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

(19) World Intellectual Property Organization
International Bureau

(43) International Publication Date
22 November 2007 (22.11.2007)

PCT

(10) International Publication Number
WO 2007/133455 A2

(51) International Patent Classification:
G01N 33/487 (2006.01)

(21) International Application Number:
PCT/US2007/010606

(22) International Filing Date: 3 May 2007 (03.05.2007)

(25) Filing Language: English

(26) Publication Language: English

(30) Priority Data:
60/798,538 8 May 2006 (08.05.2006) US

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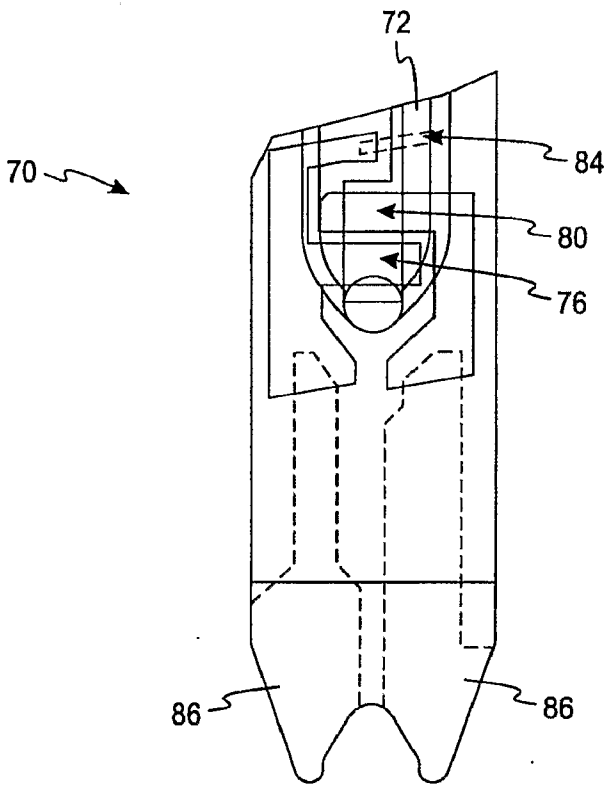
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(81) Designated States *(unless otherwise indicated, for every kind of national protection available)*: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BH, BR, BW, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, EG, ES, FI, GB, GD, GE, GH, GM, GT, HN, HR, HU, ID, IL, IN, IS, JP, KE, KG, KM, KN, KP, KR, KZ, LA, LC, LK, LR, LS, LT, LU, LY, MA, MD, ME, MG, MK, MN, MW, MX, MY, MZ, NA, NG, NI, NO, NZ, OM, PG, PH, PL, PT, RO, RS, RU, SC, SD, SE, SG, SK, SL, SM, SV, SY, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, ZA, ZM, ZW.

(84) Designated States *(unless otherwise indicated, for every kind of regional protection available)*: ARIPO (BW, GH, GM, KE, LS, MW, MZ, NA, SD, SL, SZ, TZ, UG, ZM, ZW), Eurasian (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European (AT, BE, BG, CH, CY, CZ, DE, DK, EE, ES, FI, FR, GB, GR, HU, IE, IS, IT, LT, LU, LV, MC, MT, NL, PL, PT, RO, SE, SI, SK, TR), OAPI (BF, BJ, CF, CG, CI, CM, GA, GN, GQ, GW, ML, MR, NE, SN, TD, TG).

[Continued on next page]

(54) Title: TEST-SENSOR PACKAGING



(57) Abstract: A test-sensor cartridge is disclosed. The test-sensor cartridge comprises a plurality of test sensors adapted to assist in determining an analyte concentration of a fluid sample. The test-sensor cartridge further comprises a plurality of walls forming at least one cavity therein, the at least one cavity being adapted to contain the plurality of test sensors. The test-sensor cartridge further comprises at least one opening formed on a surface of the cartridge. The at least one opening is adapted to receive each of at least one projection of a first sensor-dispensing instrument with which the cartridge is compatible. The at least one opening is adapted to receive at least one but less than all of at least one projection of a second sensor-dispensing instrument with which the cartridge is incompatible.

WO 2007/133455 A2

Declaration under Rule 4.17:

— *as to the applicant's entitlement to claim the priority of the earlier application (Rule 4.17(iii))*

Published:

— *without international search report and to be republished upon receipt of that 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.

TEST-SENSOR PACKAGING

FIELD OF THE INVENTION

[001] The present invention relates generally to sensor-dispensing instruments and, ɔarticularly, to test-sensor packaging for limiting the interchangeability of test sensors ɛn different types and/or generations of analyte-testing instruments (e.g., meters).

BACKGROUND OF THE INVENTION

[002] The quantitative determination of analytes in body fluids is of great ɜance in the diagnoses and maintenance of certain physiological abnormalities. For ɩle, lactate, cholesterol, and bilirubin should be monitored in certain individuals. In ılar, determining glucose in body fluids is important to diabetic individuals who must ntly check the glucose level in their body fluids to regulate the glucose intake in their The results of such tests may be used to determine what, if any, insulin and/or other ation needs to be administered. In one type of testing system, test sensors are used to fluid such as a sample of blood.

[003] One method of monitoring an individual's blood glucose level is with a ɩle, hand-held blood glucose testing device (e.g., a meter). To determine the blood ɛe level with the meter, a lancet device may be used with a needle lancet that pierces the ssue and allows a whole blood sample to form on the skin's surface. Once the requisite ɪt of blood forms on the skin's surface, the blood sample is transferred to a test sensor. ɜst sensor is generally placed in an opening in the body of the meter.

[004] Test-sensor cartridges are commonly used to individually dispense test sensors ɹsed for testing an analyte in a fluid. The cartridges may be incorporated directly into, ample, glucose meters to dispense test sensors for use with the meter. The cartridges ed to store multiple sensors and allow users to carry multiple sensors around within a enclosure. Test-sensor cartridges may include features designed to mate with ponding features of a meter to assist in indexing and/or excising the test sensors located ı the cartridges. The cartridges also assist in preventing or inhibiting the sensors from exposed to the environment until they are required for use. During testing, a blood or fluid sample may be placed on the sensor and analyzed with the meter or instrument to ɲine the concentration of the analyte being examined.

[005] Because different types of test sensors or test sensor versions may have icant differences associated therewith, a problem occurs when a test sensor is used with er that was not designed to be used with the test sensor. This may occur, for example, a user places a test-sensor cartridge into a meter that is not compatible with the test 's located within the test-sensor cartridge. Different types of test sensors may include ent types of sensor reagent, which may influence items such as the amount of fluid e needed and the length of time needed to react with the analyte to determine the e concentration. Furthermore, different test sensors may correspond with different protocols or programs including test sequences, test times, algorithms, voltage, ation information, or the like.

[006] It may be difficult for a user to determine when a test-sensor cartridge is atible with a given meter. This difficulty is amplified by the fact that many cartridges a generally universal size and configuration and, thus, fit into various types and/or ations of meters. Moreover, meters are generally designed to perform protocols and run ms associated with certain test sensors. Thus, mismatching test-sensor cartridges and generally yields inaccurate test results and may result in extra testing, which may be venient and expensive for a user.

[007] It would be desirable to provide test-sensor packaging for limiting the angeability of test sensors with different types and/or generations of sensor-dispensing nents.

SUMMARY OF THE INVENTION

[008] According to one embodiment of the present invention, a test-sensor cartridge losed. The test-sensor cartridge comprises a plurality of test sensors adapted to assist ermining an analyte concentration of a fluid sample. The test-sensor cartridge further ises a plurality of walls forming at least one cavity therein, the at least one cavity being d to contain the plurality of test sensors. The test-sensor cartridge further comprises at ne opening formed on a surface of the cartridge. The at least one opening is adapted to each of at least one projection of a first sensor-dispensing instrument with which the ge is compatible. The at least one opening is adapted to receive at least one but less l of at least one projection of a second sensor-dispensing instrument with which the ge is incompatible.

[009] According to another embodiment of the present invention, a test-sensor ıdge is disclosed. The test-sensor cartridge comprises a plurality of test sensors adapted ist in determining an analyte concentration of a fluid sample. The test-sensor cartridge ır comprises a plurality of walls forming at least one cavity therein, the at least one ' being adapted to contain the plurality of test sensors. The test-sensor cartridge further rises at least one projection formed on a surface of the cartridge. Each of the at least rojection is adapted to be received by at least one opening of a first sensor-dispensing ment with which the cartridge is compatible. At least one but less than all of the at least rojection is adapted to be received by at least one opening of a second sensor-dispensing ment with which the cartridge is incompatible.

[0010] According to another embodiment of the present invention, a method of nining whether a test-sensor cartridge is compatible with a sensor-dispensing instrument :losed. The method comprises the act of providing a test-sensor cartridge including a ity of walls forming at least one cavity therein. The at least one cavity is adapted to in a plurality of test sensors. The plurality of test sensors is adapted to assist in the nination of a concentration of an analyte in a fluid sample. The test-sensor cartridge has st one opening formed on at least one of the plurality of walls. The method further rises providing a sensor-dispensing instrument having at least one projection located n. The method further comprises inserting the test-sensor cartridge into the sensor-ısing instrument. The method further comprises determining whether the test-sensor ıdge is compatible with the sensor-dispensing instrument based on whether the at least ɔening is adapted to receive each of the at least one projection.

[0011] According to another embodiment of the present invention, a method of nining whether a test-sensor cartridge is compatible with a sensor-dispensing instrument :losed. The method comprises the acts of providing a test-sensor cartridge including a ity of walls forming at least one cavity therein. The at least one cavity is adapted to n a plurality of test sensors. The plurality of test sensors is adapted to assist in the nination of a concentration of an analyte in a fluid sample. The test-sensor cartridge has ;t one projection formed on at least one of the plurality of walls. The method further ises providing a sensor-dispensing instrument having at least one opening located ı. The method further comprises inserting the test-sensor cartridge into the sensor-ısing instrument. The method further comprises determining whether the test-sensor

lge is compatible with the sensor-dispensing instrument based on whether the at least pening is adapted to receive each of the at least one projection.

[0012] According to another embodiment of the present invention, a test-sensor lge is disclosed. The test-sensor cartridge comprises a plurality of walls forming at one cavity therein. The at least one cavity is adapted to contain a plurality of test rs. The plurality of test sensors is adapted to assist in the determination of a ntration of an analyte in a fluid sample. The test-sensor cartridge further comprises at one opening formed on a surface of the cartridge. The at least one opening assists in ing the test-sensor cartridge. When the test-sensor cartridge is indexed within a first -dispensing instrument with which the cartridge is compatible, a test-sensor cavity is d with an ejection mechanism. When the test-sensor cartridge is indexed within a d sensor-dispensing instrument with which the cartridge is incompatible, a test-sensor is not aligned with an ejection mechanism.

[0013] The above summary of the present invention is not intended to represent each liment or every aspect of the present invention. Additional features and benefits of the it invention are apparent from the detailed description and figures set forth below.

BRIEF DESCRIPTION OF THE DRAWINGS

[0014] FIG. 1 is a top view of a test sensor according to one embodiment.

[0015] FIG. 2 is a perspective view of a sensor-dispensing instrument or meter in an osition showing a test-sensor cartridge being inserted according to one embodiment.

[0016] FIGs. 3a-d illustrate top, representative views of indexing mechanisms having s post layouts.

[0017] FIG. 4a illustrates a top, representative view of a test-sensor cartridge ling to one embodiment.

[0018] FIGs. 4b-e illustrate top, representative views of the test-sensor cartridge of a being used in connection with the indexing mechanisms of FIGs. 3a-c.

[0019] FIG. 5a illustrates a top, representative view of a test-sensor cartridge ing to another embodiment.

[0020] FIGs. 5b-e illustrate top, representative views of the test-sensor cartridge of a being used in connection with the indexing mechanisms of FIGs. 3a-c.

[0021] FIG. 6 is a perspective view of a sensor-dispensing instrument or meter in an position showing a test-sensor cartridge being inserted according to another liment.

[0022] FIG. 7a is a perspective internal view of a stacked test-sensor cartridge and an on mechanism according to one embodiment.

[0023] FIG. 7b is a perspective view of a meter to which the ejection mechanism of 7a is attached internally and being used with the stacked test-sensor cartridge of FIG. 7a.

[0024] FIG. 8 is a perspective view of a sensor-dispensing instrument or meter in an position showing a test-sensor cartridge being inserted according to yet another liment.

DESCRIPTION OF ILLUSTRATED EMBODIMENTS

[0025] The present invention is directed to limiting the interchangeability of a test- cartridge between various types and/or generations of sensor-dispensing instruments meters). The test sensors (e.g., biosensors) excised from the cartridge may be used to in determining an analyte concentration in a fluid sample. Some examples of the types alytes that may be collected and analyzed include glucose, lipid profiles (e.g., terol, triglycerides, LDL, and HDL), microalbumin, fructose, lactate, or bilirubin. The t invention is not limited, however, to these specific analytes, and it is contemplated her analyte concentrations may be determined. The analytes may be in, for example, a blood sample, a blood serum sample, a blood plasma sample, or other body fluids like nterstitial fluid) and/or urine. One non-limiting example of a use of the test-sensor ge and meter is to determine the glucose concentration in a user's blood, plasma, or

[0026] Test sensors used in determining analyte concentrations are typically provided capillary channel that extends from the front or testing end of the test sensor to sing or reagent material disposed in the test sensor. The reagent generally includes an riately selected enzyme to react with the desired analyte or analytes to be tested. The t may be stored within the test sensor in a dried ink form to promote an extended shelf the test sensor. When the testing end of the test sensor is placed into fluid (e.g., blood accumulated on a person's finger after the finger has been pricked), a portion of the s drawn into the capillary channel by capillary action. The fluid then mixes with the t material in the test sensor and chemically reacts with the reagent material so that an

ical signal indicative of the analyte (e.g., glucose) level in the fluid being tested is ed and subsequently transmitted to a sensor-dispensing instrument or meter.

[0027] One type of test sensor that may be used is an electrochemical test sensor. ion-limiting example of an electrochemical test sensor is shown in FIG. 1. FIG. 1 s a test sensor 70 that includes a capillary channel 72, an area for meter contacts 86, plurality of electrodes 76, 80, 84. The capillary channel 72 contains reagent. The ity of electrodes includes a working (measuring) electrode 80, a counter electrode 76, n optional trigger electrode 84. The trigger electrode 84 may assist in determining er a sufficient blood sample has been placed on the sensor 70. The electrochemical test may also contain other amounts and/or types of electrodes. Examples of ochemical test sensors, including their operation, may be found in, for example, U.S. No. 6,531,040 assigned to Bayer Corporation. It is contemplated that other ochemical test sensors may be employed. It is also contemplated that other types of test s may be used including, but not limited to, optical test sensors.

[0028] A plurality of test sensors is typically stored in a disposable test-sensor lge. For example, the plurality of test sensors may be stored in a cartridge where the nsors are generally radially aligned and individually packaged in sensor cavities (e.g., a -type pack). An example of a disposable cartridge 100 being placed in a sensor- sing instrument or meter 102 is depicted in FIG. 2. The disposable cartridge 100 is an ple of a blister-type pack. The cartridge 100 includes a generally flat surface 103 a plurality of walls forming a plurality of test-sensor cavities 114 therein. A plurality sensors 112 is individually stored in a respective one of the plurality of sensor cavities The cartridge 100 further includes at least one desiccant compartment 116 for aining the test sensors 112 at adequate moisture levels such that accurate testing may be ed. The disposable cartridge 100 of FIG. 2 is further described at U.S. Patent cation Publication No. 2003/0032190 that published on February 13, 2003 and is d "Mechanical Mechanism for a Blood Glucose Sensor-Dispensing Instrument." It is nplated that other types of blister-type packs and other types of cartridges may also be

[0029] The cartridge 100 of FIG. 2 further includes a plurality of openings. Although illustrated embodiments, the openings include notches positioned along the periphery generally flat surface 103, it is contemplated that other types of openings located along suitable portions of the cartridge 100 may also be used with the present invention. It is

:ontemplated that the openings may have shapes other than those of the illustrated liments. For example, the openings may be in the form of one or more notches formed the periphery of the cartridge 100, one or more apertures formed a certain distance he periphery, or the like. It is further contemplated that the notches referred to herein ave any shape including, but not limited to, the V-shape of the illustrated embodiments.

[0030] Referring back to the embodiment of FIG. 2, the plurality of openings include ality of notches 118 adapted to receive a corresponding one of a plurality of projections, sts 120, positioned on an indexing mechanism 121 within the meter 102. It is nplated that projections other than the posts 120 shown in the illustrated embodiments lso be used with the present invention. In the embodiment of FIG. 2, the indexing nism 121 is in the form of a wheel and the posts 120 are arranged along the periphery wheel. It is contemplated, however, that other types of indexing mechanisms may be vith the present invention. The number of notches 118 in the illustrated embodiment ponds with the number of posts 120 (i.e., ten). To insert the cartridge 100 into the 102, each of the notches 118 is generally aligned with a corresponding post 120. The 120 and notches 118 generally assist in holding the cartridge 100 in place over the ng mechanism 121 so that the cartridge 100 may be rotated and indexed prior to . The posts 120 and notches 118 also assist in aligning a test-sensor cavity 114 with an n mechanism and a test-sensor dispensing port 122 so that a test sensor 112 may be l for testing.

[0031] Once the test sensor 112 is aligned with the test-sensor dispensing port 122) testing, an ejection mechanism, which may include a knife or a blade, may be moved eral direction (i.e., in the direction of Arrow A) and may puncture a seal at a first end test-sensor cavity 114. The ejection mechanism then engages the test sensor 112, g the test sensor 112 in the direction of Arrow A. The test sensor 112 then may re and burst through a seal at the opposite end of the test-sensor cavity 114. The test 112 is then excised out of the test-sensor dispensing port 122 into a read position, he test sensor 112 is aligned with electrical contacts of the meter 102 and an analyte y be performed.

[0032] Various types of meters and/or generations of meters may include different s and/or configurations of posts. FIGs. 3a-d illustrate representative views of non- examples of indexing mechanisms 200, 220, 240, 260. Each indexing mechanism 0, 240, 260 has a different number of posts 202, 222, 242, 262 respectively. The

ng mechanism 200 of FIG. 3a includes five uniformly-spaced posts 202. The indexing nism 220 of FIG. 3b includes ten uniformly-spaced posts 222. The indexing nism 240 of FIG. 3c includes two uniformly-spaced posts 242. The indexing nism 260 of FIG. 3d includes five notches 362 that are uniformly-spaced over a portion ıbout half) of the periphery of the indexing mechanism 260. It is contemplated that an ng mechanism may include a different number of posts than those of the embodiments is. 3a-c. It is further contemplated that the posts may be positioned along the indexing ınism in ways other than those shown in the illustrated embodiments. For example, the may be spaced non-uniformly along the periphery or other portions of the indexing ınism or a portion thereof.

[0033] According to the present invention, the use of an incompatible test-sensor lge is inhibited or prevented by varying the amount and/or position of openings on the ınsor cartridge. The amount and/or position of the openings may be determined based the amount and positions of the projections of a meter(s) with which the test sensors mpatible and (2) the amount and positions of the projections of a meter(s) with which st sensors are not compatible. Thus, the openings of the test-sensor cartridge are ed to receive all of the projections of a compatible meter(s), while at least one projection incompatible meter(s) does not fit within the openings of the test-sensor cartridge. By ıg the number and/or position of the openings of a test-sensor cartridge such that at least rojection of the meter does not fit within the openings of an incompatible meter, the lge is inhibited or prevented from fitting within the meter. Thus, a user could readily nine that that a particular test-sensor cartridge should not be used with that particular

[0034] Referring to FIG. 4a, for example, a representative view of a cartridge 300 g ten uniformly-spaced notches 302 is shown. FIGs. 4b-e illustrate the cartridge 300 used in connection with the indexing mechanisms 200, 220, 240, 260 of FIGs. 3a-d, ctively. The number and configuration of the notches 302 of the cartridge 300 are such ll of the posts 202, 222, 242, 262 of the various indexing mechanisms 200, 220, 240, ıay fit within a corresponding one of the notches 302. Thus, the cartridge 300 would fit ı a meter having the indexing mechanisms 200, 220, 240, 260 of FIGs. 3a-c, thereby ıting that the test sensors of the cartridge 300 are compatible with each of the ponding meters.

[0035] Referring now to FIG. 5a, a representative view of a cartridge 400 having five mly-spaced notches 402 is shown. FIGs. 5b-e illustrate the cartridge 400 being used in ction with the indexing mechanisms 200, 220, 240, 260 of FIGs. 3a-d, respectively. ing to FIG. 5b, the cartridge 400 fits within the indexing mechanism 220, which es a corresponding five posts 202 positioned uniformly on the periphery of the ng mechanism 200. As shown in FIGs. 5c-e, however, the cartridge 400 does not fit ı the indexing mechanisms 220, 240, and 260 of FIG. 3b-d, respectively. Referring to 5c, the indexing mechanism 220 includes more posts 222 (ten) than there are notches ive) in the cartridge 400. Thus, five of the ten posts 222 (i.e., every other post 222a) e with the surface 103 of the cartridge 400, thus indicating to a user that the cartridge not compatible with a meter including the indexing mechanism 220. As shown in FIG. ıe of the two posts 242 of the indexing mechanism 240 of FIGs. 3c does not fit within ıtches 402 of the cartridge 402. Similarly, as depicted in FIG. 5e, a maximum of three five posts 262 of the indexing mechanism 260 fit within the notches 402. Although in 5d-e, the number of notches 402 is greater than or the same as the number of posts 242, espectively, at least one of the posts 242, 262 is not aligned with at least one of the es 402, thus indicating to the user that the cartridge 400 is incompatible with a meter g the corresponding indexing mechanism 240, 260.

[0036] Although the notches 302, 402 of the illustrated embodiments are uniformly-d along the periphery of the respective cartridges, 300, 400, it is contemplated that a dge of the present invention may have notches or other openings arranged in other ons. For example, the notches or other openings may be positioned along only a portion e periphery of the cartridge, positioned non-uniformly over the periphery of the dge, positioned uniformly or non-uniformly on the flat surface of the cartridge (e.g., not e periphery), combinations thereof, or the like. Furthermore, it is contemplated that a ent number of openings and/or projections may be used including, for example, a single ng and/or projection.

[0037] The concepts of the present invention may also be applied to a meter/cartridge ıbly where a component of the meter (e.g., an indexing mechanism within the meter) les openings and the test-sensor cartridge includes projections adapted to mate with at one of the openings. One example of such a meter/cartridge assembly 450 is illustrated G. 6. The meter/cartridge assembly 450 includes a test-sensor cartridge 454 having tions 458. It is contemplated that the projections 458 may have other locations, shapes,

nations thereof, or the like. The meter/cartridge assembly 450 also includes a meter ıving openings 468 positioned on an indexing mechanism 472. It is contemplated that enings 468 may have other locations, forms, combinations thereof, or the like. The ge projections 458 are arranged such that the openings of a compatible meter are d to receive all of the projections 458 of the cartridge 454. The openings of an patible meter are adapted to receive at least one but less than all of the projections 458 cartridge 454, thus indicating to a user that the cartridge 454 is incompatible with the

[0038] The present invention may also be applied to inhibit or prevent a stacked test-cartridge from being used with an incompatible sensor-dispensing instrument. ing to FIGs. 7a,b, for example, a stacked test-sensor cartridge 474 includes a base 478, t wall 480, a rear wall 482, opposing side walls 484a, 484b, and a cover (not shown). ırtridge 474 is adapted to receive a plurality of stacked test-sensors 486 within a central 488 created by the sidewalls 484a, 484b, the front wall 480, and the rear wall 478 and en the base 478 and the top cover. The test-sensor cartridge 474 further includes a test- retention mechanism 490 (e.g., a spring) to ensure that the test sensors 486 remain in ;t with each other and flush with an interior face of the front wall 480. The front wall enerally includes an opening 492 adapted to allow at least a projection 493 of an ›n mechanism 494 of the meter 476 to be inserted through the opening 492. The ›n mechanism 494 may then engage a test sensor 486 such that the test sensor 486 may cted through a slot 496 in the cartridge 474 and a slot 498 of the meter 476 that is ılly aligned with the slot 496 of the cartridge 474.

[0039] According to the present invention, the opening 492 is positioned and/or sized eive an ejection mechanism 494 of a meter that is compatible with the test-sensor lge 474. The opening 492 is also positioned and/or sized so that an ejection mechanism f an incompatible meter may not fit within the opening 492. Thus, when a user attempts ct a test sensor 486 from a cartridge that is incompatible with the meter, the ejection ınism of an incompatible meter will not engage the test sensor. The test sensor, ore, will not be ejected, thus indicating to the user that the test-sensor cartridge 474 is mpatible with the particular meter.

[0040] It is contemplated that other features of the stacked test-sensor cartridge may be positioned, sized, shaped, combinations thereof, or the like to limit the hangeability of the cartridge between various types and/or generations of meters. For

ɔle, the dimensions and/or shape of the base 478, the front wall 480, the rear wall 482, le walls 484a, 484b, the cover, or combinations thereof may be sized and/or shaped so he cartridge 474 may only fit within a compatible meter(s). Alternatively or onally, the slot 496 may be sized, shaped, and/or positioned to limit the use of the lge 474 with incompatible meters. For example, the slot 496 may be positioned such ıe slot 496 does not align with a slot (e.g., slot 498 of FIG. 7b) of an incompatible . It is contemplated that the size, shape, position, combinations thereof, or the like of components of the cartridge 474 may also be varied accordingly. It is also nplated that other stacked test-sensor cartridges may also be used with the present ion.

[0041] As an alternative or in addition to mismatching the number and/or position of enings of a test-sensor cartridge, the location of the openings relative to the test sensors orresponding test-sensor cavities may be shifted. Because the openings assist in ɔning and aligning a test sensor and a corresponding test-sensor cavity with an ejection ınism and the sensor-dispensing port of a meter, shifting the openings makes it unlikely he ejection mechanism will engage and eject a test sensor. This may serve as an onal or an alternative indication to a user that the test-sensor cartridge is incompatible he meter.

[0042] An example of shifting the location of the openings of a test-sensor cartridge 're to the location of test sensors and test-sensor cavities of the cartridge is illustrated in 3. FIG. 8 shows the meter 102 of FIG. 2 being used in connection with a cartridge 500. artridge 500 includes a plurality of notches 518 and is generally similar to the cartridge f FIG. 2. The locations of the notches 518 of the cartridge 500, however, have been d slightly from the locations of the notches 118 of the cartridge 100 of FIG. 2. Because eter 102 is configured for use with a cartridge (e.g., the cartridge 100) having notches ɔned a certain distance relative to the test sensors and test-sensor cavities, shifting the es relative to the test-sensors and test-sensor cavities makes it unlikely that the ejection ınism will engage and eject a test sensor. Thus, applying this concept to the cartridges ɜs. 5c-e, even if the cartridge 400 is somehow forced into a meter having the indexing ınisms 220, 240, 260, the ejection mechanism of the corresponding meters would be ly to engage and eject a test-sensor.

ALTERNATIVE EMBODIMENT A

[0043] A test-sensor cartridge comprising:

a plurality of test sensors adapted to assist in determining an analyte concentration of l sample;

a plurality of walls forming at least one cavity therein, the at least one cavity being ed to contain the plurality of test sensors; and

at least one opening formed on a surface of the cartridge,

wherein the at least one opening is adapted to receive each of at least one projection rst sensor-dispensing instrument with which the cartridge is compatible, and

wherein the at least one opening is adapted to receive at least one but less than all of st one projection of a second sensor-dispensing instrument with which the cartridge is ıpatible.

ALTERNATIVE EMBODIMENT B

[0044] The cartridge of Alternative Embodiment A, wherein the plurality of test rs is electrochemical test sensors.

ALTERNATIVE EMBODIMENT C

[0045] The cartridge of Alternative Embodiment A, wherein the test-sensor cartridge ister-pack type cartridge.

ALTERNATIVE EMBODIMENT D

[0046] The cartridge of Alternative Embodiment C, wherein the at least one opening lurality of openings.

ALTERNATIVE EMBODIMENT E

[0047] The cartridge of Alternative Embodiment D, wherein the plurality of openings lurality of notches.

ALTERNATIVE EMBODIMENT F

[0048] The cartridge of Alternative Embodiment D, wherein the plurality of openings formly-spaced.

ALTERNATIVE EMBODIMENT G

[0049] The cartridge of Alternative Embodiment D, wherein the plurality of openings ı-uniformly-spaced.

ALTERNATIVE EMBODIMENT H

[0050] The cartridge of Alternative Embodiment C, wherein the amount of the at least rojection of the first sensor-dispensing instrument is the same as or less than the amount at least one opening.

ALTERNATIVE EMBODIMENT I

[0051] The cartridge of Alternative Embodiment C, wherein the amount of the at least ojection of the second sensor-dispensing instrument is greater than the amount of the at ne opening.

ALTERNATIVE EMBODIMENT J

[0052] The cartridge of Alternative Embodiment C, wherein the at least one opening itioned such that the at least one cavity does not align with an ejection mechanism of cond sensor-dispensing instrument when the cartridge is in an indexed position in the l sensor-dispensing instrument.

ALTERNATIVE EMBODIMENT K

[0053] The cartridge of Alternative Embodiment C, wherein the at least one opening tioned such that the at least one cavity does not align with a sensor-dispensing port of cond sensor-dispensing instrument when the cartridge is in an indexed position in the -dispensing instrument.

ALTERNATIVE EMBODIMENT L

[0054] The cartridge of Alternative Embodiment A, wherein each of the at least one tion of the first sensor-dispensing instrument generally aligns with a corresponding at ne opening.

ALTERNATIVE EMBODIMENT M

[0055] The cartridge of Alternative Embodiment A, wherein at least one but less than he at least one projection of the second sensor-dispensing instrument generally aligns corresponding at least one opening.

ALTERNATIVE EMBODIMENT N

[0056] The cartridge of Alternative Embodiment A, wherein the test-sensor cartridge cked test-sensor cartridge.

ALTERNATIVE EMBODIMENT O

[0057] The cartridge of Alternative Embodiment N, wherein the projection is ned on an ejection mechanism.

ALTERNATIVE EMBODIMENT P

[0058] A test-sensor cartridge comprising:

a plurality of test sensors adapted to assist in determining an analyte concentration of sample;

a plurality of walls forming at least one cavity therein, the at least one cavity being ɔd to contain the plurality of test sensors; and

at least one projection formed on a surface of the cartridge,

wherein each of the at least one projection is adapted to be received by at least one ıg of a first sensor-dispensing instrument with which the cartridge is compatible, and

wherein at least one but less than all of the at least one projection is adapted to be ed by at least one opening of a second sensor-dispensing instrument with which the lge is incompatible.

ALTERNATIVE EMBODIMENT Q

[0059] The cartridge of Alternative Embodiment P, wherein the plurality of test 's is electrochemical test sensors.

ALTERNATIVE EMBODIMENT R

[0060] The cartridge of Alternative Embodiment P, wherein the test-sensor cartridge ister-pack type cartridge.

ALTERNATIVE EMBODIMENT S

[0061] The cartridge of Alternative Embodiment R, wherein the at least one opening ırality of openings.

ALTERNATIVE EMBODIMENT T

[0062] The cartridge of Alternative Embodiment S, wherein the plurality of openings ırality of notches.

ALTERNATIVE EMBODIMENT U

[0063] The cartridge of Alternative Embodiment S, wherein the plurality of openings ormly-spaced.

ALTERNATIVE EMBODIMENT V

[0064] The cartridge of Alternative Embodiment S, wherein the plurality of openings -uniformly-spaced.

ALTERNATIVE EMBODIMENT W

[0065] The cartridge of Alternative Embodiment R, wherein the amount of the at least ɔening of the first sensor-dispensing instrument is the same as or less than the amount at least one projection.

ALTERNATIVE EMBODIMENT X

[0066] The cartridge of Alternative Embodiment R, wherein the amount of the at least ɔening of the second sensor-dispensing instrument is greater than the amount of the at ɪne projection.

ALTERNATIVE EMBODIMENT Y

[0067] The cartridge of Alternative Embodiment R, wherein the at least one ːtion is positioned such that the at least one cavity does not align with an ejection ɪnism of the second sensor-dispensing instrument when the cartridge is in an indexed ɔn in the second sensor-dispensing instrument.

ALTERNATIVE EMBODIMENT Z

[0068] The cartridge of Alternative Embodiment R, wherein the at least one ːtion is positioned such that the at least one cavity does not align with a sensor-ɪsing port of the second sensor-dispensing instrument when the cartridge is in an ɜd position in the sensor-dispensing instrument.

ALTERNATIVE EMBODIMENT AA

[0069] The cartridge of Alternative Embodiment P, wherein the at least one ːtion generally aligns with a corresponding at least one opening of the first sensor-ɪsing instrument.

ALTERNATIVE EMBODIMENT AB

[0070] The cartridge of Alternative Embodiment P, wherein the at least one ːtion generally aligns with at least one but less than all of the at least one opening of the d sensor-dispensing instrument.

ALTERNATIVE EMBODIMENT AC

[0071] A method of determining whether a test-sensor cartridge is compatible with a r-dispensing instrument, the method comprising the acts of:

providing a test-sensor cartridge including a plurality of walls forming at least one therein, the at least one cavity being adapted to contain a plurality of test sensors, the ity of test sensors being adapted to assist in the determination of a concentration of an ɛ in a fluid sample, the test-sensor cartridge having at least one opening formed on at ɔne of the plurality of walls;

providing a sensor-dispensing instrument having at least one projection located n;

inserting the test-sensor cartridge into the sensor-dispensing instrument; and

determining whether the test-sensor cartridge is compatible with the sensor-ısing instrument based on whether the at least one opening is adapted to receive each of least one projection.

ALTERNATIVE EMBODIMENT AD

[0072] The method of Alternative Embodiment AC, wherein the plurality of test s is electrochemical test sensors.

ALTERNATIVE EMBODIMENT AE

[0073] The method of Alternative Embodiment AC, wherein the test-sensor cartridge ister-pack type cartridge.

ALTERNATIVE EMBODIMENT AF

[0074] The method of Alternative Embodiment AE, wherein the at least one opening ast one notch.

ALTERNATIVE EMBODIMENT AG

[0075] The method of Alternative Embodiment AE, wherein the at least one opening ırality of openings.

ALTERNATIVE EMBODIMENT AH

[0076] The method of Alternative Embodiment AG, wherein the plurality of openings ormly-spaced.

ALTERNATIVE EMBODIMENT AI

[0077] The method of Alternative Embodiment AG, wherein the plurality of openings uniformly-spaced.

ALTERNATIVE EMBODIMENT AJ

[0078] The method of Alternative Embodiment AE, wherein the at least one ion is a plurality of projections.

ALTERNATIVE EMBODIMENT AK

[0079] The method of Alternative Embodiment AJ, wherein the plurality of ions is uniformly-spaced along a periphery of an indexing mechanism.

ALTERNATIVE EMBODIMENT AL

[0080] The method of Alternative Embodiment AC, wherein if the amount of the at ne opening is less than the amount of the at least one projection, the sensor-dispensing ıent is incompatible with the test-sensor cartridge.

ALTERNATIVE EMBODIMENT AM

[0081] The method of Alternative Embodiment AC, wherein the test-sensor cartridge acked test-sensor cartridge.

ALTERNATIVE EMBODIMENT AN

[0082] The method of Alternative Embodiment AM, wherein the at least one tion is positioned on an ejection mechanism.

ALTERNATIVE EMBODIMENT AO

[0083] The method of Alternative Embodiment AC, wherein, if each of the at least rojection may be received by a corresponding at least one opening, the sensor-sing instrument is compatible with the test-sensor cartridge, and wherein, if at least one tion may not be received by the at least one opening, the sensor-dispensing instrument mpatible with the test-sensor cartridge.

ALTERNATIVE EMBODIMENT AP

[0084] A method of determining whether a test-sensor cartridge is compatible with a -dispensing instrument, the method comprising the acts of:

providing a test-sensor cartridge including a plurality of walls forming at least one therein, the at least one cavity being adapted to contain a plurality of test sensors, the ty of test sensors being adapted to assist in the determination of a concentration of an e in a fluid sample, the test-sensor cartridge having at least one projection formed on at ne of the plurality of walls;

providing a sensor-dispensing instrument having at least one opening located therein;

inserting the test-sensor cartridge into the sensor-dispensing instrument; and

determining whether the test-sensor cartridge is compatible with the sensor-sing instrument based on whether the at least one opening is adapted to receive each of least one projection.

ALTERNATIVE EMBODIMENT AQ

[0085] The method of Alternative Embodiment AP, wherein the plurality of test s is electrochemical test sensors.

ALTERNATIVE EMBODIMENT AR

[0086] The method of Alternative Embodiment AP, wherein the test-sensor cartridge ster-pack type cartridge.

ALTERNATIVE EMBODIMENT AS

[0087] The method of Alternative Embodiment AR, wherein the at least one opening ast one notch.

ALTERNATIVE EMBODIMENT AT

[0088] The method of Alternative Embodiment AR, wherein the at least one opening urality of openings.

ALTERNATIVE EMBODIMENT AU

[0089] The method of Alternative Embodiment AT, wherein the plurality of openings ormly-spaced.

ALTERNATIVE EMBODIMENT AV

[0090] The method of Alternative Embodiment AT, wherein the plurality of openings -uniformly-spaced.

ALTERNATIVE EMBODIMENT AW

[0091] The method of Alternative Embodiment AR, wherein the at least one tion is a plurality of projections.

ALTERNATIVE EMBODIMENT AX

[0092] The method of Alternative Embodiment AW, wherein the plurality of tions is uniformly-spaced along a periphery of the at least one wall.

ALTERNATIVE EMBODIMENT AY

[0093] The method of Alternative Embodiment AQ, wherein if the amount of the at ne opening is less than the amount of the at least one projection, the sensor-dispensing nent is incompatible with the test-sensor cartridge.

ALTERNATIVE EMBODIMENT AZ

[0094] The method of Alternative Embodiment AQ, wherein, if each of the at least rojection may be received by a corresponding at least one opening, the sensor-sing instrument is compatible with the test-sensor cartridge, and wherein, if at least one tion may not be received by the at least one opening, the sensor-dispensing instrument mpatible with the test-sensor cartridge.

ALTERNATIVE EMBODIMENT BA

[0095] A test-sensor cartridge comprising:

a plurality of walls forming at least one cavity therein, the at least one cavity being d to contain a plurality of test sensors, the plurality of test sensors being adapted to n the determination of a concentration of an analyte in a fluid sample; and

at least one opening formed on a surface of the cartridge, the at least one opening ng in indexing the test-sensor cartridge,

wherein when the test-sensor cartridge is indexed within a first sensor-dispensing nent with which the cartridge is compatible, a test-sensor cavity is aligned with an ɔn mechanism, and

wherein when the test-sensor cartridge is indexed within a second sensor-dispensing nent with which the cartridge is incompatible, a test-sensor cavity is not aligned with ɔtion mechanism.

ALTERNATIVE EMBODIMENT BB

[0096] The cartridge of Alternative Embodiment BA, wherein the plurality of test 's is electrochemical test sensors.

ALTERNATIVE EMBODIMENT BC

[0097] The cartridge of Alternative Embodiment BA, wherein the test-sensor lge is a blister-pack type cartridge.

ALTERNATIVE EMBODIMENT BD

[0098] The cartridge of Alternative Embodiment BC, wherein the at least one opening ɹrality of openings.

ALTERNATIVE EMBODIMENT BE

[0099] The cartridge of Alternative Embodiment BD, wherein the plurality of ıgs is a plurality of notches.

ALTERNATIVE EMBODIMENT BF

[00100] The cartridge of Alternative Embodiment BD, wherein the plurality of ıgs is uniformly-spaced along a periphery of the surface of the cartridge.

ALTERNATIVE EMBODIMENT BG

[00101] The cartridge of Alternative Embodiment BC, wherein the amount of least one projection of the first sensor-dispensing instrument is the same as or less than .ount of the at least one opening.

ALTERNATIVE EMBODIMENT BH

[00102] The cartridge of Alternative Embodiment BC, wherein the at least one ıg is positioned such that the at least one cavity does not align with an ejection nism of the second sensor-dispensing instrument when the cartridge is in an indexed ɔn in the second sensor-dispensing instrument.

ALTERNATIVE EMBODIMENT BI

[00103] The cartridge of Alternative Embodiment BC, wherein the at least one ıg is positioned such that the at least one cavity does not align with a sensor-dispensing f the second sensor-dispensing instrument when the cartridge is in an indexed position sensor-dispensing instrument.

ALTERNATIVE EMBODIMENT BJ

[00104] The cartridge of Alternative Embodiment BA, wherein the at least one ıg generally aligns with a corresponding at least one projection of the first sensor-ısing instrument.

[00105] While the invention is susceptible to various modifications and ıtive forms, specific embodiments and methods thereof have been shown by way of ıle in the drawings and are described in detail herein. It should be understood, 'er, that it is not intended to limit the invention to the particular forms or methods ;ed, but, to the contrary, the intention is to cover all modifications, equivalents, and ıtives falling within the spirit and scope of the invention as defined by the appended

CLAIMS:

1. A test-sensor cartridge comprising:

a plurality of test sensors adapted to assist in determining an analyte concentration of a fluid sample;

a plurality of walls forming at least one cavity therein, the at least one cavity being adapted to contain the plurality of test sensors; and

at least one opening formed on a surface of the cartridge,

wherein the at least one opening is adapted to receive each of at least one projection of a first sensor-dispensing instrument with which the cartridge is compatible, and

wherein the at least one opening is adapted to receive at least one but less than all of at least one projection of a second sensor-dispensing instrument with which the cartridge is incompatible.

2. The cartridge of claim 1, wherein the plurality of test sensors is electrochemical test sensors.

3. The cartridge of claim 1, wherein the test-sensor cartridge is a blister-pack type cartridge.

4. The cartridge of claim 3, wherein the at least one opening is a plurality of openings.

5. The cartridge of claim 4, wherein the plurality of openings is a plurality of notches.

6. The cartridge of claim 4, wherein the plurality of openings is uniformly-spaced.

7. The cartridge of claim 4, wherein the plurality of openings is non-uniformly-spaced.

8. The cartridge of claim 1, wherein the amount of the at least one projection of the first sensor-dispensing instrument is the same as or less than the amount of the at least one opening.

9. The cartridge of claim 1, wherein the amount of the at least one projection of the second sensor-dispensing instrument is greater than the amount of the at least one opening.

10. The cartridge of claim 1, wherein the at least one opening is positioned such that the at least one cavity does not align with an ejection mechanism of the

second sensor-dispensing instrument when the cartridge is in an indexed position in the second sensor-dispensing instrument.

11. The cartridge of claim 1, wherein the at least one opening is positioned such that the at least one cavity does not align with a sensor-dispensing port of the second sensor-dispensing instrument when the cartridge is in an indexed position in the sensor-dispensing instrument.

12. The cartridge of claim 1, wherein each of the at least one projection of the first sensor-dispensing instrument generally aligns with a corresponding at least one opening.

13. The cartridge of claim 1, wherein at least one but less than all of the at least one projection of the second sensor-dispensing instrument generally aligns with a corresponding at least one opening.

14. The cartridge of claim 1, wherein the test-sensor cartridge is a stacked test-sensor cartridge.

15. The cartridge of claim 14, wherein the projection is positioned on an ejection mechanism.

16. A test-sensor cartridge comprising:

a plurality of test sensors adapted to assist in determining an analyte concentration of a fluid sample;

a plurality of walls forming at least one cavity therein, the at least one cavity being adapted to contain the plurality of test sensors; and

at least one projection formed on a surface of the cartridge,

wherein each of the at least one projection is adapted to be received by at least one opening of a first sensor-dispensing instrument with which the cartridge is compatible, and

wherein at least one but less than all of the at least one projection is adapted to be received by at least one opening of a second sensor-dispensing instrument with which the cartridge is incompatible.

17. The cartridge of claim 16, wherein the plurality of test sensors is electrochemical test sensors.

18. The cartridge of claim 16, wherein the test-sensor cartridge is a blister-pack type cartridge.

19. The cartridge of claim 16, wherein the at least one opening is a plurality of openings.

20. The cartridge of claim 19, wherein the plurality of openings is a plurality of notches.

21. The cartridge of claim 19, wherein the plurality of openings is uniformly-spaced.

22. The cartridge of claim 19, wherein the plurality of openings is non-uniformly-spaced.

23. The cartridge of claim 16, wherein the amount of the at least one opening of the first sensor-dispensing instrument is the same as or less than the amount of the at least one projection.

24. The cartridge of claim 16, wherein the amount of the at least one opening of the second sensor-dispensing instrument is greater than the amount of the at least one projection.

25. The cartridge of claim 16, wherein the at least one projection is positioned such that the at least one cavity does not align with an ejection mechanism of the second sensor-dispensing instrument when the cartridge is in an indexed position in the second sensor-dispensing instrument.

26. The cartridge of claim 16, wherein the at least one projection is positioned such that the at least one cavity does not align with a sensor-dispensing port of the second sensor-dispensing instrument when the cartridge is in an indexed position in the sensor-dispensing instrument.

27. The cartridge of claim 16, wherein the at least one projection generally aligns with a corresponding at least one opening of the first sensor-dispensing instrument.

28. The cartridge of claim 16, wherein the at least one projection generally aligns with at least one but less than all of the at least one opening of the second sensor-dispensing instrument.

29. A method of determining whether a test-sensor cartridge is compatible with a sensor-dispensing instrument, the method comprising the acts of:

providing a test-sensor cartridge including a plurality of walls forming at least one cavity therein, the at least one cavity being adapted to contain a plurality of test sensors, the plurality of test sensors being adapted to assist in the determination of a

concentration of an analyte in a fluid sample, the test-sensor cartridge having at least one opening formed on at least one of the plurality of walls;

providing a sensor-dispensing instrument having at least one projection located therein;

inserting the test-sensor cartridge into the sensor-dispensing instrument; and

determining whether the test-sensor cartridge is compatible with the sensor-dispensing instrument based on whether the at least one opening is adapted to receive each of the at least one projection.

30. The method of claim 29, wherein the plurality of test sensors is electrochemical test sensors.

31. The method of claim 29, wherein the test-sensor cartridge is a blister-pack type cartridge.

32. The method of claim 29, wherein the at least one opening is at least one notch.

33. The method of claim 29, wherein the at least one opening is a plurality of openings.

34. The method of claim 33, wherein the plurality of openings is uniformly-spaced.

35. The method of claim 33, wherein the plurality of openings is non-uniformly-spaced.

36. The method of claim 29, wherein the at least one projection is a plurality of projections.

37. The method of claim 36, wherein the plurality of projections is uniformly-spaced along a periphery of an indexing mechanism.

38. The method of claim 29, wherein if the amount of the at least one opening is less than the amount of the at least one projection, the sensor-dispensing instrument is incompatible with the test-sensor cartridge.

39. The method of claim 29, wherein the test-sensor cartridge is a stacked test-sensor cartridge.

40. The method of claim 39, wherein the at least one projection is positioned on an ejection mechanism.

41. The method of claim 29, wherein, if each of the at least one projection may be received by a corresponding at least one opening, the sensor-dispensing

instrument is compatible with the test-sensor cartridge, and wherein, if at least one projection may not be received by the at least one opening, the sensor-dispensing instrument is incompatible with the test-sensor cartridge.

42. A method of determining whether a test-sensor cartridge is compatible with a sensor-dispensing instrument, the method comprising the acts of:

providing a test-sensor cartridge including a plurality of walls forming at least one cavity therein, the at least one cavity being adapted to contain a plurality of test sensors, the plurality of test sensors being adapted to assist in the determination of a concentration of an analyte in a fluid sample, the test-sensor cartridge having at least one projection formed on at least one of the plurality of walls;

providing a sensor-dispensing instrument having at least one opening located therein;

inserting the test-sensor cartridge into the sensor-dispensing instrument; and

determining whether the test-sensor cartridge is compatible with the sensor-dispensing instrument based on whether the at least one opening is adapted to receive each of the at least one projection.

43. The method of claim 42, wherein the plurality of test sensors is electrochemical test sensors.

44. The method of claim 42, wherein the test-sensor cartridge is a blister-pack type cartridge.

45. The method of claim 42, wherein the at least one opening is at least one notch.

46. The method of claim 44, wherein the at least one opening is a plurality of openings.

47. The method of claim 46, wherein the plurality of openings is uniformly-spaced.

48. The method of claim 46, wherein the plurality of openings is non-uniformly-spaced.

49. The method of claim 42, wherein the at least one projection is a plurality of projections.

50. The method of claim 49, wherein the plurality of projections is uniformly-spaced along a periphery of the at least one wall.

51. The method of claim 42, wherein if the amount of the at least one opening is less than the amount of the at least one projection, the sensor-dispensing instrument is incompatible with the test-sensor cartridge.

52. The method of claim 42, wherein, if each of the at least one projection may be received by a corresponding at least one opening, the sensor-dispensing instrument is compatible with the test-sensor cartridge, and wherein, if at least one projection may not be received by the at least one opening, the sensor-dispensing instrument is incompatible with the test-sensor cartridge.

53. A test-sensor cartridge comprising:

a plurality of walls forming at least one cavity therein, the at least one cavity being adapted to contain a plurality of test sensors, the plurality of test sensors being adapted to assist in the determination of a concentration of an analyte in a fluid sample; and

at least one opening formed on a surface of the cartridge, the at least one opening assisting in indexing the test-sensor cartridge,

wherein when the test-sensor cartridge is indexed within a first sensor-dispensing instrument with which the cartridge is compatible, a test-sensor cavity is aligned with an ejection mechanism, and

wherein when the test-sensor cartridge is indexed within a second sensor-dispensing instrument with which the cartridge is incompatible, a test-sensor cavity is not aligned with an ejection mechanism.

54. The cartridge of claim 53, wherein the plurality of test sensors is electrochemical test sensors.

55. The cartridge of claim 53, wherein the test-sensor cartridge is a blister-pack type cartridge.

56. The cartridge of claim 53, wherein the at least one opening is a plurality of openings.

57. The cartridge of claim 56, wherein the plurality of openings is a plurality of notches.

58. The cartridge of claim 56, wherein the plurality of openings is uniformly-spaced along a periphery of the surface of the cartridge.

59. The cartridge of claim 53, wherein the amount of the at least one projection of the first sensor-dispensing instrument is the same as or less than the amount of the at least one opening.

60. The cartridge of claim 53, wherein the at least one opening is positioned such that the at least one cavity does not align with an ejection mechanism of the second sensor-dispensing instrument when the cartridge is in an indexed position in the second sensor-dispensing instrument.

61. The cartridge of claim 53, wherein the at least one opening is positioned such that the at least one cavity does not align with a sensor-dispensing port of the second sensor-dispensing instrument when the cartridge is in an indexed position in the sensor-dispensing instrument.

62. The cartridge of claim 53, wherein the at least one opening generally aligns with a corresponding at least one projection of the first sensor-dispensing instrument.

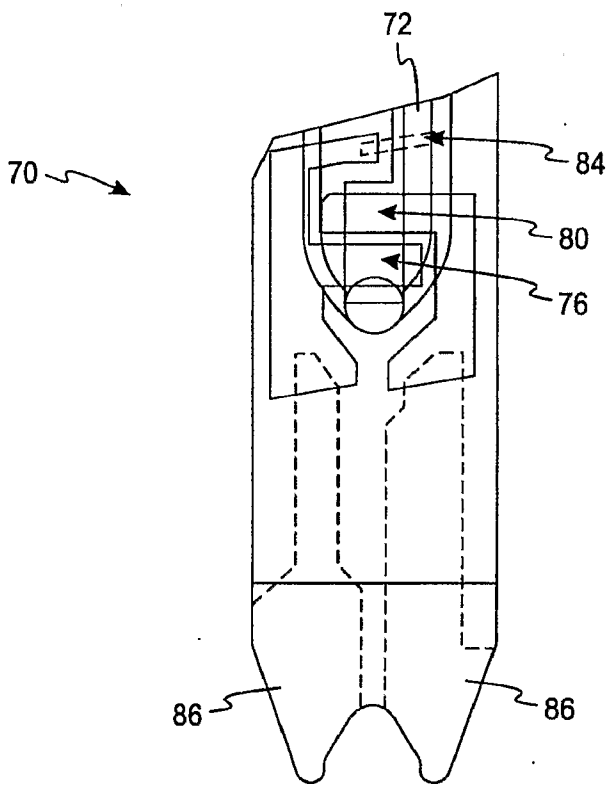


Fig. 1

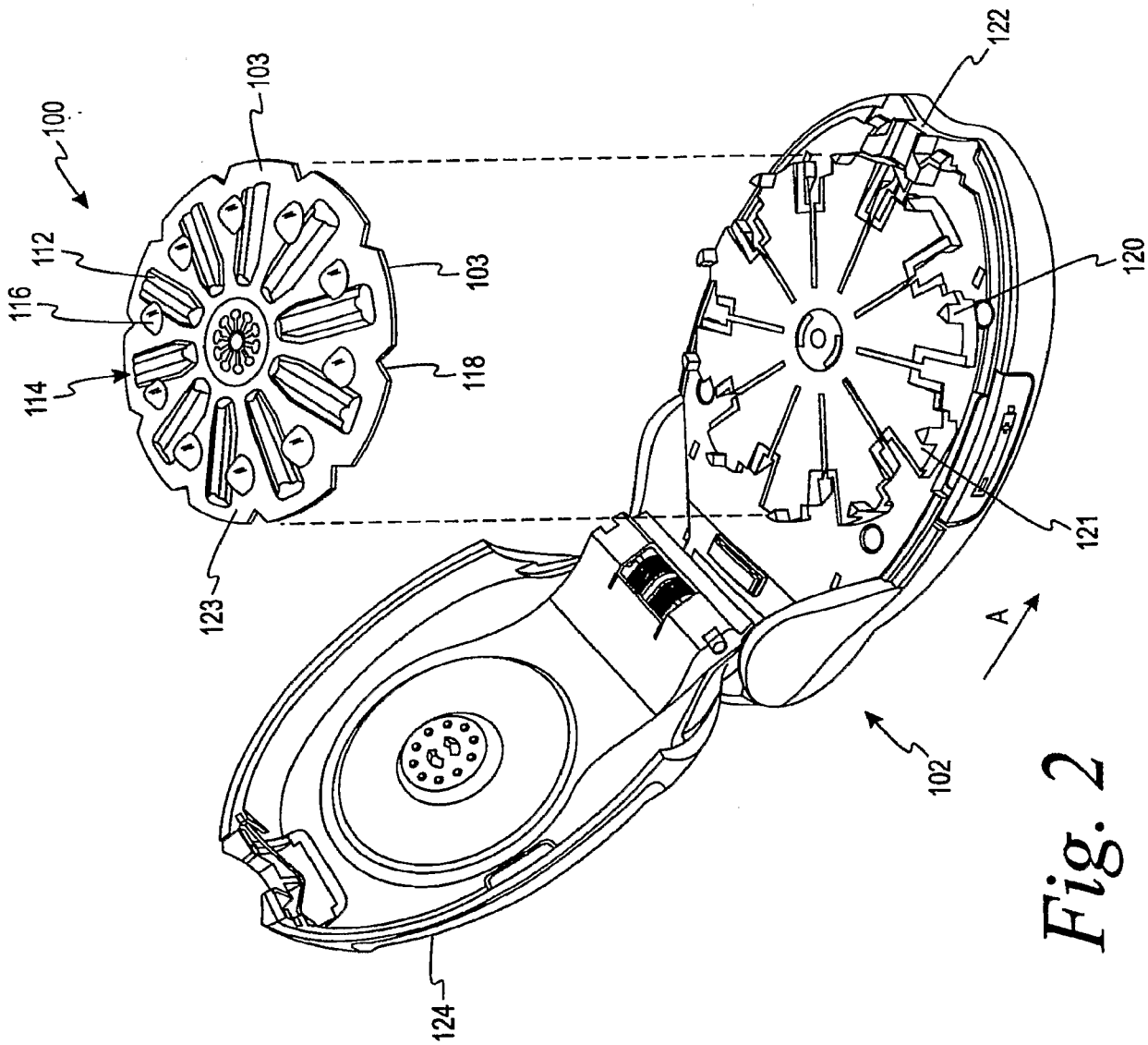


Fig. 2

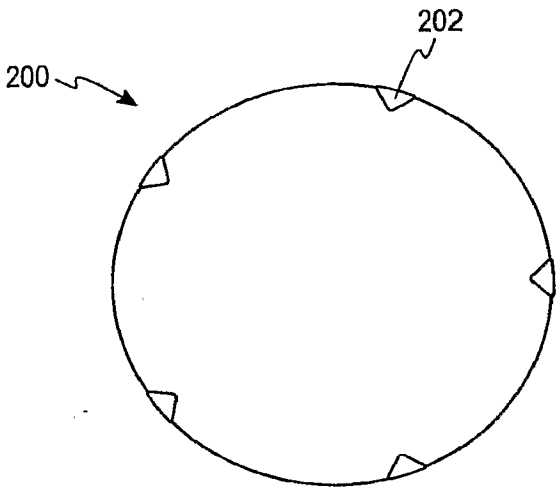


Fig. 3a

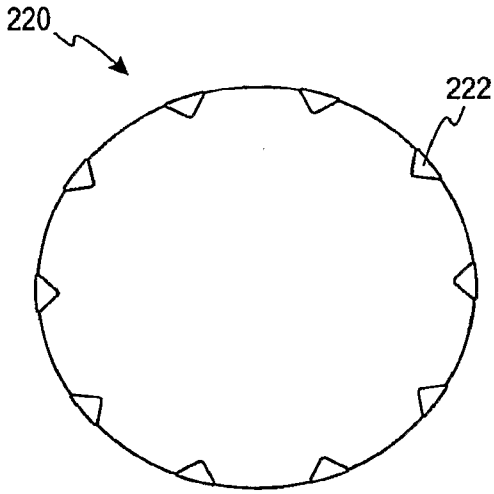


Fig. 3b

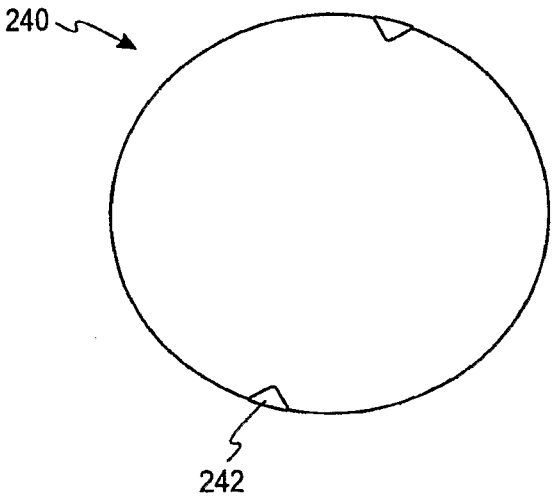


Fig. 3c

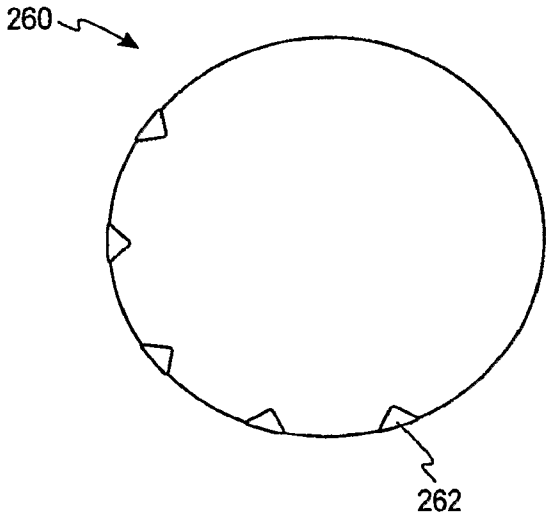


Fig. 3d

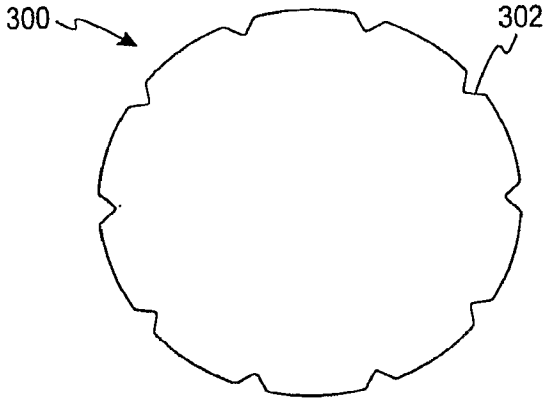


Fig. 4a

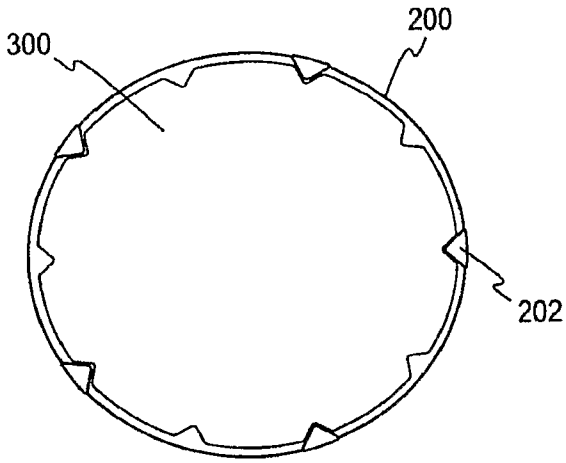


Fig. 4b

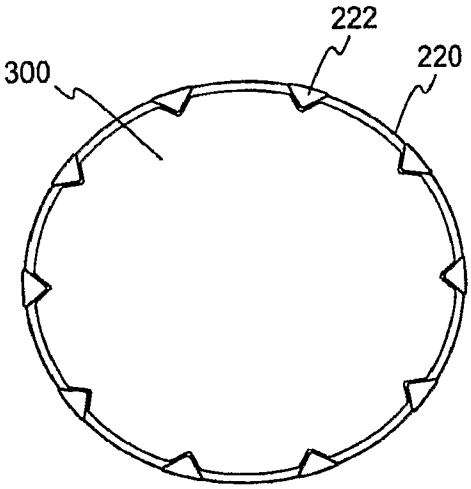


Fig. 4c

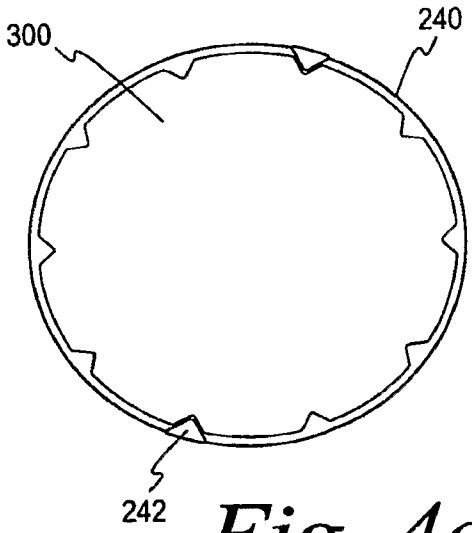


Fig. 4d

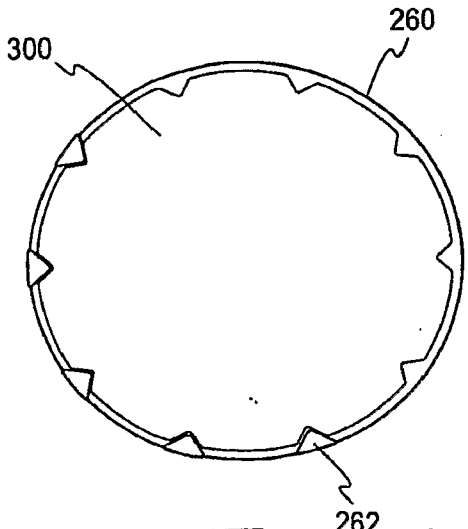


Fig. 4e

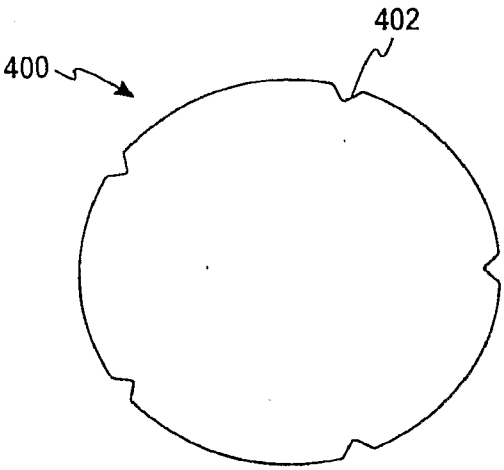


Fig. 5a

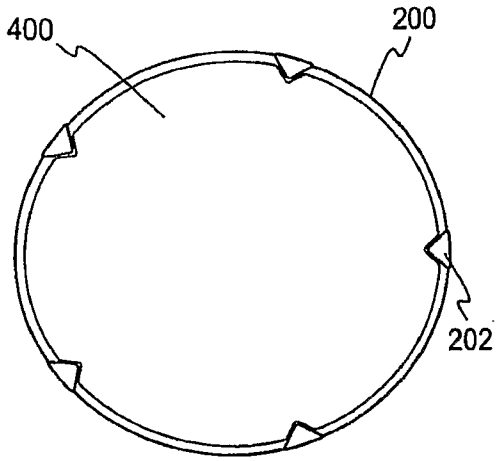


Fig. 5b

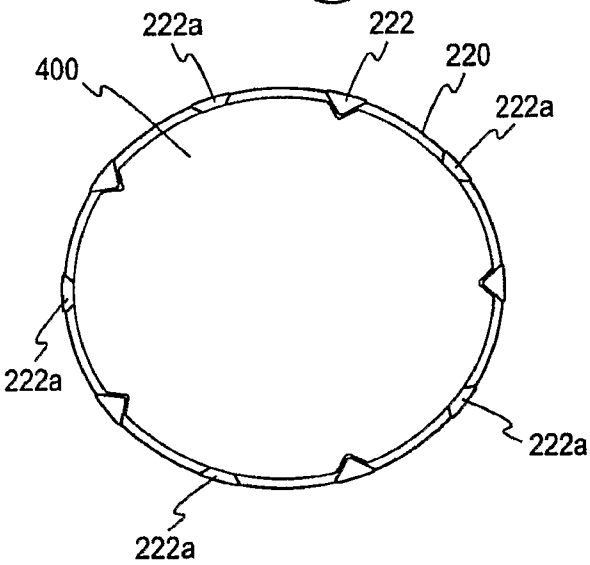


Fig. 5c

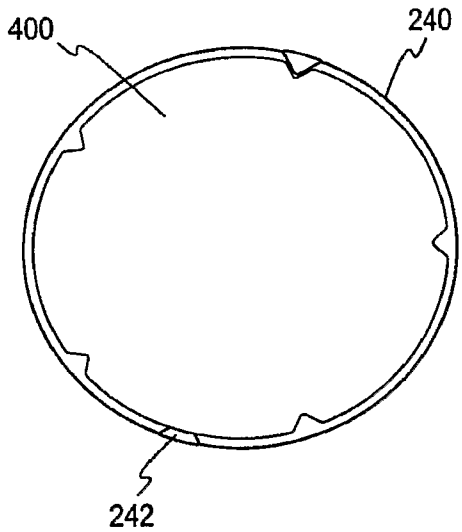


Fig. 5d

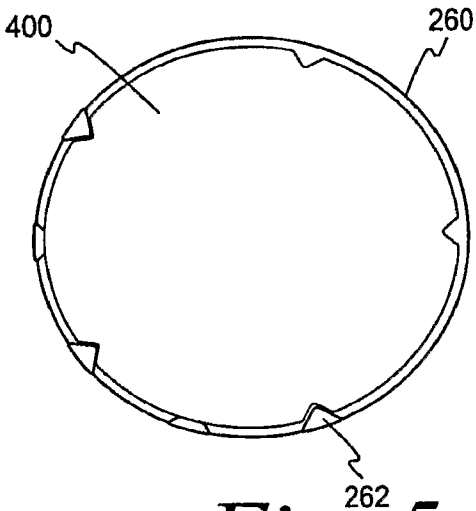


Fig. 5e

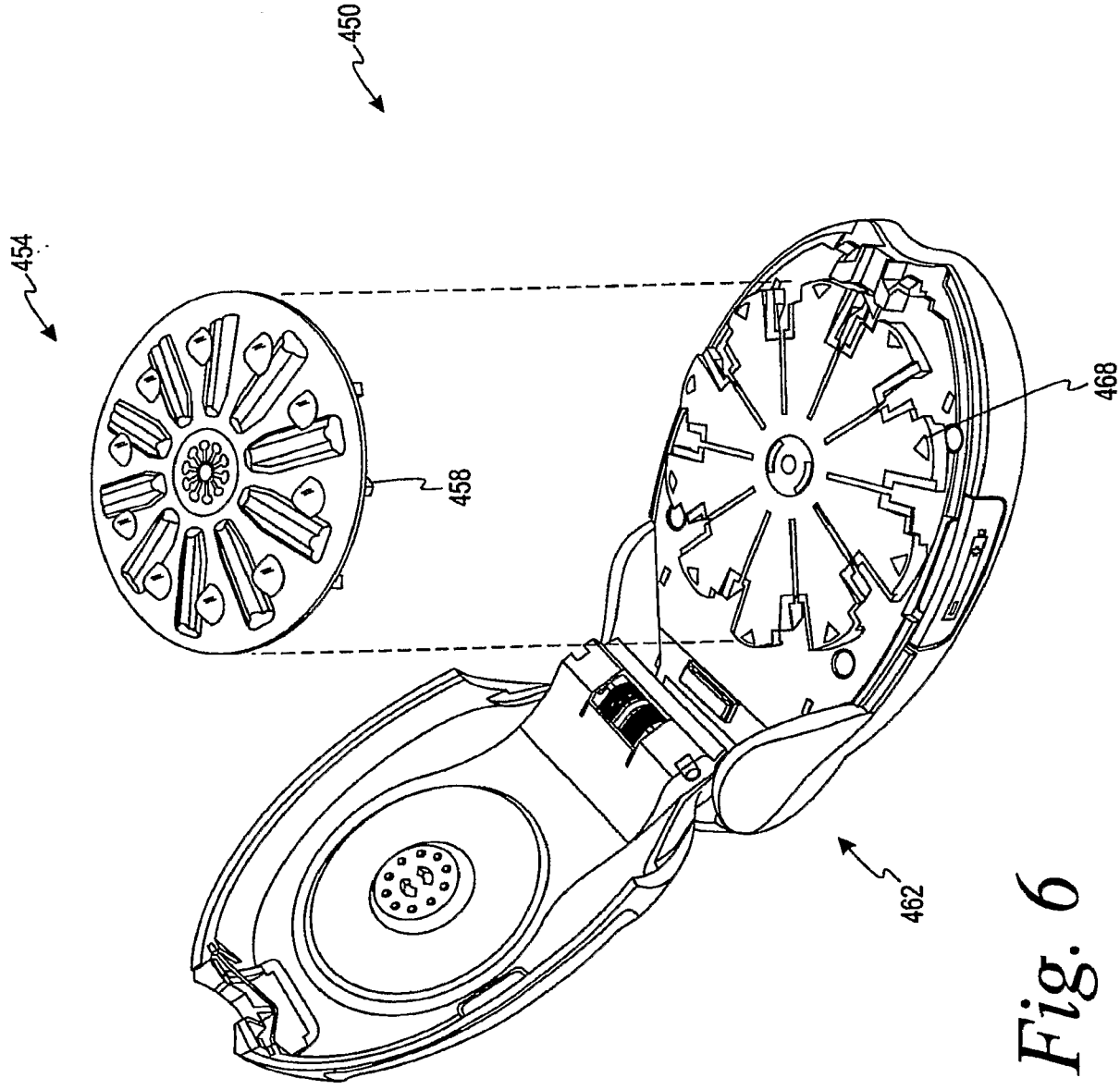


Fig. 6

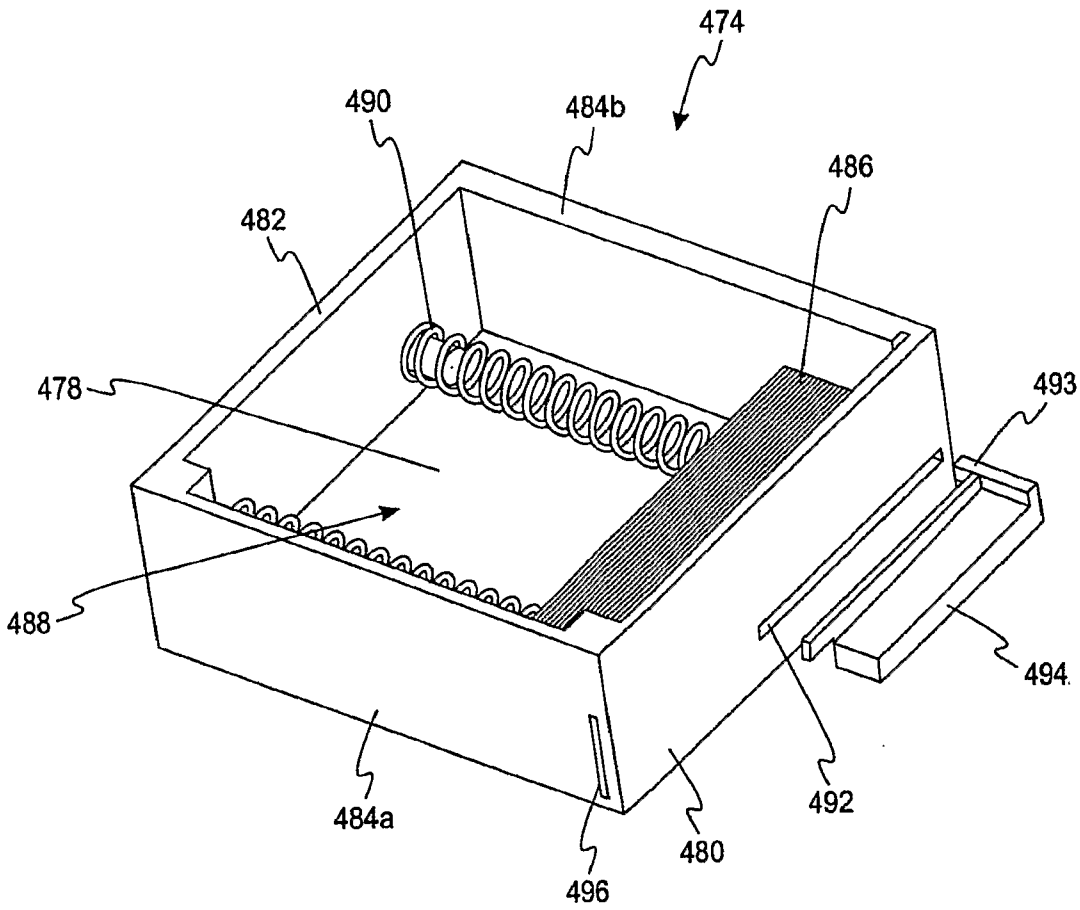


Fig. 7a

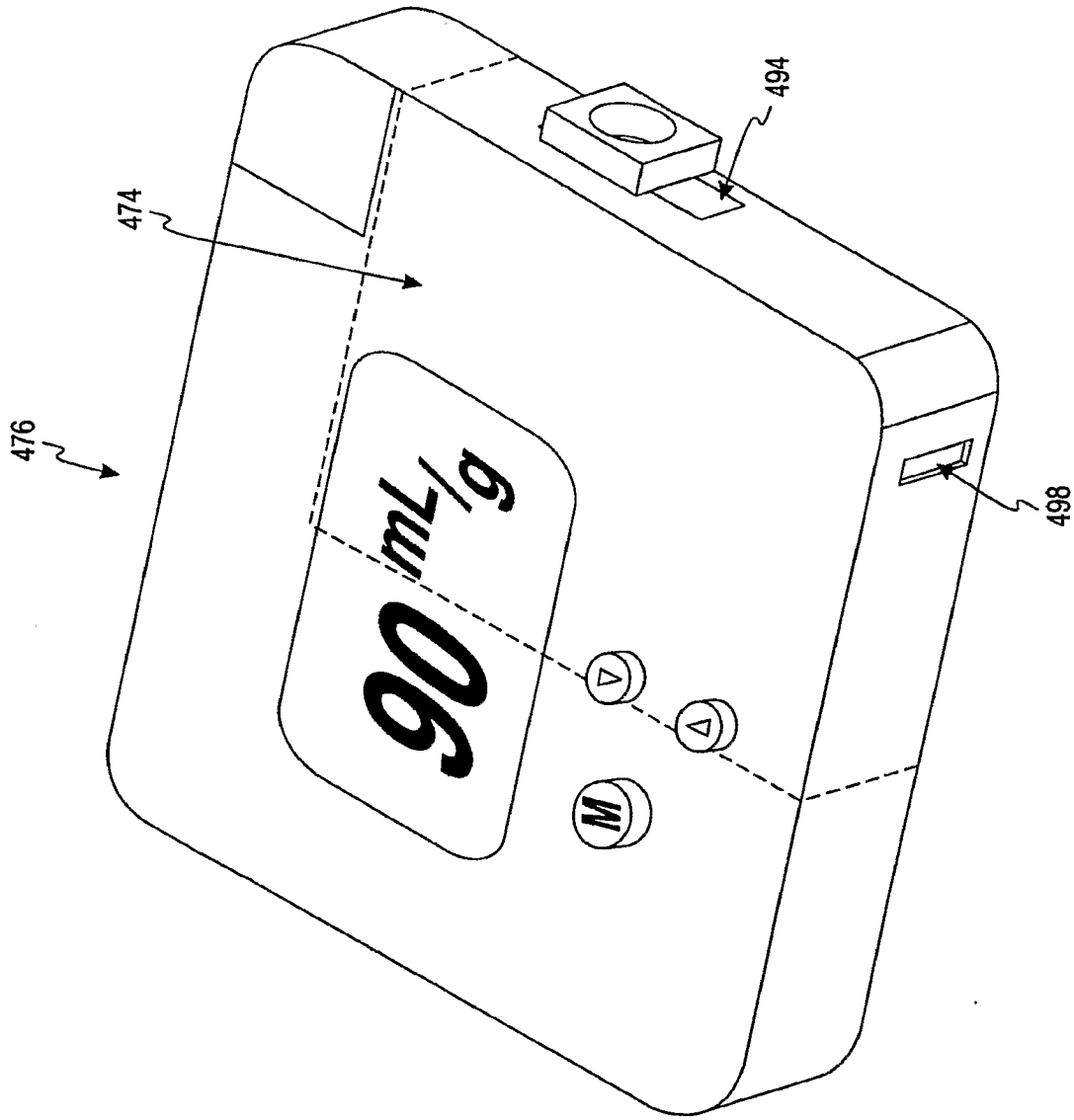


Fig. 7b

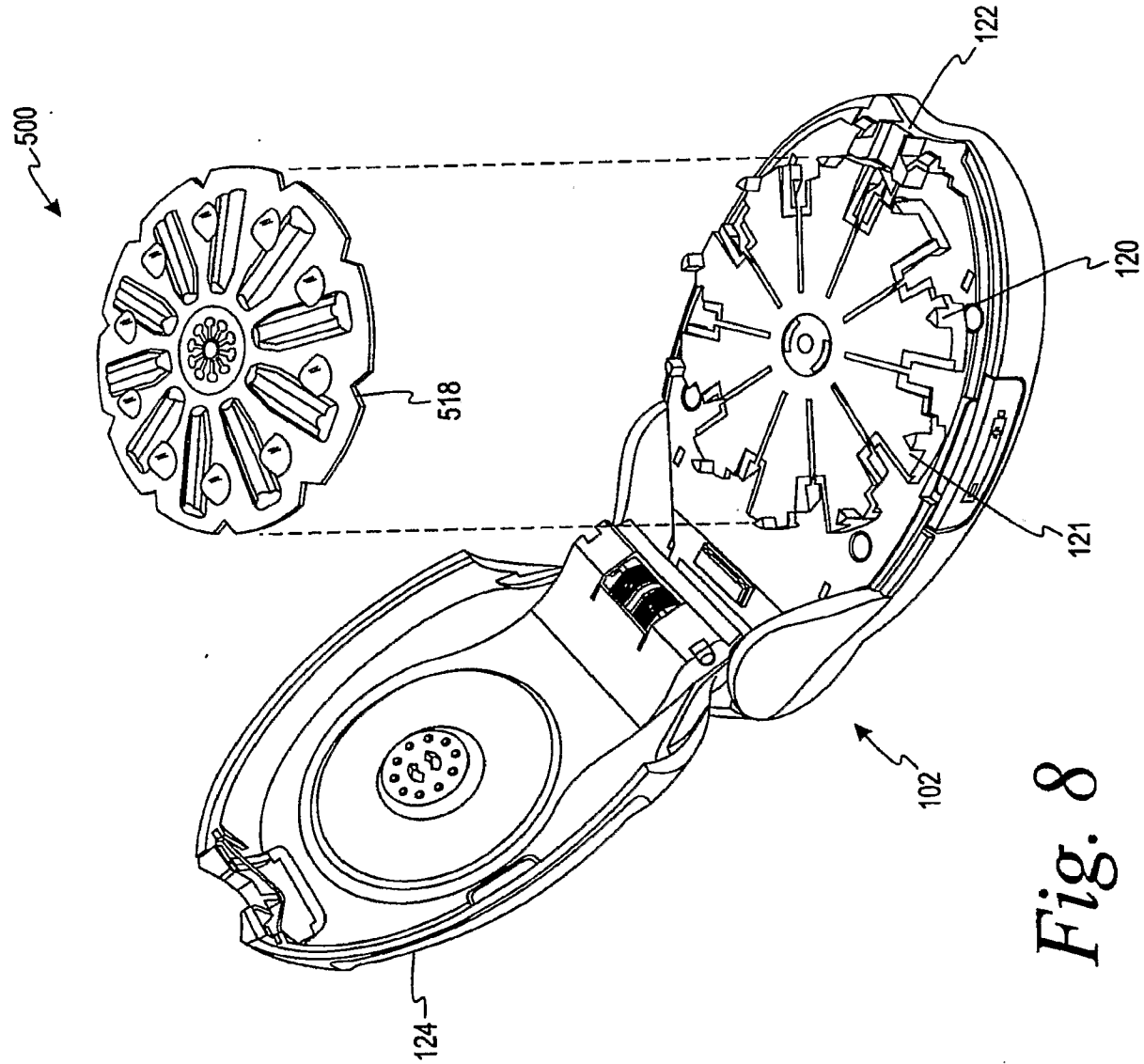


Fig. 8