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(54) Title: EXPANSION DEVICE PLACEMENT APPARATUS

(57) Abstract: An apparatus that facilitates the accurate and uncomplicated placement of an adhesive circuit structure onto an integrated circuit card is described. The apparatus is configured to hold the adhesive circuit structure and an integrated circuit card such that the two components can be aligned for proper placement.

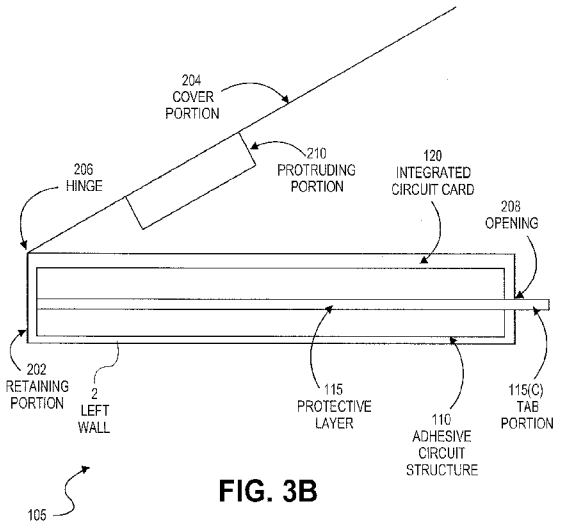

FIG. 3B

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EXPANSION DEVICE PLACEMENT APPARATUS

CROSS-REFERENCES TO RELATED APPLICATIONS

[0001] This application is a non-provisional application of and claims the benefit of priority of U.S. Provisional Application No. 61/510,023, entitled "Systems and Method for Secure Mobile Communication," filed on July 20, 2011, the contents of which are herein incorporated by reference in its entirety for all purposes.

BACKGROUND

[0002] The accurate and proper placement of an adhesive object onto another object can require greater skill than that which can be conducted free hand. When the objects contain microprocessors and electrical components that require precise alignment, the task can be even more daunting. If the two objects are incorrectly affixed or bonded to each other, the objects can be rendered inoperable and/or a replacement may be required. The microprocessors and electrical components on the objects could be damaged either by the inaccurate placement or by attempts to disengage and then reattach the two objects.

[0003] One possible solution would be to use sophisticated machinery programmed to accurately bond the two objects together. However, this can also be costly and time-consuming. Consumers would be required to physically send the objects to a facility to conduct the bonding procedure and then wait for the bonded objects to be sent back. In addition, the costs of maintaining such machinery may be cost-prohibitive.

[0004] Another possible solution that solves this problem is to send the objects pre-bonded to consumers. However, while this solution may be suitable for new consumers, pre-existing consumers still face the same issues.

[0005] Thus, new and enhanced methods of providing for the accurate and proper placement of an adhesive object onto another component that solve the above problems would be desirable.

[0006] Embodiments of the invention address the above problems, and other problems, individually and collectively.

BRIEF SUMMARY

[0007] Embodiments of the present invention are related to an apparatus and method for accurately affixing an adhesive circuit structure onto an integrated circuit card.

[0008] One embodiment of the invention is directed to an apparatus comprising a retaining structure comprising a plurality of retaining elements, the retaining structure cooperatively structured with and configured to receive an integrated circuit card and an adhesive circuit structure. The apparatus further comprises an opening in a retaining element in the plurality of retaining elements, and a cover portion coupled to the retaining structure, wherein the cover portion comprises a protruding portion that faces inwardly with respect to the retaining structure.

[0009] Another embodiment of the invention is directed to a method comprising placing an adhesive circuit structure and a protective layer in a retaining structure comprising a retaining element comprising an opening, wherein a portion of the protective layer passes through the opening. The method further comprises providing placing an integrated circuit card in the retaining structure and separating the protective layer from the adhesive circuit structure by withdrawing the protective layer through the opening. The method further comprises applying pressure to the integrated circuit card and the adhesive circuit structure to bond the integrated circuit card and the adhesive circuit structure together.

[0010] These and other embodiments of the invention are described in further detail below with reference to the Figures and the Detailed Description.

BRIEF DESCRIPTION OF THE DRAWINGS

[0011] FIG. 1 shows a view of a placement apparatus and the components utilized by the placement apparatus according to an embodiment of the claimed invention.

[0012] **FIG. 2** shows a schematic diagram of a placement apparatus according to an embodiment of the invention.

[0013] **FIGS. 3A** and **3B** show cross-sectional schematic diagrams of a placement apparatus according to an embodiment of the invention.

[0014] **FIG. 4** shows a depiction of an integrated circuit card and an adhesive circuit structure that can be bonded using a placement apparatus according to an embodiment of the invention.

[0015] **FIG. 5** illustrates a flowchart describing a method of operating a placement apparatus according to an embodiment of the invention.

DETAILED DESCRIPTION

[0016] Prior to discussing embodiments of the invention, descriptions of some terms may be helpful in understanding embodiments of the invention.

[0017] The term "retaining structure" may refer to a structure configured to house particular elements. For example, the retaining structure can be comprised of a plurality of retaining elements, such as a plurality of walls, a cover portion, and a hinge that allows the retaining structure to receive an integrated circuit card and an adhesive circuit structure. In embodiments of the claimed invention, the retaining structure comprises at least four walls that are configured into the general shape of the perimeter of an integrated circuit card. The retaining structure is thus cooperatively structured with and configured to receive or house an integrated circuit card and an adhesive circuit structure. As used herein, the retaining structure may also be referred to as a placement apparatus.

[0018] The term "integrated circuit card" may refer to an object with embedded integrated circuits. Exemplary integrated circuit cards can provide identification, authentication, data storage and application processing. Examples of integrated circuit cards can include subscriber identity module (SIM) cards that can be installed and transferred between different mobile devices. The integrated circuit card can also be any other component that allows a mobile device to send and receive communications. SIM cards can store network-specific information that can be used to authenticate and

identify subscribers on the network in order to allow a mobile device access to the network. The integrated circuit card can also be other types of user-removable component of a mobile device such as various types of memory card, for example, a secure digital (SD) memory card that can be used in conjunction with the mobile device to send and receive communications.

[0019] According to some embodiments, the integrated circuit card that the adhesive circuit structure attaches to is a user-removable integrated circuit card of a mobile device. Specific examples of mobile devices include cellular or wireless phones, personal digital assistants (PDAs), pagers, portable computing devices such as tablet computers or laptops, smart cards, portable multi-functional devices that can send and receive communications such as portable media players/reader, portable game device, and the like.

[0020] The integrated circuit card of a mobile device can come in various form factors. For example, in embodiments in which the integrated circuit card is a SIM card, the integrated circuit card can have a form factor according to a full-sized SIM card or a mini-SIM card as specified in the ISO/IEC 7810 standard, or a micro-SIM card or a nano-SIM card as specified in the ETSI TS 102 221 standard. In other embodiments, for example, in which the integrated circuit card is a SD memory card, the integrated circuit card can have a form factor according to a full-size SD card, a micro-SD card, or a mini-SD card as specified in the SD standard of the Secure Digital Association.

[0021] The term "adhesive circuit structure" may refer to an object with embedded circuits and microprocessors, that is comprised of a portion with an adhesive material. In embodiments, the adhesive material enables the adhesive circuit structure to be affixed or bonded to another object or component. In some embodiments, the adhesive circuit structure is a flexible circuit, comprising a hardware security module (or HSM module). In other embodiments, the adhesive circuit structure may be semi-flexible or rigid.

[0022] An example of an adhesive circuit structure is a cryptographic expansion device that can be attached to an integrated circuit card of a mobile device to enable the mobile device to perform cryptographic operations on communications sent to and from the mobile device.

[0023] The term "protective layer" may refer to a layer of material that is disposed onto another object to protect the object. The protective layer can be used to cover sensitive microprocessors and electrical circuitry from contamination by dust and other airborne particles. It can further be used to protect an adhesive material to prevent premature bondage. In embodiments, the protective layer covers a portion of an adhesive circuit structure containing adhesive material for bonding. In some embodiments, the protective layer completely covers the adhesive circuit structure, while in other embodiments, the protective layer may cover only a portion of the adhesive circuit structure. In embodiments, the protective layer is removably attached to the adhesive circuit structure.

[0024] In some embodiments of the invention, the protective layer is comprised of multiple sub-layers including a clear plastic film. In other embodiments, the protective layer may be composed of a material that allows for resistance-free separation of the protective layer from the adhesive circuit structure. The use of a material that allows for resistance-free separation from the adhesive material of the adhesive circuit structure can facilitate easier removal of the protective layer from the adhesive circuit structure, and thus facilitate more accurate bonding of the adhesive material to the integrated circuit card.

[0025] In embodiments of the invention, the protective layer may include a release coating, which is a material which adheres well to the plastic film, but has the property of only lightly holding, and therefore easily releasing an adhesive coated face of the adhesive circuit structure. The release coating may be made of any suitable material including a silicone resin to which cross-linkable groups, such as acrylic residues, have been appended. The silicone portion of the composition can act as a release agent, and the acrylic groups act to crosslink the release coating composition together.

[0026] The term "protruding portion" may refer to a portion of the retaining structure. In embodiments, the protruding portion is attached to the underside of the cover portion of the retaining apparatus. In embodiments, the dimensions of the protruding portion can vary but not exceed the dimensions of the cover portion of the retaining structure.

[0027] I. SYSTEMS

[0028] FIG. 1 depicts an overhead schematic diagram **100** of the components utilized by a placement apparatus according to an embodiment of the claimed invention. The diagram **100** depicts a placement apparatus **105**, an adhesive circuit structure **110**, a protective layer **115**, and an integrated circuit card **120**. The adhesive circuit structure **110** can be further comprised of one or more microprocessors **110(B)** embedded in the adhesive circuit structure **110**. The adhesive circuit structure **110** can be further comprised of one or more electrical contacts **110(C)**.

[0029] The adhesive circuit structure **110** has a periphery **110(A)** that includes a diagonal portion **110(A)-1**. The protective layer **115** also has a periphery **115(A)** that includes a diagonal portion **115(A)-1**. The integrated circuit card **120** also has a periphery **120(A)** that includes a diagonal portion **120(A)-1**.

[0030] In embodiments, and as depicted in **FIG. 1**, the adhesive circuit structure periphery **110(A)**, the protective layer periphery **115(A)**, and the integrated circuit card periphery **120(A)** are of substantially the same dimensions. The protective layer **115** has a main portion **115(B)** and a tab portion **115(C)**, the tab portion **115(C)** having a tab length **115(B)-1** that extends the tab portion **115(C)** beyond the dimensions of the protective layer periphery **115(A)**. The tab portion **115(C)** of the protective layer **115** may give the protective layer **115** greater lateral dimensions than the lateral dimensions of the adhesive circuit structure **110** to which the protective layer **115** is initially attached. As shown, the width of the adhesive circuit structure **110** and the width of the protective layer **115** may be substantially equal, while the length of the protective layer **115** may be longer (by the tab portion length **115(C)-1**) than the length of the adhesive circuit structure **110**. The tab portion length **115(C)-1** may be of any suitable length, including a length greater than about 1, 2, or 5 millimeters.

[0031] The substantially same dimensions of the adhesive circuit structure **110**, the protective layer **115**, and the integrated circuit card **120** allows the two components to be placed securely in the placement apparatus **105**. In other embodiments, the protective layer **115** has a dimension different from the dimensions of the adhesive circuit structure **110** and the integrated circuit card **120**.

[0032] The structure of the placement apparatus **105** is configured such that it can securely hold the adhesive circuit structure **110** and the integrated circuit card **120** within the placement apparatus. Further details regarding the structure of the placement apparatus are discussed with respect to **FIGS. 2**, **3A** and **3B**.

[0033] **FIG. 2** depicts a schematic diagram of the placement apparatus **105** with a cover portion **204** in a closed position. The placement apparatus **105** is comprised of a retaining portion **202**, the cover portion **204**, and a hinge **206**. The retaining portion comprises a plurality of retaining elements, including a plurality of walls, and is cooperatively structured with and configured to receive the integrated circuit card **120** and the adhesive circuit structure **110**. The retaining portion **202** further comprises an opening **208** in one wall of the retaining portion **202**. In embodiments, the opening **208** allows for the tab portion **115(C)** of the protective layer **115** to extend beyond the dimensions of the placement apparatus **105**. In embodiments, the opening is horizontally elongated. In some embodiments, the opening **208** is located in a front wall **1** of the retaining portion **202**. In other embodiments, the opening **208** can be located in any one of the plurality of walls comprising the retaining portion **202**. The opening **208** in the retaining portion **202** allows for the tab portion **115(C)** of the protective layer **215** to protrude through the opening **208**.

[0034] **FIG. 3A** depicts a forward view of the placement apparatus **105** with the cover portion **204** in a closed position, showing the opening **208** disposed in the front wall **1** of the retaining portion **202** as shown in **FIG. 2**. As noted above, in other embodiments, the opening **208** can be disposed in other walls of the retaining portion **202** besides the front wall **1**.

[0035] **FIG. 3B** depicts a cross-sectional side view of the placement apparatus **105** with the cover portion **204** in an open position, from the perspective of the left wall **2** of the retaining portion **202** as shown in **FIG. 2**. The cross-sectional side view of the placement apparatus **105** shows the adhesive circuit structure **110**, the protective layer **115**, and the integrated circuit card **120** disposed in the retaining portion **202**. As depicted, the adhesive circuit structure **110** is placed in the bottom of the retaining portion **202** with the protective layer **115** adhesively attached to the adhesive circuit structure **110**. The integrated circuit card **120** is placed on top of the adhesive circuit

structure **110** and the protective layer **115**. In other embodiments, the integrated circuit card **120** can be placed in the bottom of the retaining portion **202** with the adhesive circuit structure **110** placed on top of the integrated circuit card **120**.

[0036] **FIG. 3B** further depicts the tab portion **120(C)** of the protective layer **120** extending beyond the dimensions of the placement apparatus **105**. The tab portion **120(C)** is extended through the opening **208** located in the front wall **1** of the retaining portion **202**.

[0037] A protruding portion **210** is also depicted, attached to the underside of the cover portion **204**. The protruding portion **210** faces inwardly with respect to the retaining portion **202**. The protruding portion **210** shown in FIG. **3B** is an example of the size and dimensions of the protruding portion **210**. In other embodiments, the dimensions of the protruding portion **210** can be larger or smaller than that depicted in **FIG. 3B**, but not to exceed the lateral dimensions of the cover portion **204**. The protruding portion **210** can be a solid block of material (e.g., plastic) so that the surface thereof is continuous on the bottom.

[0038] The hinge **206** is a movable element that couples the cover portion **204** of the placement apparatus **105** to the retaining portion **202** of the placement apparatus **105**. The hinge **206** is operable to allow the cover portion **204** to pivot between an open position and a closed position.

[0039] **FIG. 4** illustrates an exemplary adhesive circuit structure **110** in the form of a cryptographic expansion device and an integrated circuit card **120** in the form of a SIM card. According to various embodiments, the cryptographic expansion device is a circuit board with integrated circuits implementing a hardware security module (HSM) disposed therein. The cryptographic expansion device can be a flexible printed circuit board in the form of a label. According to the embodiment as shown, the cryptographic expansion device is an adhesive circuit structure **110** with one or more integrated circuits or microprocessors **110(B)** and one or more electrical contacts **110(C)** disposed therein, and the integrated circuit card **120** that the adhesive circuit structure **110** attaches to is a SIM card (e.g., a mini-SIM card as shown). It should be understood that while the description and explanation provided below are made with reference to a particular embodiment, the description and explanation provided below are applicable to

and can be adapted for other embodiments, for example, embodiments in which the cryptographic expansion device is used with a SIM card with a different form factor, or in which the cryptographic expansion device is used with other types of integrated circuit card **120** such as a memory card.

[0040] Additional features and specifications regarding an adhesive circuit structure **110** in the form of a cryptographic expansion device can be found in PCT Patent Application No. _____, titled, "Cryptographic Expansion Device and Related Protocols," (Attorney Docket No. 79900-833656), which is being filed on the same day as the present application and is herein incorporated by reference in its entirety for all purposes.

[0041] **II. METHODS**

[0042] A method according to embodiments of the invention can be described with respect to **FIGS. 1-5**.

[0043] **FIG. 5** is a flowchart of a method **500** for affixing an adhesive circuit structure **105** to an integrated circuit card **120** using a system **100** shown in **FIG. 1**.

[0044] In step **502**, user receives a retaining structure (or placement apparatus) **105** and an adhesive circuit structure **110** with a protective layer **115**. In some embodiments, the user may receive the retaining structure **105** with the adhesive circuit structure **110** with the protective layer **115** pre-installed in the retaining structure **105**. In other embodiments, the user may receive the retaining structure **105** separately from the adhesive circuit structure **110** with the protective layer **115**. The retaining structure **105** and the adhesive circuit structure **110** with the protective layer **115** may be provided by a financial institution (e.g. bank) at which the user has a financial account with, or it may be provided by a payment processing network that handles transaction processing for an account associated with the user. The protective layer **115** can protect the adhesive circuit structure **110** from damage or contamination, until the circuit structure is ready to bond to the integrated circuit card **120**.

[0045] In step **504**, user places the adhesive circuit structure **110** in the retaining structure **105**, extending a portion **115(c)** of the protective layer **115** through an opening **208** in the retaining structure **105**. In embodiments of the invention, the adhesive circuit

structure **110** will have the same dimensions as the retaining structure **105** in order to ensure accurate and precise placement of the adhesive circuit structure **110** on the integrated circuit card **120**. In embodiments where the user receives the retaining structure **105** and the adhesive circuit structure **110** with the protective layer **115** as two separate components, the user will be required to place (or install) the adhesive circuit structure **110** with the protective layer **115** into the retaining structure **105**. The user can place the adhesive circuit structure **110** into the retaining structure **105** with the protective layer **115** facing out of the retaining structure **105**. The protective layer **115** is comprised of a tab portion **115(C)** that is a tab portion length **115(C)-1** longer than the size of the adhesive circuit structure **110**. When the user installs the adhesive circuit structure **110** in the retaining structure **105**, the user can extend the tab portion **115(C)** of the protective layer **115** through the opening **208** in one of the retaining elements (e.g. walls) of the retaining structure **105**.

[0046] In step **506**, user places an integrated circuit card **120** in the retaining structure **105**. Following the placement of the adhesive circuit structure **110** with the protective layer **115** into the retaining structure **105**, the user can then place the integrated circuit card **120** in the retaining structure **105**. In embodiments, the integrated circuit card **120** may be a subscriber identity module or subscriber identification module (SIM) card from a mobile device (e.g. mobile phone). In embodiments of the invention, the integrated circuit card **120** will have the same dimensions as the retaining structure **105** in order to ensure accurate and precise placement of the adhesive circuit structure **110** on the integrated circuit card **120**. In embodiments, the integrated circuit card **120** will be placed into the retaining structure **105** with the side of the integrated circuit card **120** hat is to be adhered to the adhesive circuit structure **110**, facing downwards into the retaining structure **105**.

[0047] In step **508**, user removes the protective layer **115** by withdrawing the protective layer **115** from the adhesive circuit structure **110**, through the opening **208** in the retaining structure **105**. After the user has properly placed the adhesive circuit structure **110** and the integrated circuit card **120** in the retaining structure **105**, the user can withdraw the protective layer **115** from the retaining structure **105**. In embodiments, the user can pull the tab portion **115(C)** of the protective layer **115** through the opening **208** in the retaining structure **105**. Once the protective layer **115** is removed from the

adhesive circuit structure **110**, an adhesive side of the adhesive circuit structure **110** is exposed and ready to be affixed to the integrated circuit card **120**.

[0048] In step **510**, user applies pressure to the integrated circuit card **120** and the adhesive circuit structure **110** to bond the integrated circuit card **120** and the adhesive circuit structure **110** together. After the protective layer **115** has been removed from the adhesive circuit structure **110**, the user can apply pressure to the cover portion **204** that is coupled to the retaining portion **202** by the hinge **206**. As the user closes the cover portion **204**, the protruding portion **210** attached to the underside of the cover portion **204** makes contact with and applies pressure into the integrated circuit card **120**. By the user closing and pushing down on the cover portion **204**, the protruding portion **210** on the underside of the cover portion **204** correspondingly applies pressure that assists in the bonding process to ensure that the integrated circuit card **120** and the adhesive circuit structure **110** are attached securely and evenly.

[0049] In step **512**, user opens the retaining structure **105** and removes the bonded integrated circuit card **120** and the adhesive circuit structure **110**. In embodiments, once the user has successfully affixed the adhesive circuit structure **110** to the integrated circuit card **120**, the user can open the cover portion **204** and can remove the bonded integrated circuit card **120** and the adhesive circuit structure **110** from the retaining structure **105**.

[0050] In step **514**, user places the integrated circuit card **120** and the adhesive circuit structure **110** in a mobile device. In embodiments, the user can then place the bonded integrated circuit card **120** and the adhesive circuit structure **110** in their mobile device to facilitate the functionality of the bonded integrated circuit card **120** and the adhesive circuit structure **110**.

[0051] **III. TECHNICAL BENEFITS**

[0052] A benefit of embodiments of the invention is the ability to efficiently and accurately affix an adhesive circuit structure to an integrated circuit card which reduces the risk of technical problems and errors. For example, if the adhesive circuit structure and the integrated circuit card are not in alignment when the two components are bonded together via the adhesive material on the adhesive circuit structure,

communications using the integrated circuit card may not be properly encrypted. By use of the placement apparatus, these errors can be avoided.

[0053] IV. ADDITIONAL EMBODIMENTS

[0054] In other embodiments, the configuration of the placement apparatus can vary based upon the form factor of the integrated circuit card. Similarly, the dimensions of the adhesive circuit structure and the protective layer can be based upon the form factor of the integrated circuit card.

[0055] It is understood that the examples and embodiments described herein are for illustrative purposes only and that various modifications or changes in light thereof will be suggested to persons skilled in the art and are to be included within the spirit and purview of this application and scope of the appended claims. All publications, patents, and patent applications cited in this patent are hereby incorporated by reference for all purposes.

[0056] One or more features from any embodiment may be combined with one or more features of any other embodiment without departing from the scope of the disclosure.

[0057] Any recitation of "a", "an" or "the" is intended to mean "one or more" unless specifically indicated to the contrary.

[0058] The above description is illustrative and is not restrictive. Many variations of the invention will become apparent to those skilled in the art upon review of the disclosure. The scope of the invention should, therefore, be determined not with reference to the above description, but instead should be determined with reference to the pending claims along with their full scope or equivalents.

WHAT IS CLAIMED IS:

1. An apparatus comprising:

a retaining structure comprising a plurality of retaining elements, the retaining structure cooperatively structured with and configured to receive an integrated circuit card and an adhesive circuit structure;

an opening in a retaining element in the plurality of retaining elements; and

a cover portion coupled to the retaining structure, wherein the cover portion comprises a protruding portion that faces inwardly with respect to the retaining structure.

2 The apparatus of claim 1 wherein the plurality of retaining elements comprises a plurality of walls.

3. The apparatus of claim 1 wherein the integrated circuit card is a SIM card.

4. The apparatus of claim 1 wherein the retaining structure comprises at least four walls, which form the same general shape as a perimeter of the integrated circuit card.

5. The apparatus of claim 1 further comprising a hinge, which couples the cover portion to the retaining structure.

6. The apparatus of claim 1 wherein the opening is horizontally elongated.

7. The apparatus of claim 1 wherein the adhesive circuit structure is a flexible circuit, comprising an HSM module.

8. A system comprising:

the apparatus of claim 1;

the integrated circuit card retained by the retaining structure;

the adhesive circuit structure retained by the retaining structure; and

a protective layer removably attached to the adhesive circuit structure.

9. The system of claim 8 wherein the protective layer has lateral dimensions that are greater than lateral dimensions of the adhesive circuit structure.

10. The system of claim 9 wherein a portion of the protective layer protrudes through the opening.

11. The system of claim 8 wherein the integrated circuit card is a SIM card and the adhesive circuit structure comprises an HSM module.

12. A method comprising:

placing an adhesive circuit structure and a protective layer in a retaining structure comprising a retaining element comprising an opening, wherein a portion of the protective layer passes through the opening;

placing an integrated circuit card in the retaining structure;

separating the protective layer from the adhesive circuit structure by withdrawing the protective layer through the opening; and

applying pressure to the integrated circuit card and the adhesive circuit structure to bond the integrated circuit card and the adhesive circuit structure together.

13. The method of claim 12 wherein applying pressure comprises pressing down on a cover that is coupled to the retaining structure via a hinge.

14. The method of claim 12 wherein the protective layer comprises a clear plastic film.

15. The method of claim 12 wherein the integrated circuit card is a SIM card and the adhesive circuit structure comprises an HSM module.

16 The method of claim 12 wherein the retaining structure comprises four walls, which are cooperatively structured with respect to a periphery of the integrated circuit card.

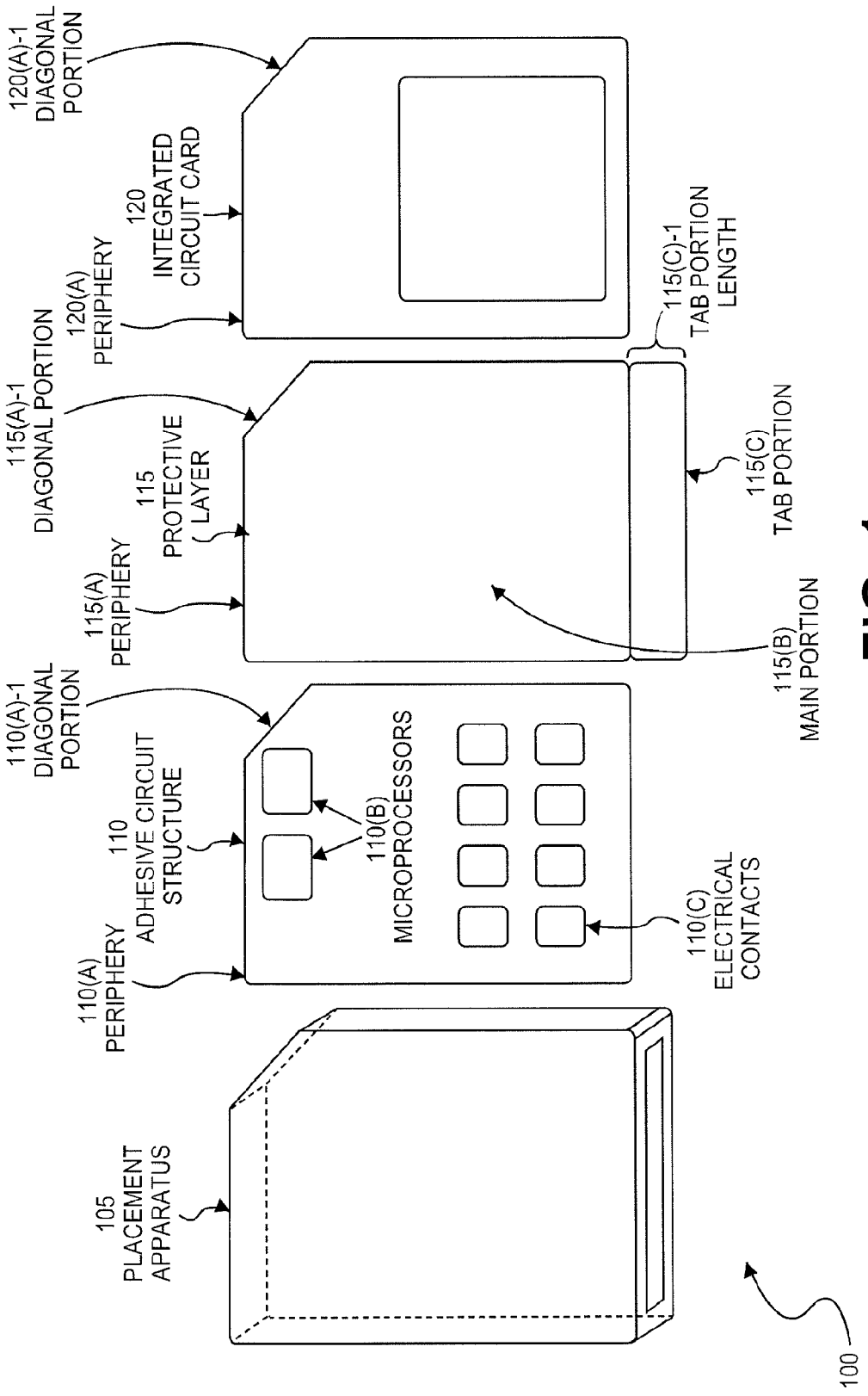
120(A)-1
DIAGONAL
PORTION
120
INTEGRATED
CIRCUIT CARD
120(A)
PERIPHERY
115(C)-1
TAB PORTION
LENGTH
115(A)-1
DIAGONAL PORTION
115
PROTECTIVE
LAYER
115(A)
PERIPHERY
115(C)
TAB PORTION
115(B)
MAIN PORTION
110(A)-1
DIAGONAL
PORTION
110
ADHESIVE CIRCUIT
STRUCTURE
110(B)
MICROPROCESSORS
110(A)
PERIPHERY
110(C)
ELECTRICAL
CONTACTS
105
PLACEMENT
APPARATUS
100

FIG. 1

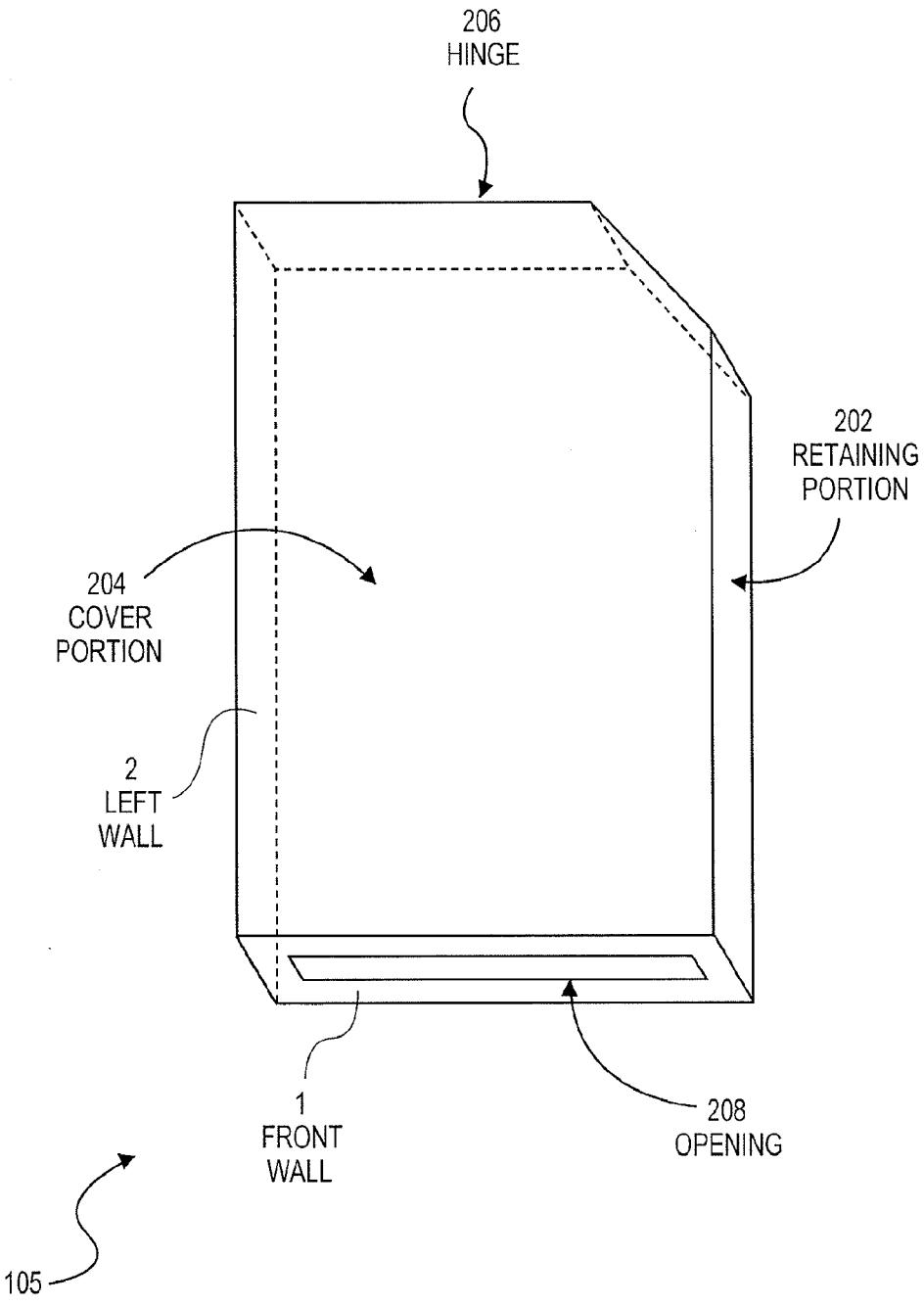
206
HINGE
202
RETAINING
PORTION
204
COVER
PORTION
2
LEFT
WALL
1
FRONT
WALL
208
OPENING
105

FIG. 2

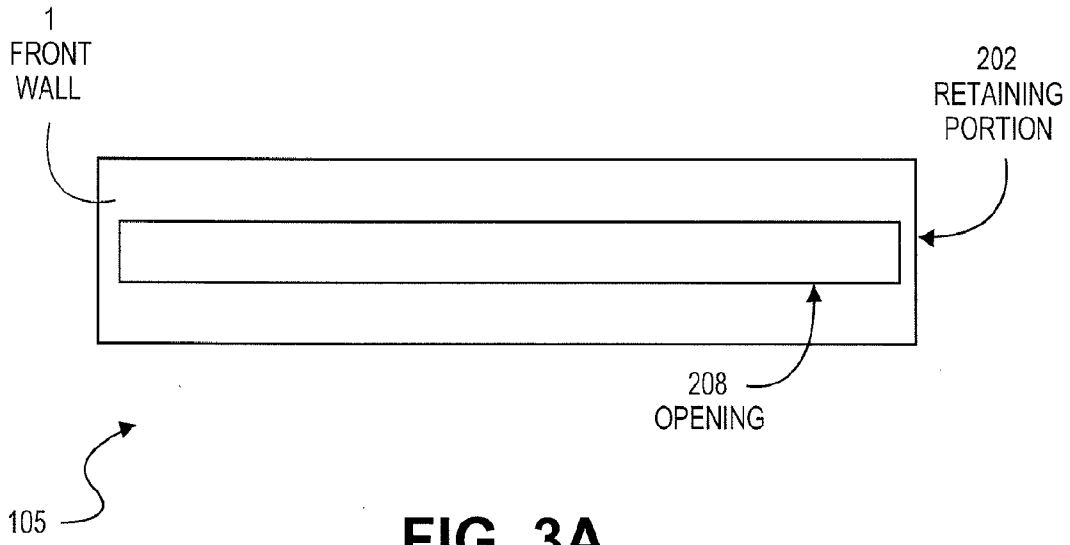
1
FRONT
WALL
202
RETAINING
PORTION
208
OPENING
105

FIG. 3A

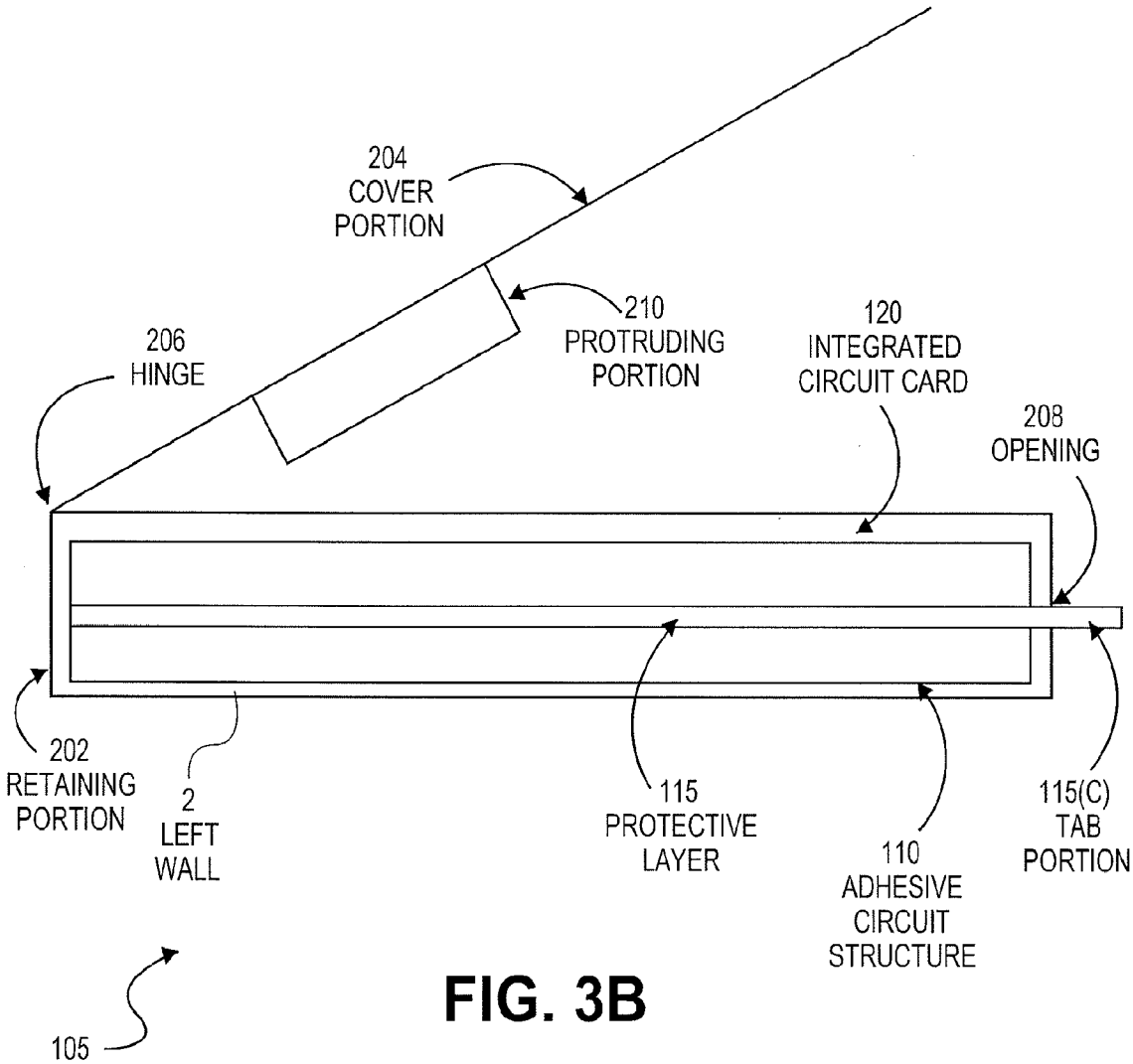
204
COVER
PORTION
210
PROTRUDING
PORTION
206
HINGE
120
INTEGRATED
CIRCUIT CARD
208
OPENING
202
RETAINING
PORTION
2
LEFT
WALL
115
PROTECTIVE
LAYER
110
ADHESIVE
CIRCUIT
STRUCTURE
115(C)
TAB
PORTION
105

FIG. 3B

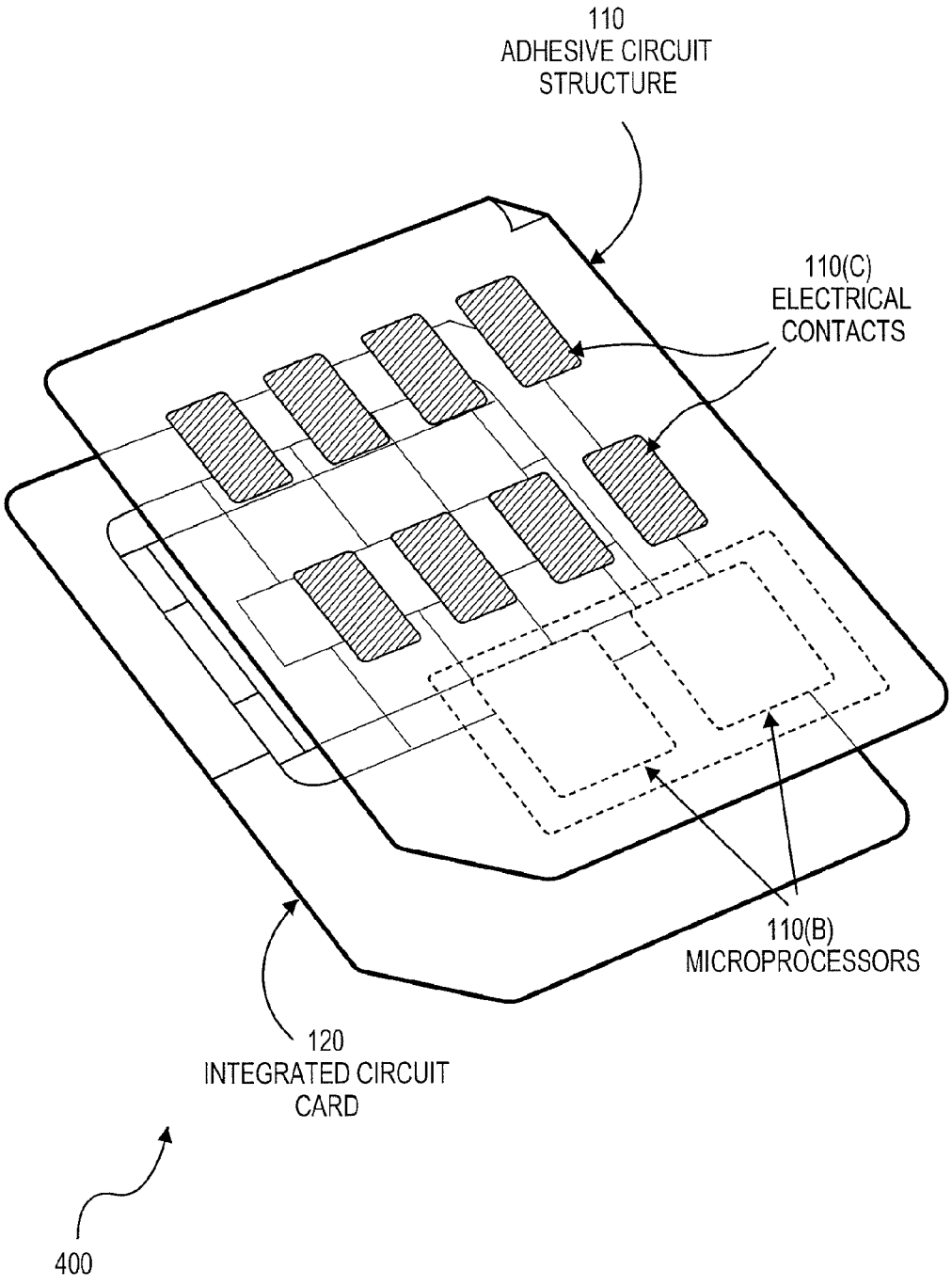
110
ADHESIVE CIRCUIT
STRUCTURE
110(C)
ELECTRICAL
CONTACTS
110(B)
MICROPROCESSORS
120
INTEGRATED CIRCUIT
CARD
400

FIG. 4

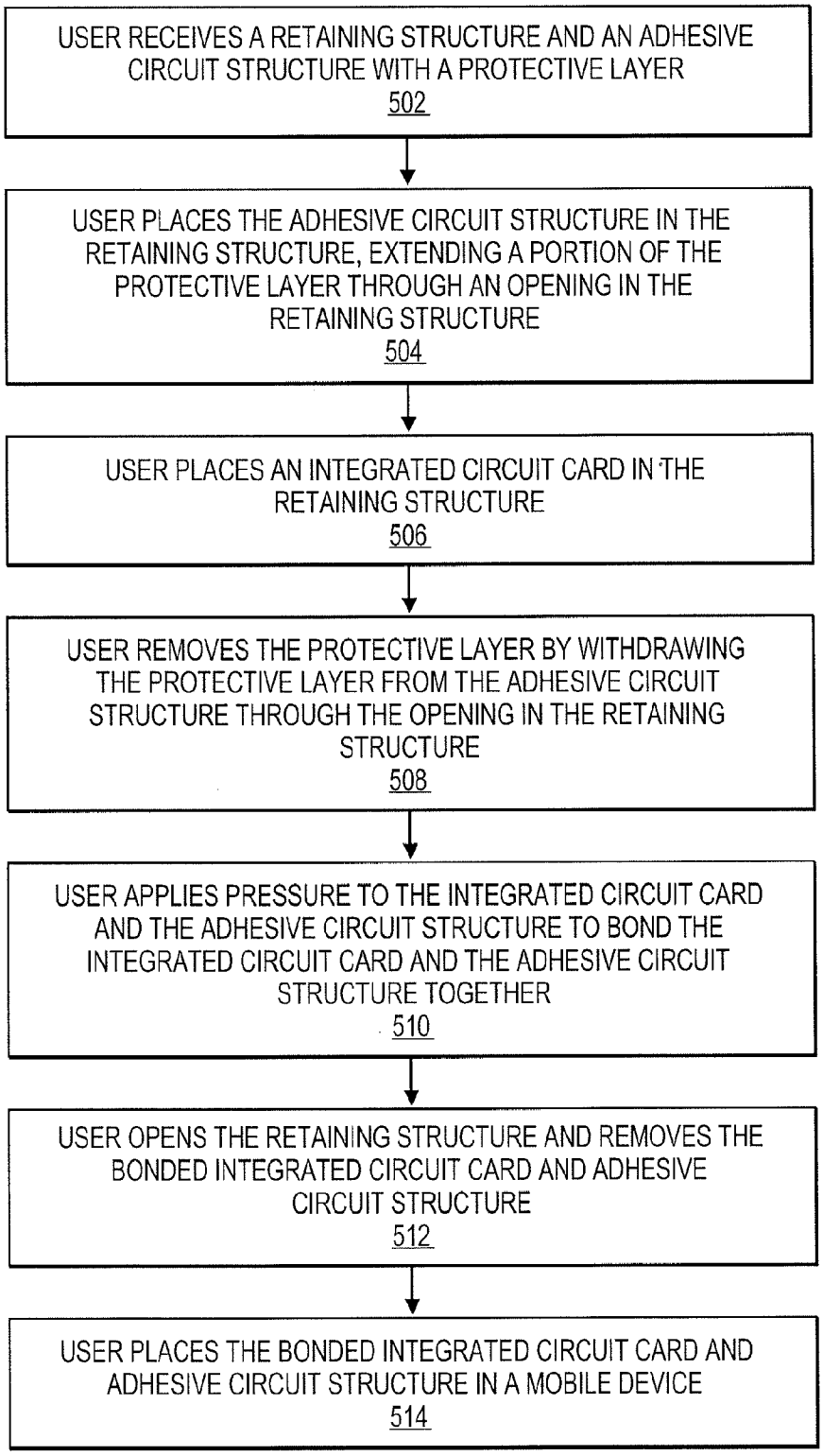
USER RECEIVES A RETAINING STRUCTURE AND AN ADHESIVE CIRCUIT STRUCTURE WITH A PROTECTIVE LAYER
502
USER PLACES THE ADHESIVE CIRCUIT STRUCTURE IN THE RETAINING STRUCTURE, EXTENDING A PORTION OF THE PROTECTIVE LAYER THROUGH AN OPENING IN THE RETAINING STRUCTURE
504
USER PLACES AN INTEGRATED CIRCUIT CARD IN THE RETAINING STRUCTURE
506
USER REMOVES THE PROTECTIVE LAYER BY WITHDRAWING THE PROTECTIVE LAYER FROM THE ADHESIVE CIRCUIT STRUCTURE THROUGH THE OPENING IN THE RETAINING STRUCTURE
508
USER APPLIES PRESSURE TO THE INTEGRATED CIRCUIT CARD AND THE ADHESIVE CIRCUIT STRUCTURE TO BOND THE INTEGRATED CIRCUIT CARD AND THE ADHESIVE CIRCUIT STRUCTURE TOGETHER
510
USER OPENS THE RETAINING STRUCTURE AND REMOVES THE BONDED INTEGRATED CIRCUIT CARD AND ADHESIVE CIRCUIT STRUCTURE
512
USER PLACES THE BONDED INTEGRATED CIRCUIT CARD AND ADHESIVE CIRCUIT STRUCTURE IN A MOBILE DEVICE
514
500

FIG. 5