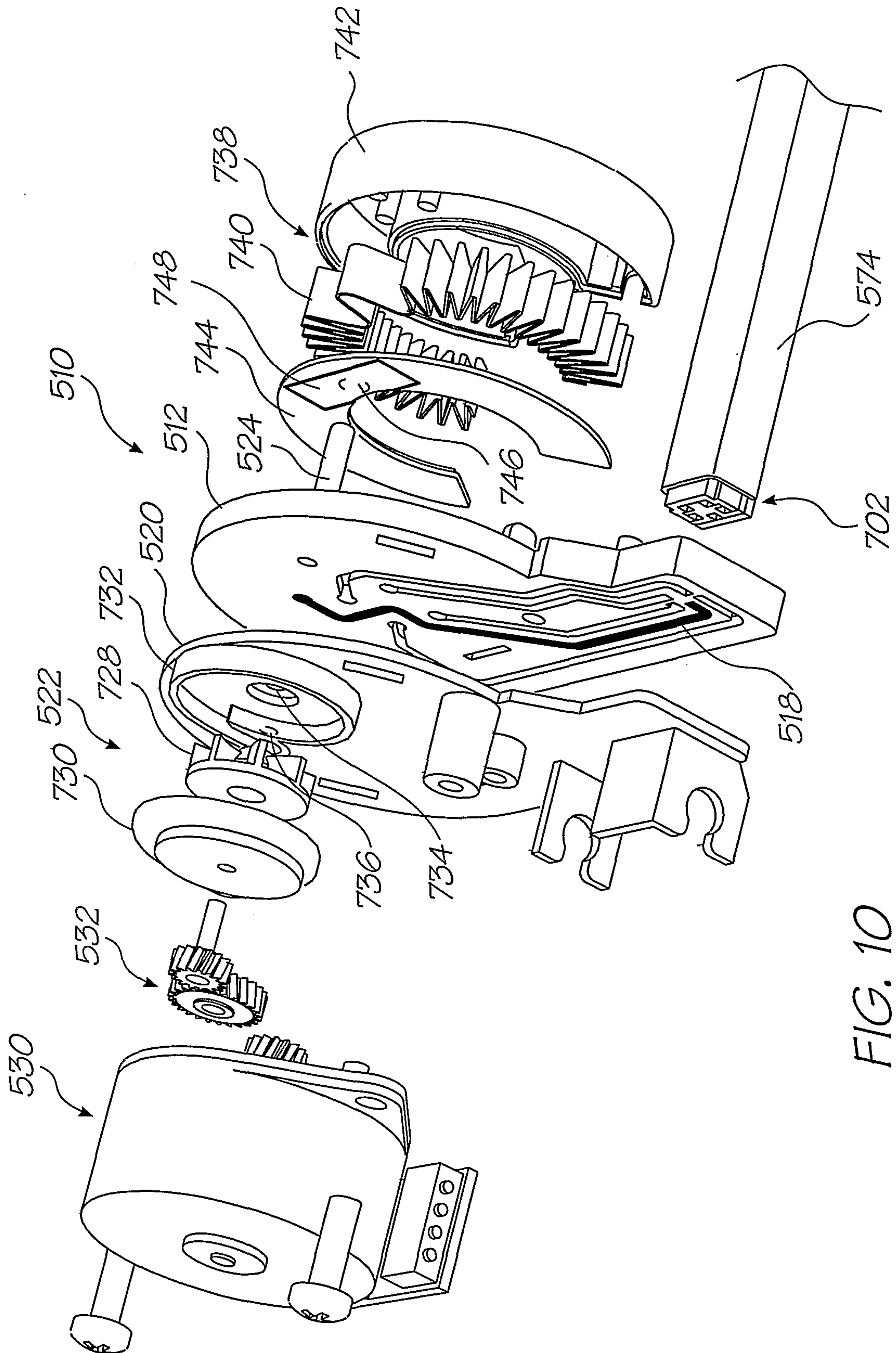
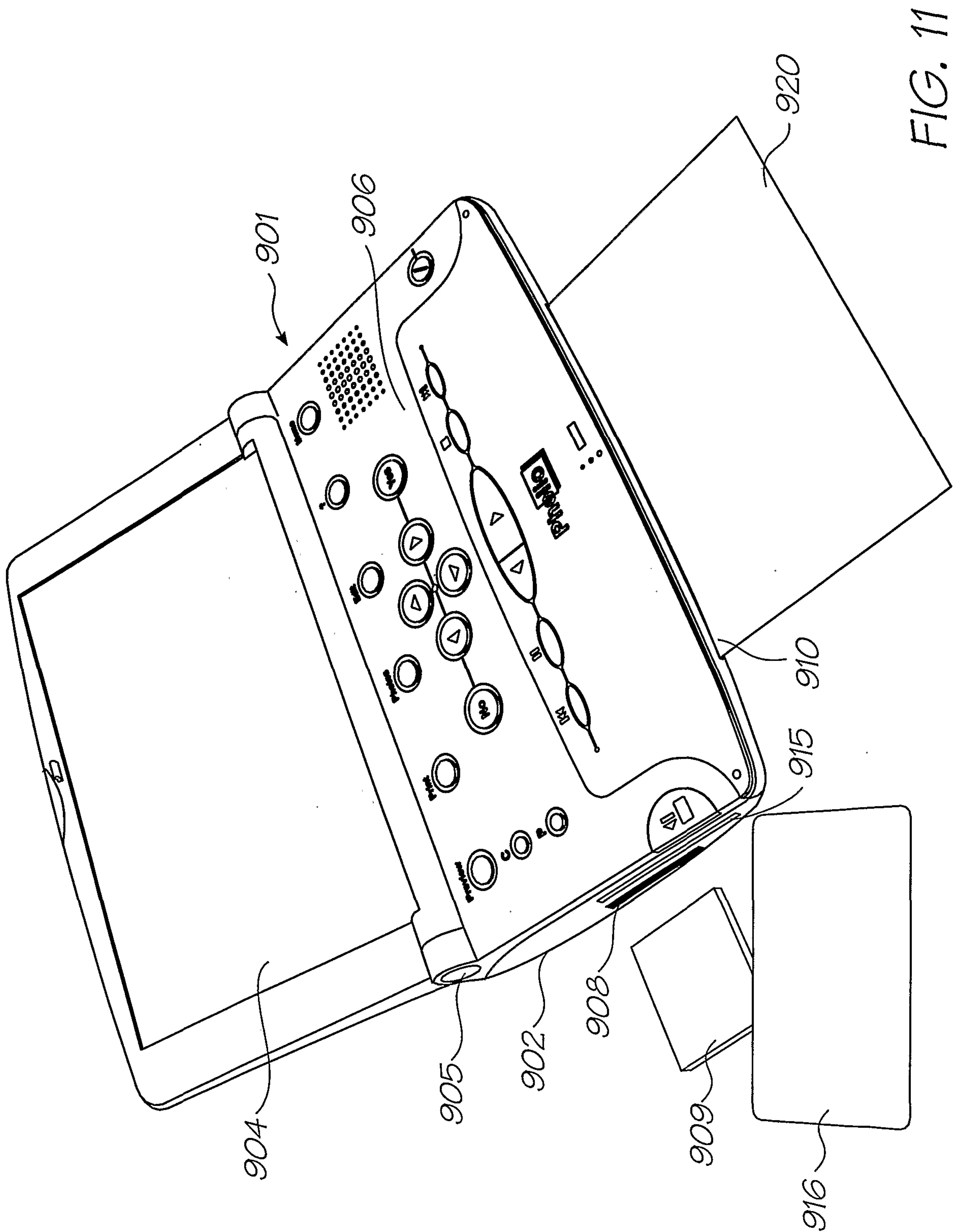


FIG. 10

10/12



11/12

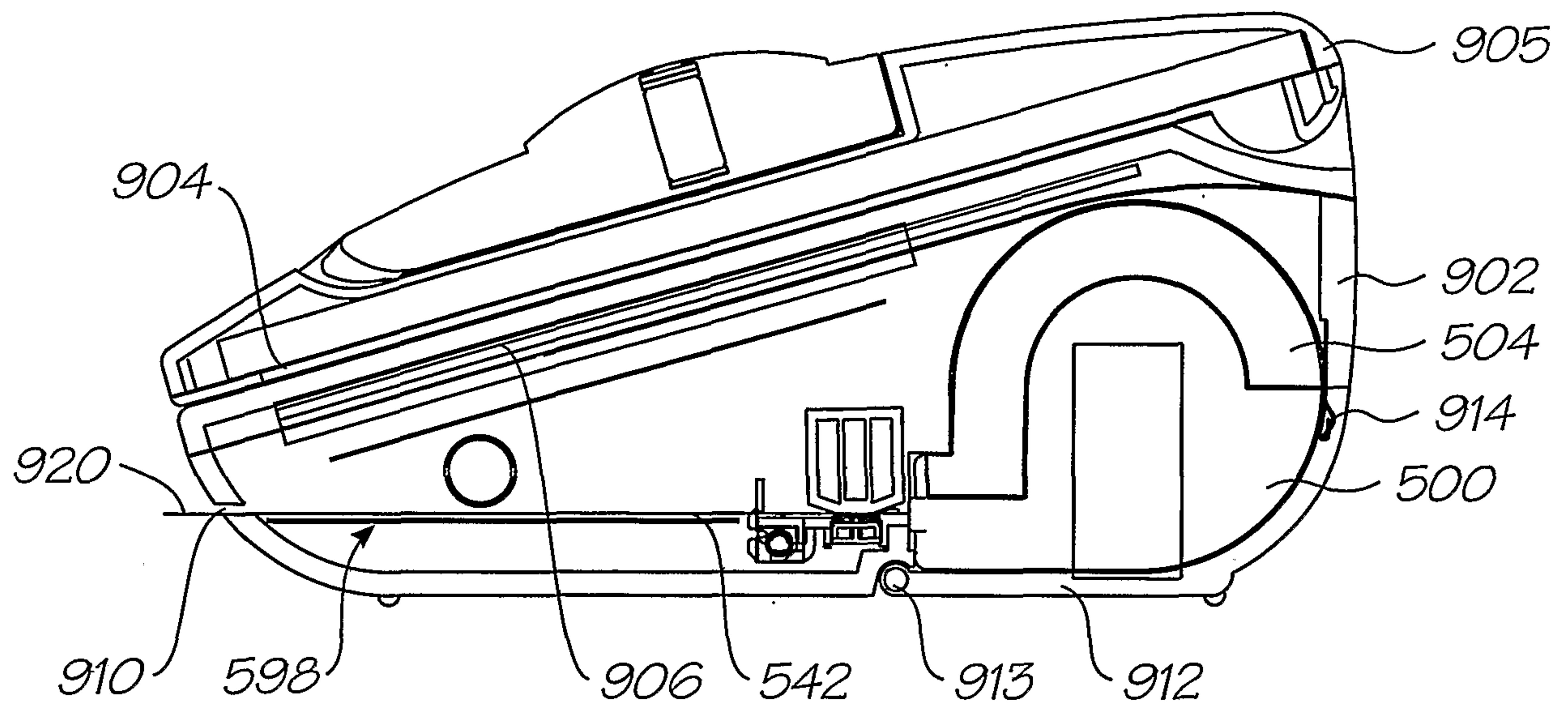


FIG. 12

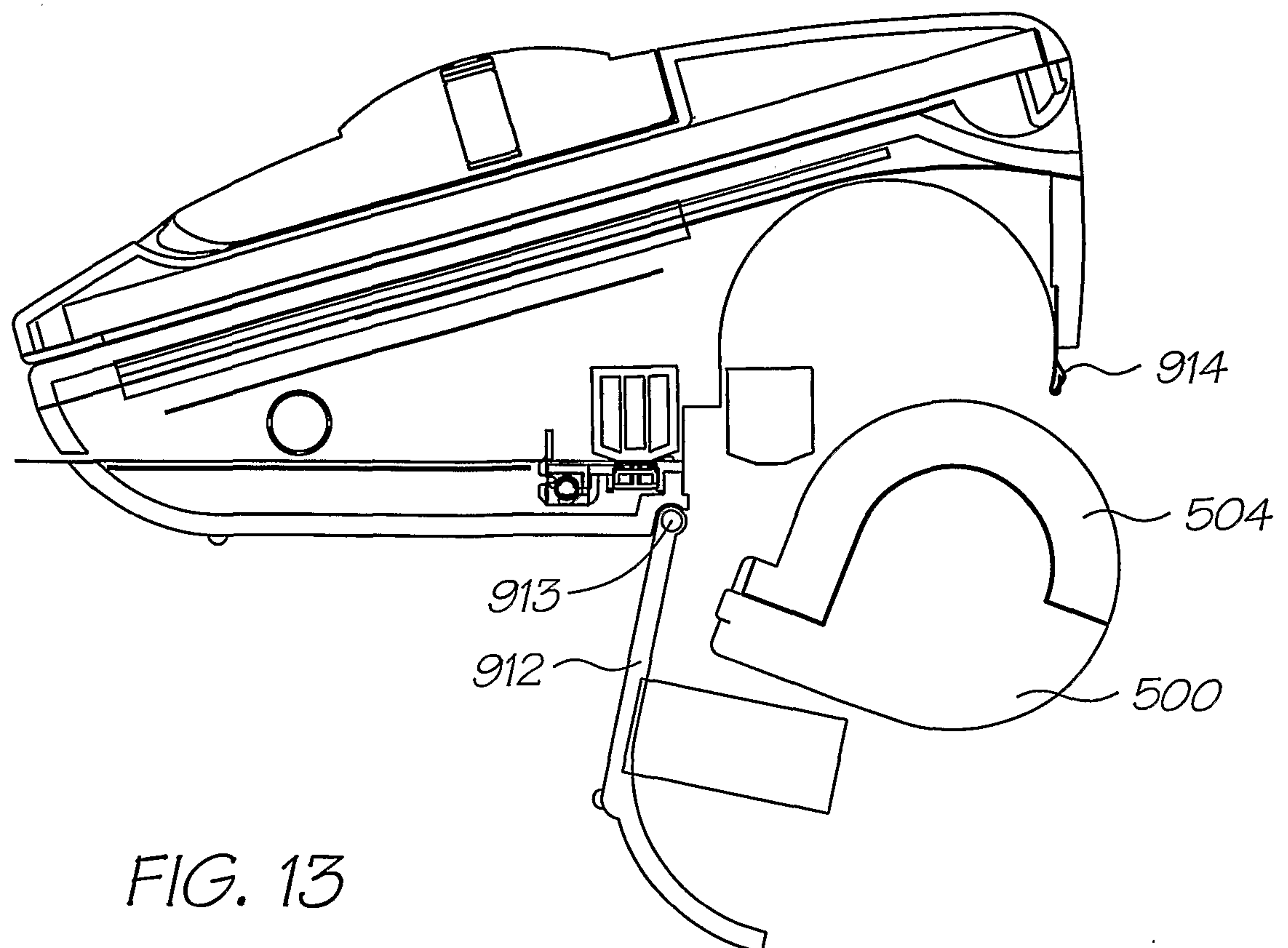


FIG. 13

12/12

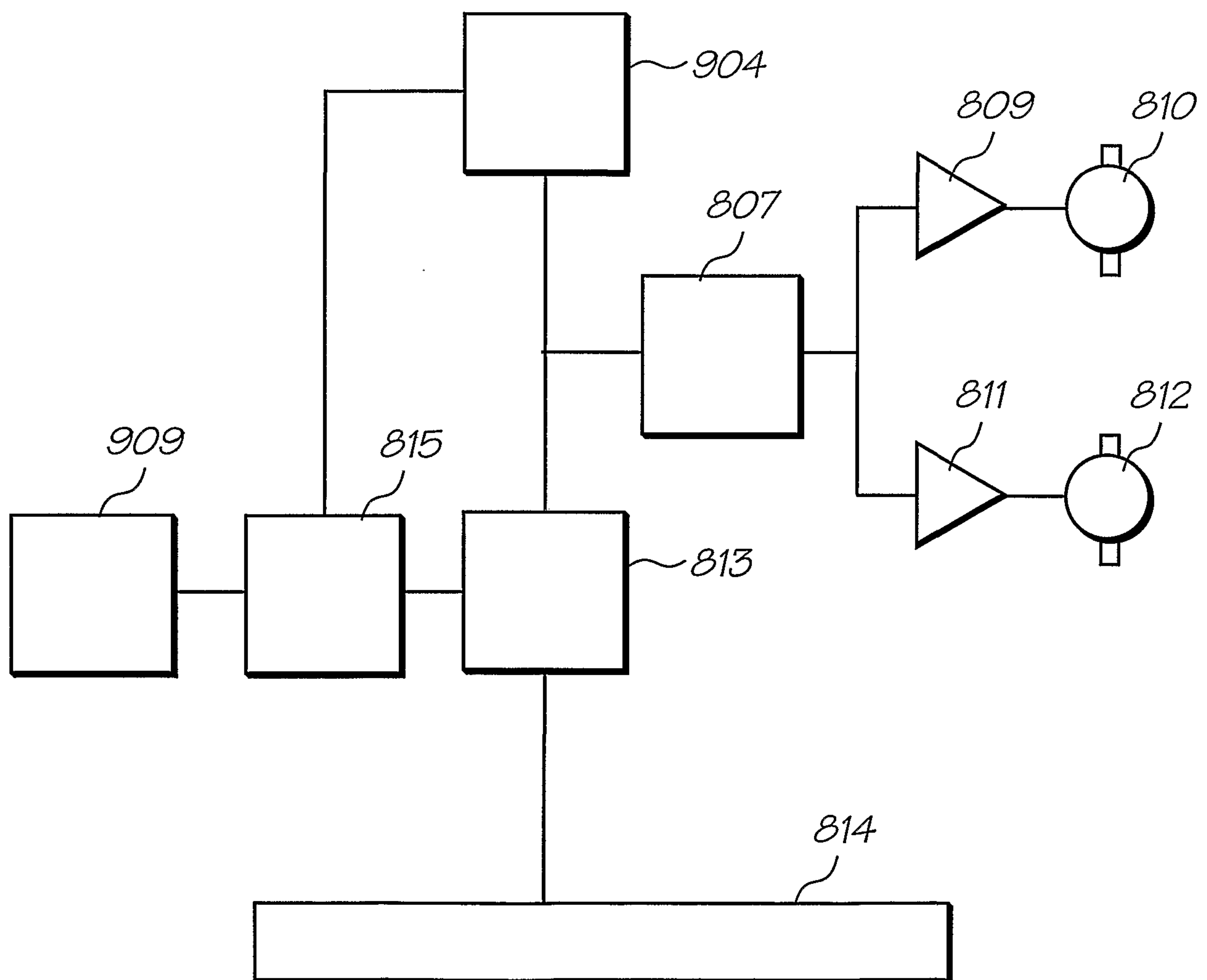


FIG. 14

