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PRELIMINARY AMENDMENT TO THE CLAIMS

SIR:

Prior to examining or calculating fees for the above referenced application, please cancel claims 19-46.

Respectfully submitted,
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Tip Tray Assembly for Optical Sensors

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BACKGROUND OF THE INVENTION

Cross-Reference to Related Applications

[0001] This application claims the benefit of U.S. Provisional Application No. 60/690,325, filed on June, 13, 2005, entitled “Tip Tray Assembly for Optical Sensors,” the entire disclosure of which is hereby incorporated by reference herein, including any appendices or attachments thereof, in its entirety for all purposes.

Field of the invention

[0002] The present invention relates to an apparatus and method based on fiber optic interferometry, and in particular, to a tip tray apparatus for packaging of optical sensors used in detecting analytes and mechanisms for creating flow of solution.

Description of the Related Art

[0003] Diagnostic tests based on a binding event between members of an analyte-anti-analyte binding pair are widely used in medical, veterinary, agricultural and research applications. Typically, such methods are employed to detect the presence or amount of an analyte in a sample, and/or the rate of binding of the analyte to the anti-analyte. Typical analyte-anti-analyte pairs include complementary strands of nucleic acids, antigen-antibody pairs, and receptor-receptor binding agent, where the analyte can be either member of the pair, and the anti-analyte molecule, the opposite member.

[0004] Diagnostics methods of this type often employ a solid surface having immobilized anti-analyte molecules to which sample analyte molecules will bind specifically and with high affinity at a defined detection zone. In this type of assay, known as a solid-phase assay, the solid surface is exposed to the sample under conditions that promote analyte binding to immobilized anti-analyte molecules. The binding event can be detected directly, *e.g.*, by a change in the mass, reflectivity, thickness, color or other characteristic indicative of a binding event. Where the analyte is pre-labeled, *e.g.*, with a chromophore, or fluorescent or radiolabel, the binding event is detectable by the presence and/or amount of detectable label at the detection zone. Alternatively, the analyte can be labeled after it is bound at the detection zone, *e.g.*, with a secondary, fluorescent-labeled anti-analyte antibody.

[0005] Co-owned U.S. Patent No. 5,804,453, (the '453 patent) which is incorporated herein by reference, discloses a fiber-optic interferometer assay device designed to detect analyte binding to a fiber-optic end surface. Analyte detection is based on a change in the thickness at the end surface of the optical fiber resulting from the binding of analyte molecules to the surface, with greater amount of analyte producing a greater thickness-related change in the interference signal. The change in interference signal is due to a phase shift between light reflected from the end of the fiber and from the binding layer carried on the fiber end, as illustrated particularly in Figs. 7a and 7b of the '453 patent. The device is simple to operate and provides a rapid assay method for analyte detection.

[0006] The optical tip tray device described herein can be used with a fiber-optic interferometer assay device, as described above. Specifically it provides a mechanism for packaging and holding discrete fiber optic sensors in a format that allows for easy use of the

sensors. Before the types of assays described above are conducted, the sensors can undergo some type of pre-wetting. Techniques can also be used to immobilize molecules, such as proteins, to the surface of the sensor. "Pre-wet," as used herein, is a procedure in which a sensor coated with immobilized binding proteins is hydrated to restore their biological activity. Sensors coated with proteins can be stored dry in order to preserve the activity of the proteins until they are to be used in an assay. In immobilization procedures, sensors are put into contact with sample solutions, such as protein-containing samples, and the proteins or other molecules in the sample are immobilized to the surface of biosensors coated with the appropriate surface chemistry. In the device disclosed herein, discrete optical sensors are packaged in a format (e.g., a format that corresponds to the 96-well format of a standard microtiter plate) that allows the sensors to be easily dipped into pre-wet or protein-immobilization solutions. Thus, in some embodiments, the device provides for off-line incubation, pre-wet, and/or immobilization. In contrast, current devices for holding biosensors are either in flow cell format or have sensors located as a part of the bottom of a microplate well, both of which require different pre-wetting and immobilization procedures. In addition, these systems do not provide flexibility for users to arrange or configure the biosensors to customize the sensor arrangement for immobilization. Users do not have the option to simply remove and save unused biosensors, but are instead forced to use an entire set of sensors for each experiment even if only a few were needed.

[0007] Therefore, there is a need for an easy mechanism for off-line incubation, pre-wetting, and immobilization where the user has the flexibility to move around the sensors and customize the arrangement. There is also a need for a device that stores these types of discrete sensors in a format for easy pick up of the sensors, for transfer of the sensors to a second

microplate for assay, and for mapping of sensors to sample wells. Furthermore, these types of discrete sensors need to be packaged to avoid damage during shipping, handling, and storage of the sensors.

[0008] Current devices also have limitations with regard the mechanism for providing flow in wells during an assay. For molecular kinetic analyses and other types of analyses, the device must include some sort of mechanism for providing flow (e.g., within the wells of the microtiter plate containing sample or the second microtiter plate), for example, to measure the disassociation of molecules from the sensor surfaces. Where the sensor surface is located at the bottom of a microtiter plate, however, it is difficult to create any flow. Without proper flow, it is impossible to provide a valid environment for molecular binding kinetic analysis. Current systems use flow cells to create sample or buffer flow over the sensing surface. For example, some current systems use microfluidics and fluidic channels to move the fluid around to bring reagents into contact with a particular biosensor. However, these types of designs put a large design and support burden on the instrumentation. Thus, there is needed a mechanism that allows for fluidic motion without the need for microfluidics or fluidic channels. There is a need for a mechanism that allows exposure of the biosensor to a relatively large bulk of reagents by providing continuous flow of reagent over the biosensor.

[0009] The present invention is designed to overcome these and other limitations with a design that allows flexibility for arrangement or configuration of biosensors, biosensor mapping capability to sample wells in a microtiter plate, off-line incubation, pre-wet, and immobilization, and an effective mechanism for orbital flow of the reagent over the biosensors, among other advantages.

SUMMARY OF THE INVENTION

[0010] The invention includes, in one aspect, an apparatus and method for packaging of an optical sensing fiber. The apparatus includes a substrate with a plurality of openings, and each opening is configured for holding an optical sensing assembly. The assembly is positioned in the opening with a tip of the assembly extending through the opening to be suspended from the substrate. In addition, openings are arranged so the assembly positioned therein avoids contacting another assembly positioned therein. In some embodiments, the apparatus further includes a support member for supporting the substrate and positioning the substrate so the tip of the assembly suspended from the opening in the substrate contacts solution in one of a plurality of wells in a container adjacent to the substrate. The assembly can be configured for preparing of the optical assembly for assay.

[0011] In one particular design, the apparatus includes both a cover and a base that can lock together around the substrate to form an enclosure around the optical sensing assembly. A container (e.g., a microtiter plate) can be positioned inside the base, beneath the substrate, in a manner that allows the tips of the optical assemblies to line up in a predetermined orientation for immersion in the solution inside the wells of the container. The discrete optical assemblies can be moved around and arranged within the substrate to customize an array of assemblies. In some embodiments, the wells in the container are filled with different types of protein solution or another type of solution to customize the array. In some embodiments, different sensors (or sensors coated with different reagents) are arranged within the substrate to customize the array. The optical assemblies can be mapped to wells in a sample container or microtiter plate to allow a user to keep track of the samples being assayed and the different sensors being used in the assay.

[0012] In another aspect, the invention includes a method for packaging an optical sensing assembly for assay. The method includes placing a discrete optical sensing assembly in one of a plurality of openings in a substrate that is supported by a support member. The optical sensing assembly is positioned in the opening with a tip of the optical sensing assembly extending through the opening to be suspended from the opening in the substrate. In addition, the openings are arranged so the optical sensing assembly positioned therein avoids contacting another optical sensing assembly positioned therein. In some embodiments, the method further includes positioning the substrate so the tip of the optical sensing assembly suspended from the opening in the substrate contacts solution in one of a plurality of wells in a container adjacent to the substrate. In addition, the method can include preparing the optical sensing assembly for assay, such as by immobilization or pre-wet of the optical assembly before assay.

[0013] In one design, the substrate can hold the array of optical assemblies on a robotic instrument. In this embodiment, the substrate may or may not be positioned over a container of wells (e.g., a microtiter plate containing protein samples for immobilization on the sensor tips). One or more of the optical assemblies can be moved by a robotic arm from the tip tray apparatus to another location (e.g., a second microtiter plate containing samples and mounted on the robotic instrument next to the substrate). In some embodiments, the tip tray apparatus holds the sensors in position for manual transfer by a standard pipette or other device to another location (e.g., to a wastebasket or other location). Still other embodiments of the method include covering the substrate with a cover and setting the substrate over the container that is resting in a base. The base and cover can lock together to surround the optical sensing assembly for storage.

[0014] In yet another aspect, the invention includes an apparatus for maintaining flow of the solution. The apparatus includes an agitation assembly operably coupled to a container (e.g., the second sample-containing microtiter plate described above) with a plurality of wells containing solution. Each of the wells is configured for having a discrete optical sensing assembly immersed therein. The optical sensing assembly is also configured for measuring a characteristic of the solution. In addition, the agitation assembly comprises an agitation device that moves the container according to a specified type of motion to agitate the solution relative to the optical assembly to create flow of the solution relative to the optical assembly.

[0015] In one design, the agitation device can be a motor or an actuator, or other type of device for providing movement of the solution to create surface flow. The specified type of motion created by the agitation device can be a repetitive or a random motion of the solution, thus causing it to flow over the optical sensing assembly for the assay. In some embodiments, the apparatus is placed on a surface above the agitation device, and the device thereby causes movement or vibration of the solution relative to the optical sensing assembly.

[0016] In some embodiments of the invention, the substrate that holds an array of sensors (e.g., as part of the tip tray apparatus) over a first container (e.g., a first microtiter plate) is mounted on a robotic instrument adjacent to a sample container (e.g., a second microtiter plate containing sample) that is mounted on the agitation assembly within the robotic instrument. A robotic arm (e.g., a robotic system with 8 SMA's) can pick up one or more sensors (e.g., a row of eight sensors) and transfer them over to the second container outside the tip tray apparatus for dipping of the sensors in the sample contained in the second container.

[0017] These and other objects and features of the present invention will become more fully apparent when the following detailed description of the invention is read in conjunction with the accompanying drawings.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWING

[0018] These and other features, aspects, and advantages of the present invention will become better understood with regard to the following description, and accompanying drawings, where:

[0019] **Fig. 1** shows the basic system setup for the biosensor and tip tray apparatus, according to an embodiment of the invention;

[0020] **Fig. 2** shows an interferometer system constructed according to an embodiment of the invention;

[0021] **Figs. 3A and 3B** show a portion of an interference wave over 7 peak and valley orders (**3A**), and over in a visible portion of the spectrum (**3B**);

[0022] **Fig. 4** shows an optical sensing assembly constructed according to an embodiment of the invention;

[0023] **Fig. 5** shows an apparatus including a substrate and an optical sensing assembly stored in an opening in the substrate, according to an embodiment of the invention;

[0024] **Fig. 6** shows an exploded view of the apparatus illustrating a cover, a substrate, a base, and a container of wells, according to an embodiment of the invention;

[0025] **Fig. 7** shows perspective view of the substrate with an array of openings therein, according to an embodiment of the invention;

[0026] **Fig. 8** shows an exploded view of the container of wells and a base structure, according to an embodiment;

[0027] **Fig. 9** shows a perspective view of the cover for the apparatus, according to an embodiment of the invention;

[0028] **Fig. 10** shows a side view of the apparatus, according to an embodiment of the invention.

[0029] **Fig. 11** shows a cross-section of a side view of the apparatus with the tip lined up with the well, according to a embodiment of the invention;

[0030] **Fig. 12** shows a cross-section of a side view of the apparatus with the tip of the optical sensing assembly inside the well, according to an embodiment of the invention;

[0031] **Figs. 13a and b** show an apparatus for agitation of solution in a well relative to an optical sensing assembly, according to an embodiment of the invention.

[0032] **Fig. 13c** shows a robotic instrument for assay, according to an embodiment of the invention.

[0033] **Fig. 14** shows a graphical illustration of binding curves with and without flow, according to an embodiment of the invention.

DETAILED DESCRIPTION OF THE INVENTION

Definitions

[0034] Terms used in the claims and specification are to be construed in accordance with their usual meaning as understood by one skilled in the art except and as defined as set forth below. Numeric ranges recited in the claims and specification are to be construed as including the limits bounding the recited ranges.

[0035] The term "in vivo" refers to processes that occur in a living organism.

[0036] An "analyte-binding" molecule refers to any molecule capable of participating in a specific binding reaction with an analyte molecule. Examples include but are not limited to, *e.g.*, antibody-antigen binding reactions, and nucleic acid hybridization reactions.

[0037] A "specific binding reaction" refers to a binding reaction that is saturable, usually reversible, and that can be competed with an excess of one of the reactants. Specific binding reactions are characterized by complementarity of shape, charge, and other binding determinants as between the participants in the specific binding reaction.

[0038] An "antibody" refers to an immunoglobulin molecule having two heavy chains and two light chains prepared by any method known in the art or later developed and includes polyclonal antibodies such as those produced by inoculating a mammal such as a goat, mouse, rabbit, etc. with an immunogen, as well as monoclonal antibodies produced using the well-known Kohler Milstein hybridoma fusion technique. The term includes antibodies produced using genetic engineering methods such as those employing, *e.g.*, SCID mice reconstituted with human immunoglobulin genes, as well as antibodies that have been humanized using art-known resurfacing techniques.

[0039] An "antibody fragment" refers to a fragment of an antibody molecule produced by chemical cleavage or genetic engineering techniques, as well as to single chain variable fragments (SCFvs) such as those produced using combinatorial genetic libraries and phage display technologies. Antibody fragments used in accordance with the present invention usually retain the ability to bind their cognate antigen and so include variable sequences and antigen combining sites.

[0040] A "small molecule" refers to an organic compound having a molecular weight less than about 500 daltons. Small molecules are useful starting materials for screening to identify drug lead compounds that then can be optimized through traditional medicinal chemistry, structure activity relationship studies to create new drugs. Small molecule drug compounds have the benefit of usually being orally bioavailable. Examples of small molecules include compounds listed in the following databases: MDL/ACD (<http://www.mdli.com/>), MDL/MDDR (<http://www.mdli.com/>), SPECS (<http://www.specs.net/>), the China Natural Product Database (CNPD) (<http://www.neotrident.com/>), and the compound sample database of the National Center for Drug Screening (<http://www.screen.org.cn/>).

[0041] Abbreviations used in this application include the following: "ss" refers to single-stranded; "SNP" refers to single nucleotide polymorphism; "PBS" refers to phosphate buffered saline (0.01 M phosphate buffer, 0.0027 M potassium chloride and 0.137 M sodium chloride, pH 7.4); "NHS" refers to N-hydroxysuccinimide; "MW" refers to molecular weight; "Sulfo-SMCC" refers to sulfosuccinimidyl 4-[N-maleimidomethyl]cyclohexane-1-carboxylate.

[0042] It must be noted that, as used in the specification and the appended claims, the singular forms "a," "an" and "the" include plural referents unless the context clearly dictates otherwise.

Advantages and utility

[0043] The advantages and utility of the invention are illustrated by reference to the Figures and Examples as described in greater detail below. These include an apparatus that holds and stores discrete optical fiber sensors in a format that is useful for off-line pre-wetting or protein immobilization, for transfer with a robotic or other type of instrument, etc. In some

embodiments, a substrate holds the sensors in a format that corresponds to a standard 96-well microplate (i.e., an 8 x 12 format with approximately 9 mm spacing between the sensors). This positioning allows a microplate or other container to be placed in the tip tray apparatus under the sensors so that each tip of each sensor is suspended over and can be immersed in a liquid in the microplate wells. This design provides a means for immersing the end of the sensor so that the tips of the sensors do not have to rub against or otherwise contact the sides of the package or one another, thus protecting them from contamination or damage.

[0044] Holding the sensors in this type of format can serve a number of purposes. As one example, this format can be useful in pre-wetting of the sensors. The sensors can be coated with immobilized binding proteins and stored dry in order to preserve the activity of the proteins. Then a container, such as a microtiter plate, containing simple buffer or other solution can be placed in the tip tray beneath the sensors to immerse the tips of the sensors in the buffer. This immersion allows the sensors to become hydrated, thus restoring their biological activity prior to their transfer to the sample containing microplate (e.g., a second microtiter plate outside the tip tray) for assay. As another example, this format can be useful in immobilization of molecules, such as proteins, to the surface of the sensors (or e.g., for measurement of interaction with another protein already immobilized on the optical sensing assembly). For example, protein-containing samples can be dispensed into microplate wells and the microplate can be placed in the tip tray under the tips of the sensors that have the appropriate surface chemistry so that binding of the protein to the sensor occurs. These samples may be, e.g., the same for all wells or different in different wells for preparing a homogenous or heterogenous set of sensors. Since protein immobilization does not entail optical thickness

measurements, the immobilization procedure can be performed off-line or outside of the use of the instrument for assay (i.e., in some embodiments the sensors do not have to be on the robotic instrument during immobilization).

[0045] Another advantage of the apparatus described herein is that the biosensors are each discrete structures that do not have to be connected to one another or connected to the apparatus that supports them (e.g., they are not located at the bottom of microplate wells, etc), so a user can move around the various sensors or customize the arrangement as desired. Since the sensors are discrete, the user can remove and save extra sensors that are not needed for a smaller-sized assay, rather than wasting these unused sensors as might occur in an apparatus where the sensors are located at the bottom of microplate wells. In addition, as described above, the tip tray apparatus can have a microtiter plate or other container optionally placed inside the base of the tip tray apparatus for pre-wet (pre-conditioning of tips) or off-line immobilization of proteins, and different proteins can be used in each well of the plate, thereby allowing for a customized array of sensor tips.

[0046] A further advantage includes the ability to map the sensors and their specific arrangement to the sample container (e.g., a second microtiter plate outside of the tip tray) including wells filled with sample. The position of each sensor can be mapped to the corresponding position of the well of sample that the sensor will contact during assay. Yet other advantages include the design of the sensors that allow them to be positioned for automatic pick-up and usage by a robotic instrument or by a standard pipette. In embodiments in which the sensors are positioned in a 96-well format, the sensors can then be easily transferred to a second microplate for measurement. Furthermore, the overall apparatus is

configured to protect the sensors during shipping, handling, and storage. The sensors rest neatly in separate openings in the apparatus and, in some embodiments, the apparatus includes a hard-sided bottom portion and a top portion that effectively surround the sensors in a safe and protected environment.

[0047] A further advantage is provided in the mechanism for creating orbital flow without the need for microfluidics and fluidic channels. As described above, this is needed for providing a valid environment for molecular binding kinetic analysis. In the invention described herein, an orbital agitation device is provided for creating relative motion between an optical fiber sensor surface and the samples in a microtiter plate. In one embodiment, the plate is rotated in a plane that is perpendicular to the fiber sensors. An angle between the plate bottom and sensor fibers is also possible to reduce the reflected light (i.e., background noise).

[0048] FIG. 1 shows, in schematic view, an interferometer system 20 constructed in accordance with the invention. In its most basic elements, the system 20 includes a light source 22, a biosensor or optical sensing assembly 26 that functions as a sensing element or detector tip, and a detector unit 28 for detecting interference signals produced by interfering light waves reflected from the optical sensing assembly 26.

[0049] Light from source 22 is directed onto the optical sensing assembly 26, and reflected back to the detector through an optical coupling assembly indicated by dashed lines at 30. In a preferred embodiment, the coupling assembly includes a first fiber cable 32 extending from the light source 22 to the optical sensing assembly 26, and a second fiber cable 34 which carries reflected light from the optical sensing assembly 26 to the detector 28. Optionally, an optical

coupler may be used to optically couple the fiber cables 32, 34 to the optical sensing assembly 26.

[0050] The light source 22 in the system 20 can be a white light source, such as a light emitting diode (LED) which produces light over a broad spectrum, e.g., 400 nm or less to 700 nm or greater, typically over a spectral range of at least 100 nm. Alternatively, the light source 22 can be a plurality of sources each having a different characteristic wavelength, such as LEDs designed for light emission at different selected wavelengths in the visible light range. The same function can be achieved by a single light source 22, e.g., white light source, with suitable filters for directing light with different selected wavelengths onto the optical sensing assembly 26.

[0051] The detector 28 can be a spectrometer, such as charge-coupled device (CCD), capable of recording the spectrum of the reflected interfering light from the optical sensing assembly 26. Alternatively, where the light source 22 operates to direct different selected wavelengths onto the optical sensing assembly 26, the detector 28 can be a simple photodetector for recording light intensity at each of the different irradiating wavelengths. In still another embodiment, the detector 28 can include a plurality of filters which allows detection of light intensity, e.g., from a white-light source, at each of a plurality of selected wavelengths of the interference reflectance wave.

[0052] FIG. 2 shows the optically functional part of an optical sensing assembly 26 constructed in accordance with one embodiment of the invention. The optical sensing assembly 26 includes a short length of optical fiber 42, to which the remainder of the optical sensing assembly 26 is fixedly attached. The other end of optical fiber 42 couples to the fiber

cables 32 and 34, respectively. As seen, the assembly 26 includes a transparent optical element 38 having first and second reflecting surfaces 42, 40 formed on its lower (distal) and upper (proximal) end faces, respectively. According to an important feature of the invention, the thickness "d" of the optical element 38 between its distal and proximal surfaces, i.e., between the two reflecting surfaces, is at least 50 nm, and preferably at least 100 nm. An exemplary thickness is between about 100-5,000 nm, preferably 400-1,000 nm. The first reflecting surface 42 is formed of a layer of analyte-binding molecules, such as molecules 44, which are effective to bind analyte molecules 46 specifically and with high affinity. That is, the analyte and anti-analyte molecules are opposite members of a binding pair of the type described above, which can include, without limitations, antigen-antibody pairs, complementary nucleic acids, and receptor-binding agent pairs.

[0053] The index of refraction of the optical element 38 is preferably similar to that of the first reflecting surface 42, so that reflection from the lower distal end of the end optical sensing assembly 26 occurs predominantly from the layer formed by the analyte-binding molecules 44, rather than from the interface between the optical element 38 and the analyte-binding molecules 44. Similarly, as analyte molecules 46 bind to the lower layer of the optical sensing assembly 26, light reflection from the lower end of the assembly 26 occurs predominantly from the layer formed by the analyte-binding molecules 44 and bound analyte 46, rather than from the interface region. One exemplary material forming the optical element 38 is SiO₂, *e.g.*, a high-quality quality glass having an index of refraction of about 1.4-1.5. The optical element 38 can also be formed of a transparent polymer, such as polystyrene or polyethylene, having an index of refraction preferably in the 1.3-1.8 range.

[0054] The second reflecting surface 40 in the optical sensing assembly 26 formed as a layer of transparent material having an index of refraction that is substantially higher than that of the optical element 38, such that this layer functions to reflect a portion of the light directed onto the optical sensing assembly 26. Preferably, the second layer has a refractive index greater than 1.8. One exemplary material for the second layer is Ta₂O₅ with refractive index equal to 2.1. The layer is typically formed on the optical element 38 by a conventional vapor deposition coating or layering process, to a layer thickness of less than 50 nm, typically between 5 and 30 nm.

[0055] The thickness of the first (analyte-binding) layer is designed to optimize the overall sensitivity based on specific hardware and optical components. Conventional immobilization chemistries are used in chemically, e.g., covalently, attaching a layer of analyte-binding molecules to the lower surface of the optical element. For example, a variety of bifunctional reagents containing a siloxane group for chemical attachment to SiO₂, and an hydroxyl, amine, carboxyl or other reaction group for attachment of biological molecules, such as proteins (*e.g.*, antigens, antibodies), or nucleic acids. It is also well known to etch or otherwise treat glass a glass surface to increase the density of hydroxyl groups by which analyte-binding molecules can be bound. Where the optical element 38 is formed of a polymer, such as polystyrene, a variety of methods are available for exposing available chemically-active surface groups, such as amine, hydroxyl, and carboxyl groups.

[0056] The analyte-binding layer 44 is preferably formed under conditions in which the distal surface of the optical element 38 is densely coated, so that binding of analyte molecules

46 to the layer forces a change in the thickness of the layer, rather than filling in the layer. The analyte-binding layer 44 can be either a monolayer or a multi-layer matrix.

[0057] The measurement of the presence, concentration, and/or binding rate of analyte 46 to the optical sensing assembly 26 is enabled by the interference of reflected light beams from the two reflecting surfaces 40, 42 in the optical sensing assembly 26. Specifically, as analyte molecules 46 attach to or detach from the surface, the average thickness of the first reflecting layer 42 changes accordingly. Because the thickness of all other layers remains the same, the interference wave formed by the light waves reflected from the two surfaces is phase shifted in accordance with this thickness change.

[0058] Assume that there are two reflected beams: The first beam is reflected from the first surface, which is the distal end interface between analyte-binding molecules 44 and bound analyte 46 and the surrounding medium; and the second beam is reflected from the second surface, which is the proximal interface between the optical element (the first layer) and the high-index of refraction layer (the second layer). The overall wavelength -dependent intensity of the interference wave is:

$$I = I_1 + I_2 + 2\sqrt{I_1 I_2} \cos\left(\frac{2\pi\Delta}{\lambda}\right)$$

where I is the intensity, I_1 and I_2 are the intensity of two interference beams, Δ is the optical path difference, and λ is the wavelength.

[0059] When $(2\pi\Delta/\lambda) = N\pi$, the curve is at its peak or valley if N is an integer 0, 1, 2,.... The thickness of the first layer $d = \Delta/2n$. Therefore, $\lambda = 4nd/N$ at peaks or valleys (extrema). For the first several values of N, *i.e.*, 0, 1, 2, ...7, and assuming a d of 770 nm, the equation gives:

$$\begin{aligned}
N=0: \lambda &= \infty \text{ (peak)} \\
N=1: \lambda &= 4nd = 4,496.80 \text{ nm (Valley)} \\
N=2: \lambda &= 2nd = 2,248.40 \text{ nm (Peak)} \\
N=3: \lambda &= 4nd/3 = 1,498.9 \text{ nm (Valley)} \\
N=4: \lambda &= nd = 1,124.20 \text{ nm (Peak)} \\
N=5: \lambda &= 4nd/5 = 899.36 \text{ nm (Valley)} \\
N=6: \lambda &= 2nd/3 = 749.47 \text{ nm (Peak)} \\
N=7: \lambda &= 4nd/7 = 642 \text{ nm (Valley)} \\
N=8: \lambda &= nd/2 = 562 \text{ nm (Peak)} \\
N=9: \lambda &= 4nd/9 = 499.64 \text{ nm (Valley)} \\
N=10: \lambda &= 4nd/10 = 449.6 \text{ nm (Peak)}
\end{aligned}$$

As can be seen, and illustrated further in FIGS. 3A and 3B, at least three peaks/valleys (N=7-9) occur in the visible spectral range.

[0060] If the 7th order valley is used to calculate the change in molecular layer thickness, when the molecular layer attached to the first layer increases from 0 nm to 10 nm, the 7th order valley will shift to 650.74 nm. Therefore, the ratio between the actual the phase shift of the 7th order valley and thickness change equals $(650.74 - 642.40)/10 = 0.834$.

[0061] By contrast, if the initial spacing between the two reflecting layers 40, 42 is made up entirely of the analyte-binding molecules 44 on the end of the fiber, assuming a thickness of this layer of 25 nm, then the first order peak will occur at 146 nm, clearly out of the range of the visible spectrum, so that the device will only see a portion of the region between the 0-order

valley and the first order peak, but will not see any peaks, making a shift in the spectral characteristics of the interference wave difficult to measure accurately.

[0062] Not until the total thickness of the reflecting layer approaches about 100 nm will the first-order peak appear in the visible spectrum. Assuming a total thickness change of up to 50 nm, the thickness of the optical element can then be as small as 50 nm, but is preferably on the order of several hundred nm, so that the phase shift or change in periodicity of the interference wave can be measured readily by a shift in the spectral positions of higher-order peaks or valleys, *e.g.*, where $N=3-10$.

[0063] The ratio between the actual thickness and the measured phase shift is considered as a key factor of measurement sensitivity. It can be appreciated how one can adjust the thickness of the optical element 38 and its refractive index to improve and optimize the sensitivity to accommodate the electronics and optical designs.

[0064] Referring now to FIG. 4, there is shown an illustration of a side view of the full optical sensing assembly 26 (or biosensor or sensor), according to an embodiment of the invention. The sensors can be fabricated from cut lengths of optical fiber 42 bonded into a hub 404, similar in structure to a hypodermic needle and its hub. A portion of the fiber 42 can be immersed in sample during an assay. As shown in FIG. 2, a portion of the fiber 42 can be coated with a substance, such as analyte-binding molecules 44, to which the sample (*e.g.*, analyte molecules 46) will bind. In some embodiments, the analyte-binding molecule is a protein, a small molecule, a nucleic acid, a carbohydrate, or some other type of molecule. Where the molecule is a protein, the protein can be an avidin, a streptavidin, an antibody, an antibody fragment, or another type of protein. In some embodiments, the optical sensing

assembly 26 is used to measure the amount of analyte in the sample based on the amount of analyte that binds to the analyte-binding molecule coated on the assembly 26. In other embodiments, the optical sensing assembly 26 is used to measure the kinetics of a binding reaction between the analyte in the sample and the analyte-binding molecule coated on the optical sensing assembly.

[0065] Before these types of assays are conducted, the optical sensing assemblies 26 can be immersed in a specific molecule-containing immobilization solution for immobilization of molecules, such as proteins, to the assemblies 26 that are coated with the appropriate surface chemistry for this immobilization. Similarly, the assemblies 26 can be immersed into a pre-wet solution to hydrate the sensors restoring biological activity of previously bound molecules (e.g., binding proteins) just prior to the transfer of the sensors to a second microplate or other container for assay, as explained above.

[0066] The hub 404 of the optical sensing assembly 26 extends from fiber 402 and provides a base onto which a robotic instrument, standard pipette, or other instrument can attach to the sensor and move it from a first location to a second location. Specifically, the instrument used for moving the optical sensing assembly 26 can be attached at opening 406, and the assembly 26 can thus be moved to a different location as desired. The instrument for moving the assembly 26 can be designed for moving an array of assemblies 26 at one time, and thus the instrument can pick up a number of the discrete assemblies 26 from the tip tray holding the assemblies 26 (see FIG. 5) to move the assemblies 26 to a second location (e.g., a second microtiter containing sample to be tested).

[0067] FIG. 5 shows a tip tray apparatus 500 for packaging one or more optical assemblies 26, according to an embodiment of the present invention. The tip tray apparatus 500 includes a substrate 504, which is the portion of the tip tray apparatus 500 that includes a number of openings 508 for containing one or more discrete optical assemblies 26. The optical sensing assemblies 26 are discrete in that they are not connected or attached directly to other optical assemblies 26, and each assembly 26 can be moved around within the tip tray 500 to any configuration the user selects. Other devices may be attached to the optical sensing assemblies 26 in the tray 500, such as a standard pipette device, a robotic instrument, an optical fiber assembly (as shown in FIG. 1), etc., and these devices may indirectly and temporarily link these assemblies 26 together for a particular purpose. However, the user can still have the ability to move the assemblies 26 around at some point to configure them for the assay. In some embodiments, the optical sensing assemblies 26 are disposable tips that are to be used for an assay and then thrown away and replaced by new tips for the next assay.

[0068] The optical assemblies 26 are suspended in the openings 508 with the tip of the optical sensing assembly 26 extending away from the substrate 504. Each discrete optical sensing assembly 26 can rest in an opening 508 in the substrate 504, and the optical sensing assembly 26 is positioned in the opening so that the tip of the optical sensing assembly 26 is suspended below the substrate 504 while the hub of the optical sensing assembly 26 rests above the substrate 504. Thus, in FIG. 5, the hub 404 portion of the optical sensing assembly 26 can be seen resting above the opening 508, while the fiber 42 portion of the assembly 26 is positioned through the opening 508 and below the substrate 504. In some embodiments, the optical sensing assembly 26 rests loosely within the opening 508. In other embodiments, the

optical sensing assembly 26 is snapped or locked into place in the opening 508. In some embodiments, the substrate 504 includes an array of 96 openings 508 in an 8 x 12 pattern, similar to the structure of the wells in a standard 96-well microtiter plate. In other embodiments, the substrate 504 includes an array of 384 openings 508 or 1536 openings, similar to the wells in a standard 384-well or 1536-well microtiter plate. However, the array of openings 508 can be arranged in a number of other ways and can include any other number of openings 508, as suitable. In general, the openings are arranged so that the optical sensing assemblies 26 positioned in the openings avoid contacting other optical sensing assemblies 26, and thus the optical sensing assemblies 26 remain as discrete sensors within the tip tray.

[0069] Also illustrated in FIG. 5 is a base structure 506 and a cover 502 that make up a part of tip tray apparatus 500. The substrate 504 rests on the base 506 and the cover 502 rests on top of the base 506 to enclose the upper portion of the substrate 504. In this manner, the optical assemblies 26 in the substrate 504 are protected from the environment in the closed compartment created by base 506 and cover 502. The optical assemblies 26 can be stored in an enclosed manner for protection, and the assemblies 206 can also be protected during shipping and handling. The hard-sided base 506 and cover 502 can lock into an enclosed position and thus protect the contents of apparatus 500. The base 506 and cover 502 can form an injection-molded plastic box, as shown in FIG. 5, or the apparatus 500 can be constructed from materials other than plastic. As shown in FIG. 5, the cover 502 can be transparent or translucent, allowing the user to see the optical assemblies 26 and substrate 504 beneath the cover 502.

[0070] Referring now to FIG. 6, there is shown an exploded view of the tip tray apparatus 500, according to an embodiment of the invention. This Figure illustrates how the various

pieces of the tip tray apparatus 500 fit together. As shown in FIG. 5, each of the pieces of the apparatus can be completely separated from one another. The cover 502 can be completely removed from the substrate 504 and base 506, to expose the optical assemblies 26 below. Furthermore, the substrate 504 can be completely separated from the base 506 to expose container 602 below. Container 602 can be a standard 96-well, 384-well, or 1536-well microtiter plate that includes an array of wells 604 for holding sample. Container 602 can also include any other number of wells (e.g., 1 well, 8 wells, 384 wells, etc.) and any other well arrangement or overall configuration, as desired. Container 602 can be an injection-molded plastic plate, as shown in FIG. 5, or container 602 can be made of another material, as suitable.

[0071] As FIG. 6 illustrates, the openings 508 in the substrate 504 correspond generally with the wells 604 in container 602. When the tip of an optical sensing assembly 26 is placed into an opening 508 in the substrate 504, the fiber 42 portion (not shown) of the optical sensing assembly 26 will extend below the substrate 504 and into the well 604 of container 602. The substrate 504 can be arranged to be a distance from container 602 that permits a portion of fiber 42 (not shown) of the optical sensing assembly 26 to be immersed in sample contained in the well 604. The container 602 can also be separated from the base 506 to allow the container to be removed from the apparatus 500. Thus, a user can place pre-wet or immobilization solution in the wells 604, for example, while the container 602 is separate from the tip tray apparatus 500, and the user can then insert the container 602 into the base 506 when the wells 604 have been filled. In addition, the substrate 504 can be used by itself without the container 602. For example, the substrate 504 can be mounted on a robotic instrument and can simply hold the optical assemblies in place for a robotic arm to attach to one or more of the assemblies and

move the assemblies to a container of sample to be tested (e.g., a microtiter plate that is separate from the tip tray apparatus). In this example, the container 602 can be included under the substrate 504 on the robotic instrument, but the container 602 can be optionally left out, as desired.

[0072] The apparatus 500 described herein is useful in a number of ways. As described previously, the apparatus 500 is useful in orienting and positioning the optical assemblies 26 (i.e., in a 96-well format) so that they can easily be picked up by a robotic instrument or a standard pipette and transferred to another location. In addition, the apparatus 500 protects the optical sensing assemblies 26 during shipping, handling, and storage by enclosing them within a protected compartment. The apparatus 500 also provides a means to map selected sensors to selected wells in a microtiter plate or other container. Furthermore, as explained above, the apparatus can be used in incubation, immobilization, pre-wet, etc. In some embodiments, the immobilization is conducted off-line, separate from the robotic instrument used for assay. However, in some embodiments, the substrate 504 plus container 602 filled with solution for immobilization of molecules to the optical assemblies 26 (e.g., protein solution) can be placed onto the robotic instrument. In some embodiments, the immobilization step occurs while the substrate 504 is on the instrument.

[0073] In some embodiments, the apparatus 500 or some of the components of the apparatus 500 can be mounted on a robotic system, as described above. In some embodiments, the substrate 504 is placed above a first microtiter plate containing samples or solution (e.g., protein immobilization solution). The substrate 504 can be mounted alongside a second microtiter plate (that is separate from the substrate 504) also mounted on the robotic system.

The second plate can contain the same or different samples included in the first plate. One or more of the optical assemblies 26 in the substrate 504 can be picked up with a robotic system and transferred to the second plate for immersion in the samples to be tested. In some embodiments, the first microtiter plate is not included, and instead only the substrate 504 is mounted on the instrument. In some embodiments, the second plate is mounted on an agitation assembly for creating orbital flow of sample within the wells of the second plate, as will be described in more detail below. In still other embodiments, the substrate 504 (or possibly a second substrate 504) is used to position the sensors over the second microtiter plate (or over another container holding samples to be tested) during an assay.

[0074] Numerous different types of assays can be conducted using the discrete optical assemblies 26. For example, assays can involve an anti-species antibody carried on the sensor tip, for screening hybridoma expression lines for cell lines with high antibody expression, or an antigen carried on the tip, to characterize high affinity antibodies against that antigen. Other assays can include a protein carried on the tip, for identifying and characterizing binding partners (DNA, RNA, proteins, carbohydrates, organic molecules) for that protein, or a carbohydrate or glycosyl moiety carried on the tip, for identifying and characterizing binding partners (such as, *e.g.*, DNA, RNA, proteins, carbohydrates, organic molecules) for that carbohydrate. Still other assays can include a protein thought to participate in a multi-protein complex carried on the tip, for characterizing the binding components and/or kinetics of complex formation, or a small protein-binding molecule carried on the tip, for identifying and characterizing protein binders for that molecule. These are but a few examples of assays that could be conducted, and these are in no way meant to limit the scope of the invention.

[0075] In some embodiments, every opening 508 in the substrate 504 contains an optical sensing assembly 26, and every well 604 in container 602 contains a solution (i.e., an immobilization or pre-wet solution, a sample, etc.) that is contacted by each optical sensing assembly 26. However, the user can move around the assemblies 26 and customize the array of assemblies 26, as desired. For example, the user may wish to only use one row of optical assemblies 26 for an assay, and may use only a corresponding row of wells 604 in container 602. The user can leave all of the other openings 508 in the substrate 504 and all of the other wells 604 in the container 602 empty during pre-wetting and immobilization, for example. In this manner, the user can avoid wasting a number of sensors needlessly by simply omitting the sensors that are not going to be used during an assay. In contrast, in an apparatus in which the sensors are all included at the bottom of wells in a microtiter plate, an entire set of sensors must be used for each assay, even if the assay only includes 10 wells filled with sample. In some embodiments, the user may wish to use different types of samples or protein immobilization solutions in different wells 604 or different kinds of optical assemblies 26 (or assemblies 26 with different coatings on the tip) to customize the array.

[0076] As explained above, the apparatus 500 arranges the optical assemblies 26 in a manner that allows the optical assemblies 26 to be mapped to the array of wells in the sample container or second microtiter plate that will be used in conducting the assay. A combination of software can provide programmable control of the sample plate and of which samples are tested and/or which sensors are used (e.g., different sensors coated with different proteins). In some embodiments, the user can view the assay on a computer display or other type of display, and thus can see which wells in the sample plate are filled with which types of sample and/or

can keep track of which sensors are used and into which sample wells these sensors are dipped into in the sample-containing second microtiter plate. In this manner, the user will know what optical assemblies 26 are associated with what samples.

[0077] Referring now to FIG. 7, there is shown an illustration of the substrate 504 and openings 508, according to an embodiment of the invention. The openings 508 of the substrate 504 extend down below the substrate 504 to a sufficient distance to prevent the optical assemblies 26 inside the openings 508 from tilting or swaying from side to side a substantial amount. The depth of the openings 508 will be illustrated more clearly in FIGS. 11 and 12.

[0078] In some embodiments, the substrate 504 includes one or more support members 704 that extend from the substrate 504 and provide support. In the embodiment of FIG. 7, the substrate 504 includes four support members 704, one at each corner of the substrate.

However, these support members can be designed in various ways and there can be more than four or fewer than four, as suitable. The support members 704 provide support to the substrate 504, and can support the substrate 504 when resting on a surface, on a robotic instrument, in the base 506, or other locations. In some embodiments, the substrate 504 is designed to be a sufficient height that when the substrate 504 is loaded with optical assemblies 26 and set on a surface without the base 506 or container 602 below, the tips of the optical assemblies 26 will still not contact the surface or contact each other. The support members 704 allow the substrate 504 to be positioned on the base 506 by extending through slots in the base (see FIG. 8). The support members 704 can slide into the openings in the base 506 and the notches 706, 708 further contact the base to allow the substrate 504 to be securely positioned on the base 506.

[0079] In some embodiments, the support members 704 are designed to extend down into a robotic instrument platform or other device to locate the sensors with respect to the instrument robotics. The support members 704 can make contact with a mating surface in the instrument and provide datum surfaces for location during installation. Thus, any position tolerance increase that might have been contributed to by the base 506 is therefore avoided, since the base 506 does not need to be used for location in the instrument.

[0080] The substrate 504 illustrated in the embodiment of FIG. 7 also includes a raised edge 702 that surrounds the center surface of the substrate 504 and a recess 709 into which the optical assemblies 26 are placed. Thus, the optical assemblies can be positioned down into the recess 709 and can be protected by the edge 702. The edge 702 provides the sensors with some protection against getting knocked out of the openings 508 when the cover 502 is not in place. The recess 709 further provides some protection of the sensors when the cover 502 is in place, since the cover has a corresponding recess that helps to hold the sensors in position (see FIG. 9).

[0081] FIG. 8 shows an exploded view of the base 506 and container 602, according to an embodiment of the invention. The container 602 can be placed in the base 506 so that the ends of the optical assemblies 26 are aligned with the wells 604 in the container 602. FIG. 8 also illustrates that container 602 can be removed from the base 506 and replaced as required. Where the container 602 is a standard microtiter plate, the used plate can easily be removed after use in pre-wetting or immobilization and replaced with a new, clean plate, as needed.

[0082] As described previously, the base 506 can include openings or slots 802 for placement of the substrate 504. In the embodiment of FIG. 8, there are four slots 802 in the

base 506, one at each corner. As the substrate 504 is placed over the base 506, the substrate 504 is guided into position while preventing contact between the ends of the optical assemblies 26 and other surfaces. The support members 704 of the substrate 504 are guided into the slots 802 in the base to provide secure positioning of the substrate 504 in the base 506. The base 506 thus can protect the tips of the optical assemblies 26 when the substrate 504 is positioned on the base 506 without the container 602 in between. The base 506 can also assist in guiding the substrate 504 into place for the proper positioning of the optical assemblies 26 in the wells 604 when the substrate 504 is positioned on the base 506 over container 602.

[0083] In some embodiments, the base 506 also includes a mounting notch 804 that mates with the corner orientation notch 806 of the container 602. In this manner, the user can easily find the correct orientation of the container 602 in the base 506. The container 602 can be secured into position by sliding the orientation notch 806 under the mounting notch 804 to force the container 602 into its specified orientation.

[0084] Referring now to FIG. 9, there is shown the cover 502 for the apparatus 500, according to an embodiment of the invention. The cover 502 can be generally contoured to fit the shape of the substrate, including a raised outer edge 910 around the periphery of the cover 502 and a recess 902 in the center of the cover 502. The cover 502 fits over the top of the substrate 504 and protects the hub 404 end of the optical sensing assembly 26 from environmental contamination or other damage. The cover 502 can be designed to fit such that the sensors cannot lift from the holes in the substrate 504, regardless of the position of the apparatus 500 in space. For example, in this embodiment, even if the apparatus 500 is held upside down, the cover will retain the sensors in position in the opening 508 of the substrate

504. One feature that allows the cover 502 to hold the optical assemblies 26 firmly in place is the recess 902 in the top of the cover. This recess 902 corresponds with the recess 709 in the substrate 504, and thus the center portion of the cover 502 extends down into the recess 709 of the substrate 504. In this manner, the center portion of the cover 502 is lowered close to the hubs 404 of the optical assemblies 26 when the assemblies 26 are positioned in the openings 508 of substrate 504 to maintain the assemblies 26 in the openings 508.

[0085] In some embodiments, the cover includes structures 904 and 906 that engage the base 506 to snap the cover 502 into position on the base 506. Various other types of locking mechanisms can be used, as well, for locking the cover to the base. In some embodiments, the cover 502 and the base 506 lock into the substrate 504 rather than locking into each other. In some embodiments, the cover 502 further includes flap 908 that engages a notched portion of the base 506 (that will be illustrated in FIG. 10), and provides a gripping means for the user to grip the cover 502 and separate the cover 502 from the apparatus 500. In addition, the recess 902 can also provide for nestled stacking of assemblies 500 during storage. The base 506 includes feet (that will be illustrated in FIG. 10) that will rest in the recess 902 when one apparatus is placed on top of another, thus securing the stacked configuration.

[0086] FIG. 10 shows a side view of the apparatus 500, according to an embodiment of the invention. FIG. 10 further illustrates the flap 908 of the cover 502, and how this flap 908 rests against notch 1010 in the base, according to an embodiment of the invention. The notch 1010 provides a space into which a user can slip his/her fingers to grip the flap 908 and remove the cover 502. In addition, FIG. 10 illustrates the stacking feet 1012 of base 506 that permit nestled stacking of assemblies 500, according to an embodiment. In this embodiment, the feet

1012 of one apparatus 500 can rest in the recess 902 of another apparatus 500, thus holding the two assemblies 500 in place during storage. The stacking feet 500 can also provide support for the apparatus 500 when the apparatus is resting on a surface. FIG. 10 further illustrates the support members 704 of substrate 504, and shows how these engage the base for secure fitting, according to an embodiment of the invention.

[0087] FIG. 11 shows a cross-sectional view of the side of the apparatus 500, including the substrate 504, the container 602, and the base 506, according to an embodiment of the invention. FIG. 11 illustrates how the hub 404 rests at the top of the substrate 504, and the fiber 42 is suspended below the substrate 504 from the opening 508, according to some embodiments. The optical sensing assembly 26 is positioned above one of the wells 604, and is positioned for insertion of the fiber 42 inside the well 604.

[0088] FIG. 12 further shows another cross-sectional view of the side of the apparatus 500, including the substrate 504, the container 602, and the base 506, according to an embodiment of the invention. This view shows the fiber 42 inside of a well 604 that can be filled with solution or sample. The optical sensing assembly 26 is positioned so that only a portion of the fiber is inside the well, and thus only a portion will contact the solution (however, this positioning can vary as needed). FIG. 12 further illustrates the length of the opening 508 in this embodiment. The opening 508 at the upper surface of the substrate 504 can have an elongated barrel below the surface that extends a distance beyond the surface of the substrate 504. This design can provide additional support for the optical sensing assembly 26 to avoid tipping or swaying of the optical sensing assembly 26 and to keep the assembly 26 from contacting other nearby assemblies 26 or other surfaces.

[0089] While the many of the embodiments shown herein include both a cover 502 and a base 506, these elements are optional. In some embodiments, either the cover 502 or base 506, or both, are excluded from the apparatus 500. In addition, the shape of the apparatus 500 can vary, as suitable.

[0090] Referring now to FIGS. 13a and 13b, there is shown illustrations of an orbital flow apparatus 1300, according to an embodiment of the present invention. The orbital flow apparatus 1300 can include a container 1302, an agitation assembly 1306, an agitation device 1306 and a heater adapter 1304. However, one or more of these parts can be left out of the apparatus or other parts can be added, as suitable for a given application. Instead of using a flow cell or microfluidics to create surface flow in a well, the invention disclosed herein describes a different manner for creating flow. The orbital flow apparatus 1300 shown in FIG. 13 provides a mechanism for creating the flow needed in a sample well of a container 1302 for a molecular binding kinetic analysis or movement of buffer solution in a well. Without proper flow, it is very difficult to measure the disassociation of molecules from the sensor surfaces. Container 1302 is similar to container 602, and thus it can be a 96-well microtiter plate as shown in FIGS. 13a and b, a 384-well or 1536-well microtiter plate, or some other type of container. The orbital flow mechanism allows for the exposure of a biosensor or optical sensing assembly 26 to a relatively large bulk of reagents. This apparatus 1300 can provide for continuous flow of reagent over an optical sensing assembly 26 by rotating the container 1302 to create orbital flow within the wells. FIG. 13b illustrates an optical sensing assembly 26 as was shown in FIGS. 1-12. This assembly 26 is suspended in a solution in the wells of container 1302. The apparatus 1300 is designed to create relative flow between the assembly

26 and the sample in which the biosensor is immersed by moving or rotating the container 1302 in a plane perpendicular to the optical assemblies 26, according to a specified type of motion (e.g., repetitive motion, random motion, etc.).

[0091] One embodiment of the apparatus 1300 uses a repetitive flow mechanism. In this embodiment, the mechanism creates a repetitive motion, resulting in relative movement of the assembly 26 and the sample in the well. This type of mechanism can be designed in a number of manners. One example is shown in FIG. 13 that includes a surface 1310, which can be a substantially flat surface that rests on suspensions 1312. In the example shown in FIG. 13, there are four flexible suspensions 1312, but any other type of mechanism can be used. The example shown in FIG. 13 further includes an agitation assembly 1306 with an agitation device 1308 (e.g., an electrical motor or another type of device for providing movement or agitation) that is positioned below the surface 1310 (or adjacent to the surface 1310). The agitation device 1308 includes a driving mechanism for the repetitive motion, in this embodiment. In the example illustrated in FIG. 13, the motor rotates the container 1302 in a plane that is perpendicular to the optical sensing assembly 26 to cause the agitation to occur. This movement of the motor causes the sample to move relative to the assembly 26, thus causing continuous flow of the sample over the biosensor surface. In some embodiments, the orbital motion can be controlled from 10 rpm to 5000 rpm. In other embodiments, the motion can be controlled from 1 rpm to 10,000 rpm, from 100 rpm to 2000 rpm.

[0092] Some embodiments of the apparatus 1300 include an actuator (e.g. electrical motor, piezo actuator, solenoids, etc.) to create a repetitive motion that is not in orbital trajectory. The

possible trajectories can include linear, elliptical, sinusoidal, etc., or any combination of these motions in the three-dimensional space.

[0093] Another embodiment of the apparatus 1300 uses a random flow mechanism. In this embodiment, the mechanism generates a random motion or vibration that agitates the sample in the wells, and thus creates relative movement of sample against the biosensor surface 26. For example, an ultrasound source can be used to agitate the sample or solution to create flow of the sample over the biosensor 26.

[0094] In still other embodiments, instead of causing orbital movement of the solution inside the well relative to the optical assembly 26, the assembly 26 is agitated while the solution is kept substantially stable. An agitation assembly 1306 can be attached to the assembly to cause the assembly 26 to move relative to the sample, thus creating relative movement of the sample over the biosensor. Additionally, both the solution and the optical assembly 26 can be agitated in some embodiments.

[0095] In addition, movement of either the optical assembly 26 or the sample is not limited to circular or elliptical motion. Agitation can be created using numerous other types of motion, such as movement up and down (i.e., by moving the sample up and down or the biosensor up and down), movement in a straight line, vibrational movement, etc.

[0096] In some embodiments, the agitation assembly 1306 includes a heater adapter 1304 that connects to the container 1302 and the agitation assembly 1306 by being sandwiched in between the two. The heater adapter 1304 is mounted onto the orbital flow device to provide heated flow during binding measurements. FIG. 13 shows how the pieces of apparatus 1300 fit together, and can lock into place.

[0097] As described above, the orbital flow apparatus 1300 can be included in a robotic instrument for assay. FIG. 13c better illustrates this usage of the inventions described herein in a robotic instrument for assay. Robotic instrument 1350 is shown in FIG. 13c, and this instrument can be included as a part of interferometer system 20, described above. In some embodiments, container 1302 can be mounted to the agitation assembly 1306 and can contain samples to be tested during assay (e.g., the second microtiter plate referred to above). The container 1302 can be mounted alongside substrate 504 that is holding optical assemblies 26. A robotic arm 1352 can transfer one or more of the assemblies 26 from the substrate 504 over to the container 1302 and can dip the assemblies 26 into the samples in the wells of container 1302. The agitation assembly 1306 causes agitation of the container 1302 while the tips of the assemblies 26 are dipped into the samples, thus creating flow of the sample over the optical assemblies 26 for kinetic analyses or other types of assays.

[0098] The following example illustrates a method of the invention for creating orbital flow, but is in no way intended to limit its scope.

EXAMPLES

[0099] Below is an example of a specific embodiment for carrying out the present invention. The example is offered for illustrative purposes only, and is not intended to limit the scope of the present invention in any way. Efforts have been made to ensure accuracy with respect to numbers used (*e.g.*, amounts, temperatures, *etc.*), but some experimental error and deviation should, of course, be allowed for.

[00100] The practice of the present invention will employ, unless otherwise indicated, conventional methods of protein chemistry, biochemistry, recombinant DNA techniques and

pharmacology, within the skill of the art. Such techniques are explained fully in the literature. See, e.g., T.E. Creighton, *Proteins: Structures and Molecular Properties* (W.H. Freeman and Company, 1993); A.L. Lehninger, *Biochemistry* (Worth Publishers, Inc., current addition); Sambrook, et al., *Molecular Cloning: A Laboratory Manual* (2nd Edition, 1989); *Methods In Enzymology* (S. Colowick and N. Kaplan eds., Academic Press, Inc.); *Remington's Pharmaceutical Sciences*, 18th Edition (Easton, Pennsylvania: Mack Publishing Company, 1990); Carey and Sundberg *Advanced Organic Chemistry 3rd Ed.* (Plenum Press) Vols A and B(1992).

Example 1: Multi-concentration kinetic experiment with direct comparison of flow = 0 and flow = 140 rpm.

[00101] This example demonstrates the creation of orbital flow of a sample relative to the biosensor. In this example, a set of biosensors was coated with an antibody against mouse IgG2b. The analyte (mouse IgG2b) was added into an assay buffer (1mg/mL bovine serum albumin in phosphate buffered saline, 0.02% Tween-20) at the concentration specified in FIG. 14. FIG. 14 shows, in two graphs, the binding curves for the mouse IgG2b to the Anti-mouse IgG2b-coated sensors where flow is equal to 0 (e.g., no flow; depicted in the upper graph) and where flow is equal to 7 mm/sec (depicted in the lower graph). Binding of the analyte to the antibody was monitored using the technique of Biolayer Interferometry, and binding was recorded as a nanometer (nm) increase in thickness of the binding layer (i.e., the layer formed by binding of the analyte to the anti-analyte) as a function of time (in seconds). The graphs show that the orbital flow (i.e., where flow = 7) eliminates the early "lag" phase of binding of a 2.5 ug/ml sample of mouse IgG2b to the coated sensor due to diffusional barriers (i.e., which can be seen where flow = 0). Therefore, the apparatus 1300 for creating orbital flow allows for

flow of the sample over the biosensor resulting in binding without the “lag” phase that occurs when the apparatus 1300 is not used to create orbital flow.

[00102] While the invention has been particularly shown and described with reference to a preferred embodiment and various alternate embodiments, it will be understood by persons skilled in the relevant art that various changes in form and details can be made therein without departing from the spirit and scope of the invention.

[00103] All references, issued patents and patent applications cited within the body of the instant specification are hereby incorporated by reference in their entirety, for all purposes.

CLAIMS

What is claimed is:

1. An apparatus for packaging an optical sensing assembly, the apparatus comprising a substrate with a plurality of openings, each opening being configured for holding a discrete optical sensing assembly therein, the optical sensing assembly being positioned in the opening with a tip of the optical sensing assembly extending through the opening to be suspended from the substrate, wherein the plurality of openings are arranged so the optical sensing assembly positioned therein avoids contacting another optical sensing assembly positioned therein.
2. The apparatus of claim 1, further comprising a support member for supporting the substrate, the support member positioning the substrate so the tip of the optical sensing assembly suspended from the opening in the substrate contacts a solution in one of a plurality of wells in a container adjacent to the substrate, wherein the substrate is configured for preparing the optical assembly for assay.
3. The apparatus of claim 2, wherein the container is a microtiter plate including 96 wells.
4. The apparatus of claim 1, wherein the optical sensing assembly further comprises a hub at an end of the assembly opposite the tip, the hub being designed for attachment to a device that moves the assembly from a first location to a second location.
5. The apparatus of claim 1, wherein the openings include elongated barrels that allow the optical sensing assembly to be immersed in a solution in a container below the substrate without the tip of the optical sensing assembly contacting a tip of another optical sensing assembly in the substrate.
6. The apparatus of claim 1, wherein a plurality of discrete optical sensing assemblies coated with different reagents are moved around and arranged in the plurality of openings to create a customized array.
7. The apparatus of claim 2, wherein the optical sensing assembly in the substrate is mapped to wells in a second container containing different samples.

- 8.** The apparatus of claim 2, wherein the solution is a pre-wet solution into which the optical sensing assembly is immersed.
- 9.** The apparatus of claim 2, wherein the solution is a protein solution into which the optical sensing assembly is immersed for immobilization of protein on the optical sensing assembly, or for measurement of interaction with another protein already immobilized on the optical sensing assembly.
- 10.** The apparatus of claim 2, wherein the substrate being configured for preparing the optical sensing assembly for assay further comprises the substrate being configured for pre-wet of the optical assembly before assay.
- 11.** The apparatus of claim 2, wherein the substrate being configured for preparing the optical sensing assembly for assay further comprises the substrate being configured protein immobilization of the optical assembly before assay.
- 12.** The apparatus of claim 1, wherein the optical sensing assembly comprises a hub at an end opposite the tip, and the optical sensing assembly is inserted into the opening with the hub of the assembly remaining on a first side of the substrate and the tip of the assembly being inserted through the opening to be suspended from a second side of the substrate.
- 13.** The apparatus of claim 1, further comprising a cover on a first side of the substrate to protect the optical sensing assembly.
- 14.** The apparatus of claim 1, further comprising a base on a second side of the substrate to protect the tip of the optical sensing assembly.
- 15.** The apparatus of claim 14, wherein a container is positioned inside the base beneath the substrate, the container being positioned so the tip of the suspended optical sensing assembly contacts solution in one of the plurality of wells in the container.
- 16.** The apparatus of claim 13, wherein the cover is designed to maintain the optical sensing assembly in the opening in the substrate.

17. The apparatus of claim 1, further comprising a cover and a base, the cover and base being designed to lock together around the substrate forming an enclosure around the optical sensing assembly.

18. The apparatus of claim 17, wherein the base of the apparatus is designed fit together with the cover of other apparatuses to be stackable with the other apparatuses for storage.

19. A method for packaging an optical sensing assembly for assay, the method comprising placing a discrete optical sensing assembly in one of a plurality of openings in a substrate that is supported by a support member, the optical sensing assembly being positioned in the opening with a tip of the optical sensing assembly extending through the opening to be suspended from the opening in the substrate, wherein the plurality of openings are arranged so the optical sensing assembly positioned therein avoids contacting another optical sensing assembly positioned therein.

20. The method of claim 19, further comprising:

positioning the substrate so the tip of the optical sensing assembly suspended from the opening in the substrate contacts solution in one of a plurality of wells in a container adjacent to the substrate; and

preparing the optical sensing assembly for assay.

21. The method of claim 19, wherein the optical sensing assembly further comprises a hub on an end of the assembly opposite the tip.

22. The method of claim 21, wherein placing the optical sensing assembly in one of a plurality of openings in a substrate further comprises inserting the tip of the optical sensing assembly into the opening so that the hub of the assembly rests on a first side of the substrate and the tip of the assembly is suspended from a second side of the substrate.

23. The method of claim 20, wherein positioning the substrate further comprises placing the container below the substrate with one of the plurality of wells lined up with the tip of the optical sensing assembly so the tip is immersed in solution in the well.

24. The method of claim 19, further comprising:

creating an array of discrete optical sensing assemblies in the substrate; and
moving around the assemblies coated with different reagents in the plurality of
openings to arrange the assemblies in a customized array.

25. The method of claim 20, further comprising mapping configuration of the optical sensing assembly to a plurality of sample wells in a second container for assay.

26. The method of claim 20, wherein the container is a microtiter plate with wells in an 8 x 12 pattern.

27. The method of claim 19, further comprising covering the substrate with a cover for protecting the optical sensing assembly.

28. The method of claim 27, further comprising setting the substrate on a base that locks into place with the cover to enclose the optical sensing assembly within a protective enclosure.

29. The method of claim 20, further comprising:

setting the container on a base; and

setting the substrate on the base over the container with the tip of the optical sensing assembly being immersed in the solution in one of the plurality of wells of the container.

30. The method of claim 20, wherein preparing the optical sensing assembly further comprises immersing the optical assembly in a pre-wet solution.

31. The method of claim 20, wherein preparing the optical sensing assembly further comprises immersing the optical assembly in a protein solution for immobilization of proteins on the tip of the assembly.

32. The method of claim 21, further comprising attaching a device to the hub of the optical sensing assembly for moving the assembly from a first location to a second location.

33. The method of claim 32, wherein the device is a robotic machine for attaching to the discrete optical assembly in the substrate and for moving the assembly from the substrate to a second location.

- 34.** The method of claim 32, wherein the device is a pipette for attaching to the discrete optical assembly in the substrate and for moving the array of assemblies from the substrate to a second location.
- 35.** An apparatus for maintaining flow of the solution, the apparatus comprising an agitation assembly operably coupled to a container with a plurality of wells containing solution, each well being configured for holding a discrete optical sensing assembly therein, the optical sensing assembly being configured for measuring a characteristic of the solution, wherein the agitation assembly comprises an agitation device that moves the container according to a specified type of motion to agitate the solution relative to the optical assembly to create flow of the solution relative to the optical assembly.
- 36.** The apparatus of claim 35, wherein the agitation device is driven by an electrical motor.
- 37.** The apparatus of claim 35, wherein the specified type of motion is repetitive motion of the solution in the well, relative to the optical assembly.
- 38.** The apparatus of claim 37, wherein the repetitive motion is circular motion.
- 39.** The apparatus of claim 35, wherein the agitation device is driven by an actuator for creating repetitive motion that is not in orbital trajectory.
- 40.** The apparatus of claim 35, wherein the specified type of motion is random motion of the solution in the well, relative to the optical assembly.
- 41.** The apparatus of claim 35, wherein the agitation device is operably coupled with the optical assembly to move the assembly relative to the sample.
- 42.** The apparatus of claim 35, wherein the apparatus rests on a surface suspended above the agitation device with suspensions, the agitation device providing agitation of the container creating surface flow of the solution relative to the optical assembly.
- 43.** The apparatus of claim 35, wherein the agitation assembly further comprises a heater adapter for providing heated flow of solution.
- 44.** The apparatus of claim 43, wherein the heater adapter is positioned between the container and the agitation assembly and is operable coupled to the container and the agitation assembly.

45. The apparatus of claim 35, wherein the agitation assembly is included in a robotic instrument for assay with the container mounted on the agitation assembly, the container and agitation assembly being mounted in the instrument adjacent to a substrate for holding an optical sensing assembly.

46. The apparatus of claim 45, wherein a robotic arm moves the optical sensing assembly from the substrate to the container to dip the assembly in the solution, the solution being simultaneously agitated by the agitation device.

TIP TRAY ASSEMBLY FOR OPTICAL SENSORS

ABSTRACT

An apparatus and method for packaging of an optical sensing fiber is disclosed. The apparatus includes a substrate with a plurality of openings, and each opening is configured for holding an optical sensing assembly. The assembly is positioned in the opening with a tip of the assembly extending through the opening to be suspended from the substrate. In addition, openings are arranged so the assembly positioned therein avoids contacting another assembly positioned therein. The apparatus can include a support member for supporting the substrate and positioning the substrate so the tip of the assembly suspended from the opening in the substrate contacts solution in one of a plurality of wells in a container adjacent to the substrate. The assembly can be configured for preparing of the optical assembly for assay. An agitation assembly for agitating the container to create flow of the solution in the container wells over an optical sensing assembly is also disclosed.

24377/01000/DOCS/1631208

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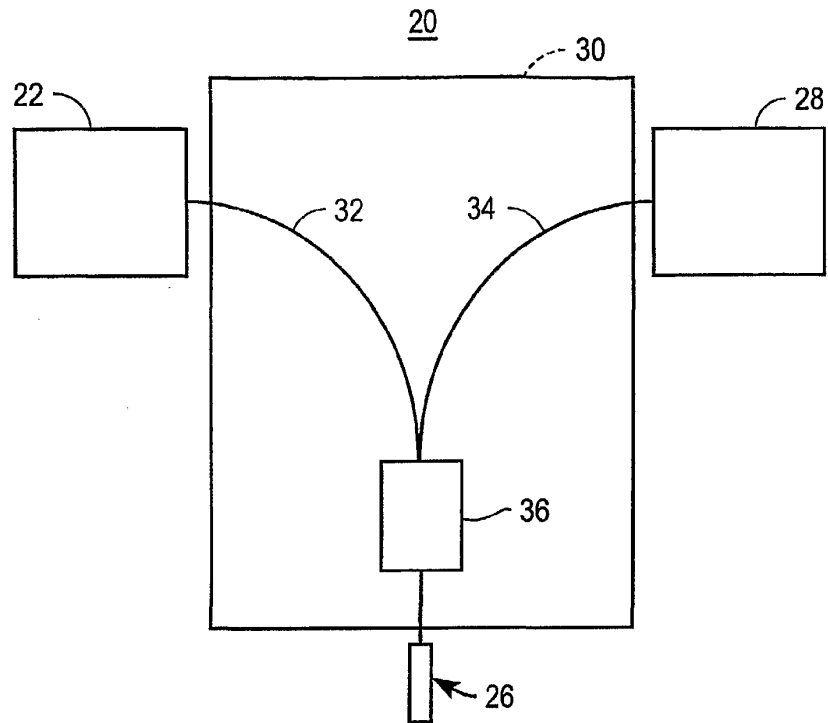


FIG. 1

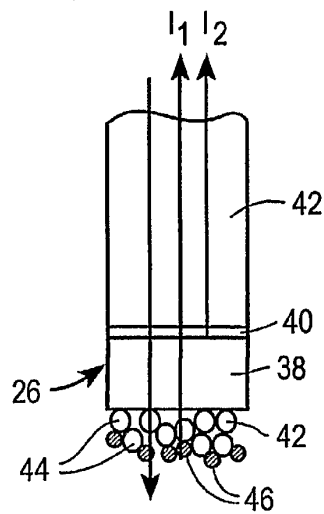
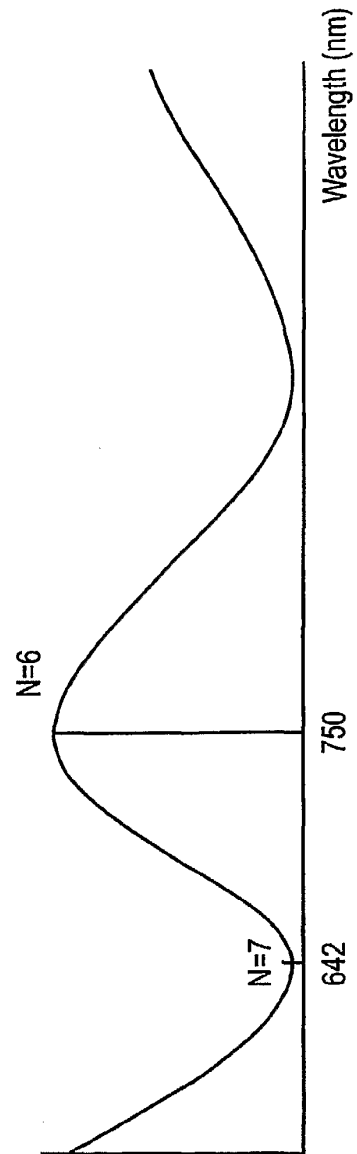
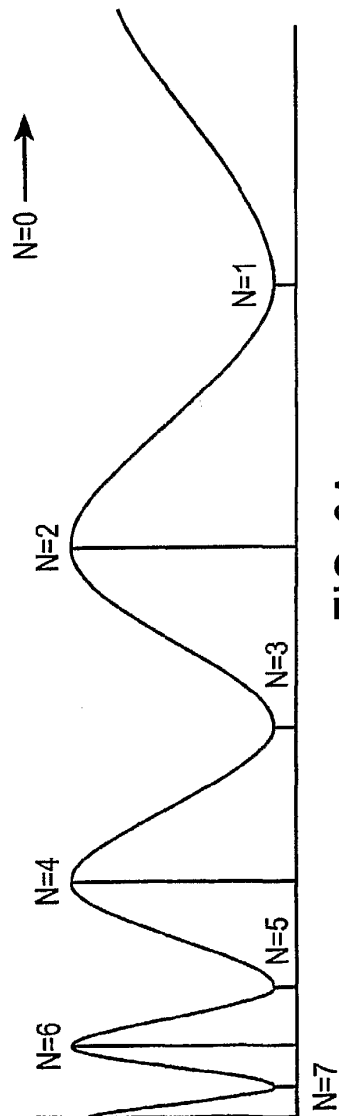


FIG. 2

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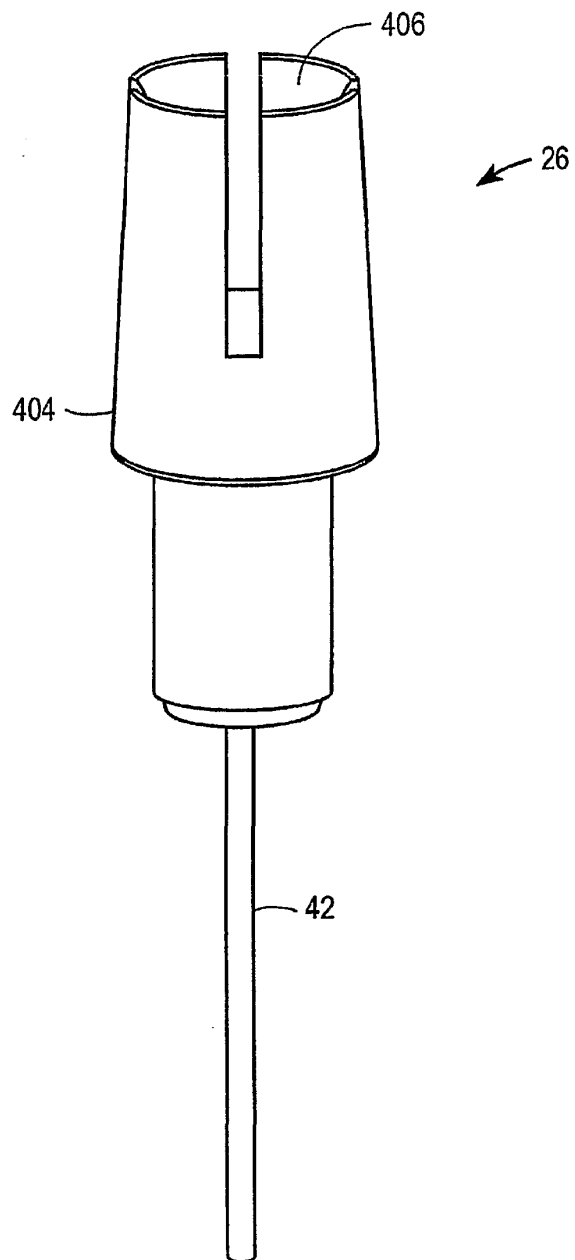


FIG. 4

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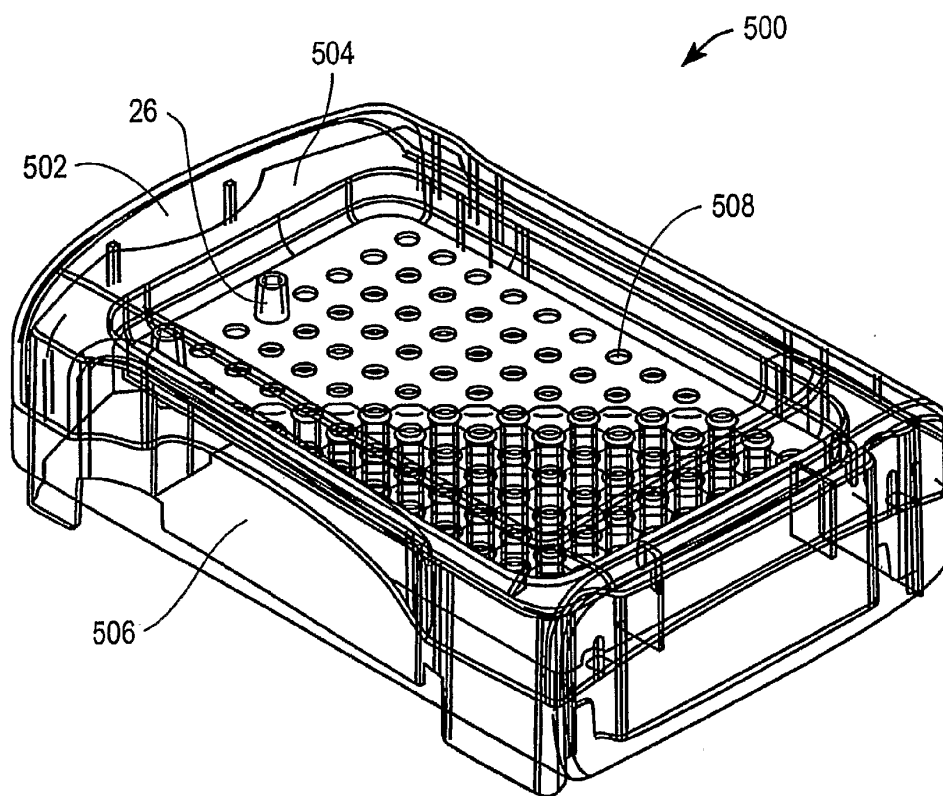


FIG. 5

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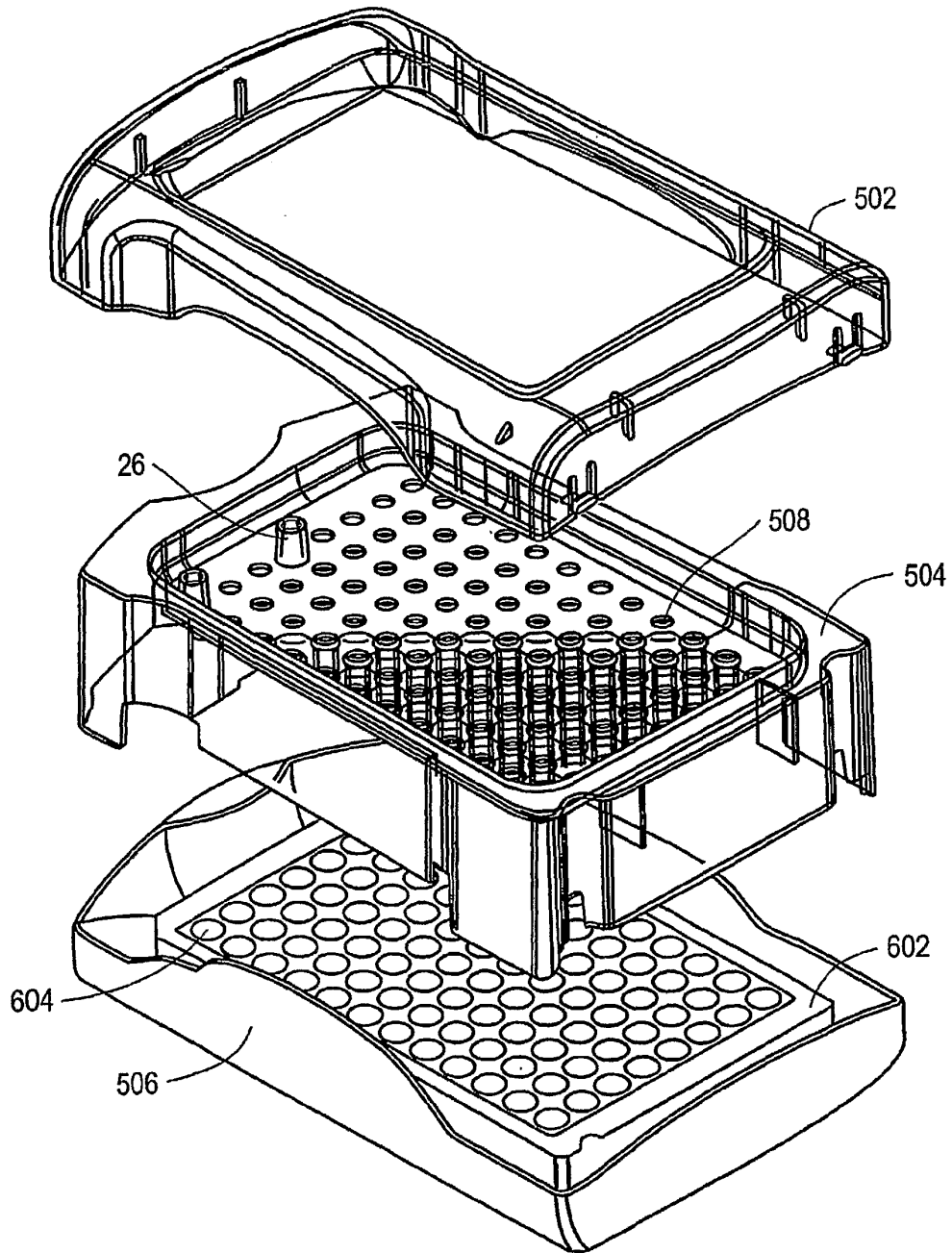


FIG. 6

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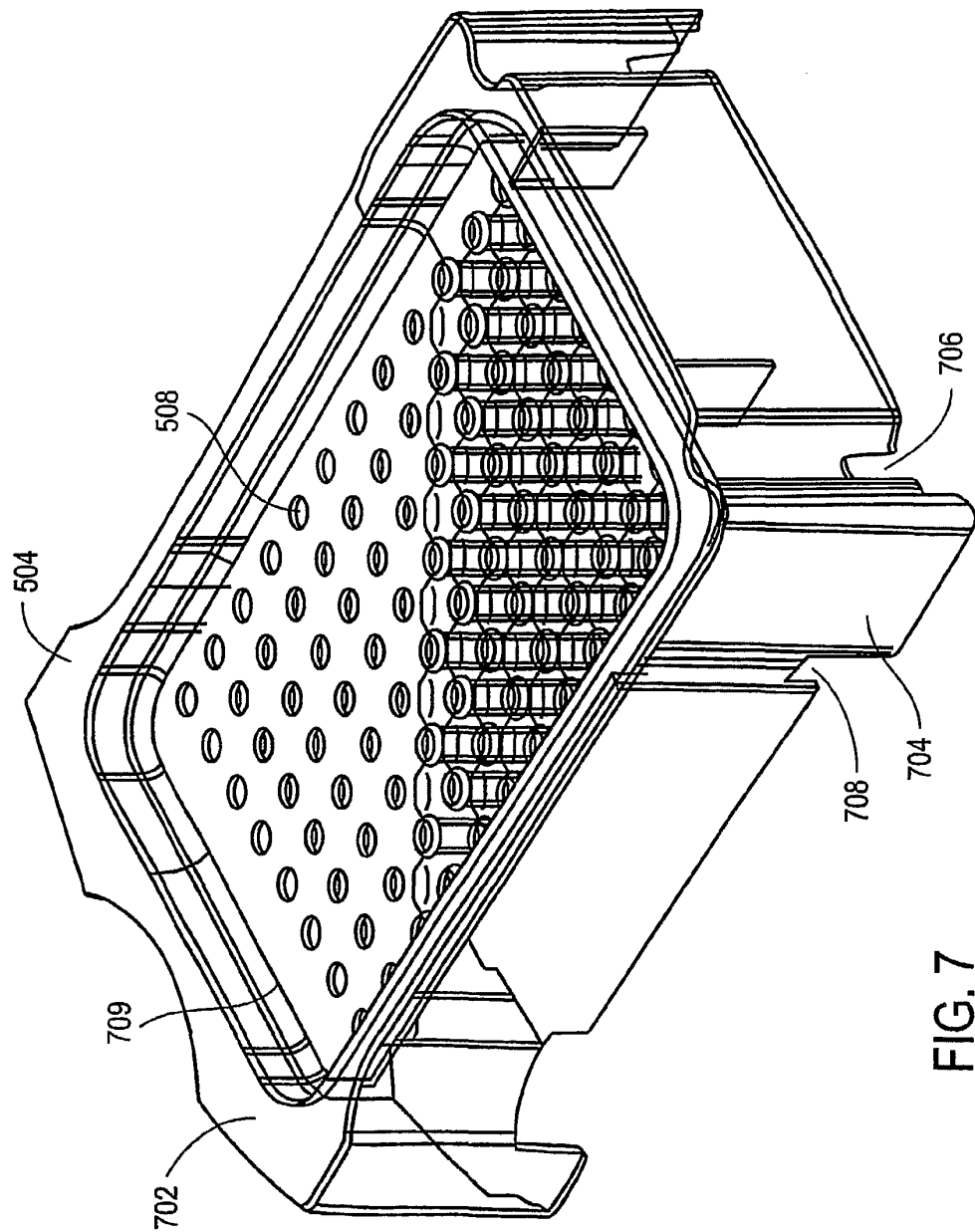


FIG. 7

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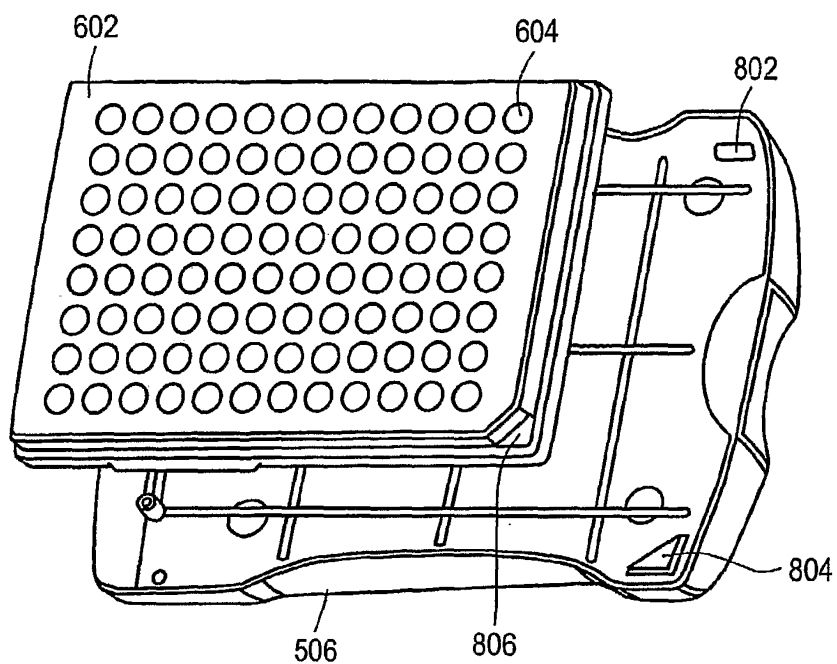


FIG. 8

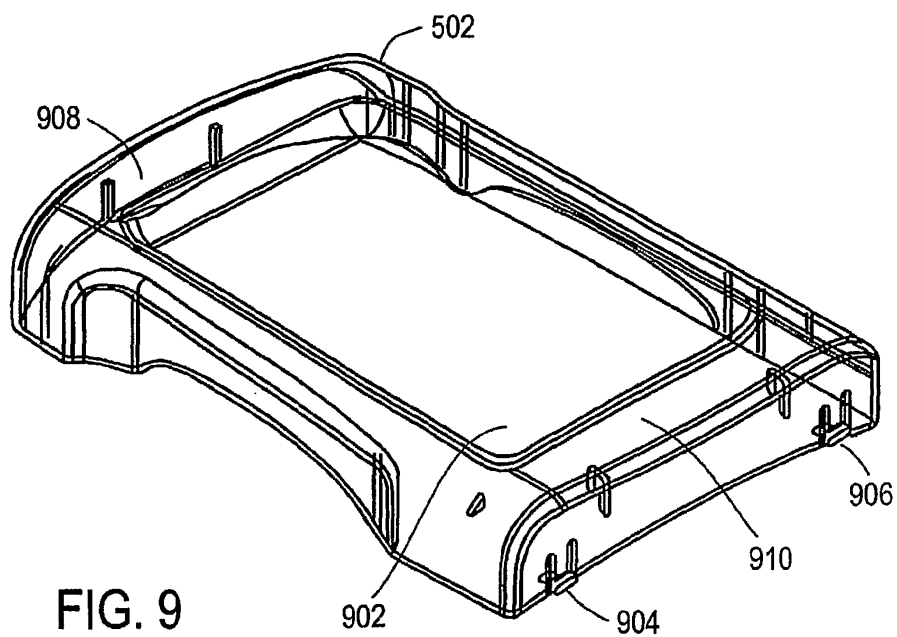


FIG. 9

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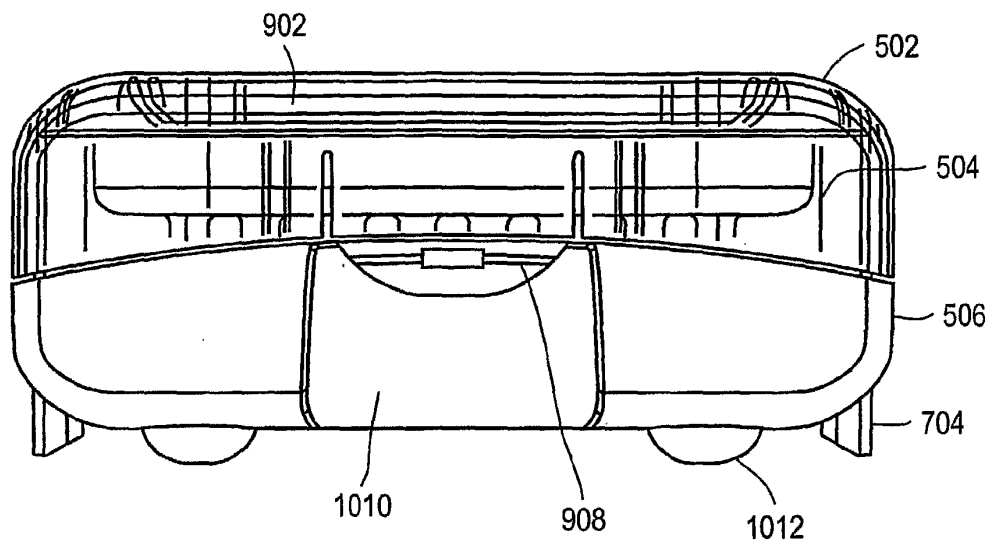


FIG. 10

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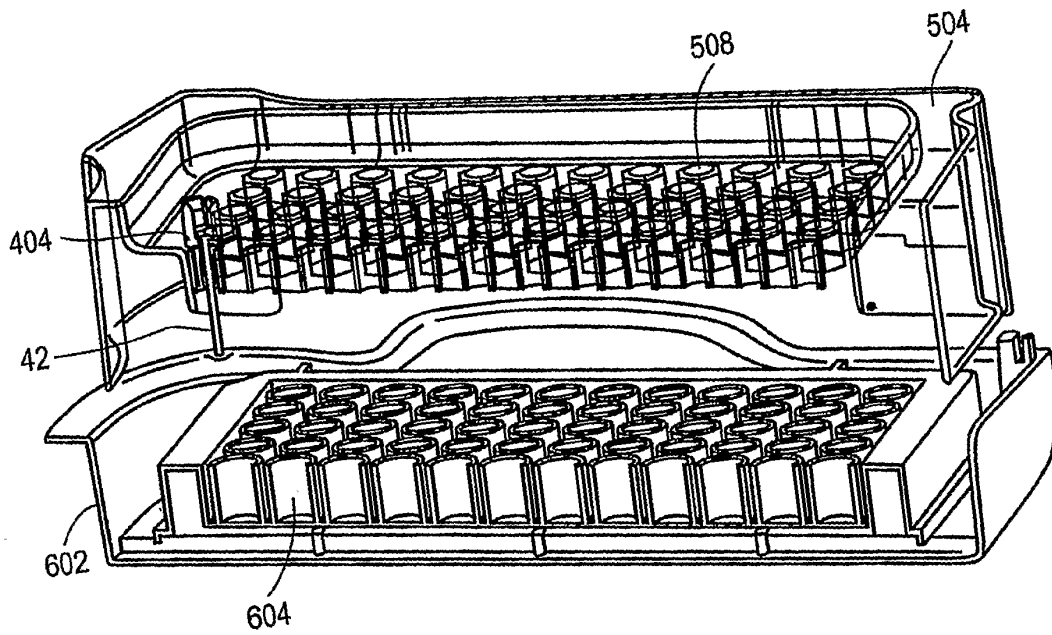


FIG. 11

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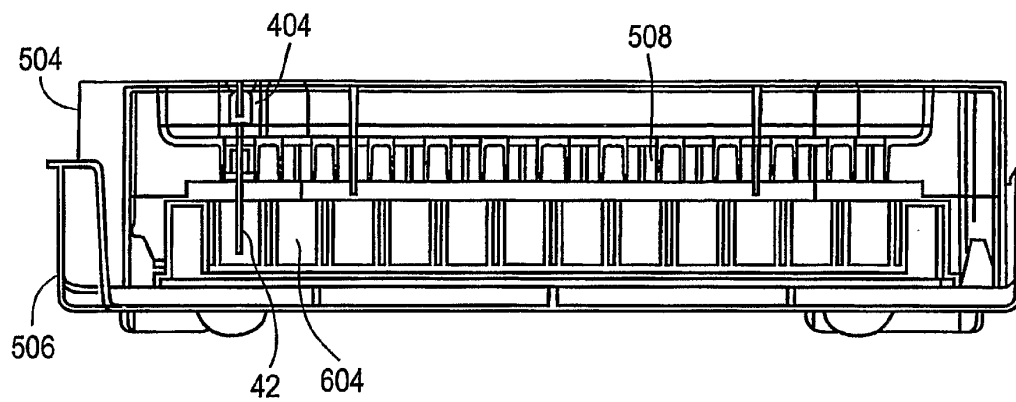


FIG. 12

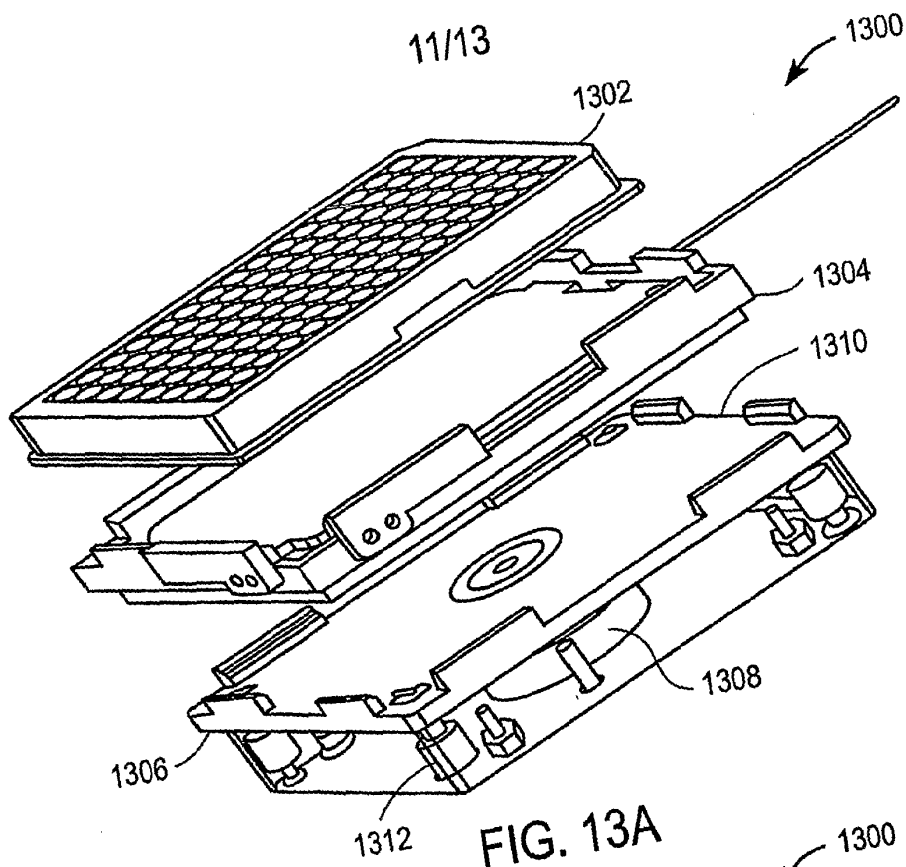


FIG. 13A

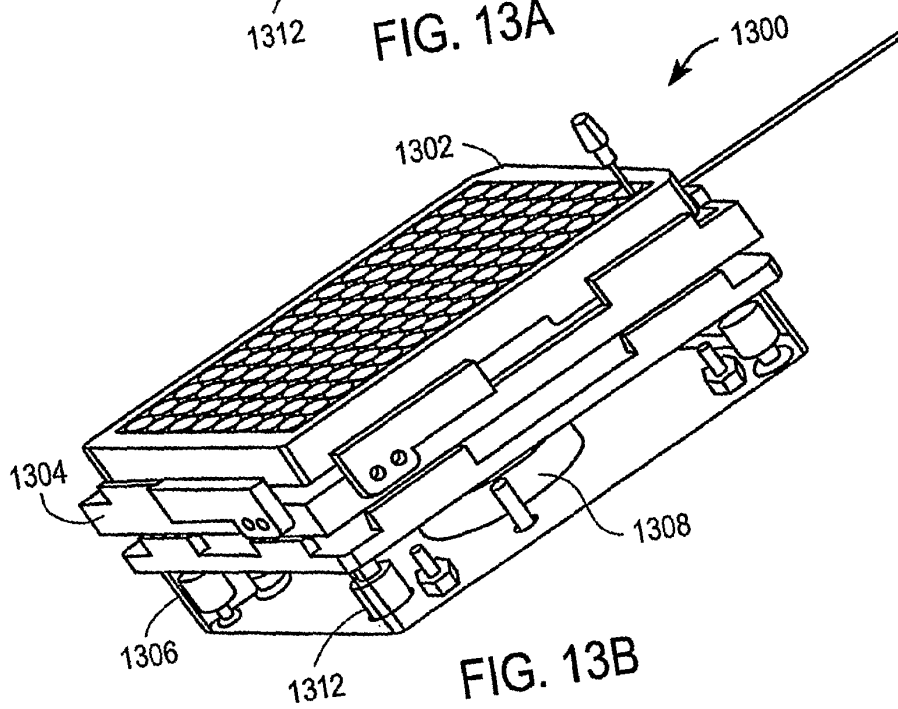


FIG. 13B

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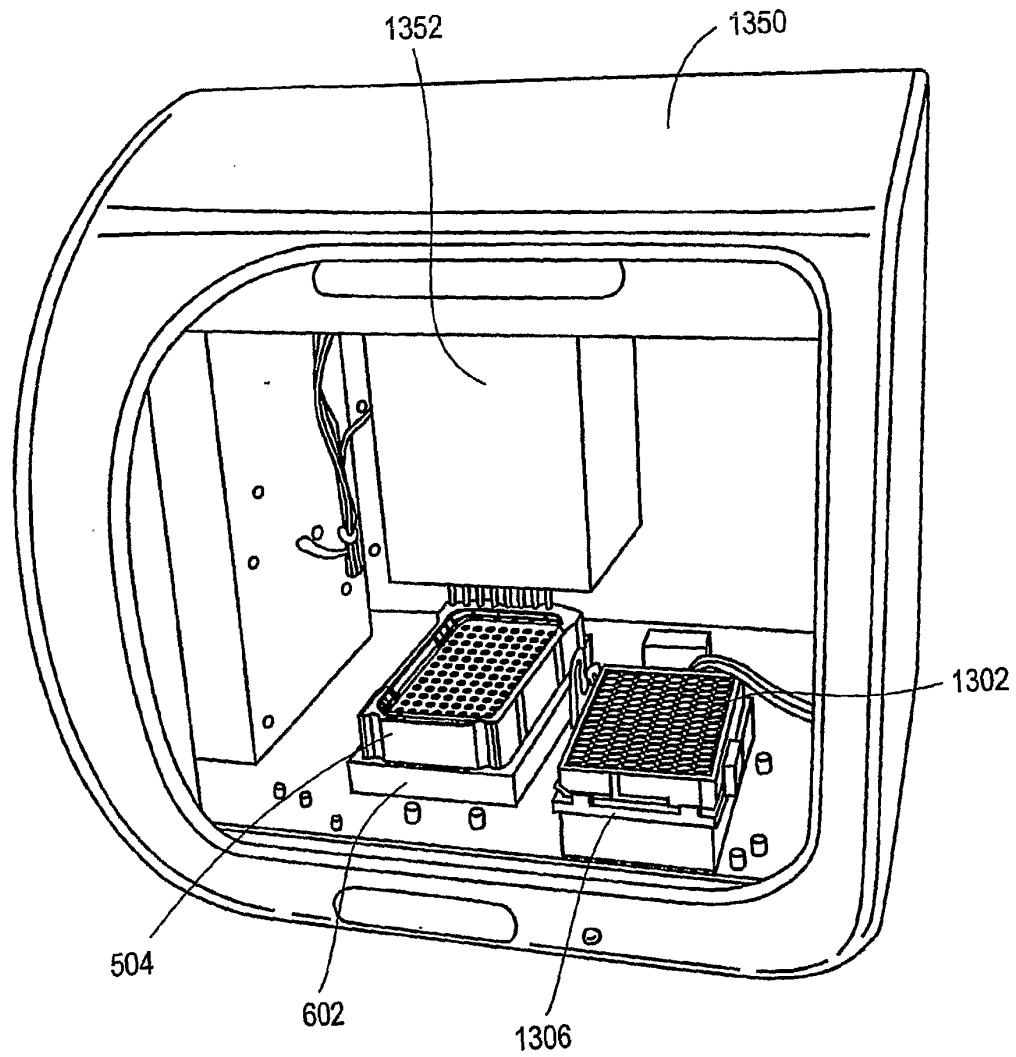


FIG. 13C

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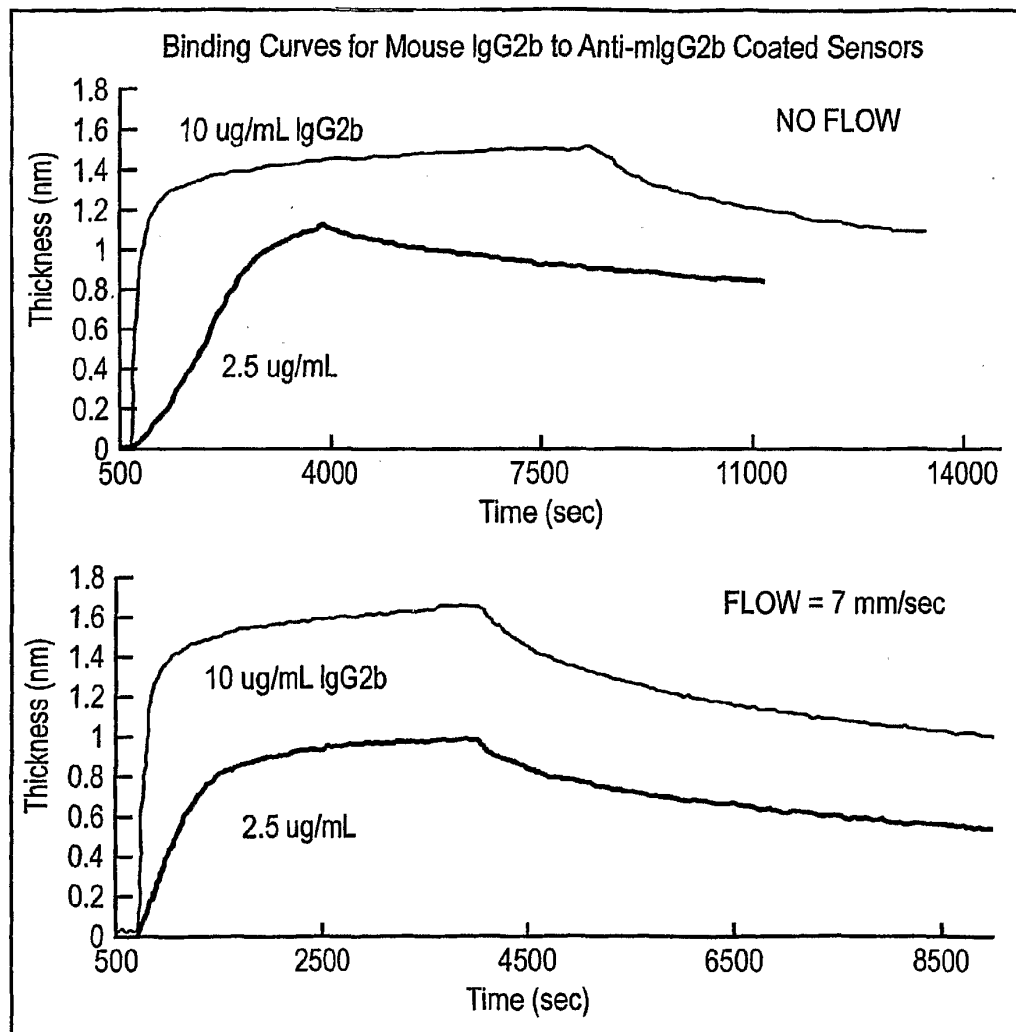


FIG. 14

Electronic Patent Application Fee Transmittal				
Application Number:				
Filing Date:				
Title of Invention:		Tip Tray Assembly For Optical Sensors		
First Named Inventor/Applicant Name:		Michael W. Recknor		
Filer:		Pauline Farmer-Koppenol/Heather Orosco		
Attorney Docket Number:		24377-18795 US		
Filed as Small Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Utility filing Fee (Electronic filing)	4011	1	82	82
Utility Search Fee	2111	1	270	270
Utility Examination Fee	2311	1	110	110
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				462

Electronic Acknowledgement Receipt	
EFS ID:	10024620
Application Number:	13101112
International Application Number:	
Confirmation Number:	4330
Title of Invention:	Tip Tray Assembly For Optical Sensors
First Named Inventor/Applicant Name:	Michael W. Recknor
Customer Number:	00758
Filer:	Pauline Farmer-Koppenol
Filer Authorized By:	
Attorney Docket Number:	24377-18795 US
Receipt Date:	04-MAY-2011
Filing Date:	
Time Stamp:	22:01:46
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$462
RAM confirmation Number	8340
Deposit Account	192555
Authorized User	
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File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	18795_US_ADS.pdf	1031995	no	6
			830921c09cb6b5272c130a95d2fd01b207833889		
Warnings:					
Information:					
2	Preliminary Amendment	18795_US_Preliminary_Amendment.pdf	66921	no	1
			491d6dc72ec7859ea6ccf785a9e445a50c6ba687		
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3		18795_US_Specification_from_parent.pdf	4473793	yes	45
			24d73228b2757d97a2b25047ec40528d6ac4dc07		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Specification		1	38	
	Claims		39	44	
	Abstract		45	45	
Warnings:					
Information:					
4	Drawings-only black and white line drawings	18795_US_Drawings_from_PCT.pdf	1151134	no	13
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5	Fee Worksheet (PTO-875)	fee-info.pdf	33030	no	2
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Warnings:					
Information:					
Total Files Size (in bytes):			6756873		

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	24377-18795 US
		Application Number	
Title of Invention	Tip Tray Assembly For Optical Sensors		
The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.			

Secrecy Order 37 CFR 5.2

☐ Portions or all of the application associated with this Application Data Sheet may fall under a Secrecy Order pursuant to 37 CFR 5.2 (Paper filers only. Applications that fall under Secrecy Order may not be filed electronically.)

Applicant Information:

Applicant 1					Remove
Applicant Authority		☒ Inventor		☐ Legal Representative under 35 U.S.C. 117	☐ Party of Interest under 35 U.S.C. 118
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Michael	W.	Recknor		
Residence Information (Select One)		☒ US Residency ☐ Non US Residency ☐ Active US Military Service			
City	Oakland	State/Province	CA	Country of Residence i	US
Citizenship under 37 CFR 1.41(b) i		US			
Mailing Address of Applicant:					
Address 1		c/o ForteBio, Inc.			
Address 2		1360 Willow Road, Suite 205			
City	Menlo Park		State/Province	CA	
Postal Code	94025		Country i	US	
Applicant 2					
Applicant Authority		☒ Inventor		☐ Legal Representative under 35 U.S.C. 117	☐ Party of Interest under 35 U.S.C. 118
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Hong		Tan		
Residence Information (Select One)		☒ US Residency ☐ Non US Residency ☐ Active US Military Service			
City	San Jose	State/Province	CA	Country of Residence i	US
Citizenship under 37 CFR 1.41(b) i		US			
Mailing Address of Applicant:					
Address 1		c/o ForteBio, Inc.			
Address 2		1360 Willow Road, Suite 205			
City	Menlo Park		State/Province	CA	
Postal Code	94025		Country i	US	
Applicant 3					
Applicant Authority		☒ Inventor		☐ Legal Representative under 35 U.S.C. 117	☐ Party of Interest under 35 U.S.C. 118
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Robert		Zuk		
Residence Information (Select One)		☒ US Residency ☐ Non US Residency ☐ Active US Military Service			
City	Atherton	State/Province	CA	Country of Residence i	US

Application Data Sheet 37 CFR 1.76		Attorney Docket Number		24377-18795 US	
		Application Number			
Title of Invention		Tip Tray Assembly For Optical Sensors			

Citizenship under 37 CFR 1.41(b) i		US			
Mailing Address of Applicant:					
Address 1		c/o ForteBio, Inc.			
Address 2		1360 Willow Road, Suite 205			
City	Menlo Park			State/Province	CA
Postal Code		94025	Countryⁱ	US	
Applicant 4 Remove					
Applicant Authority		☒ Inventor		☐ Legal Representative under 35 U.S.C. 117	
				☐ Party of Interest under 35 U.S.C. 118	
Prefix	Given Name	Middle Name		Family Name	Suffix
	Krista	Leah		Witte	
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service					
City	Hayward		State/Province	CA	Country of Residenceⁱ
					US
Citizenship under 37 CFR 1.41(b) i		US			
Mailing Address of Applicant:					
Address 1		c/o ForteBio, Inc.			
Address 2		1360 Willow Road, Suite 205			
City	Menlo Park			State/Province	CA
Postal Code		94025	Countryⁱ	US	
Applicant 5 Remove					
Applicant Authority		☒ Inventor		☐ Legal Representative under 35 U.S.C. 117	
				☐ Party of Interest under 35 U.S.C. 118	
Prefix	Given Name	Middle Name		Family Name	Suffix
	Sae			Choo	
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service					
City	Sunnyvale		State/Province	CA	Country of Residenceⁱ
					US
Citizenship under 37 CFR 1.41(b) i		US			
Mailing Address of Applicant:					
Address 1		c/o ForteBio, Inc.			
Address 2		1360 Willow Road, Suite 205			
City	Menlo Park			State/Province	CA
Postal Code		94025	Countryⁱ	US	
Applicant 6 Remove					
Applicant Authority		☒ Inventor		☐ Legal Representative under 35 U.S.C. 117	
				☐ Party of Interest under 35 U.S.C. 118	
Prefix	Given Name	Middle Name		Family Name	Suffix
	Scott			Lockard	
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service					
City	Los Gatos		State/Province	CA	Country of Residenceⁱ
					US
Citizenship under 37 CFR 1.41(b) i		US			

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	24377-18795 US
		Application Number	
Title of Invention	Tip Tray Assembly For Optical Sensors		

Mailing Address of Applicant:			
Address 1	c/o ForteBio, Inc.		
Address 2	1360 Willow Road, Suite 205		
City	Menlo Park	State/Province	CA
Postal Code	94025	Country	US
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button.			

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below. For further information see 37 CFR 1.33(a).	
☐ An Address is being provided for the correspondence information of this application.	
Customer Number	00758
Email Address	pfarmer@fenwick.com Add Email Remove Email

Application Information:

Title of the Invention	Tip Tray Assembly For Optical Sensors		
Attorney Docket Number	24377-18795 US	Small Entity Status Claimed	☒
Application Type	Nonprovisional		
Subject Matter	Utility		
Suggested Class (if any)		Sub Class (if any)	
Suggested Technology Center (if any)			
Total Number of Drawing Sheets (if any)	13	Suggested Figure for Publication (if any)	

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)
☐ Request Not to Publish. I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application has not and will not be the subject of an application filed in another country, or under a multilateral international agreement, that requires publication at eighteen months after filing.

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Enter either Customer Number or complete the Representative Name section below. If both sections are completed the Customer Number will be used for the Representative Information during processing.			
Please Select One:	☒ Customer Number	☐ US Patent Practitioner	☐ Limited Recognition (37 CFR 11.9)
Customer Number	00758		

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	24377-18795 US
		Application Number	
Title of Invention	Tip Tray Assembly For Optical Sensors		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, or 365(c) or indicate National Stage entry from a PCT application. Providing this information in the application data sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78(a)(2) or CFR 1.78(a)(4), and need not otherwise be made part of the specification.

Prior Application Status	Pending	Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	Division of	11423669	2006-06-12
Prior Application Status	Expired	Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
11423669	non provisional of	60690325	2005-06-13

Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the **Add** button. [Add](#)

Foreign Priority Information:

This section allows for the applicant to claim benefit of foreign priority and to identify any prior foreign application for which priority is not claimed. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55(a).

Remove			
Application Number	Country ⁱ	Parent Filing Date (YYYY-MM-DD)	Priority Claimed
			☒ Yes ☐ No

Additional Foreign Priority Data may be generated within this form by selecting the **Add** button. [Add](#)

Assignee Information:

Providing this information in the application data sheet does not substitute for compliance with any requirement of part 3 of Title 37 of the CFR to have an assignment recorded in the Office.

Assignee 1 Remove			
If the Assignee is an Organization check here. ☒			
Organization Name	ForteBio, Inc.		

Mailing Address Information:

Address 1	1360 Willow Road, Suite 205		
Address 2			
City	Menlo Park	State/Province	CA
Country ⁱ	US	Postal Code	94025
Phone Number		Fax Number	
Email Address			

Additional Assignee Data may be generated within this form by selecting the **Add** button. [Add](#)

Signature:

A signature of the applicant or representative is required in accordance with 37 CFR 1.33 and 10.18. Please see 37 CFR 1.47(d) for the form of the signature.

[069]

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	24377-18795 US
		Application Number	
Title of Invention	Tip Tray Assembly For Optical Sensors		

Signature	/Pauline Farmer-Koppenol/		Date (YYYY-MM-DD)	2011-05-04	
First Name	Pauline	Last Name	Farmer-Koppenol	Registration Number	58004

This collection of information is required by 37 CFR 1.76. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 23 minutes to complete, including gathering, preparing, and submitting the completed application data sheet form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspections or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.



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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
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Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
13/101,112	05/04/2011		462	24377-18795 US	18	1

CONFIRMATION NO. 4330

758
FENWICK & WEST LLP
SILICON VALLEY CENTER
801 CALIFORNIA STREET
MOUNTAIN VIEW, CA 94041

FILING RECEIPT



OC000000047675761

Date Mailed: 05/20/2011

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Applicant(s)

Michael W. Recknor, Oakland, CA;
Hong Tan, San Jose, CA;
Robert Zuk, Atherton, CA;
Krista Leah Witte, Hayward, CA;
Sae Choo, Sunnyvale, CA;
Scott Lockard, Los Gatos, CA;

Assignment For Published Patent Application

FORTEBIO, INC., Menlo Park, CA

Power of Attorney: None

Domestic Priority data as claimed by applicant

This application is a DIV of 11/423,669 06/12/2006
which claims benefit of 60/690,325 06/13/2005

Foreign Applications (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.)

If Required, Foreign Filing License Granted: 05/16/2011

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/101,112**

Projected Publication Date: To Be Determined - pending completion of Missing Parts

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

Tip Tray Assembly For Optical Sensors

Preliminary Class**PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES**

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

LICENSE FOR FOREIGN FILING UNDER**Title 35, United States Code, Section 184****Title 37, Code of Federal Regulations, 5.11 & 5.15****GRANTED**

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier

license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875						Application or Docket Number 13/101,112				
APPLICATION AS FILED - PART I										
(Column 1)		(Column 2)		SMALL ENTITY		OTHER THAN SMALL ENTITY				
FOR	NUMBER FILED	NUMBER EXTRA	RATE(\$)	FEE(\$)		RATE(\$)	FEE(\$)			
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	82		N/A				
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A	270		N/A				
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	110		N/A				
TOTAL CLAIMS (37 CFR 1.16(j))	18	minus 20 = *	x 26 =	0.00	OR					
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1	minus 3 = *	x 110 =	0.00						
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$270 (\$135 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00						
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00						
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL		TOTAL				
				462						
APPLICATION AS AMENDED - PART II										
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OTHER THAN SMALL ENTITY		
AMENDMENT A		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)
	Total (37 CFR 1.16(i))	*	Minus	**	=	x	=	OR	x	=
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x	=	OR	x	=
	Application Size Fee (37 CFR 1.16(s))							OR		
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	
AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)
	Total (37 CFR 1.16(i))	*	Minus	**	=	x	=	OR	x	=
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x	=	OR	x	=
	Application Size Fee (37 CFR 1.16(s))							OR		
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))							OR		
						TOTAL ADD'L FEE		OR	TOTAL ADD'L FEE	
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.										



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/101,112	05/04/2011	Michael W. Recknor	24377-18795 US

CONFIRMATION NO. 4330

FORMALITIES LETTER



758
FENWICK & WEST LLP
SILICON VALLEY CENTER
801 CALIFORNIA STREET
MOUNTAIN VIEW, CA 94041

Date Mailed: 05/20/2011

NOTICE TO FILE MISSING PARTS OF NONPROVISIONAL APPLICATION

FILED UNDER 37 CFR 1.53(b)

Filing Date Granted

Items Required To Avoid Abandonment:

An application number and filing date have been accorded to this application. The item(s) indicated below, however, are missing. Applicant is given **TWO MONTHS** from the date of this Notice within which to file all required items below to avoid abandonment. Extensions of time may be obtained by filing a petition accompanied by the extension fee under the provisions of 37 CFR 1.136(a).

- The oath or declaration is missing.

A properly signed oath or declaration in compliance with 37 CFR 1.63, identifying the application by the above Application Number and Filing Date, is required.

Note: If a petition under 37 CFR 1.47 is being filed, an oath or declaration in compliance with 37 CFR 1.63 signed by all available joint inventors, or if no inventor is available by a party with sufficient proprietary interest, is required.

The applicant needs to satisfy supplemental fees problems indicated below.

The required item(s) identified below must be timely submitted to avoid abandonment:

- A surcharge (for late submission of filing fee, search fee, examination fee or oath or declaration) as set forth in 37 CFR 1.16(f) of **\$65** for a small entity in compliance with 37 CFR 1.27, must be submitted.

SUMMARY OF FEES DUE:

Total fee(s) required within **TWO MONTHS** from the date of this Notice is **\$65** for a small entity

- **\$65** Surcharge.

Replies should be mailed to:

Mail Stop Missing Parts
Commissioner for Patents
P.O. Box 1450
Alexandria VA 22313-1450

Registered users of EFS-Web may alternatively submit their reply to this notice via EFS-Web.

<https://sportal.uspto.gov/authenticate/AuthenticateUserLocalEPF.html>

For more information about EFS-Web please call the USPTO Electronic Business Center at **1-866-217-9197** or visit our website at <http://www.uspto.gov/ebc>.

If you are not using EFS-Web to submit your reply, you must include a copy of this notice.

/hnguyen/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

To: PTOC@Fenwick.com,,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 758

May 20, 2011 05:31:41 AM

Dear PAIR Customer:

FENWICK & WEST LLP
SILICON VALLEY CENTER
801 CALIFORNIA STREET
MOUNTAIN VIEW, CA 94041
UNITED STATES

The following USPTO patent application(s) associated with your Customer Number, 758 , have new outgoing correspondence. This correspondence is now available for viewing in Private PAIR.

The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

Disclaimer:

The list of documents shown below is provided as a courtesy and is not part of the official file wrapper. The content of the images shown in PAIR is the official record.

Application	Document	Mailroom Date	Attorney Docket No.
13101112	APP.FILE.REC	05/20/2011	24377-18795 US
	NTC.MISS.PRT	05/20/2011	24377-18795 US

To view your correspondence online or update your email addresses, please visit us anytime at <https://sportal.uspto.gov/secure/myportal/privatepair>.

If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov with 'e-Office Action' on the subject line or call 1-866-217-9197 during the following hours:

Monday - Friday 6:00 a.m. to 12:00 a.m.

Thank you for prompt attention to this notice,

UNITED STATES PATENT AND TRADEMARK OFFICE
PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANT(S): Michael W. Recknor, et al.
SERIAL NO.: **13/101,112**
FILING DATE: May 4, 2011
TITLE: Tip Tray Assembly For Optical Sensors
EXAMINER: Not Yet Known
GROUP ART UNIT: Not Yet Known
F&W REF.: 24377-18795 US

CERTIFICATE OF ELECTRONIC (EFS-WEB) TRANSMISSION

I hereby certify that this correspondence is being transmitted via the Office electronic filing system in accordance with 37 C.F.R. § 1.8(a)(i)(C) from the Pacific Time Zone of the United States on the local date shown below.

Dated: **20 July 2011**

By: /Pauline Farmer-Koppenol/
Pauline Farmer-Koppenol, Reg. No. 58,004

MAIL STOP MISSING PARTS
COMMISSIONER FOR PATENTS
P.O. BOX 1450
ALEXANDRIA, VA 22313-1450

RESPONSE TO NOTICE TO FILE MISSING PARTS OF APPLICATION

SIR:

Responsive to the Notice to File Missing Parts dated May 20, 2011 ("Notice"), received in the above-identified patent application,

☒ Enclosed are:

- ☒ an executed Declaration;
- ☒ an executed Power of Attorney;
- ☒ an executed Statement Under 37 CFR 3.73(b); and
- ☒ payment in the amount of \$65.00 for the

24377/18795/SF/5349941.1

☒ missing parts surcharge.

Respectfully submitted,

Dated: 20 July 2011

By: /Pauline Farmer-Koppenol/

Pauline Farmer-Koppenol
Reg. No.: 58,004
Fenwick & West LLP
Silicon Valley Center
801 California Street
Mountain View, CA 94041
Direct: (415) 875-2406
Main: (415) 875-2300
Fax: (650) 938-5200

**DECLARATION (37 CFR 1.63) FOR
UTILITY OR DESIGN APPLICATION
USING AN APPLICATION DATA SHEET
(37 CFR 1.76)**

Application Number	11/423,669
Filing Date	June 12, 2006
First Named Inventor	Michael W. Recknor
Title	Tip Tray Assembly for Optical Sensors
Group Art Unit	1744
Attorney Docket Number	24377-11758

As the below named inventor(s), I/we declare that:

This declaration is directed to:

- ☐ The attached application, or
☒ Application No. 11/423,669, filed on June 12, 2006,
☐ as amended on _____ (if applicable);

I/we believe that I/we am/are the original and first inventor(s) of the subject matter which is claimed and for which a patent is sought;

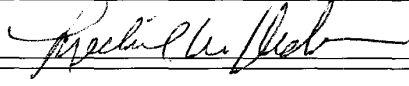
I/we have reviewed and understand the contents of the above-identified application, including the claims, as amended by any amendment specifically referred to above;

I/we acknowledge the duty to disclose to the United States Patent and Trademark Office all information known to me/us to be material to patentability as defined in 37 CFR 1.56, including material information which became available between the filing date of the prior application and the National or PCT International filing date of the continuation-in-part application, if applicable; and

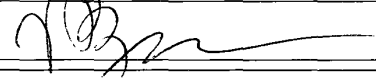
All statements made herein of my/our knowledge are true, all statements made herein on information and belief are believed to be true, and further that these statements were made with the knowledge that willful false statements and the like are punishable by fine or imprisonment, or both, under 18 U.S.C. 1001, and may jeopardize the validity of the application or any patent issuing thereon.

FULL NAME OF INVENTOR(S)

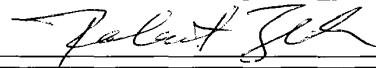
Inventor one: Michael W. Recknor Citizen of: US

Signature:  Date: Jan 16, 2007

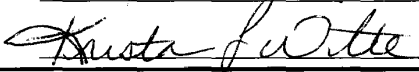
Inventor two: Hong Tan Citizen of: US

Signature:  Date: January 5, 2007

Inventor three: Robert Zuk Citizen of: US

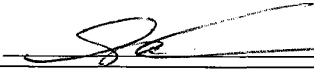
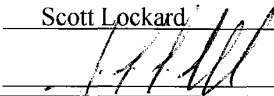
Signature:  Date: 1-5-07

Inventor four: Krista Leah Witte Citizen of: US

Signature:  Date: 1/05/2007

☒ Additional inventors are being named on 1 additional form(s) attached hereto.

24377/11758/DOCS/1682929.1

DECLARATION	ADDITIONAL INVENTOR(S) Supplemental Sheet
As the below named inventor(s), I/we declare that: This declaration is directed to: ☐ The attached application, or ☒ Application No. 11/423,669,, filed on June 12, 2006, ☐ as amended on _____ (if applicable);	
FULL NAME OF INVENTOR(S)	
Inventor five: <u>Sae Choo</u>	Citizen of: <u>US</u>
Signature: 	Date: <u>1-5-07</u>
Inventor six: <u>Scott Lockard</u>	Citizen of: <u>US</u>
Signature: 	Date: <u>1-12-07</u>

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

POWER OF ATTORNEY TO PROSECUTE APPLICATIONS BEFORE THE USPTO

I hereby revoke all previous powers of attorney given in the application identified in the attached statement under 37 CFR 3.73(b).

I hereby appoint:



Practitioners associated with the Customer Number:

00758

OR



Practitioner(s) named below (if more than ten patent practitioners are to be named, then a customer number must be used):

Name	Registration Number	Name	Registration Number

as attorney(s) or agent(s) to represent the undersigned before the United States Patent and Trademark Office (USPTO) in connection with any and all patent applications assigned only to the undersigned according to the USPTO assignment records or assignment documents attached to this form in accordance with 37 CFR 3.73(b).

Please change the correspondence address for the application identified in the attached statement under 37 CFR 3.73(b) to:



The address associated with Customer Number:

00758

OR

☐ Firm or Individual Name			
Address			
City	State	Zip	
Country			
Telephone	Email		

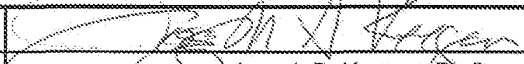
Assignee Name and Address:

FortéBio, Inc.
1360 Willow Road, Suite 205
Menlo Park, CA 94025

A copy of this form, together with a statement under 37 CFR 3.73(b) (Form PTO/SB/96 or equivalent) is required to be filed in each application in which this form is used. The statement under 37 CFR 3.73(b) may be completed by one of the practitioners appointed in this form if the appointed practitioner is authorized to act on behalf of the assignee, and must identify the application in which this Power of Attorney is to be filed.

SIGNATURE of Assignee of Record

The individual whose signature and title is supplied below is authorized to act on behalf of the assignee

Signature		Date	5/25/11
Name	Joseph D. Keegan, Ph.D.	Telephone	650-322-1360
Title	President and CEO		

This collection of information is required by 37 CFR 1.31, 1.32 and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: Michael W. Recknor, et al.

Application No./Patent No.: 13/101,112

Filed/Issue Date: May 4, 2011

Titled: Tip Tray Assembly For Optical Sensors

FortéBio, Inc., a corporation

(Name of Assignee)

(Type of Assignee, e.g., corporation, partnership, university, government agency, etc.)

states that it is:

1. ☒ the assignee of the entire right, title, and interest in;
2. ☐ an assignee of less than the entire right, title, and interest in
(The extent (by percentage) of its ownership interest is _____ %); or
3. ☐ the assignee of an undivided interest in the entirety of (a complete assignment from one of the joint inventors was made)

the patent application/patent identified above, by virtue of either:

- A. ☒ An assignment from the inventor(s) of the patent application/patent identified above. The assignment was recorded in the United States Patent and Trademark Office at Reel 026617, Frame 0079, or for which a copy therefore is attached.

OR

- B. ☐ A chain of title from the inventor(s), of the patent application/patent identified above, to the current assignee as follows:

1. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

2. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

3. From: _____ To: _____

The document was recorded in the United States Patent and Trademark Office at

Reel _____, Frame _____, or for which a copy thereof is attached.

☐ Additional documents in the chain of title are listed on a supplemental sheet(s).

☐ As required by 37 CFR 3.73(b)(1)(i), the documentary evidence of the chain of title from the original owner to the assignee was, or concurrently is being, submitted for recordation pursuant to 37 CFR 3.11.

[NOTE: A separate copy (i.e., a true copy of the original assignment document(s)) must be submitted to Assignment Division in accordance with 37 CFR Part 3, to record the assignment in the records of the USPTO. See MPEP 302.08]

The undersigned (whose title is supplied below) is authorized to act on behalf of the assignee.

/Pauline Farmer-Koppenol/

20 July 2011

Signature

Date

Pauline Farmer-Koppenol, Reg. No. 58,004

Attorney for Assignee

Printed or Typed Name

Title

This collection of information is required by 37 CFR 3.73(b). The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

Privacy Act Statement

The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

Electronic Patent Application Fee Transmittal				
Application Number:		13101112		
Filing Date:		04-May-2011		
Title of Invention:		Tip Tray Assembly For Optical Sensors		
First Named Inventor/Applicant Name:		Michael W. Recknor		
Filer:		Pauline Farmer-Koppenol/Heather Orosco		
Attorney Docket Number:		24377-18795 US		
Filed as Small Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Late filing fee for oath or declaration	2051	1	65	65
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Total in USD (\$)				65

Electronic Acknowledgement Receipt	
EFS ID:	10561780
Application Number:	13101112
International Application Number:	
Confirmation Number:	4330
Title of Invention:	Tip Tray Assembly For Optical Sensors
First Named Inventor/Applicant Name:	Michael W. Recknor
Customer Number:	00758
Filer:	Pauline Farmer-Koppenol
Filer Authorized By:	
Attorney Docket Number:	24377-18795 US
Receipt Date:	21-JUL-2011
Filing Date:	04-MAY-2011
Time Stamp:	01:30:06
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$65
RAM confirmation Number	7919
Deposit Account	192555
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees) Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)	

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)					
Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)					
File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Applicant Response to Pre-Exam Formalities Notice	18795_US_Response_to_Notice_to_File_Missing_Parts.pdf	77436	no	2
			d25ffbfb2c1c37e79c6e82aa70562ec19ea6eb1e		
Warnings:					
Information:					
2	Oath or Declaration filed	18795_US_Declaration_from_parent.pdf	211137	no	2
			24674c172ab15f0ad65304b64f947506c8a2dca6		
Warnings:					
Information:					
3	Power of Attorney	18795_US_Universal_POA.pdf	1288027	no	2
			3c46eef027671f12662935e09f2fb23d493f9e48		
Warnings:					
Information:					
4	Assignee showing of ownership per 37 CFR 3.73(b).	18795_US_373b_Statement.pdf	423039	no	2
			92426b57a04755cebb83415d3af5860919d2770e		
Warnings:					
Information:					
5	Fee Worksheet (SB06)	fee-info.pdf	30122	no	2
			1d402a05e8ba1aaf1b0b55c8a139564fed157302		
Warnings:					
Information:					
Total Files Size (in bytes):			2029761		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS: Michael W. Recknor, et al.
APPLICATION NO.: 13/101,112
FILING DATE: May 4, 2011
TITLE: Tip Tray Assembly For Optical Sensors
EXAMINER: Not Yet Known
GROUP ART UNIT: Not Yet Known
ATTY. DKT. NO.: 24377-18795 US
CONFIRMATION NO.: 4330

COMMISSIONER FOR PATENTS
P.O. BOX 1450
ALEXANDRIA, VA 22313-1450

PRELIMINARY AMENDMENT

SIR:

Preliminary to examination of the above-captioned patent application, please amend the application as follows:

Amendments to the Specification begin on page 2 of this paper.

24377/18795/SF/5350777.1

AMENDMENTS TO THE SPECIFICATION

Kindly amend the specification at paragraph CROSS-REFERENCE TO RELATED APPLICATIONS as follows:

[0001] This application is a division of U.S. Application No. 11/423,669, filed on June 12, 2006,
entitled “Tip Tray Assembly for Optical Sensors,” which claims the benefit of U.S. Provisional
Application No. 60/690,325, filed on June, 13, 2005, entitled “Tip Tray Assembly for Optical Sensors,”
the entire disclosure of which is hereby incorporated by reference herein, including any appendices or
attachments thereof, in its entirety for all purposes both of which are hereby incorporated in their entirety,
including any appendices or attachments thereof, by reference for all purposes.

Respectfully submitted,
MICHAEL W. RECKNOR, ET AL.

Dated: 26 July 2011

By: /Pauline Farmer-Koppenol/

Pauline Farmer-Koppenol
Reg. No.: 58,004
Fenwick & West LLP
555 California Street, 12th Floor
San Francisco, CA 94104
Direct: (415) 875-2406
Main: (415) 875-2300
Fax: (650) 938-5200

Electronic Acknowledgement Receipt	
EFS ID:	10603609
Application Number:	13101112
International Application Number:	
Confirmation Number:	4330
Title of Invention:	Tip Tray Assembly For Optical Sensors
First Named Inventor/Applicant Name:	Michael W. Recknor
Customer Number:	00758
Filer:	Pauline Farmer-Koppenol
Filer Authorized By:	
Attorney Docket Number:	24377-18795 US
Receipt Date:	26-JUL-2011
Filing Date:	04-MAY-2011
Time Stamp:	19:50:21
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment		no			
File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		18795_US_Preliminary_Amend ment.pdf	86696 b5e482f9518104f3f8850ad7b768a3a1d3fa 7bb9	yes	2

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Preliminary Amendment	1	1
	Specification	2	2
Warnings:			
Information:			
Total Files Size (in bytes):		86696	
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.			

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875						Application or Docket Number 13/101,112	
APPLICATION AS FILED - PART I							
(Column 1)		(Column 2)		SMALL ENTITY		OTHER THAN SMALL ENTITY	
FOR	NUMBER FILED	NUMBER EXTRA	RATE(\$)	FEE(\$)		RATE(\$)	FEE(\$)
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A	82		N/A	
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A	270		N/A	
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A	110		N/A	
TOTAL CLAIMS (37 CFR 1.16(j))	18	minus 20 = *	x 26 =	0.00	OR		
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1	minus 3 = *	x 110 =	0.00			
APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$270 (\$135 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).			0.00			
MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))				0.00			
* If the difference in column 1 is less than zero, enter "0" in column 2.			TOTAL	462		TOTAL	
APPLICATION AS AMENDED - PART II							
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY	
AMENDMENT A		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)
	Total (37 CFR 1.16(i))	*	Minus	**	=	x	=
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x	=
	Application Size Fee (37 CFR 1.16(s))						
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
			TOTAL ADD'L FEE			OR	
(Column 1)		(Column 2)		(Column 3)		OTHER THAN SMALL ENTITY	
AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)
	Total (37 CFR 1.16(i))	*	Minus	**	=	x	=
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x	=
	Application Size Fee (37 CFR 1.16(s))						
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))						
			TOTAL ADD'L FEE			OR	
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.							



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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO.	TOT CLAIMS	IND CLAIMS
13/101,112	05/04/2011		527	24377-18795 US	18	1

CONFIRMATION NO. 4330

UPDATED FILING RECEIPT



OC000000048987193

758
FENWICK & WEST LLP
SILICON VALLEY CENTER
801 CALIFORNIA STREET
MOUNTAIN VIEW, CA 94041

Date Mailed: 07/29/2011

Receipt is acknowledged of this non-provisional patent application. The application will be taken up for examination in due course. Applicant will be notified as to the results of the examination. Any correspondence concerning the application must include the following identification information: the U.S. APPLICATION NUMBER, FILING DATE, NAME OF APPLICANT, and TITLE OF INVENTION. Fees transmitted by check or draft are subject to collection. Please verify the accuracy of the data presented on this receipt. **If an error is noted on this Filing Receipt, please submit a written request for a Filing Receipt Correction. Please provide a copy of this Filing Receipt with the changes noted thereon. If you received a "Notice to File Missing Parts" for this application, please submit any corrections to this Filing Receipt with your reply to the Notice. When the USPTO processes the reply to the Notice, the USPTO will generate another Filing Receipt incorporating the requested corrections**

Applicant(s)

Michael W. Recknor, Oakland, CA;
Hong Tan, San Jose, CA;
Robert Zuk, Atherton, CA;
Krista Leah Witte, Hayward, CA;
Sae Choo, Sunnyvale, CA;
Scott Lockard, Los Gatos, CA;

Assignment For Published Patent Application

FORTEBIO, INC., Menlo Park, CA

Power of Attorney: The patent practitioners associated with Customer Number 00758

Domestic Priority data as claimed by applicant

This application is a DIV of 11/423,669 06/12/2006
which claims benefit of 60/690,325 06/13/2005

Foreign Applications (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.)

If Required, Foreign Filing License Granted: 05/16/2011

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/101,112**

Projected Publication Date: 11/03/2011

Non-Publication Request: No

Early Publication Request: No

**** SMALL ENTITY ****

Title

Tip Tray Assembly For Optical Sensors

Preliminary Class**PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES**

Since the rights granted by a U.S. patent extend only throughout the territory of the United States and have no effect in a foreign country, an inventor who wishes patent protection in another country must apply for a patent in a specific country or in regional patent offices. Applicants may wish to consider the filing of an international application under the Patent Cooperation Treaty (PCT). An international (PCT) application generally has the same effect as a regular national patent application in each PCT-member country. The PCT process **simplifies** the filing of patent applications on the same invention in member countries, but **does not result** in a grant of "an international patent" and does not eliminate the need of applicants to file additional documents and fees in countries where patent protection is desired.

Almost every country has its own patent law, and a person desiring a patent in a particular country must make an application for patent in that country in accordance with its particular laws. Since the laws of many countries differ in various respects from the patent law of the United States, applicants are advised to seek guidance from specific foreign countries to ensure that patent rights are not lost prematurely.

Applicants also are advised that in the case of inventions made in the United States, the Director of the USPTO must issue a license before applicants can apply for a patent in a foreign country. The filing of a U.S. patent application serves as a request for a foreign filing license. The application's filing receipt contains further information and guidance as to the status of applicant's license for foreign filing.

Applicants may wish to consult the USPTO booklet, "General Information Concerning Patents" (specifically, the section entitled "Treaties and Foreign Patents") for more information on timeframes and deadlines for filing foreign patent applications. The guide is available either by contacting the USPTO Contact Center at 800-786-9199, or it can be viewed on the USPTO website at <http://www.uspto.gov/web/offices/pac/doc/general/index.html>.

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4158).

LICENSE FOR FOREIGN FILING UNDER**Title 35, United States Code, Section 184****Title 37, Code of Federal Regulations, 5.11 & 5.15****GRANTED**

The applicant has been granted a license under 35 U.S.C. 184, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" followed by a date appears on this form. Such licenses are issued in all applications where the conditions for issuance of a license have been met, regardless of whether or not a license may be required as set forth in 37 CFR 5.15. The scope and limitations of this license are set forth in 37 CFR 5.15(a) unless an earlier

license has been issued under 37 CFR 5.15(b). The license is subject to revocation upon written notification. The date indicated is the effective date of the license, unless an earlier license of similar scope has been granted under 37 CFR 5.13 or 5.14.

This license is to be retained by the licensee and may be used at any time on or after the effective date thereof unless it is revoked. This license is automatically transferred to any related applications(s) filed under 37 CFR 1.53(d). This license is not retroactive.

The grant of a license does not in any way lessen the responsibility of a licensee for the security of the subject matter as imposed by any Government contract or the provisions of existing laws relating to espionage and the national security or the export of technical data. Licensees should apprise themselves of current regulations especially with respect to certain countries, of other agencies, particularly the Office of Defense Trade Controls, Department of State (with respect to Arms, Munitions and Implements of War (22 CFR 121-128)); the Bureau of Industry and Security, Department of Commerce (15 CFR parts 730-774); the Office of Foreign Assets Control, Department of Treasury (31 CFR Parts 500+) and the Department of Energy.

NOT GRANTED

No license under 35 U.S.C. 184 has been granted at this time, if the phrase "IF REQUIRED, FOREIGN FILING LICENSE GRANTED" DOES NOT appear on this form. Applicant may still petition for a license under 37 CFR 5.12, if a license is desired before the expiration of 6 months from the filing date of the application. If 6 months has lapsed from the filing date of this application and the licensee has not received any indication of a secrecy order under 35 U.S.C. 181, the licensee may foreign file the application pursuant to 37 CFR 5.15(b).



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/101,112	05/04/2011	Michael W. Recknor	24377-18795 US

CONFIRMATION NO. 4330

POA ACCEPTANCE LETTER



758
FENWICK & WEST LLP
SILICON VALLEY CENTER
801 CALIFORNIA STREET
MOUNTAIN VIEW, CA 94041

Date Mailed: 07/29/2011

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 07/21/2011.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/cnguyen/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

To: PTOC@Fenwick.com,,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 758

Jul 29, 2011 05:30:01 AM

Dear PAIR Customer:

FENWICK & WEST LLP
SILICON VALLEY CENTER
801 CALIFORNIA STREET
MOUNTAIN VIEW, CA 94041
UNITED STATES

The following USPTO patent application(s) associated with your Customer Number, 758 , have new outgoing correspondence. This correspondence is now available for viewing in Private PAIR.

The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

Disclaimer:

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Application	Document	Mailroom Date	Attorney Docket No.
13101112	APP.FILE.REC	07/29/2011	24377-18795 US
	N570	07/29/2011	24377-18795 US

To view your correspondence online or update your email addresses, please visit us anytime at <https://sportal.uspto.gov/secure/myportal/privatepair>.

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Monday - Friday 6:00 a.m. to 12:00 a.m.

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PLUS Search Results for S/N 13101112, Searched Fri Aug 05 10:00:29 EDT 2011

The Patent Linguistics Utility System (PLUS) is a USPTO automated search system for U.S. Patents from 1971 to the present PLUS is a query-by-example search system which produces a list of patents that are most closely related linguistically to the application searched. This search was prepared by the staff of the Scientific and Technical Information Center, SIRA.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/101,112	05/04/2011	Michael W. Recknor	24377-18795 US	4330
758 7590 09/12/2011 FENWICK & WEST LLP SILICON VALLEY CENTER 801 CALIFORNIA STREET MOUNTAIN VIEW, CA 94041			EXAMINER KWAK, DEAN P	
			ART UNIT 1773	PAPER NUMBER
			NOTIFICATION DATE 09/12/2011	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTOC@Fenwick.com

Office Action Summary	Application No.	Applicant(s)	
	13/101,112	RECKNOR ET AL.	
	Examiner	Art Unit	
	DEAN KWAK	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☐ Responsive to communication(s) filed on ____.

2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.

3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.

4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5) ☒ Claim(s) 1-18 is/are pending in the application.

5a) Of the above claim(s) ____ is/are withdrawn from consideration.

6) ☐ Claim(s) ____ is/are allowed.

7) ☒ Claim(s) 1-18 is/are rejected.

8) ☐ Claim(s) ____ is/are objected to.

9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

10) ☐ The specification is objected to by the Examiner.

11) ☒ The drawing(s) filed on 04 May 2011 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) ☐ All b) ☐ Some * c) ☐ None of:

1. ☐ Certified copies of the priority documents have been received.

2. ☐ Certified copies of the priority documents have been received in Application No. ____.

3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____.

4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.

5) ☐ Notice of Informal Patent Application

6) ☒ Other: PTOL-324.

DETAILED ACTION

Claim Status

1. Applicant's preliminary amendment to cancel claims 19-46 filed on 05/04/2011 is acknowledged.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1-12, 14 & 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Marquiss et al. (US 6838051; prior publication date of 24 January 2002, US 2002/0009391).

Regarding claim 1, Marquiss et al. teach an apparatus for packaging an optical sensing assembly (C2/L5-13, C5/L3-9), the apparatus comprising:

- a substrate (e.g., manifold 3502) with a plurality of openings (e.g., aperture 3540),
- each opening being configured for holding a discrete optical sensing assembly therein (see e.g., dispense elements 3504),
- the optical sensing assembly being positioned in the opening with a tip (e.g., dispense tip 3534) of the optical sensing assembly extending through the opening to be suspended from the substrate (see Figs. 32, 33),

- wherein the plurality of openings are arranged so the optical sensing assembly positioned therein avoids contacting another optical sensing assembly positioned therein (see Fig. 31 & C25/L30-33).

Regarding claims 2-12, 14 & 15, Marquiss et al. further teach the apparatus comprising:

- a support member (e.g., parallel slides 3412b) for supporting the substrate (see Fig. 29), the support member positioning the substrate so the tip (3534) of the optical sensing assembly suspended from the opening in the substrate contacts a solution in one of a plurality of wells in a container (e.g., microplate 3406) adjacent to the substrate (C23/L51-C24/L53), wherein the substrate is configured for preparing the optical assembly for assay (C22/L15-25);
- the container is a microtiter plate including 96 wells (Fig. 5 & C6/L61-66);
- the optical sensing assembly further comprises a hub (e.g., body tube 3532) at an end of the assembly (see Fig. 32) opposite the tip (3534), the hub being designed for attachment to a device that moves the assembly from a first location to a second location (C23/L13-C24/L53);
- the openings include elongated barrels (see Fig. 33) that allow the optical sensing assembly to be immersed in a solution in a container below the substrate without the tip of the optical sensing assembly contacting a tip of another optical sensing assembly in the substrate (see Fig. 28, C22/L15-25 & Fig. 31 & C25/L30-33);

- a plurality of discrete optical sensing assemblies coated with different reagents are moved around and arranged in the plurality of openings to create a customized array (C23/L13-C24/L53));
- the optical sensing assembly in the substrate is mapped to wells in a second container (e.g., receptacle 3712) containing different samples (e.g., second liquid 3710, C27/L35-42);
- the solution is a pre-wet solution (e.g., fluids, C22/L15-25) into which the optical sensing assembly is immersed;
- the solution is a protein solution (C6/L29-60);
- the substrate being configured for preparing the optical sensing assembly for assay further comprises the substrate being configured for pre-wet (e.g., fluids, C22/L15-25) of the optical assembly before assay;
- the substrate being configured for preparing the optical sensing assembly for assay further comprises the substrate being configured protein immobilization of the optical assembly (see C6/L29-60) before assay;
- the optical sensing assembly comprises a hub (e.g., head or tip flange 3530) at an end opposite the tip (3534), and the optical sensing assembly is inserted into the opening (3540) with the hub of the assembly remaining on a first side of the substrate and the tip of the assembly being inserted through the opening to be suspended from a second side of the substrate (see Figs. 32, 33);
- a base (1208) on a second side of the substrate (see the bottom portion of the manifold 3502 in Fig. 31) to protect the tip of the optical sensing assembly; and

- a container (C7/L50-53) is positioned inside the base (1208) beneath the substrate (see Fig. 29), the container being positioned so the tip of the suspended optical sensing assembly contacts solution in one of the plurality of wells in the container (C22/L15-25 & Fig. 29).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later

invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claims 13 & 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marquiss et al. (US 6838051; prior publication date of 24 January 2002, US 2002/0009391) in view of Gubernator et al. (US 6436351).

Regarding claims 13 & 17, Marquiss et al. further teach the 96-well microplate 1200 comprising a base 1208, and a frame 1202 with notches 1210 to facilitate receiving a protective lid, see C7/L42-45. However, Marquiss et al. fail to teach a cover on a first side of the substrate (e.g., optical dispensing assembly 3504).

Gubernator et al. teach a packaging for a microtitre plate having a cover 26 and a base 46 designed to lock together around a substrate 16 for protecting and maintaining a reactor assembly 19 within the wells 18 to prevent spilling and cross-contamination during shipping and storage, see C1/L52-55.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the device disclosed by Marquiss et al. having a cover and base around the substrate, as taught by Gubernator et al., to maintain the assembly in place prevent spilling and cross-contamination during shipping and storage.

Regarding claim 16, while features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function, because apparatus claims cover what a device is, not what a device does (Hewlett-Packard Co. v. Bausch & Lomb Inc., 909 F.2d 1464, 1469, 15 USPQ2d 1525,

1528 (Fed. Cir. 1990)). Thus, if a prior art structure is capable of performing the intended use as recited in the preamble, or elsewhere in a claim, then it meets the claim.

Regarding claim 18, modified Marquiss et al. further teach the apparatus is designed to fit together with the cover of another to be stackable for storage (Fig. 44, 47 & C36/L10-25).

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DEAN KWAK whose telephone number is (571)270-7072. The examiner can normally be reached on M-TH, 5:30 am - 3:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

27 August 2011

/Dean Kwak/
Examiner, Art Unit 1773

Notice of References Cited	Application/Control No. 13/101,112	Applicant(s)/Patent Under Reexamination RECKNOR ET AL.	
	Examiner DEAN KWAK	Art Unit 1773	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-6,838,051	01-2005	Marquiss et al.	422/63
*	B	US-6,436,351	08-2002	Gubernator et al.	422/553
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

<i>Search Notes</i> 	Application/Control No. 13101112	Applicant(s)/Patent Under Reexamination RECKNOR ET AL.
	Examiner DEAN KWAK	Art Unit 1773

SEARCHED			
Class	Subclass	Date	Examiner
422	50, 400, 401, 407, 408, 503, 504, 511, 521	8/27/2011	dk

SEARCH NOTES		
Search Notes	Date	Examiner
EAST search	8/27/2011	dk
inventor search	8/27/2011	dk

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	7	((MICHAEL) near2 (RECKNOR)).INV.	US-PGPUB; USPAT	OR	ON	2011/08/27 07:25
S2	129	((HONG) near2 (TAN)). INV.	US-PGPUB; USPAT	OR	ON	2011/08/27 07:25
S3	55	((ROBERT) near2 (ZUK)). INV.	US-PGPUB; USPAT	OR	ON	2011/08/27 07:25
S4	15	((KRISTA) near2 (WITTE)). INV.	US-PGPUB; USPAT	OR	ON	2011/08/27 07:25
S5	6	((SAE) near2 (CHOO)). INV.	US-PGPUB; USPAT	OR	ON	2011/08/27 07:25
S6	5	((SCOTT) near2 (LOCKARD)).INV.	US-PGPUB; USPAT	OR	ON	2011/08/27 07:25
S7	46	(S1 or S2 or S3 or S4 or S5 or S6) and (optic\$4 or support).clm.	US-PGPUB; USPAT	OR	ON	2011/08/27 07:25
S8	8	S7 and (tip).clm.	US-PGPUB; USPAT	OR	ON	2011/08/27 07:57
S9	3	("5804453" "6436351" "6838051").PN.	US-PGPUB; USPAT	OR	ON	2011/08/27 07:58
S10	49	(US-5779978-\$ or US- 5944660-\$ or US-5958704- \$ or US-6009632-\$ or US- 6060256-\$ or US-4775637- \$ or US-5220161-\$ or US- 5280130-\$ or US-5349181- \$ or US-5357732-\$ or US- 5374395-\$ or US-5399315- \$ or US-5409666-\$ or US- 5477326-\$ or US-5498549- \$ or US-5557398-\$ or US- 5673814-\$ or US-5946083- \$ or US-6020047-\$ or US- 6048623-\$ or US-6115528- \$ or US-6151111-\$ or US- 6188813-\$ or US-6191847- \$ or US-6203983-\$ or US- 6274384-\$).did. or (US- 6287765-\$ or US-6306347- \$ or US-6387709-\$ or US- 6526188-\$ or US-6764226- \$ or US-6816241-\$ or US- 6862301-\$ or US-6951545- \$ or US-6952603-\$ or US- 7002688-\$ or US-7054258- \$ or US-7079468-\$ or US-	USPAT	OR	ON	2011/08/27 07:59

		7200100-\$ or US-7223367-\$ or US-7262847-\$ or US-7267798-\$ or US-7277210-\$ or US-7319525-\$ or US-7354772-\$ or US-7366063-\$ or US-7385695-\$ or US-7394547-\$ or US-7450980-\$).did.				
S11	50	(US-4604511-\$ or US-4949194-\$ or US-5025129-\$ or US-4396887-\$ or US-4439098-\$ or US-4597461-\$ or US-4832902-\$ or US-4927595-\$ or US-5193678-\$ or US-5405271-\$ or US-5448214-\$ or US-5459618-\$ or US-5987722-\$ or US-6244609-\$ or US-6247713-\$ or US-4268896-\$ or US-4276460-\$ or US-4285771-\$ or US-4295766-\$ or US-4318222-\$ or US-4357503-\$ or US-4375897-\$ or US-4451098-\$ or US-4471246-\$ or US-4475755-\$ or US-4507844-\$).did. or (US-RE31882-\$ or US-4560052-\$ or US-4574454-\$ or US-4575914-\$ or US-4622530-\$ or US-4628722-\$ or US-4786460-\$ or US-4810981-\$ or US-4850617-\$ or US-4857263-\$ or US-4870965-\$ or US-4907382-\$ or US-4924127-\$ or US-4929413-\$ or US-4930210-\$ or US-4932101-\$ or US-4941258-\$ or US-4948553-\$ or US-4955918-\$ or US-4966290-\$ or US-5007783-\$ or US-5011302-\$ or US-5024807-\$ or US-5197273-\$).did.	USPAT	OR	ON	2011/08/27 08:03
S12	2	wo-2006138293-\$).did.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2011/08/27 08:04
S13	2	("20020009391").PN.	US-PGPUB; USPAT; JPO; DERWENT	OR	OFF	2011/08/27 08:04
S14	3	((("20040022677") or ("20050052646")).PN.	US-PGPUB; USPAT; JPO; DERWENT	OR	OFF	2011/08/27 08:05
S15	148108	(multiwell or multi-well or (multi adj well) or ("96" adj well) or (96-well))	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2011/08/27 08:11

S17	7206	(S9 or S10 or S11 or "L12" or S12 or S13 or S14 or S15) and (optic\$4 and (cover or lid) and tip)	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2011/08/27 08:13
S18	25	(S9 or S10 or S11 or "L12" or S12 or S13 or S14 or S15) and (optic\$4 and (cover or lid) and tip).clm.	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2011/08/27 08:14

EAST Search History (Interference)

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Notice of Non-Compliant Amendment (37 CFR 1.121)	Application No.	Applicant(s)	
	13/101,112	RECKNOR ET AL.	
	Examiner	Art Unit	
	DEAN KWAK	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

The amendment document filed on 04 May 2011 is considered non-compliant because it has failed to meet the requirements of 37 CFR 1.121 or 1.4. In order for the amendment document to be compliant, correction of the following item(s) is required.

THE FOLLOWING MARKED (X) ITEM(S) CAUSE THE AMENDMENT DOCUMENT TO BE NON-COMPLIANT:

- ☐ 1. Amendments to the specification:
 - ☐ A. Amended paragraph(s) do not include markings.
 - ☐ B. New paragraph(s) should not be underlined.
 - ☐ C. Other _____.
- ☐ 2. Abstract:
 - ☐ A. Not presented on a separate sheet. 37 CFR 1.72.
 - ☐ B. Other _____.
- ☐ 3. Amendments to the drawings:
 - ☐ A. The drawings are not properly identified in the top margin as "Replacement Sheet," "New Sheet," or "Annotated Sheet" as required by 37 CFR 1.121(d).
 - ☐ B. The practice of submitting proposed drawing correction has been eliminated. Replacement drawings showing amended figures, without markings, in compliance with 37 CFR 1.84 are required.
 - ☐ C. Other _____.
- ☒ 4. Amendments to the claims:
 - ☐ A. A complete listing of all of the claims is not present.
 - ☐ B. The listing of claims does not include the text of all pending claims (including withdrawn claims)
 - ☒ C. Each claim has not been provided with the proper status identifier, and as such, the individual status of each claim cannot be identified. Note: the status of every claim must be indicated after its claim number by using one of the following status identifiers: (Original), (Currently amended), (Canceled), (Previously presented), (New), (Not entered), (Withdrawn) and (Withdrawn-currently amended).
 - ☐ D. The claims of this amendment paper have not been presented in ascending numerical order.
 - ☐ E. Other: _____.
- ☐ 5. Other (e.g., the amendment is unsigned or not signed in accordance with 37 CFR 1.4):

For further explanation of the amendment format required by 37 CFR 1.121, see MPEP § 714.

TIME PERIODS FOR FILING A REPLY TO THIS NOTICE:

1. Applicant is given **no new time period** if the non-compliant amendment is an after-final amendment or an amendment filed after allowance. If applicant wishes to resubmit the non-compliant after-final amendment with corrections, the **entire corrected amendment** must be resubmitted.
2. Applicant is given **one month**, or thirty (30) days, whichever is longer, from the mail date of this notice to supply the correction, if the non-compliant amendment is one of the following: a preliminary amendment, a non-final amendment (including a submission for a request for continued examination (RCE) under 37 CFR 1.114), a supplemental amendment filed within a suspension period under 37 CFR 1.103(a) or (c), and an amendment filed in response to a *Quayle* action. If any of above boxes 1. to 4. are checked, the correction required is only the **corrected section** of the non-compliant amendment in compliance with 37 CFR 1.121.

Extensions of time are available under 37 CFR 1.136(a) only if the non-compliant amendment is a non-final amendment or an amendment filed in response to a *Quayle* action.

Failure to timely respond to this notice will result in:

- Abandonment** of the application if the non-compliant amendment is a non-final amendment or an amendment filed in response to a *Quayle* action; or
- Non-entry** of the amendment if the non-compliant amendment is a preliminary amendment or supplemental amendment.

/Dean Kwak/ Examiner, Art Unit 1773	
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<i>Index of Claims</i> 	Application/Control No. 13101112	Applicant(s)/Patent Under Reexamination RECKNOR ET AL.
	Examiner DEAN KWAK	Art Unit 1773

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant			☐ CPA			☐ T.D.			☐ R.1.47		
CLAIM		DATE									
Final	Original	08/27/2011									
	1	✓									
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	3	✓									
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	31	-									
	32	-									
	33	-									
	34	-									
	35	-									
	36	-									

<i>Index of Claims</i> 	Application/Control No. 13101112	Applicant(s)/Patent Under Reexamination RECKNOR ET AL.
	Examiner DEAN KWAK	Art Unit 1773

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47										
CLAIM		DATE								
Final	Original	08/27/2011								
	37	-								
	38	-								
	39	-								
	40	-								
	41	-								
	42	-								
	43	-								
	44	-								
	45	-								
	46	-								

To: PTOC@Fenwick.com,,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 758

Sep 12, 2011 05:23:09 AM

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Application	Document	Mailroom Date	Attorney Docket No.
13101112	CTNF	09/12/2011	24377-18795 US
	CTNF	09/12/2011	24377-18795 US
	892	09/12/2011	24377-18795 US
	NTC.A.NONCPL	09/12/2011	24377-18795 US

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PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS: Michael W. Recknor, et al.
APPLICATION NO.: 13/101,112
FILING DATE: May 4, 2011
TITLE: Tip Tray Assembly For Optical Sensors
EXAMINER: Dean P. Kwak
GROUP ART UNIT: 1773
ATTY. DKT. NO.: 24377-18795 US
CONFIRMATION NO.: 4330

CERTIFICATE OF ELECTRONIC (EFS-WEB) TRANSMISSION

I hereby certify that this correspondence is being transmitted via the Office electronic filing system in accordance with 37 C.F.R. § 1.8(a)(i)(C) from the **Pacific Time Zone** of the United States on the local date shown below.

Dated: 10 October 2011

By: /Pauline Farmer-Koppenol/

Pauline Farmer-Koppenol, Reg. No. 58,004

COMMISSIONER FOR PATENTS
P.O. BOX 1450
ALEXANDRIA, VA 22313-1450

RESPONSE TO NOTICE OF NON-COMPLIANT AMENDMENT

SIR:

Responsive to the Notice of Non-Compliant Amendment dated September 12, 2011 received in the above-identified patent application, please enter the following amendments. This Response is timely filed.

24377/18795/SF/5361070.1

IN THE CLAIMS:

Claims 19-46 are canceled. All pending claims are produced below.

What is claimed is:

1. (Original) An apparatus for packaging an optical sensing assembly, the apparatus comprising a substrate with a plurality of openings, each opening being configured for holding a discrete optical sensing assembly therein, the optical sensing assembly being positioned in the opening with a tip of the optical sensing assembly extending through the opening to be suspended from the substrate, wherein the plurality of openings are arranged so the optical sensing assembly positioned therein avoids contacting another optical sensing assembly positioned therein.
2. (Original) The apparatus of claim 1, further comprising a support member for supporting the substrate, the support member positioning the substrate so the tip of the optical sensing assembly suspended from the opening in the substrate contacts a solution in one of a plurality of wells in a container adjacent to the substrate, wherein the substrate is configured for preparing the optical assembly for assay.
3. (Original) The apparatus of claim 2, wherein the container is a microtiter plate including 96 wells.
4. (Original) The apparatus of claim 1, wherein the optical sensing assembly further comprises a hub at an end of the assembly opposite the tip, the hub being designed for attachment to a device that moves the assembly from a first location to a second location.
5. (Original) The apparatus of claim 1, wherein the openings include elongated barrels that allow the optical sensing assembly to be immersed in a solution in a container below the substrate without the tip of the optical sensing assembly contacting a tip of another optical sensing assembly in the substrate.
6. (Original) The apparatus of claim 1, wherein a plurality of discrete optical sensing assemblies coated with different reagents are moved around and arranged in the plurality of openings to create a customized array.
7. (Original) The apparatus of claim 2, wherein the optical sensing assembly in the substrate is mapped to wells in a second container containing different samples.

8. (Original) The apparatus of claim 2, wherein the solution is a pre-wet solution into which the optical sensing assembly is immersed.
9. (Original) The apparatus of claim 2, wherein the solution is a protein solution into which the optical sensing assembly is immersed for immobilization of protein on the optical sensing assembly, or for measurement of interaction with another protein already immobilized on the optical sensing assembly.
10. (Original) The apparatus of claim 2, wherein the substrate being configured for preparing the optical sensing assembly for assay further comprises the substrate being configured for pre-wet of the optical assembly before assay.
11. (Original) The apparatus of claim 2, wherein the substrate being configured for preparing the optical sensing assembly for assay further comprises the substrate being configured protein immobilization of the optical assembly before assay.
12. (Original) The apparatus of claim 1, wherein the optical sensing assembly comprises a hub at an end opposite the tip, and the optical sensing assembly is inserted into the opening with the hub of the assembly remaining on a first side of the substrate and the tip of the assembly being inserted through the opening to be suspended from a second side of the substrate.
13. (Original) The apparatus of claim 1, further comprising a cover on a first side of the substrate to protect the optical sensing assembly.
14. (Original) The apparatus of claim 1, further comprising a base on a second side of the substrate to protect the tip of the optical sensing assembly.
15. (Original) The apparatus of claim 14, wherein a container is positioned inside the base beneath the substrate, the container being positioned so the tip of the suspended optical sensing assembly contacts solution in one of the plurality of wells in the container.
16. (Original) The apparatus of claim 13, wherein the cover is designed to maintain the optical sensing assembly in the opening in the substrate.
17. (Original) The apparatus of claim 1, further comprising a cover and a base, the cover and base being designed to lock together around the substrate forming an enclosure around the optical sensing assembly.

18. (Original) The apparatus of claim 17, wherein the base of the apparatus is designed fit together with the cover of other apparatuses to be stackable with the other apparatuses for storage.

19. -46. (Canceled)

REMARKS

STATUS OF THE CLAIMS

Claims 19-46 are canceled. Following entry of the amendments, claims 1-18 will be pending and at issue.

CLAIM OBJECTIONS

The Examiner objected to claims 1-18 because of certain informalities. These claims have been amended to correct these inadvertent and/or typographical errors. These changes are believed not to introduce new matter, and their entry is respectfully requested.

CONCLUSION

If the Examiner has any questions concerning this Response, the Examiner is invited to telephone Applicants' representative at 415-875-2406.

Respectfully submitted,
MICHAEL W. RECKNOR, ET AL.

Dated: 10 October 2011 By: /Pauline Farmer-Koppenol/

Pauline Farmer-Koppenol
Reg. No.: 58,004
Fenwick & West LLP
555 California Street, 12th Floor
San Francisco, CA 94104
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Main: (415) 875-2300
Fax: (650) 938-5200

Electronic Acknowledgement Receipt	
EFS ID:	11154452
Application Number:	13101112
International Application Number:	
Confirmation Number:	4330
Title of Invention:	Tip Tray Assembly For Optical Sensors
First Named Inventor/Applicant Name:	Michael W. Recknor
Customer Number:	758
Filer:	Pauline Farmer-Koppenol
Filer Authorized By:	
Attorney Docket Number:	24377-18795 US
Receipt Date:	11-OCT-2011
Filing Date:	04-MAY-2011
Time Stamp:	01:26:35
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no				
File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		18795_US_Response_to_Non-Compliant_Amendment.pdf	96362 d3fc20beca85e94a9d2a8a1e0cda8f7860906452	yes	5

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Claims	2	4
	Applicant Arguments/Remarks Made in an Amendment	5	5
Warnings:			
Information:			
Total Files Size (in bytes):		96362	
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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875					Application or Docket Number 13/101,112		Filing Date 05/04/2011		☐ To be Mailed	
APPLICATION AS FILED – PART I										
(Column 1)			(Column 2)			SMALL ENTITY ☒ OR		OTHER THAN SMALL ENTITY		
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)	OR	RATE (\$)	FEE (\$)			
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A				
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A				
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A				
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X \$ =		OR	X \$ =				
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X \$ =			X \$ =				
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).									
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))										
* If the difference in column 1 is less than zero, enter "0" in column 2.										
APPLICATION AS AMENDED – PART II										
(Column 1)			(Column 2)			SMALL ENTITY OR		OTHER THAN SMALL ENTITY		
AMENDMENT	10/11/2011	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	OR	RATE (\$)	ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))	* 18	Minus	** 20	= 0	X \$30 =	0	OR	X \$ =	
	Independent (37 CFR 1.16(h))	* 1	Minus	*** 3	= 0	X \$125 =	0	OR	X \$ =	
☐ Application Size Fee (37 CFR 1.16(s))										
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))										
TOTAL ADD'L FEE						0	OR	TOTAL ADD'L FEE		
(Column 1) (Column 2) (Column 3)										
AMENDMENT	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)	OR	RATE (\$)	ADDITIONAL FEE (\$)		
	Total (37 CFR 1.16(i))	*	Minus	**	=	X \$ =	OR	X \$ =		
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X \$ =	OR	X \$ =		
☐ Application Size Fee (37 CFR 1.16(s))										
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))										
TOTAL ADD'L FEE						OR	TOTAL ADD'L FEE			
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.										

 Legal Instrument Examiner:
 /VENESSA JONES/

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/101,112	05/04/2011	Michael W. Recknor	24377-18795 US

CONFIRMATION NO. 4330

PUBLICATION NOTICE



758
FENWICK & WEST LLP
SILICON VALLEY CENTER
801 CALIFORNIA STREET
MOUNTAIN VIEW, CA 94041

Title: Tip Tray Assembly For Optical Sensors

Publication No. US-2011-0268610-A1

Publication Date: 11/03/2011

NOTICE OF PUBLICATION OF APPLICATION

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Cc: PAIR_eOfficeAction@uspto.gov
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Nov 04, 2011 05:26:58 AM

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13101112	NTC.PUB	11/03/2011	24377-18795 US

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/101,112	05/04/2011	Michael W. Recknor	24377-18795 US	4330
758 7590 11/10/2011 FENWICK & WEST LLP SILICON VALLEY CENTER 801 CALIFORNIA STREET MOUNTAIN VIEW, CA 94041			EXAMINER KWAK, DEAN P	
			ART UNIT 1773	PAPER NUMBER
			NOTIFICATION DATE 11/10/2011	DELIVERY MODE ELECTRONIC

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The time period for reply, if any, is set in the attached communication.

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PTOC@Fenwick.com

Office Action Summary	Application No.	Applicant(s)	
	13/101,112	RECKNOR ET AL.	
	Examiner	Art Unit	
	DEAN KWAK	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on 11 October 2011.

2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.

3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.

4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5) ☒ Claim(s) 1-18 is/are pending in the application.

 5a) Of the above claim(s) ____ is/are withdrawn from consideration.

6) ☐ Claim(s) ____ is/are allowed.

7) ☒ Claim(s) 1-18 is/are rejected.

8) ☐ Claim(s) ____ is/are objected to.

9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

10) ☐ The specification is objected to by the Examiner.

11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
 * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)	4) ☐ Interview Summary (PTO-413)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. ____.
3) ☐ Information Disclosure Statement(s) (PTO/SB/08)	5) ☐ Notice of Informal Patent Application
Paper No(s)/Mail Date ____.	6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-12, 14 & 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Marquiss et al. (US 6838051; prior publication date of 24 January 2002, US 2002/0009391).

Regarding claim 1, Marquiss et al. teach an apparatus for packaging an optical sensing assembly (C2/L5-13, C5/L3-9), the apparatus comprising:

- a substrate (e.g., manifold 3502) with a plurality of openings (e.g., aperture 3540),
- each opening being configured for holding a discrete optical sensing assembly therein (see e.g., dispense elements 3504),
- the optical sensing assembly being positioned in the opening with a tip (e.g., dispense tip 3534) of the optical sensing assembly extending through the opening to be suspended from the substrate (see Figs. 32, 33),
- wherein the plurality of openings are arranged so the optical sensing assembly positioned therein avoids contacting another optical sensing assembly positioned therein (see Fig. 31 & C25/L30-33).

Regarding claims 2-12, 14 & 15, Marquiss et al. further teach the apparatus comprising:

- a support member (e.g., parallel slides 3412b) for supporting the substrate (see Fig. 29), the support member positioning the substrate so the tip (3534) of the optical sensing assembly suspended from the opening in the substrate contacts a solution in one of a plurality of wells in a container (e.g., microplate 3406) adjacent to the substrate (C23/L51-C24/L53), wherein the substrate is configured for preparing the optical assembly for assay (C22/L15-25);
- the container is a microtiter plate including 96 wells (Fig. 5 & C6/L61-66);
- the optical sensing assembly further comprises a hub (e.g., body tube 3532) at an end of the assembly (see Fig. 32) opposite the tip (3534), the hub being designed for attachment to a device that moves the assembly from a first location to a second location (C23/L13-C24/L53);
- the openings include elongated barrels (see Fig. 33) that allow the optical sensing assembly to be immersed in a solution in a container below the substrate without the tip of the optical sensing assembly contacting a tip of another optical sensing assembly in the substrate (see Fig. 28, C22/L15-25 & Fig. 31 & C25/L30-33);
- a plurality of discrete optical sensing assemblies coated with different reagents are moved around and arranged in the plurality of openings to create a customized array (C23/L13-C24/L53));
- the optical sensing assembly in the substrate is mapped to wells in a second container (e.g., receptacle 3712) containing different samples (e.g., second liquid 3710, C27/L35-42);

- the solution is a pre-wet solution (e.g., fluids, C22/L15-25) into which the optical sensing assembly is immersed;
- the solution is a protein solution (C6/L29-60);
- the substrate being configured for preparing the optical sensing assembly for assay further comprises the substrate being configured for pre-wet (e.g., fluids, C22/L15-25) of the optical assembly before assay;
- the substrate being configured for preparing the optical sensing assembly for assay further comprises the substrate being configured protein immobilization of the optical assembly (see C6/L29-60) before assay;
- the optical sensing assembly comprises a hub (e.g., head or tip flange 3530) at an end opposite the tip (3534), and the optical sensing assembly is inserted into the opening (3540) with the hub of the assembly remaining on a first side of the substrate and the tip of the assembly being inserted through the opening to be suspended from a second side of the substrate (see Figs. 32, 33);
- a base (1208) on a second side of the substrate (see the bottom portion of the manifold 3502 in Fig. 31) to protect the tip of the optical sensing assembly; and
- a container (C7/L50-53) is positioned inside the base (1208) beneath the substrate (see Fig. 29), the container being positioned so the tip of the suspended optical sensing assembly contacts solution in one of the plurality of wells in the container (C22/L15-25 & Fig. 29).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 13 & 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marquiss et al. (US 6838051; prior publication date of 24 January 2002, US 2002/0009391) in view of Gubernator et al. (US 6436351).

Regarding claims 13 & 17, Marquiss et al. further teach the 96-well microplate 1200 comprising a base 1208, and a frame 1202 with notches 1210 to facilitate receiving a protective lid, see C7/L42-45. However, Marquiss et al. fail to teach a cover on a first side of the substrate (e.g., optical dispensing assembly 3504).

Gubernator et al. teach a packaging for a microtiter plate having a cover 26 and a base 46 designed to lock together around a substrate 16 for protecting and maintaining a reactor assembly 19 within the wells 18 to prevent spilling and cross-contamination during shipping and storage, see C1/L52-55.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the device disclosed by Marquiss et al. having a cover and base around the substrate, as taught by Gubernator et al., to maintain the assembly in place prevent spilling and cross-contamination during shipping and storage.

Regarding claim 16, while features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function, because apparatus claims cover what a device is, not what a device does (*Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990)). Thus, if a prior art structure is capable of performing the intended use as recited in the preamble, or elsewhere in a claim, then it meets the claim.

Regarding claim 18, modified Marquiss et al. further teach the apparatus is designed to fit together with the cover of another to be stackable for storage (Fig. 44, 47 & C36/L10-25).

Response to Arguments

7. Applicant's arguments filed 10/11/2011 have been fully considered but they are not persuasive.
8. Applicants have not made specific argument to the Office action and therefore the rejection is maintained.

Conclusion

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DEAN KWAK whose telephone number is (571)270-7072. The examiner can normally be reached on M-TH, 5:30 am - 3:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

01 November 2011

/ Lyle Alexander/
Primary Examiner, Art Unit 1773

/D. K./
Examiner, Art Unit 1773

<i>Index of Claims</i> 	Application/Control No. 13101112	Applicant(s)/Patent Under Reexamination RECKNOR ET AL.
	Examiner DEAN KWAK	Art Unit 1773

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant				☐ CPA		☐ T.D.		☐ R.1.47	
CLAIM		DATE							
Final	Original	08/27/2011	11/01/2011						
	1	✓	✓						
	2	✓	✓						
	3	✓	✓						
	4	✓	✓						
	5	✓	✓						
	6	✓	✓						
	7	✓	✓						
	8	✓	✓						
	9	✓	✓						
	10	✓	✓						
	11	✓	✓						
	12	✓	✓						
	13	✓	✓						
	14	✓	✓						
	15	✓	✓						
	16	✓	✓						
	17	✓	✓						
	18	✓	✓						
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	36	-	-						

<i>Index of Claims</i> 	Application/Control No. 13101112	Applicant(s)/Patent Under Reexamination RECKNOR ET AL.
	Examiner DEAN KWAK	Art Unit 1773

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47									
CLAIM		DATE							
Final	Original	08/27/2011	11/01/2011						
	37	-	-						
	38	-	-						
	39	-	-						
	40	-	-						
	41	-	-						
	42	-	-						
	43	-	-						
	44	-	-						
	45	-	-						
	46	-	-						

<i>Search Notes</i> 	Application/Control No. 13101112	Applicant(s)/Patent Under Reexamination RECKNOR ET AL.
	Examiner DEAN KWAK	Art Unit 1773

SEARCHED			
Class	Subclass	Date	Examiner
422	50, 400, 401, 407, 408, 503, 504, 511, 521	8/27/2011	dk
	class/subclass updated	11/1/2011	dk

SEARCH NOTES		
Search Notes	Date	Examiner
EAST search	8/27/2011	dk
inventor search	8/27/2011	dk
inventor search updated	11/1/2011	dk

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

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EAST Search History**EAST Search History (Prior Art)**

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	7	((MICHAEL) near2 (RECKNOR)).INV.	US-PGPUB; USPAT	OR	ON	2011/11/01 12:36
L2	130	((HONG) near2 (TAN)).INV.	US-PGPUB; USPAT	OR	ON	2011/11/01 12:36
L3	55	((ROBERT) near2 (ZUK)).INV.	US-PGPUB; USPAT	OR	ON	2011/11/01 12:36
L4	15	((KRISTA) near2 (WITTE)).INV.	US-PGPUB; USPAT	OR	ON	2011/11/01 12:36
L5	7	((SAE) near2 (CHOO)).INV.	US-PGPUB; USPAT	OR	ON	2011/11/01 12:36
L6	5	((SCOTT) near2 (LOCKARD)).INV.	US-PGPUB; USPAT	OR	ON	2011/11/01 12:36
L7	47	(L1 or L2 or L3 or L4 or L5 or L6) and (optic\$4 or support).clm.	US-PGPUB; USPAT	OR	ON	2011/11/01 12:36
L8	8	L7 and (tip).clm.	US-PGPUB; USPAT	OR	ON	2011/11/01 12:36

EAST Search History (Interference)

< This search history is empty >

11/ 1/ 2011 12:36:41 PM

**C:\ Documents and Settings\ dkwak\ My Documents\ EAST\ Workspaces
 \ 13101112_Tip Tray_Recknor et al_27Aug11.wsp**

To: PTOC@Fenwick.com,,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 758

Nov 10, 2011 05:22:50 AM

Dear PAIR Customer:

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Application	Document	Mailroom Date	Attorney Docket No.
13101112	CTFR	11/10/2011	24377-18795 US

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/101,112	05/04/2011	Michael W. Recknor	24377-18795 US	4330
758 FENWICK & WEST LLP SILICON VALLEY CENTER 801 CALIFORNIA STREET MOUNTAIN VIEW, CA 94041			EXAMINER KWAK, DEAN P	
			ART UNIT 1773	PAPER NUMBER
			NOTIFICATION DATE 11/25/2011	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTOC@Fenwick.com

Applicant-Initiated Interview Summary	Application No.		Applicant(s)	
	13/101,112		RECKNOR ET AL.	
	Examiner		Art Unit	
	DEAN KWAK		1773	

All participants (applicant, applicant's representative, PTO personnel):

(1) DEAN KWAK. (3) _____.

(2) PAULINE FARMER-KOPPENOL. (4) _____.

Date of Interview: 22 November 2011.

Type: ☒ Telephonic ☐ Video Conference
☐ Personal [copy given to: ☐ applicant ☐ applicant's representative]

Exhibit shown or demonstration conducted: ☐ Yes ☒ No.
If Yes, brief description: _____.

Issues Discussed ☐ 101 ☐ 112 ☐ 102 ☐ 103 ☒ Others
(For each of the checked box(es) above, please describe below the issue and detailed description of the discussion)

Claim(s) discussed: n/a.

Identification of prior art discussed: n/a.

Substance of Interview
(For each issue discussed, provide a detailed description and indicate if agreement was reached. Some topics may include: identification or clarification of a reference or a portion thereof, claim interpretation, proposed amendments, arguments of any applied references etc...)

Examiner agreed to withdraw final Office action mailed 11/10/2011 due to an inadvertent error. Applicant's representative stated that a reply to non-final Office action will be filed for consideration.

Applicant recordation instructions: The formal written reply to the last Office action must include the substance of the interview. (See MPEP section 713.04). If a reply to the last Office action has already been filed, applicant is given a non-extendable period of the longer of one month or thirty days from this interview date, or the mailing date of this interview summary form, whichever is later, to file a statement of the substance of the interview

Examiner recordation instructions: Examiners must summarize the substance of any interview of record. A complete and proper recordation of the substance of an interview should include the items listed in MPEP 713.04 for complete and proper recordation including the identification of the general thrust of each argument or issue discussed, a general indication of any other pertinent matters discussed regarding patentability and the general results or outcome of the interview, to include an indication as to whether or not agreement was reached on the issues raised.

☐ Attachment

/D. K./ Examiner, Art Unit 1773	/Jill Warden/ Supervisory Patent Examiner, Art Unit 1773
------------------------------------	---

To: PTOC@Fenwick.com,,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
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Dec 01, 2011 05:24:52 AM

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Application	Document	Mailroom Date	Attorney Docket No.
13101112	W/AC	11/25/2011	24377-18795 US

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Thank you for prompt attention to this notice,

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PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

**IN THE
UNITED STATES PATENT AND TRADEMARK OFFICE**

APPLICANT(S): Michael W. Recknor, et al.
SERIAL NO.: 13/101,112
FILING DATE: May 4, 2011
TITLE: Tip Tray Assembly For Optical Sensors
EXAMINER: Dean P. Kwak
GROUP ART UNIT: 1773
CONFIRMATION NO.: 4330
ATTY. DKT. NO.: 24377-18795

CERTIFICATE OF ELECTRONIC (EFS-WEB) TRANSMISSION

I hereby certify that this correspondence is being transmitted via the Office electronic filing system in accordance with 37 C.F.R. § 1.8(a)(i)(C) from the Pacific Time Zone of the United States on the local date shown below.

Dated: 9 December 2011

By: /Pauline Farmer-Koppenol/

Pauline Farmer-Koppenol, Reg. No. 58,004

AMENDMENT A

This amendment is in response to the Office Action dated September 12, 2011, which set a shortened statutory period for response that expires on December 12, 2011.

Kindly amend this application as indicated herein.

IN THE CLAIMS:

What is claimed is:

1. (Original) An apparatus for packaging an optical sensing assembly, the apparatus comprising a substrate with a plurality of openings, each opening being configured for holding a discrete optical sensing assembly therein, the optical sensing assembly being positioned in the opening with a tip of the optical sensing assembly extending through the opening to be suspended from the substrate, wherein the plurality of openings are arranged so the optical sensing assembly positioned therein avoids contacting another optical sensing assembly positioned therein.
2. (Original) The apparatus of claim 1, further comprising a support member for supporting the substrate, the support member positioning the substrate so the tip of the optical sensing assembly suspended from the opening in the substrate contacts a solution in one of a plurality of wells in a container adjacent to the substrate, wherein the substrate is configured for preparing the optical assembly for assay.
3. (Original) The apparatus of claim 2, wherein the container is a microtiter plate including 96 wells.
4. (Original) The apparatus of claim 1, wherein the optical sensing assembly further comprises a hub at an end of the assembly opposite the tip, the hub being designed for attachment to a device that moves the assembly from a first location to a second location.
5. (Original) The apparatus of claim 1, wherein the openings include elongated barrels that allow the optical sensing assembly to be immersed in a solution in a container below the substrate without the tip of the optical sensing assembly contacting a tip of another optical sensing assembly in the substrate.
6. (Original) The apparatus of claim 1, wherein a plurality of discrete optical sensing assemblies coated with different reagents are moved around and arranged in the plurality of openings to create a customized array.
7. (Original) The apparatus of claim 2, wherein the optical sensing assembly in the substrate is mapped to wells in a second container containing different samples.

- 8. (Original)** The apparatus of claim 2, wherein the solution is a pre-wet solution into which the optical sensing assembly is immersed.
- 9. (Original)** The apparatus of claim 2, wherein the solution is a protein solution into which the optical sensing assembly is immersed for immobilization of protein on the optical sensing assembly, or for measurement of interaction with another protein already immobilized on the optical sensing assembly.
- 10. (Original)** The apparatus of claim 2, wherein the substrate being configured for preparing the optical sensing assembly for assay further comprises the substrate being configured for pre-wet of the optical assembly before assay.
- 11. (Original)** The apparatus of claim 2, wherein the substrate being configured for preparing the optical sensing assembly for assay further comprises the substrate being configured protein immobilization of the optical assembly before assay.
- 12. (Original)** The apparatus of claim 1, wherein the optical sensing assembly comprises a hub at an end opposite the tip, and the optical sensing assembly is inserted into the opening with the hub of the assembly remaining on a first side of the substrate and the tip of the assembly being inserted through the opening to be suspended from a second side of the substrate.
- 13. (Original)** The apparatus of claim 1, further comprising a cover on a first side of the substrate to protect the optical sensing assembly.
- 14. (Original)** The apparatus of claim 1, further comprising a base on a second side of the substrate to protect the tip of the optical sensing assembly.
- 15. (Original)** The apparatus of claim 14, wherein a container is positioned inside the base beneath the substrate, the container being positioned so the tip of the suspended optical sensing assembly contacts solution in one of the plurality of wells in the container.
- 16. (Original)** The apparatus of claim 13, wherein the cover is designed to maintain the optical sensing assembly in the opening in the substrate.

17. (Original) The apparatus of claim 1, further comprising a cover and a base, the cover and base being designed to lock together around the substrate forming an enclosure around the optical sensing assembly.

18. (Original) The apparatus of claim 17, wherein the base of the apparatus is designed fit together with the cover of other apparatuses to be stackable with the other apparatuses for storage.

19. -46. (Canceled)

REMARKS

Claims 1-18 were presented for examination. In an Office Action dated September 12, 2011, and claims 1-18 were rejected.

Applicants thank the Examiner for examination of the claims pending in this application and address the Examiner's comments below. Based on the above Amendment and following Remarks, Applicants respectfully request that the Examiner reconsider all outstanding rejections and objections and withdraw them.

Substance of the Interview

Applicants thank the Examiner for his time in a phone call on November 22, 2011. The Examiner agreed to withdraw the final office action of November 10, 2011 as it was premature as no response to the non-final office action of September 12, 2011 had yet been filed.

Response to Rejection Under 35 USC 102(b)

The Examiner rejected claims 1-12, 14 & 15 under 35 USC § 102(b) as being anticipated by (U.S. 6,838,051; prior publication date 24 January 2002, US 2002/0009391) to Marquiss et al. ("Marquiss"). This rejection is traversed.

Claim 1 recites, "An apparatus for packaging an optical sensing assembly, the apparatus comprising a substrate with a plurality of openings, each opening being configured for holding a discrete optical sensing assembly therein, the optical sensing assembly being positioned in the opening with a tip of the optical sensing assembly extending through the opening to be suspended from the substrate, wherein the plurality of openings are arranged so the optical sensing assembly positioned therein avoids contacting another optical sensing assembly positioned therein." Marquiss fails to disclose or suggest an opening being

configured for holding a discrete optical sensing assembly therein. The Examiner points to the dispensing tip of Marquiss as disclosing an optical sensing assembly. This is incorrect however. A dispensing tip is not the same as an optical sensing assembly. Thus Marquiss does not disclose all of the elements of claim 1 and claim 1 is distinguished over Marquiss. Therefore, for at least this reason, the rejection of claim 1 under 35 USC § 102(b) based on Marquiss is improper and should be withdrawn. Claims 2-12, 14 and 15 depend from claim 1 and are thus similarly distinguished over Marquiss.

Response to Rejections Under 35 USC 103(a)

The Examiner rejected claims 13 & 16-18 under 35 USC § 103(a) as being unpatentable over Marquiss et al. (“Marquiss”) (U.S. 6,838,051; prior publication date 24 January 2002, US 2002/0009391) in view of Gubernator et al. (U.S. 6,436,351). This rejection is traversed. Gubernator however does not remedy the deficiencies of Marquiss, nor does the Examiner contend that it does. Gubernator discloses arrays of microtitre reaction wells but does not disclose optical assemblies. Thus claims 13 and 16-18 are distinguished over the combination of Gubernator and Marquiss.

Conclusion

In sum, Applicants respectfully submit that all claims now pending are patentable over the cited references for at least the reasons given above, while not necessarily conceding any contention not specifically addressed. Applicants request reconsideration of the basis for the rejections of and objections to these claims and request allowance of them.

/ / /

If the Examiner believes that for any reason direct contact with Applicants' attorney would help advance the prosecution of this case, the Examiner is invited to telephone the undersigned at the number given below.

Respectfully Submitted,

Date: 9 December 2011

By: /Pauline Farmer-Koppenol/

Pauline Farmer-Koppenol

Reg. No.: 58,004

Fenwick & West LLP

555 California Street, 12th Floor

San Francisco, CA 94104

Direct: (415) 875-2406

Main: (415) 875-2300

Fax: (650) 938-5200

Electronic Acknowledgement Receipt	
EFS ID:	11587963
Application Number:	13101112
International Application Number:	
Confirmation Number:	4330
Title of Invention:	Tip Tray Assembly For Optical Sensors
First Named Inventor/Applicant Name:	Michael W. Recknor
Customer Number:	758
Filer:	Pauline Farmer-Koppenol
Filer Authorized By:	
Attorney Docket Number:	24377-18795 US
Receipt Date:	09-DEC-2011
Filing Date:	04-MAY-2011
Time Stamp:	19:44:11
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no				
File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		18795_US_Amendment_A.pdf	113639 537eec10e45d59e951f3ed5a0f9069600ac50828	yes	7

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1
	Claims	2	4
	Applicant Arguments/Remarks Made in an Amendment	5	7
Warnings:			
Information:			
Total Files Size (in bytes):		113639	
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.			

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PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875					Application or Docket Number 13/101,112		Filing Date 05/04/2011		☐ To be Mailed	
APPLICATION AS FILED – PART I										
(Column 1)			(Column 2)			SMALL ENTITY ☒ OR		OTHER THAN SMALL ENTITY		
FOR	NUMBER FILED	NUMBER EXTRA	RATE (\$)	FEE (\$)		RATE (\$)	FEE (\$)			
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A				
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A	N/A			N/A				
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A				
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*	X \$ =		OR	X \$ =				
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*	X \$ =			X \$ =				
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$250 (\$125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).									
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))										
* If the difference in column 1 is less than zero, enter "0" in column 2.										
APPLICATION AS AMENDED – PART II										
(Column 1)			(Column 2)			SMALL ENTITY OR		OTHER THAN SMALL ENTITY		
AMENDMENT	12/09/2011	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)		RATE (\$)	ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))	* 18	Minus	** 20	= 0	X \$30 =	0	OR	X \$ =	
	Independent (37 CFR 1.16(h))	* 1	Minus	*** 3	= 0	X \$125 =	0	OR	X \$ =	
☐ Application Size Fee (37 CFR 1.16(s))										
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))										
TOTAL ADD'L FEE						0	OR	TOTAL ADD'L FEE		
(Column 1) (Column 2) (Column 3)										
AMENDMENT	CLAIMS REMAINING AFTER AMENDMENT	HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)		RATE (\$)	ADDITIONAL FEE (\$)		
	Total (37 CFR 1.16(i))	*	Minus	**	=	X \$ =		OR	X \$ =	
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X \$ =		OR	X \$ =	
☐ Application Size Fee (37 CFR 1.16(s))										
☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))										
TOTAL ADD'L FEE							OR	TOTAL ADD'L FEE		
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Legal Instrument Examiner:
/CHRISTINE V. MOORE/

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**INFORMATION DISCLOSURE
STATEMENT BY APPLICANT****Complete if Known**

Sheet	1	of	6	Application No.	13/101,112
				Filing Date	May 4, 2011
				First Named Inventor	Michael W. Recknor
				Art Unit	1773
				Examiner Name	Dean P. Kwak
				Attorney Docket Number	24377-18795

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document No. Number – Kind Code ² (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document
	A1	US-7,728,982	06-01-2010	Tan et al.
	A2	US-7,656,536	02-02-2010	Tan et al.
	A3	US-7,445,887	11-04-2008	Zuk et al.
	A4	US-7,394,547	07-01-2008	Tan et al.
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Sheet	2	of	6	Application No.	13/101,112
				Filing Date	May 4, 2011
				First Named Inventor	Michael W. Recknor
				Art Unit	1773
				Examiner Name	Dean P. Kwak
				Attorney Docket Number	24377-18795

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document No. Number – Kind Code ² (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document
	A30	US-6,055,080	04-25-2000	Furstenau et al.
	A31	US-5,982,959	11-09-1999	Hopenfeld
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Examiner Signature			Date Considered	

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Application No.	13/101,112
Filing Date	May 4, 2011
First Named Inventor	Michael W. Recknor
Art Unit	1773
Examiner Name	Dean P. Kwak
Attorney Docket Number	24377-18795

Sheet 3 of 6

U.S. PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Document No. Number – Kind Code ² (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document
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Examiner Initials*	Cite No. ¹	Foreign Patent Document Country Code ³ – Number ⁴ Kind Code ⁵ (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	T ⁶
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	B6	JP 2000-98182 A (with English abstract)	04-07-2000	Suzuki Motor Co.	
	B7	SG 122203	03-31-2009	ForteBio, Inc.	
	B8	SG 133108	04-30-2008	ForteBio, Inc.	
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	B12	WO 2006/074444 A2	07-13-2006	ForteBio, Inc.	

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Application No.	13/101,112
Filing Date	May 4, 2011
First Named Inventor	Michael W. Recknor
Art Unit	1773
Examiner Name	Dean P. Kwak
Attorney Docket Number	24377-18795

Sheet 4 of 6

FOREIGN PATENT DOCUMENTS

Examiner Initials*	Cite No. ¹	Foreign Patent Document Country Code ³ – Number ⁴ Kind Code ⁵ (if known)	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	T ⁶
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	B16	WO 92/16826 A1	10-01-1992	Biostar Medical Products, Inc.	

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Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T ⁶
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	C2	BRECHT, A. et al., "Direct Monitoring of Antigen-Antibody Interactions by Spectral Interferometry", Sensors and Actuators, vol. B5, 1992, pp. 96-100.	
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Examiner Signature		Date Considered	

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT	Application No.	13/101,112
	Filing Date	May 4, 2011
	First Named Inventor	Michael W. Recknor
	Art Unit	1773
	Examiner Name	Dean P. Kwak
Sheet 5 of 6	Attorney Docket Number	24377-18795

OTHER REFERENCES – NON-PATENT LITERATURE DOCUMENTS

Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T ⁶
		Thin (Multi-)Layers," Sensors and Actuators B, March 1, 1993, pp. 21-27, Vol. B11, No. 1-3.	
	C12	GAUGLITZ, G. et al., "Interferometric Biochemical and Chemical Sensors," Proceeding of the SPIE, June 1, 1995, pp. 41-48.	
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	C22	NIKITIN, P.I. et al., "New Direct Optical Biosensors for Multi-Analyte Detection," Sensors and Actuators B, April 20, 2003, pp. 46-51, Vol. 90, No. 1-3.	
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Art Unit	1773
Examiner Name	Dean P. Kwak
Attorney Docket Number	24377-18795

Sheet

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of

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		scientific.com/reagent.sub.--reservoirs.sub.--with.- sub.--control.sub.--.htm>.	
	C26	RICH, R. L. et al., "A Global Benchmark Study Using Affinity-Based Biosensors," Analytical Biochemistry, March 15, 2009, pp. 194-216, Vol. 386, No. 2.	
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	C34	United States Application No. 12/240,823, Filed November 29, 2008, Zuk et al. [Copy Not Enclosed].	

24377/18795/DOCS/2501100.2

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Electronic Patent Application Fee Transmittal				
Application Number:		13101112		
Filing Date:		04-May-2011		
Title of Invention:		Tip Tray Assembly For Optical Sensors		
First Named Inventor/Applicant Name:		Michael W. Recknor		
Filer:		Pauline Farmer-Koppenol/Sarah Glenn		
Attorney Docket Number:		24377-18795 US		
Filed as Small Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Submission- Information Disclosure Stmt	1806	1	180	180
Total in USD (\$)				180

Electronic Acknowledgement Receipt	
EFS ID:	11619574
Application Number:	13101112
International Application Number:	
Confirmation Number:	4330
Title of Invention:	Tip Tray Assembly For Optical Sensors
First Named Inventor/Applicant Name:	Michael W. Recknor
Customer Number:	758
Filer:	Pauline Farmer-Koppenol
Filer Authorized By:	
Attorney Docket Number:	24377-18795 US
Receipt Date:	14-DEC-2011
Filing Date:	04-MAY-2011
Time Stamp:	23:47:53
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$180
RAM confirmation Number	8970
Deposit Account	192555
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1		18795IDS.pdf	179740	yes	9
			625eacbf305f57ecc4276799a21ede1852bd8de		
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Warnings:					
Information:					
2	Foreign Reference	EP2026060A1.pdf	1338372	no	25
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Warnings:					
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7	Foreign Reference	JP-2000-98182.pdf	695280	no	14
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8	Foreign Reference	SG-122203.pdf	5273470	no	41
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9	Foreign Reference	SG-133108.pdf	1242004	no	29
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10	Foreign Reference	WO-2008-033535.pdf	1617981	no	32
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13	Foreign Reference	WO-2006-074444.pdf	2315033	no	30
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16	Foreign Reference	WO-97-18472.pdf	689810	no	18
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17	Foreign Reference	WO-92-16826.pdf	2696997	no	56
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43	Non Patent Literature	Rich.pdf	7467052 84f72402839d446bd7c171d831a5fbd673c12265	no	23

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Information:					
Total Files Size (in bytes):			50904134		

This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503.

New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICANTS: Michael W. Recknor et al.
APPLICATION NO.: 13/101,112
FILING DATE: May 4, 2011
TITLE: Tip Tray Assembly for Optical Sensors
EXAMINER: Dean P. Kwak
GROUP ART UNIT: 1773
CONFIRMATION NO.: 4330
ATTY. DKT. NO.: 24377-18795

CERTIFICATE OF ELECTRONIC (EFS-WEB) TRANSMISSION

I hereby certify that this correspondence is being transmitted via the Office electronic filing system in accordance with 37 C.F.R. § 1.8(a)(i)(C) from the Pacific Time Zone of the United States on the local date shown below.

Dated: 14 December 2011

By: /Pauline Farmer-Koppenol/

Pauline Farmer-Koppenol, Reg. No. 58,004

**INFORMATION DISCLOSURE STATEMENT
Under 37 CFR §§ 1.56 and 1.97-98**

SIR:

Pursuant to the provisions of 37 CFR §§ 1.56 and 1.97-98, enclosed herewith is modified form PTO/SB/08A listing references for consideration by the Examiner.

The filing of this Information Disclosure Statement shall not be construed as a representation regarding the completeness of the list of references, or that inclusion of a reference in this list is an admission that it is prior art or is pertinent to this application, or that a search has been made, or as an admission that the information listed is, or may be considered to be, material to patentability, or that no other material information exists, and shall not be construed as an admission against interest in any manner.

This Information Disclosure Statement is being filed:

- ☐ within three months of the filing date of the application, or date of entry into the national stage of an international application, or before the mailing date of a first office action on the merits, whichever event last occurred;
- ☐ before the mailing of a first official action after the filing of a request for continued examination (RCE) under 37 CFR § 1.114;

- ☒ after three months of the filing date of this national application or the date of entry of the national stage in an international application, or after the mailing date of the first official action on the merits, whichever event last occurred, but before the mailing date of the first to occur of either: (1) a final action under 37 CFR §1.113; or (2) an action that otherwise closes prosecution in the application, and:
 - ☒ attached hereto is the fee set forth under 37 CFR §1.17(p) for submission of this Information Disclosure Statement under 37 CFR. § 1.97(c); OR
 - ☐ Applicant certifies pursuant to 37 CFR § 1.97(e) that:
 - ☐ each item of information contained in this Information Disclosure Statement was first cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Statement; OR
 - ☐ no item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application and, to the knowledge of the person signing this certification after making reasonable inquiry, no item of information contained in this Statement was known to any individual designated under 37 CFR § 1.56(c) more than three months prior to the filing of this Statement;
- ☐ on or before the payment of the issue fee but after the mailing date of the first to occur of either: (1) a final action under 37 CFR § 1.113; (2) a notice of allowance under 37 CFR § 1.311; or (3) an action that otherwise closes prosecution in the application, and:
 - ☐ Applicant certifies pursuant to 37 CFR. § 1.97(e) that:
 - ☐ each item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Statement;
 - ☐ no item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application

and, to the knowledge of the person signing this certification after making reasonable inquiry, no item of information contained in this Statement was known to any individual designated under 37 CFR § 1.56(c) more than three months prior to the filing of this Statement; AND

- ☐ attached hereto is the fee set forth under 37 CFR §1.17(p) for submission of this Information Disclosure Statement under 37 CFR. § 1.97(d); OR
- ☐ after the payment of the issue fee. Applicant requests that the information contained in this Information Disclosure Statement be placed in the file according to 37 CFR § 1.97(i), although the information may not be considered by the USPTO.
- ☐ This application relies, under 35 U.S.C. § 120, on the earlier filing date of prior application No. _____, filed on _____, and the references cited therein are hereby referenced, but are not required to be provided in this application under 37 CFR § 1.98(d).
- ☐ Each item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart application, and the communication was not received by any individual designated in 37 CFR § 1.56(c) more than thirty days prior to the filing of this Information Disclosure Statement. 37 CFR § 1.704(d).

Respectfully submitted,

Dated: 14 December 2011

/Pauline Farmer-Koppenol/

Pauline Farmer-Koppenol, Reg. No.: 58,004

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/101,112	05/04/2011	Michael W. Recknor	24377-18795 US	4330
758 7590 12/22/2011 FENWICK & WEST LLP SILICON VALLEY CENTER 801 CALIFORNIA STREET MOUNTAIN VIEW, CA 94041			EXAMINER KWAK, DEAN P	
			ART UNIT 1773	PAPER NUMBER
			NOTIFICATION DATE 12/22/2011	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

PTOC@Fenwick.com

Office Action Summary	Application No.	Applicant(s)	
	13/101,112	RECKNOR ET AL.	
	Examiner	Art Unit	
	DEAN KWAK	1773	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).

Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on 09 December 2011.

2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.

3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.

4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

5) ☒ Claim(s) 1-18 is/are pending in the application.

5a) Of the above claim(s) ____ is/are withdrawn from consideration.

6) ☐ Claim(s) ____ is/are allowed.

7) ☒ Claim(s) 1-18 is/are rejected.

8) ☐ Claim(s) ____ is/are objected to.

9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

10) ☐ The specification is objected to by the Examiner.

11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

12) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)	4) ☐ Interview Summary (PTO-413)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. ____.
3) ☒ Information Disclosure Statement(s) (PTO/SB/08)	5) ☐ Notice of Informal Patent Application
Paper No(s)/Mail Date <u>12/14/2011</u> .	6) ☐ Other: ____.

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-12, 14 & 15 are rejected under 35 U.S.C. 102(b) as being anticipated by Marquiss et al. (US 6838051; prior publication date of 24 January 2002, US 2002/0009391).

Regarding claim 1, Marquiss et al. teach an apparatus for packaging an optical sensing assembly (C2/L5-13, C5/L3-9), the apparatus comprising:

- a substrate (e.g., manifold 3502) with a plurality of openings (e.g., aperture 3540),
- each opening being configured for holding a discrete optical sensing assembly therein (see e.g., dispense elements 3504),
- the optical sensing assembly being positioned in the opening with a tip (e.g., dispense tip 3534) of the optical sensing assembly extending through the opening to be suspended from the substrate (see Figs. 32, 33),
- wherein the plurality of openings are arranged so the optical sensing assembly positioned therein avoids contacting another optical sensing assembly positioned therein (see Fig. 31 & C25/L30-33).

Regarding claims 2-12, 14 & 15, Marquiss et al. further teach the apparatus comprising:

- a support member (e.g., parallel slides 3412b) for supporting the substrate (see Fig. 29), the support member positioning the substrate so the tip (3534) of the optical sensing assembly suspended from the opening in the substrate contacts a solution in one of a plurality of wells in a container (e.g., microplate 3406) adjacent to the substrate (C23/L51-C24/L53), wherein the substrate is configured for preparing the optical assembly for assay (C22/L15-25);
- the container is a microtiter plate including 96 wells (Fig. 5 & C6/L61-66);
- the optical sensing assembly further comprises a hub (e.g., body tube 3532) at an end of the assembly (see Fig. 32) opposite the tip (3534), the hub being designed for attachment to a device that moves the assembly from a first location to a second location (C23/L13-C24/L53);
- the openings include elongated barrels (see Fig. 33) that allow the optical sensing assembly to be immersed in a solution in a container below the substrate without the tip of the optical sensing assembly contacting a tip of another optical sensing assembly in the substrate (see Fig. 28, C22/L15-25 & Fig. 31 & C25/L30-33);
- a plurality of discrete optical sensing assemblies coated with different reagents are moved around and arranged in the plurality of openings to create a customized array (C23/L13-C24/L53));
- the optical sensing assembly in the substrate is mapped to wells in a second container (e.g., receptacle 3712) containing different samples (e.g., second liquid 3710, C27/L35-42);

- the solution is a pre-wet solution (e.g., fluids, C22/L15-25) into which the optical sensing assembly is immersed;
- the solution is a protein solution (C6/L29-60);
- the substrate being configured for preparing the optical sensing assembly for assay further comprises the substrate being configured for pre-wet (e.g., fluids, C22/L15-25) of the optical assembly before assay;
- the substrate being configured for preparing the optical sensing assembly for assay further comprises the substrate being configured protein immobilization of the optical assembly (see C6/L29-60) before assay;
- the optical sensing assembly comprises a hub (e.g., head or tip flange 3530) at an end opposite the tip (3534), and the optical sensing assembly is inserted into the opening (3540) with the hub of the assembly remaining on a first side of the substrate and the tip of the assembly being inserted through the opening to be suspended from a second side of the substrate (see Figs. 32, 33);
- a base (1208) on a second side of the substrate (see the bottom portion of the manifold 3502 in Fig. 31) to protect the tip of the optical sensing assembly; and
- a container (C7/L50-53) is positioned inside the base (1208) beneath the substrate (see Fig. 29), the container being positioned so the tip of the suspended optical sensing assembly contacts solution in one of the plurality of wells in the container (C22/L15-25 & Fig. 29).

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

5. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

6. Claims 13 & 16-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Marquiss et al. (US 6838051; prior publication date of 24 January 2002, US 2002/0009391) in view of Gubernator et al. (US 6436351).

Regarding claims 13 & 17, Marquiss et al. further teach the 96-well microplate 1200 comprising a base 1208, and a frame 1202 with notches 1210 to facilitate receiving a protective lid, see C7/L42-45. However, Marquiss et al. fail to teach a cover on a first side of the substrate (e.g., optical dispensing assembly 3504).

Gubernator et al. teach a packaging for a microtiter plate having a cover 26 and a base 46 designed to lock together around a substrate 16 for protecting and maintaining a reactor assembly 19 within the wells 18 to prevent spilling and cross-contamination during shipping and storage, see C1/L52-55.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to provide the device disclosed by Marquiss et al. having a cover and base around the substrate, as taught by Gubernator et al., to prevent spilling and cross-contamination during shipping and storage.

Regarding claim 16, while features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function, because apparatus claims cover what a device is, not what a device does (*Hewlett-Packard Co. v. Bausch & Lomb Inc.*, 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990)). Thus, if a prior art structure is capable of performing the intended use as recited in the preamble, or elsewhere in a claim, then it meets the claim.

Regarding claim 18, modified Marquiss et al. further teach the apparatus is designed to fit together with the cover of another to be stackable for storage (Fig. 44, 47 & C36/L10-25).

Response to Arguments

7. Applicant's arguments filed 12/09/2011 have been fully considered but they are not persuasive. Previous final Office action mailed on 11/10/2011 is withdrawn. Examiner acknowledges Applicant's traversal of the 35 USC 102 & 103 rejections. However, the arguments are not persuasive for the reasons below.

8. In response to applicant's argument that Marquiss et al. fail to teach an opening being configured for holding a discrete optical sensing assembly, Examiner disagrees. Claim 1 merely recites a functional recitation that holds no patentable weight in an apparatus claim. Apparatus claims must be structurally distinguishable from the prior art in terms of structure, not function. See MPEP § 2114 & § 2173.05(g). While features of an apparatus may be recited either structurally or functionally, claims directed to an apparatus must be distinguished from the prior art in terms of structure rather than function, because apparatus claims cover what a device is, not what a device does (Hewlett-Packard Co. v. Bausch & Lomb Inc., 909 F.2d 1464, 1469, 15 USPQ2d 1525, 1528 (Fed. Cir. 1990)). Thus, if a prior art structure is capable of performing the intended use as recited in the preamble, or elsewhere in a claim, then it meets the claim. It is advised to positively claim a discrete optical sensing assembly.

9. In response to applicant's traversal of the 35 USC 103 rejections for the reason that the 35 USC 102 rejections are overcome, the 35 USC 102 rejection arguments are addressed & maintained as set forth above and therefore the 103 rejections are maintained.

Conclusion

10. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DEAN KWAK whose telephone number is (571)270-7072. The examiner can normally be reached on M-TH, 5:30 am - 3:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

16 December 2011

/D. K./
Examiner, Art Unit 1773

/Jyoti Nagpaul/

Primary Examiner, Art Unit 1773

<i>Index of Claims</i> 	Application/Control No. 13101112	Applicant(s)/Patent Under Reexamination RECKNOR ET AL.
	Examiner DEAN KWAK	Art Unit 1773

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant					☐ CPA					☐ T.D.					☐ R.1.47				
CLAIM		DATE																	
Final	Original	08/27/2011	11/01/2011	12/16/2011															
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	2	✓	✓	✓															
	3	✓	✓	✓															
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	10	✓	✓	✓															
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	12	✓	✓	✓															
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	14	✓	✓	✓															
	15	✓	✓	✓															
	16	✓	✓	✓															
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EAST Search History**EAST Search History (Prior Art)**

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	8	((MICHAEL) near2 (RECKNOR)).INV.	US-PGPUB; USPAT	OR	ON	2011/12/16 11:09
L2	133	((HONG) near2 (TAN)).INV.	US-PGPUB; USPAT	OR	ON	2011/12/16 11:09
L3	57	((ROBERT) near2 (ZUK)).INV.	US-PGPUB; USPAT	OR	ON	2011/12/16 11:09
L4	16	((KRISTA) near2 (WITTE)).INV.	US-PGPUB; USPAT	OR	ON	2011/12/16 11:09
L5	8	((SAE) near2 (CHOO)).INV.	US-PGPUB; USPAT	OR	ON	2011/12/16 11:09
L6	6	((SCOTT) near2 (LOCKARD)).INV.	US-PGPUB; USPAT	OR	ON	2011/12/16 11:09
L7	49	(L1 or L2 or L3 or L4 or L5 or L6) and (optic\$4 or support).clm.	US-PGPUB; USPAT	OR	ON	2011/12/16 11:09
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L9	2	("6436351" "6838051").PN.	US-PGPUB; USPAT	OR	ON	2011/12/16 11:10

EAST Search History (Interference)

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Substitute for form 1449A/PTO INFORMATION DISCLOSURE STATEMENT BY APPLICANT		Complete if Known			
		Application No.	13/101,112		
		Filing Date	May 4, 2011		
		First Named Inventor	Michael W. Recknor		
		Art Unit	1773		
		Examiner Name	Dean P. Kwak		
Sheet	1	of	6	Attorney Docket Number	24377-18795

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	A3	US-7,445,887	11-04-2008	Zuk et al.
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Examiner Signature	/Dean Kwak/	Date Considered	12/16/2011
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Examiner Signature	/Dean Kwak/		Date Considered	12/16/2011

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/D.K./	B1	EP 2026060 A1	02-18-2009	Fortebio, Inc.	
↓	B2	GB 2084317 A	04-07-1982	Farmitalia Carlo Erbe S.p.A.	
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	B7	SG 122203	03-31-2009	ForteBio, Inc.	
	B8	SG 133108	04-30-2008	ForteBio, Inc.	
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/D.K./	B12	WO 2006/074444 A2	07-13-2006	ForteBio, Inc.	

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OTHER REFERENCES – NON-PATENT LITERATURE DOCUMENTS					
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	C7	CHRISTENSEN, D. et al., "Analysis of Excitation and Collection Geometries for Planar Waveguide Immunosensors," SPIE vol. 1886, Fiber Optic Sensors in Medical Diagnostics, 1993, pp. 2-8.			
	C8	DAVIES, R. et al., "An Optical Biosensor System for Molecular Interaction Studies", American Biotechnology Laboratory, Jul. 1993.			
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OTHER REFERENCES – NON-PATENT LITERATURE DOCUMENTS				
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/D.K./	/D.K./	Thin (Multi-)Layers," Sensors and Actuators B, March 1, 1993, pp. 21-27, Vol. B11, No. 1-3.		
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	C20	LUKOSZ, W., et al., "Output grating Couplers on Planar Optical Waveguides as Direct Immunosensors", Biosensors & Bioelectronics, vol. 6, 1991, pp. 227-232.		
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Examiner Signature		/Dean Kwak/	Date Considered	12/16/2011

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1Applicant's unique citation designation number (optional). 2See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04. 3Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. 6Applicant is to place a check mark here if English language Translation is attached.

Receipt date: 12/14/2011

INFORMATION DISCLOSURE STATEMENT BY APPLICANT		Substitute for form 1449A/PTO			
		Complete if Known			
		Application No.	13/101,112		
		Filing Date	May 4, 2011		
		First Named Inventor	Michael W. Recknor		
		Art Unit	1773		
Examiner Name	Dean P. Kwak				
Sheet	6	of	6	Attorney Docket Number	24377-18795

OTHER REFERENCES – NON-PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No. ¹	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published	T ⁶
/D.K./	/D.K./	scientific.com/reagent.sub.--reservoirs.sub.--with.- sub.--control.sub.--.htm>.	
/D.K./	C26	RICH, R. L. et al., "A Global Benchmark Study Using Affinity-Based Biosensors," Analytical Biochemistry, March 15, 2009, pp. 194-216, Vol. 386, No. 2.	
	C27	RUDRARAJU, S. et al., "Acoustic Wave Propagation in Composite Materials: an Experimental Study", SPIE, vol. 2191, Jul. 1994, pp. 487,493.	
	C28	SCHNEIDER, I. et al., "Herbicide Detection Using Reaction, Centers Integrated Into Liposomes Binding to Grating Couplers", The Third World Congress on Biosensors: Abstracts, 1994, p. 271.	
	C29	TIEFENTHALER, K., "Grating Couplers as Label-free Biochemical Waveguide Sensors", Biosensors & Bioelectronics, vol. 8, No. 7-8, pp. xxxv-xxxvii.	
	C30	WEBER, A. et al., "Fiber-optic Fluorimetry in Biosensors: Comparison Between Evanescent Wave Generation and Distal-face Generation of Fluorescent Light", Biosensors & Bioelectronics, vol. 7, 1992, pp. 193-197.	
	C31	YANG Y. et al., "Direct Monitoring of Antigen-Antibody Interactions by Optical Fiber Bioprobe," Proceedings of the SPIE, Jun. 8, 2003, pp. 431-436, vol. 5254, No. 1.	
	C32	YANG, Y. et al., "Study of Optical Fiber Biosensor Based on White-Light Interferometry," Journal of Xi'An Jiaotong University, Sep. 2003, pp. 914-916, 988, vol. 37, No. 9, Xian, CN.	
↓	C33	YANG Y. et al., "Direct Monitoring of Antigen-Antibody Interactions by Optical Fiber Bioprobe," Proceedings of the SPIE, Dec. 2003, pp. 431-436.	
/D.K./	C34	United States Application No. 12/240,823, Filed November 29, 2008, Zuk et al. [Copy Not Enclosed].	

24377/18795/DOCS/2501100.2

Examiner Signature	/Dean Kwak/	Date Considered	12/16/2011
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EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609.
Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

1Applicant's unique citation designation number (optional). 2See Kinds Codes of USPTO Patent Documents at www.uspto.gov or MPEP 901.04.
3Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). 4For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. 5Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. 6Applicant is to place a check mark here if English language Translation is attached.

<i>Search Notes</i> 	Application/Control No. 13101112	Applicant(s)/Patent Under Reexamination RECKNOR ET AL.
	Examiner DEAN KWAK	Art Unit 1773

SEARCHED			
Class	Subclass	Date	Examiner
422	50, 400, 401, 407, 408, 503, 504, 511, 521	8/27/2011	dk
	class/subclass updated	11/1/2011	dk
	updated	12/16/2011	dk

SEARCH NOTES		
Search Notes	Date	Examiner
EAST search	8/27/2011	dk
inventor search	8/27/2011	dk
inventor search updated	11/1/2011	dk
inventor search updated	12/16/2011	dk

INTERFERENCE SEARCH			
Class	Subclass	Date	Examiner

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To: PTOC@Fenwick.com,,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 758

Dec 22, 2011 05:22:32 AM

Dear PAIR Customer:

FENWICK & WEST LLP
SILICON VALLEY CENTER
801 CALIFORNIA STREET
MOUNTAIN VIEW, CA 94041
UNITED STATES

The following USPTO patent application(s) associated with your Customer Number, 758 , have new outgoing correspondence. This correspondence is now available for viewing in Private PAIR.

The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

Disclaimer:

The list of documents shown below is provided as a courtesy and is not part of the official file wrapper. The content of the images shown in PAIR is the official record.

Application	Document	Mailroom Date	Attorney Docket No.
13101112	CTFR	12/22/2011	24377-18795 US
	1449	12/22/2011	24377-18795 US

To view your correspondence online or update your email addresses, please visit us anytime at <https://sportal.uspto.gov/secure/myportal/privatepair>.

If you have any questions, please email the Electronic Business Center (EBC) at EBC@uspto.gov with 'e-Office Action' on the subject line or call 1-866-217-9197 during the following hours:

Monday - Friday 6:00 a.m. to 12:00 a.m.

Thank you for prompt attention to this notice,

UNITED STATES PATENT AND TRADEMARK OFFICE
PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application No. 13/101,112

Confirmation No. 4330

Applicant: Michael W. RECKNOR

Filed: May 4, 2011

TC/AU: 1773

Examiner: Dean P. Kwak

Docket No.: 709972

Customer No.: 23548

Commissioner for Patents
U.S. Patent and Trademark Office
Randolph Building
401 Dulany Street
Alexandria, VA 22314

**REVOCATION OF
FORMER POWERS OF ATTORNEY AND
NEW POWER OF ATTORNEY BY ASSIGNEE OF ENTIRE INTEREST**

Sir:

ForteBio, Inc. (hereinafter the "assignee") is the assignee of record of the entire interest of the above-identified U.S. patent application, and has a place of business at 1360 Willow Road, Suite 201, Menlo Park, California 94025.

The assignee merged with Project Phoenix Acquisition Corp. under the name Pall ForteBio Corp., effective March 1, 2012. The afore-mentioned merger was recorded in the U.S. Patent and Trademark Office on June 8, 2012, at Reel 028345, Frame No. 0275.

As set forth in the attached document, "Consent of the Executive Committee of the Board of Directors of Pall Corporation," the undersigned is authorized to act on behalf of the assignee. Pursuant to 37 CFR 3.73(b), the undersigned has reviewed evidentiary documents establishing a chain of title from the inventor(s) to the assignee and, to the best of the undersigned's knowledge and belief, certifies that title is in the assignee. An assignment from the inventors to ForteBio, Inc. was recorded in the U.S. Patent and Trademark Office on July 20, 2011, at Reel 026617, Frame No. 0079.

Application No. 13/101,112

Revocation of Former Powers of Attorney and
New Power of Attorney by Assignee of Entire
Interest

The assignee hereby revokes all previously given powers of attorney and appoints the following as its attorneys to prosecute and transact all business in the U.S. Patent and Trademark Office connected with the application, including receiving all documents issued by the U.S. Patent and Trademark Office based thereon; filing continuation, continuation-in-part and divisional applications based thereon; paying any and all fees, including maintenance fees for any resulting patent; and filing for reissues and extensions and requesting reexamination of any resulting patent, with all such powers to be exercised separately or collectively:

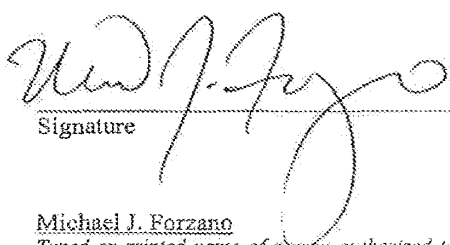
Customer Number

23548

The assignee requests that correspondence concerning this application be directed to the above-mentioned Customer Number

The assignee also requests that all telephone calls be directed to Jeremy M. Jay of Leydig, Voit & Mayer at (202) 737-6770.

Date: June 14, 2012


Signature

Michael J. Forzano

Typed or printed name of person authorized to sign on behalf of Assignee

Intellectual Property Counsel

Title

E. Krasnoff
D. Longstreet
E. Martin

**Consent of Member of the Executive Committee
of the Board of Directors of Pall Corporation**

The undersigned, as a member of the Executive Committee of the Board of Directors of Pall Corporation, a New York corporation (the "Company"), hereby approves the adoption of the resolutions set forth below.

WHEREAS, the Company wishes to establish the current authorization of individuals who may act on its behalf in certain intellectual property matters;

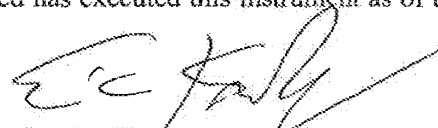
NOW THEREFORE, BE IT:

RESOLVED, that Michael Forzano, Intellectual Property Counsel (the "Authorized Signatory"), is hereby authorized to execute patent and trademark executions, for the purposes of representing the interests of the Company in the matters of international patent applications, U.S. patents, and U.S. patent applications, including, but not limited to, executing international and U.S. patent applications, appointing law firms and attorneys to file and prosecute international and U.S. patent applications, and taking such actions in patent matters before the U.S. Patent and Trademark Office, in the name and on behalf of the Company, as he may deem appropriate (collectively, the "Patent and Trademark Activities") ;

FURTHER RESOLVED, that the Authorized Signatory is hereby authorized to execute, file, deliver and record in the Company's name and on its behalf, any and all documents and to take all such other actions for and on behalf of the Company, under its corporate seal or otherwise, as he may deem necessary, desirable or appropriate to carry out the purposes of the foregoing resolution with respect to the Patent and Trademark Activities and the actions contemplated thereunder, the taking of such actions to constitute conclusive evidence of the exercise of such discretionary authority; and

FURTHER RESOLVED, that any actions previously taken by the Authorized Signatory in connection with the matters set forth in the foregoing resolutions and the transactions contemplated thereby be, and hereby are, in all respects approved, ratified and confirmed.

IN WITNESS WHEREOF, the undersigned has executed this instrument as of the 18th day of August, 2010.



Member, Executive Committee

E. Krasnoff

D. Longstreet

E. Martin

The undersigned, as a member of the Executive Committee of the Board of Directors of Pall Corporation, a New York corporation (the "Company"), hereby approves the adoption of the resolutions set forth below.

WHEREAS, the Company wishes to establish the current authorization of individuals who may act on its behalf in certain intellectual property matters;

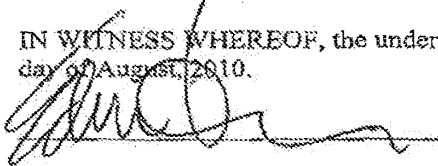
NOW THEREFORE, BE IT:

RESOLVED, that Michael Forzano, Intellectual Property Counsel (the "Authorized Signatory"), is hereby authorized to execute patent and trademark executions, for the purposes of representing the interests of the Company in the matters of international patent applications, U.S. patents, and U.S. patent applications, including, but not limited to, executing international and U.S. patent applications, appointing law firms and attorneys to file and prosecute international and U.S. patent applications, and taking such actions in patent matters before the U.S. Patent and Trademark Office, in the name and on behalf of the Company, as he may deem appropriate (collectively, the "Patent and Trademark Activities") ;

FURTHER RESOLVED, that the Authorized Signatory is hereby authorized to execute, file, deliver and record in the Company's name and on its behalf, any and all documents and to take all such other actions for and on behalf of the Company, under its corporate seal or otherwise, as he may deem necessary, desirable or appropriate to carry out the purposes of the foregoing resolution with respect to the Patent and Trademark Activities and the actions contemplated thereunder, the taking of such actions to constitute conclusive evidence of the exercise of such discretionary authority; and

FURTHER RESOLVED, that any actions previously taken by the Authorized Signatory in connection with the matters set forth in the foregoing resolutions and the transactions contemplated thereby be, and hereby are, in all respects approved, ratified and confirmed.

IN WITNESS WHEREOF, the undersigned has executed this instrument as of the 18th day of August, 2010.



Member, Executive Committee

Electronic Acknowledgement Receipt	
EFS ID:	13012331
Application Number:	13101112
International Application Number:	
Confirmation Number:	4330
Title of Invention:	Tip Tray Assembly For Optical Sensors
First Named Inventor/Applicant Name:	Michael W. Recknor
Customer Number:	758
Filer:	Jeremy M. Jay/michelle duvall
Filer Authorized By:	Jeremy M. Jay
Attorney Docket Number:	24377-18795 US
Receipt Date:	14-JUN-2012
Filing Date:	04-MAY-2011
Time Stamp:	11:56:20
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment		no			
File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		709972_revocation_new_POA.pdf	235702 fc731567c6540a529d56074d8d23fdc4d33870c0	yes	5

	Multipart Description/PDF files in .zip description		
	Document Description	Start	End
	Transmittal Letter	1	1
	Power of Attorney	2	5
Warnings:			
Information:			
Total Files Size (in bytes):		235702	
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.			

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application No. 13/101,112

Confirmation No. 4330

Applicant: Michael W. RECKNOR

Filed: May 4, 2011

TC/AU: 1773

Examiner: Dean P. Kwak

Docket No.: 709972

Customer No.: 23548

Commissioner for Patents
U.S. Patent and Trademark Office
Randolph Building
401 Dulany Street
Alexandria, VA 22314

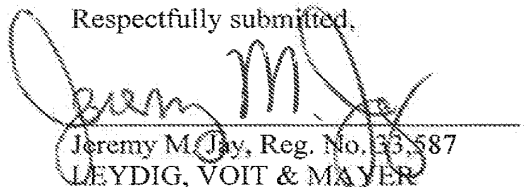
LETTER

Sir:

Attached are a Revocation of Former Powers of Attorney and New Power of Attorney By Assignee of Entire Interest, and a Consent of the Executive Committee of the Board of Directors of Pall Microreactor Technologies, Inc. in the above-identified application.

If any fees are owed in connection with this communication, please charge Deposit Account No. 12-1216.

Respectfully submitted,



Jeremy M. Jay, Reg. No. 33,587
LEYDIG, VOIT & MAYER

700 Thirteenth Street, N.W., Suite 300
Washington, DC 20005-3960
(202) 737-6770 (telephone)
(202) 737-6776 (facsimile)

Date: June 14, 2012



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/101,112	05/04/2011	Michael W. Recknor	709972

23548
LEYDIG VOIT & MAYER, LTD
700 THIRTEENTH ST. NW
SUITE 300
WASHINGTON, DC 20005-3960

CONFIRMATION NO. 4330
POA ACCEPTANCE LETTER



Date Mailed: 06/21/2012

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 06/14/2012.

The Power of Attorney in this application is accepted. Correspondence in this application will be mailed to the above address as provided by 37 CFR 1.33.

/sleutchit/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/101,112	05/04/2011	Michael W. Recknor	24377-18795 US

CONFIRMATION NO. 4330

POWER OF ATTORNEY NOTICE



758
FENWICK & WEST LLP
SILICON VALLEY CENTER
801 CALIFORNIA STREET
MOUNTAIN VIEW, CA 94041

Date Mailed: 06/21/2012

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 06/14/2012.

- The Power of Attorney to you in this application has been revoked by the assignee who has intervened as provided by 37 CFR 3.71. Future correspondence will be mailed to the new address of record(37 CFR 1.33).

/sleutchit/

Office of Data Management, Application Assistance Unit (571) 272-4000, or (571) 272-4200, or 1-888-786-0101

Request for Continued Examination (RCE) Transmittal

Address to:
Commissioner for Patents
U.S. Patent and Trademark Office
Customer Service Window, Mail Stop RCE
Randolph Building, 401 Dulany Street
Alexandria, VA 22314

Application No.	13/101,112
Filing Date	May 4, 2011
First Named Inventor	Michael W. RECKNOR
Group Art Unit	1773
Examiner Name	Dean P. Kwak
Attorney Docket No.	709972
Client Reference No.	

This is a Request for Continued Examination (RCE) under 37 CFR 1.114 of the above-identified application.

1. Submission required under 37 CFR 1.114

- a. ☐ Previously submitted
- i. ☐ Consider the amendment(s)/reply under 37 CFR 1.116 previously filed on
(Any unentered amendment(s) referred to above will be entered.)
- ii. ☐ Consider the arguments in the Appeal Brief or Reply Brief previously filed on
- iii. ☐ Other:
- b. ☒ Enclosed
- i. ☒ Amendment/Reply
- ii. ☐ Affidavit(s)/Declaration(s)
- iii. ☐ Information Disclosure Statement (IDS)
- iv. ☐ Form PTO-1449
- v. ☐ Copies of References listed in Form PTO-1449
(except for U.S. patents and applications)
- vi. ☐ Other:

2. Miscellaneous

- a. ☐ Suspension of action on the above-identified application is requested under 37 CFR 1.103(c) for a period of months. (Period of suspension shall not exceed 3 months; fee under 37 CFR 1.17(i) required.)
- b. ☐ Applicant claims small entity status. See 37 CFR 1.27
- c. ☐ Other:

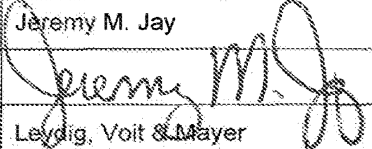
3. Fees The RCE fee under 37 CFR 1.17(e) is required by 37 CFR 1.114 when the RCE is filed.

- a. ☒ Please charge Deposit Account No. 12-1216 in the total amount indicated below.
- i. ☒ RCE fee of \$930.00 (large entity) required under 37 CFR 1.17(e) \$930.00
- ii. ☒ Three-month extension of time fee of \$1,270.00 (37 CFR 1.136 and 1.17) \$1,270.00
- iii. ☐ A extension has already been secured and the fee paid therefor of \$0.00 is deducted from the total fee due for the total amount of extension now requested.
- iv. ☒ Petition for an extension of time (including the period noted above, if checked), as well as for any additional period necessary to render the present submission timely. Please charge Deposit Account No. 12-1216 for the appropriate petition fee.
- v. ☐ Suspension of action fee of \$130.00 (37 CFR 1.17(i)) \$ 0.00
- vi. ☐ Other:

Total amount to be charged to Deposit Account \$2,200.00

- b. ☒ The Commissioner is hereby authorized to charge any deficiencies in the above fees or to credit any overpayments to Deposit Account No. 12-1216.

SIGNATURE OF APPLICANT, ATTORNEY OR AGENT REQUIRED

Name (Print/Type)	Jeremy M. Jay	Registration No. (Attorney/Agent)	33,587
Signature		Date	June 21, 2012
Address	Leydig, Voit & Mayer 700 Thirteenth Street, NW #300 Washington, DC 20005	Phone	(202) 737-6770 (telephone) (202) 737-6776 (facsimile)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application No. 13/101,112

Confirmation No. 4330

Applicant: Michael W. RECKNOR

Filed: May 4, 2011

TC/AU: 1773

Examiner: Dean P. Kwak

Docket No.: 709972

Customer No.: 23548

Commissioner for Patents
U.S. Patent and Trademark Office
Randolph Building
401 Dulany Street
Alexandria, VA 22314

REPLY TO OFFICE ACTION AND REQUEST FOR CONTINUED EXAMINATION

Sir:

In reply to the Office Action dated December 22, 2011, please enter the following amendments and consider the following remarks. Applicants petition for a three month extension of time, extending the date for reply to and including June 22, 2012, and submit the requisite fee therefor.

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 5 of this paper.

REMARKS/ARGUMENTS

The amendments set out above and the following remarks are believed responsive to the points raised by the Office Action dated December 22, 2012. In view of these amendments and remarks, reconsideration is respectfully requested.

The Pending Claims

Claims 19-46 were previously canceled, and claims 1-18 remain pending. Claim 20 is added by this amendment.

Claims 1, 2, 6, 12, 16, and 17 have been amended, and claim 20 has been added, to describe the invention more clearly. No new matter has been added, the basis for the amended claim language may be found within the original specification, claims and drawings.

Claim 1 is supported at, for example, paragraphs [0052], [0067], and Figures 2 and 5. Claim 16 is supported at, for example, paragraph [0084]-[0085], and Figures 5, 6, 9, and 10. Claim 20 is supported at, for example, paragraph [0011]. Entry of the above is respectfully requested.

The Office Action

For convenience, the following remarks will address the rejections in the same order they were raised in the Office Action.

Claims 1-12, 14, and 15 were rejected under 35 USC 102 as anticipated by U.S. Patent 6,838,051 (U.S. Patent Application Publication 2002/000391) to Marquiss et al. (hereinafter, "Marquiss"); and claims 13, and 16-18 were rejected under 35 USC 103(a) as being unpatentable over Marquiss in view of U.S. Patent 6,436,351 to Gubernator et al. (hereinafter, "Gubernator").

Each of these rejections is respectfully traversed.

Marquiss discloses an integrated sample processing system including dispense elements **3504** each attached to a tubing assembly **3506** (e.g., col. 25, lines 29-33; Figure 31).

The tubing assembly can include an input (distal) flange **3520** for connecting to a pump, and an output (proximal) flange **3522** for connecting to a dispense element (col. 25, lines 44-49; Figures 32 and 33). Fluid enters the dispense element (col. 26, line 1) and passes through the dispense tip (col. 25, lines 35-40).

Accordingly, Marquiss merely teaches passing fluid through dispensing elements. There is no teaching or suggestion in Marquiss of an apparatus for packaging an optical sensing assembly, the apparatus comprising “at least one discrete optical sensing assembly comprising an optical fiber and a transparent optical element having first and second reflecting surfaces.” Since Marquiss does not disclose each and every element of claim 1, claim 1 and dependent claims 2-12, 14, and 15 (and newly added dependent claim 20) cannot be considered to be anticipated by Marquiss. Therefore, Applicants request that the anticipation rejection

For subject matter defined by a claim to be considered obvious, the Office must demonstrate that the differences between the claimed subject matter and the prior art “are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains.” 35 USC 103(a); see also *Graham v. John Deere Co.*, 383 US 1, 148 USPQ 459 (1996). The ultimate determination of whether an invention is or is not obvious is based on certain factual inquiries including: (1) the scope and content of the prior art, (2) the level of ordinary skill in the prior art, (3) the differences between the claimed invention and the prior art, and (4) objective evidence of nonobviousness. *Graham*, 383 US at 17-18, 148 USPQ at 467.

Consideration of the aforementioned *Graham* factors here indicates that the present invention, as defined by the pending claims, is unobvious in view of the cited references.

For purposes of the analysis here, and for the sake of argument, the level of ordinary skill in the art can be considered to be relatively high, such that a person of ordinary skill in the art would have several years of experience in the relevant field.

Additionally, for purposes of the analysis here, there is no need to consider any objective criteria of nonobviousness.

Regarding the scope and content of the prior art and the differences between the claimed invention and the prior art, as set forth above, Marquiss merely teaches passing fluid through dispensing elements. There is no teaching or suggestion in Marquiss of an apparatus for packaging an optical sensing assembly, the apparatus comprising “at least one discrete optical sensing assembly comprising an optical fiber and a transparent optical element having first and second reflecting surfaces.”

Gubernator merely teaches a microtitre chemical reaction system, comprising a support rack having an array of reaction wells disposed therein, each reaction well having an open top end and a closed bottom end, a plurality of generally funnel shaped reactor caps with each of the reactor caps being received into the open top end of each reaction well, a porous gas-permeable layer positioned over the support rack, the gas-permeable layer having an array of holes therein with each hole being positioned over the open top end of each of the plurality of reaction wells, a gasket positioned over the gas-permeable layer, and a top cover positioned over the gasket (Abstract). As such, it does not remedy the deficiencies of Marquiss, and therefore, the combination of Marquiss and Gubernator also fails to render the present invention obvious (including the embodiment encompassed by newly added dependent claim 20).

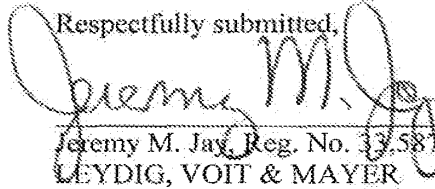
Considering all of the *Graham* factors together, it is clear that the present invention would not have been obvious to one of ordinary skill in the art at the relevant time in view of the combined disclosures of the cited references. Accordingly, the obviousness rejection should be withdrawn.

For the reasons set forth above, reconsideration of the rejections is respectfully requested.

Conclusion

If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.

Respectfully submitted,


Jeremy M. Jay, Reg. No. 33,581
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Date: June 21, 2012

Electronic Patent Application Fee Transmittal				
Application Number:	13101112			
Filing Date:	04-May-2011			
Title of Invention:	Tip Tray Assembly For Optical Sensors			
First Named Inventor/Applicant Name:	Michael W. Recknor			
Filer:	Jeremy M. Jay/michelle duvall			
Attorney Docket Number:	709972			
Filed as Large Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				
Extension - 3 months with \$0 paid	1253	1	1270	1270

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Request for continued examination	1801	1	930	930
Total in USD (\$)				2200

Electronic Acknowledgement Receipt	
EFS ID:	13074482
Application Number:	13101112
International Application Number:	
Confirmation Number:	4330
Title of Invention:	Tip Tray Assembly For Optical Sensors
First Named Inventor/Applicant Name:	Michael W. Recknor
Customer Number:	23548
Filer:	Jeremy M. Jay/michelle duvall
Filer Authorized By:	Jeremy M. Jay
Attorney Docket Number:	709972
Receipt Date:	21-JUN-2012
Filing Date:	04-MAY-2011
Time Stamp:	16:08:01
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$2200
RAM confirmation Number	3108
Deposit Account	121216
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.16 (National application filing, search, and examination fees) Charge any Additional Fees required under 37 C.F.R. Section 1.17 (Patent application and reexamination processing fees)	

Charge any Additional Fees required under 37 C.F.R. Section 1.19 (Document supply fees)					
Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)					
File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Request for Continued Examination (RCE)	709972_RCE_transmittal.pdf	102956 573c1fe81d9bd57be9a887bd9f0a08537968c7d7	no	1
Warnings:					
This is not a USPTO supplied RCE SB30 form.					
Information:					
2		709972_ROA.pdf	357679 60510105592a7cd8a01f81d1c5a06f633df20722	yes	8
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Amendment Submitted/Entered with Filing of CPA/RCE		1	1	
	Claims		2	4	
	Applicant Arguments/Remarks Made in an Amendment		5	8	
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	31888 620e43beab7c24cda507dafbc4ccaba191fff3c6	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			492523		

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New Applications Under 35 U.S.C. 111

If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application.

National Stage of an International Application under 35 U.S.C. 371

If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course.

New International Application Filed with the USPTO as a Receiving Office

If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.

To: DCpatent@leydig.com,Chgpatent@leydig.com,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
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Jun 21, 2012 05:24:55 AM

Dear PAIR Customer:

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UNITED STATES

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Application	Document	Mailroom Date	Attorney Docket No.
13101112	N570	06/21/2012	709972
	N570	06/21/2012	709972

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Monday - Friday 6:00 a.m. to 12:00 a.m.

Thank you for prompt attention to this notice,

UNITED STATES PATENT AND TRADEMARK OFFICE
PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application.

1. (Currently Amended) An apparatus for packaging an optical sensing assembly, the apparatus comprising at least one discrete optical sensing assembly comprising an optical fiber and a transparent optical element having first and second reflecting surfaces, a substrate with a plurality of openings, each opening being configured for holding a discrete optical sensing assembly therein, the optical sensing assembly being positioned in the opening with a tip of the optical sensing assembly extending through the opening to be suspended from the substrate, wherein the plurality of openings are arranged so the optical sensing assembly positioned therein avoids contacting another optical sensing assembly positioned therein, and wherein at least one opening holds an optical sensing assembly therein, with the tip of the optical sensing assembly extending through the opening.

2. (Currently Amended) The apparatus of claim 1, further comprising a support member for supporting the substrate, the support member positioning the substrate so the tip of the optical sensing assembly suspended from the opening in the substrate contacts a solution in one of a plurality of wells in a container adjacent to the substrate, ~~wherein the substrate is configured for preparing the optical assembly for assay.~~

3. (Previously Presented) The apparatus of claim 2, wherein the container is a microtiter plate including 96 wells.

4. (Previously Presented) The apparatus of claim 1, wherein the optical sensing assembly further comprises a hub at an end of the assembly opposite the tip, the hub being designed for attachment to a device that moves the assembly from a first location to a second location.

5. (Previously Presented) The apparatus of claim 1, wherein the openings include elongated barrels that allow the optical sensing assembly to be immersed in a solution in a

container below the substrate without the tip of the optical sensing assembly contacting a tip of another optical sensing assembly in the substrate.

6. (Currently Amended) The apparatus of claim 1, ~~wherein comprising a plurality of discrete optical sensing assemblies coated with different reagents are moved around and arranged in the plurality of openings to create a customized array.~~

7. (Previously Presented) The apparatus of claim 2, wherein the optical sensing assembly in the substrate is mapped to wells in a second container containing different samples.

8. (Previously Presented) The apparatus of claim 2, wherein the solution is a pre-wet solution into which the optical sensing assembly is immersed.

9. (Previously Presented) The apparatus of claim 2, wherein the solution is a protein solution into which the optical sensing assembly is immersed for immobilization of protein on the optical sensing assembly, or for measurement of interaction with another protein already immobilized on the optical sensing assembly.

10. (Previously Presented) The apparatus of claim 2, wherein the substrate being configured for preparing the optical sensing assembly for assay further comprises the substrate being configured for pre-wet of the optical assembly before assay.

11. (Previously Presented) The apparatus of Claim 2, wherein the substrate being configured for preparing the optical sensing assembly for assay further comprises the substrate being configured protein immobilization of the optical assembly before assay.

12. (Currently Amended) The apparatus of claim 1, wherein the at least one optical sensing assembly comprises a hub at an end opposite the tip, and the optical sensing assembly is inserted into the opening with the hub of the assembly remaining on a first side of the substrate and the tip of the assembly being inserted through the opening to be suspended from a second side of the substrate.

13. (Previously Presented) The apparatus of claim 1, further comprising a cover on a first side of the substrate to protect the optical sensing assembly.

14. (Previously Presented) The apparatus of claim 1, further comprising a base on a second side of the substrate to protect the tip of the optical sensing assembly.

15. (Previously Presented) The apparatus of claim 14, wherein a container is positioned inside the base beneath the substrate, the container being positioned so the tip of the suspended optical sensing assembly contacts solution in one of the plurality of wells in the container.

16. (Currently Amended) The apparatus of claim 13, wherein the cover comprises a recess comprising a downwardly extending center portion such that, when the cover is closed over the substrate, the cover retains ~~is designed to maintain~~ the optical sensing assembly in the opening in position in the substrate.

17. (Currently Amended) The apparatus of claim [[1]] 16, further comprising a cover and a base, the cover and base being designed to lock together around the substrate forming an enclosure around the optical sensing assembly.

18. (Previously Presented) The apparatus of claim 17, wherein the base of the apparatus is designed fit together with the cover of other apparatuses to be stackable with the other apparatuses for storage.

19.-46. (Canceled)

20. (New) The apparatus of claim 16, further comprising a support member for supporting the substrate, the support member positioning the substrate so the tip of the optical sensing assembly suspended from the opening in the substrate can contact a solution in one of a plurality of wells in a container adjacent to the substrate, wherein the container is a microtiter plate.



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/101,112	05/04/2011	Michael W. Recknor	709972	4330
23548 7590 08/16/2013 LEYDIG VOIT & MAYER, LTD 700 THIRTEENTH ST. NW SUITE 300 WASHINGTON, DC 20005-3960			EXAMINER KWAK, DEAN P	
			ART UNIT 1773	PAPER NUMBER
			NOTIFICATION DATE 08/16/2013	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

DCpatent@leydig.com
Chgpatent@leydig.com

Office Action Summary	Application No. 13/101,112	Applicant(s) RECKNOR ET AL.	
	Examiner DEAN KWAK	Art Unit 1773	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 June 2012.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on ____; the restriction requirement and election have been incorporated into this action.
- 4) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 5) ☒ Claim(s) 1-18 and 47 is/are pending in the application.
5a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 6) ☐ Claim(s) ____ is/are allowed.
- 7) ☒ Claim(s) 1-18 and 47 is/are rejected.
- 8) ☐ Claim(s) ____ is/are objected to.
- 9) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

* If any claims have been determined allowable, you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

Application Papers

- 10) ☐ The specification is objected to by the Examiner.
- 11) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

Certified copies:

- a) ☐ All b) ☐ Some * c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date ____.
- 3) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 4) ☐ Other: ____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 06/21/2012 has been entered.

Claim Objections

2. The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

Misnumbered claim 20 has been renumbered to claim 47.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of pre-AIA 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –
(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-18 & 47 are rejected under pre-AIA 35 U.S.C. 102(e) as being anticipated by Klein et al. (US 2005/0176155).

Regarding claim 1, Klein et al. teach an apparatus, the apparatus comprising:

- at least one discrete optical sensing assembly (see e.g., processor 390; see also optical devices including sensors 140 and 142, Figs. 12, 19, 20) comprising an optical fiber (e.g., probes 500, ¶ 0093) and a transparent optical element (e.g., optical fibers, ¶ 0078+) having first and second reflecting surfaces (it is noted that an optical fiber inherently reflects light),
- substrate with a plurality of openings (e.g., micro-well plates 110, ¶ 0039), each opening being configured for holding a discrete optical sensing assembly therein (see ¶ 0092),
- the optical sensing assembly being positioned in the opening with a tip of the optical sensing assembly extending through the opening to be suspended from the substrate (see Fig. 19),
- wherein the plurality of openings are arranged so the optical sensing assembly positioned therein avoids contacting another optical sensing assembly positioned therein, and wherein at least one opening holds an optical sensing assembly therein, with the tip of the optical sensing assembly extending through the opening (see Fig. 19 & ¶ 0092+).

Regarding claims 2-9, 12-17 & 47, Klein et al. further teach the apparatus:

- further comprising a support member (e.g., top surface 102) for supporting the substrate, the support member positioning the substrate so the tip of the optical sensing assembly suspended from the opening in the substrate contacts a solution in one of a plurality of wells in a container adjacent to the substrate (see Fig. 19 & ¶ 0092+);
- wherein the container is a microtiter plate including 96 wells (¶ 0039);
- wherein the optical sensing assembly further comprises a hub (e.g., lid 502) at an end of the assembly opposite the tip (see Fig. 19);
- wherein the openings include elongated barrels (see Fig. 19);
- comprising a plurality of discrete optical sensing assemblies coated with different reagents arranged in the plurality of openings (see e.g., thin coating applied to the interior of the wells ¶ 0053-0054+);
- wherein the optical sensing assembly in the substrate is mapped to wells in a second container (e.g., micro-well plates 110, ¶ 0039) containing different samples (see various settings shown in ¶ 0053-0055+);
- wherein the solution which the optical sensing assembly is immersed (¶ 0059);
- wherein the solution is a protein solution (¶ 0096);
- wherein the at least one optical sensing assembly comprises a hub (e.g., lid 502) at an end opposite the tip (see Fig. 19);
- further comprising a cover (e.g., lid 502) on a first side of the substrate (see Fig. 19);

- further comprising a base (e.g., support plate 201) on a second side of the substrate (see Fig. 12);
- wherein a container (e.g., aperture 210) is positioned inside the base beneath the substrate (see Fig. 12), the container being positioned so the tip of the suspended optical sensing assembly contacts solution in one of the plurality of wells in the container (§ 0060-0064+);
- wherein the cover comprises a recess comprising a downwardly extending center portion (see the lid having a downward design as shown in Figs. 19, 20) such that, when the cover is closed over the substrate, the cover retains the optical sensing assembly in the opening in position in the substrate (see Figs. 19 & 20);
- further comprising a cover (e.g., top cover 154) and a base (e.g., top surface 180), the cover and base being designed to lock together around the substrate forming an enclosure around the optical sensing assembly (see Fig. 6 & § 0092); and
- further comprising a support member (e.g., top surface 102) for supporting the substrate (see Fig. 19), wherein the container is a microtiter plate (§ 0039).

With regard to limitations in claims 1, 2, 4-6, 9, 10-14, 17, 18 & 47 (e.g., "...designed to (for)...", "...can contact...", "...being ... so...", etc.), these claim limitations are considered process or intended use limitations, which do not further delineate the structure of the claimed apparatus from that of the prior art. Since these claims are drawn to an apparatus statutory class of invention, it is the structural limitations of the apparatus, as recited in the claims, which are considered in determining the patentability of the apparatus itself. These recited process or intended use limitations are accorded no patentable weight to an apparatus. Process limitations

do not add patentability to a structure, which is not distinguished from the prior art. A recitation of the intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See *In re Casey*, 152 USPQ 235 (CCPA 1967); and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). The Courts have held that it is well settled that the recitation of a new intended use, for an old product, does not make a claim to that old product patentable. See *In re Schreiber*, 128 F.3d 1473, 1477, 44 USPQ2d 1429, 1431 (Fed. Cir. 1997). The Courts have held that the manner of operating an apparatus does not differentiate an apparatus claim from the prior art, if the prior art apparatus teaches all of the structural limitations of the claim. See *Ex Parte Masham*, 2 USPQ2d 1647 (BPAI 1987) (see MPEP § 2114).

Response to Arguments

5. Applicant's arguments have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DEAN KWAK whose telephone number is (571)270-7072. The examiner can normally be reached on M-TH, 5:30 am - 3:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on (571) 272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

10 August 2013

/Dean Kwak/
Primary Examiner, Art Unit 1773

Notice of References Cited	Application/Control No. 13/101,112	Applicant(s)/Patent Under Reexamination RECKNOR ET AL.	
	Examiner DEAN KWAK	Art Unit 1773	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2005/0176155	08-2005	Klein et al.	436/163
	B	US-			
	C	US-			
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

EAST Search History**EAST Search History (Prior Art)**

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	10	((MICHAEL) near2 (RECKNOR)).INV.	US-PGPUB; USPAT	OR	ON	2013/08/10: 01:04
L2	159	((HONG) near2 (TAN)).INV.	US-PGPUB; USPAT	OR	ON	2013/08/10: 01:04
L3	67	((ROBERT) near2 (ZUK)).INV.	US-PGPUB; USPAT	OR	ON	2013/08/10: 01:04
L4	17	((KRISTA) near2 (WITTE)).INV.	US-PGPUB; USPAT	OR	ON	2013/08/10: 01:04
L5	8	((SAE) near2 (CHOO)).INV.	US-PGPUB; USPAT	OR	ON	2013/08/10: 01:04
L6	6	((SCOTT) near2 (LOCKARD)).INV.	US-PGPUB; USPAT	OR	ON	2013/08/10: 01:04
L7	56	(L1 or L2 or L3 or L4 or L5 or L6) and (optic\$4 or support).clm.	US-PGPUB; USPAT	OR	ON	2013/08/10: 01:04

EAST Search History (Interference)

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Tray_Recknor et al_27Aug11.wsp**

<i>Index of Claims</i> 	Application/Control No. 13101112	Applicant(s)/Patent Under Reexamination RECKNOR ET AL.
	Examiner DEAN KWAK	Art Unit 1773

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant						☐ CPA		☐ T.D.		☐ R.1.47	
CLAIM		DATE									
Final	Original	08/27/2011	11/01/2011	12/16/2011	08/10/2013						
	1	✓	✓	✓	✓						
	2	✓	✓	✓	✓						
	3	✓	✓	✓	✓						
	4	✓	✓	✓	✓						
	5	✓	✓	✓	✓						
	6	✓	✓	✓	✓						
	7	✓	✓	✓	✓						
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	10	✓	✓	✓	✓						
	11	✓	✓	✓	✓						
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<i>Index of Claims</i> 	Application/Control No. 13101112	Applicant(s)/Patent Under Reexamination RECKNOR ET AL.
	Examiner DEAN KWAK	Art Unit 1773

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant						☐ CPA		☐ T.D.		☐ R.1.47	
CLAIM		DATE									
Final	Original	08/27/2011	11/01/2011	12/16/2011	08/10/2013						
	37	-	-	-	-						
	38	-	-	-	-						
	39	-	-	-	-						
	40	-	-	-	-						
	41	-	-	-	-						
	42	-	-	-	-						
	43	-	-	-	-						
	44	-	-	-	-						
	45	-	-	-	-						
	46	-	-	-	-						
	47				✓						

Search Notes 	Application/Control No. 13101112	Applicant(s)/Patent Under Reexamination RECKNOR ET AL.
	Examiner DEAN KWAK	Art Unit 1773

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
422	50, 400, 401, 407, 408, 503, 504, 511, 521	8/27/2011	dk
	class/subclass updated	11/1/2011	dk
	updated	12/16/2011	dk
	updated	8/10/2013	dk

SEARCH NOTES		
Search Notes	Date	Examiner
EAST search	8/27/2011	dk
inventor search	8/27/2011	dk
inventor search updated	11/1/2011	dk
inventor search updated	12/16/2011	dk
updated	8/10/2013	dk

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner

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To: DCpatent@leydig.com,Chgpatent@leydig.com,
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Application	Document	Mailroom Date	Attorney Docket No.
13101112	CTNF	08/16/2013	709972
	892	08/16/2013	709972

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PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Patent Application No. 13/101,112

Confirmation No. 4330

Inventor(s): Michael W. Recknor et al.

Filing or 371(c) Date: May 4, 2011

TC/AU: 1773

Examiner: Dean Kwak

Docket No.: 709972

Customer No.: 23548

REPLY TO OFFICE ACTION

In reply to the Office Action dated August 16, 2013, please enter the following amendments and consider the following remarks.

Amendments to the Claims are reflected in the listing of claims which begins on page 2 of this paper.

Remarks/Arguments begin on page 5 of this paper.

<i>MAILING/TRANSMISSION CERTIFICATE UNDER 37 CFR 1.8</i>			
I hereby certify that this correspondence is being facsimile transmitted to the USPTO, EFS-Web transmitted to the USPTO, or deposited with the United States Postal Service with sufficient postage in an envelope addressed to "Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450" [37 CFR 1.8(a)] on the date indicated below.			
<i>Name (Print/Type)</i>	Jeremy M. Jay		
<i>Signature</i>	/Jeremy M. Jay/	<i>Date</i>	September 6, 2013

AMENDMENTS TO THE CLAIMS

This listing of claims replaces all prior versions, and listings, of claims in the application.

1. (Currently Amended) An apparatus for packaging an optical sensing assembly, the apparatus comprising at least one discrete optical sensing assembly comprising an optical fiber and a transparent optical element having end faces and first and second reflecting surfaces formed on the end faces, the first and second reflecting surfaces separated by at least 50 nm, wherein the first reflecting surface comprises a layer of analyte binding molecules; a substrate with a plurality of openings, each opening being configured for holding a discrete optical sensing assembly therein, the optical sensing assembly being positioned in the opening with a tip of the optical sensing assembly extending through the opening to be suspended from the substrate, wherein the plurality of openings are arranged so the optical sensing assembly positioned therein avoids contacting another optical sensing assembly positioned therein, and wherein at least one opening holds an optical sensing assembly therein, with the tip of the optical sensing assembly extending through the opening.

2. (Previously Presented) The apparatus of claim 1, further comprising a support member for supporting the substrate, the support member positioning the substrate so the tip of the optical sensing assembly suspended from the opening in the substrate contacts a solution in one of a plurality of wells in a container adjacent to the substrate.

3. (Previously Presented) The apparatus of claim 2, wherein the container is a microtiter plate including 96 wells.

4. (Previously Presented) The apparatus of claim 1, wherein the optical sensing assembly further comprises a hub at an end of the assembly opposite the tip, the hub being designed for attachment to a device that moves the assembly from a first location to a second location.

5. (Previously Presented) The apparatus of claim 1, wherein the openings include elongated barrels that allow the optical sensing assembly to be immersed in a solution in a

container below the substrate without the tip of the optical sensing assembly contacting a tip of another optical sensing assembly in the substrate.

6. (Previously Presented) The apparatus of claim 1, comprising a plurality of discrete optical sensing assemblies coated with different reagents arranged in the plurality of openings.

7. (Previously Presented) The apparatus of claim 2, wherein the optical sensing assembly in the substrate is mapped to wells in a second container containing different samples.

8. (Previously Presented) The apparatus of claim 2, wherein the solution is a pre-wet solution into which the optical sensing assembly is immersed.

9. (Previously Presented) The apparatus of claim 2, wherein the solution is a protein solution into which the optical sensing assembly is immersed for immobilization of protein on the optical sensing assembly, or for measurement of interaction with another protein already immobilized on the optical sensing assembly.

10. (Previously Presented) The apparatus of claim 2, wherein the substrate being configured for preparing the optical sensing assembly for assay further comprises the substrate being configured for pre-wet of the optical assembly before assay.

11. (Previously Presented) The apparatus of Claim 2, wherein the substrate being configured for preparing the optical sensing assembly for assay further comprises the substrate being configured protein immobilization of the optical assembly before assay.

12. (Previously Presented) The apparatus of claim 1, wherein the at least one optical sensing assembly comprises a hub at an end opposite the tip, and the optical sensing assembly is inserted into the opening with the hub of the assembly remaining on a first side of the substrate and the tip of the assembly being inserted through the opening to be suspended from a second side of the substrate.

13. (Previously Presented) The apparatus of claim 1, further comprising a cover on a first side of the substrate to protect the optical sensing assembly.

14. (Previously Presented) The apparatus of claim 1, further comprising a base on a second side of the substrate to protect the tip of the optical sensing assembly.

15. (Previously Presented) The apparatus of claim 14, wherein a container is positioned inside the base beneath the substrate, the container being positioned so the tip of the suspended optical sensing assembly contacts solution in one of the plurality of wells in the container.

16. (Previously Presented) The apparatus of claim 13, wherein the cover comprises a recess comprising a downwardly extending center portion such that, when the cover is closed over the substrate, the cover retains the optical sensing assembly in the opening in position in the substrate.

17. (Currently Amended) The apparatus of claim ~~[[1]]~~ 16, further comprising a cover and a base, the cover and base being designed to lock together around the substrate forming an enclosure around the optical sensing assembly.

18. (Previously Presented) The apparatus of claim 17, wherein the base of the apparatus is designed fit together with the cover of other apparatuses to be stackable with the other apparatuses for storage.

19.-46. (Canceled)

47. (Previously Presented) The apparatus of claim 16, further comprising a support member for supporting the substrate, the support member positioning the substrate so the tip of the optical sensing assembly suspended from the opening in the substrate can contact a solution in one of a plurality of wells in a container adjacent to the substrate, wherein the container is a microtiter plate.

REMARKS/ARGUMENTS

The amendments set out above and the following remarks are believed responsive to the points raised by the Office Action dated August 16, 2013. In view of these amendments and remarks, reconsideration is respectfully requested.

The Pending Claims

Claims 19-46 were previously canceled, and claims 1-18 and 47 remain pending.

Claim 1 has been amended to describe the invention more clearly. No new matter has been added, the basis for the amended claim language may be found within the original specification, claims and drawings.

Claim 1 is supported at, for example, paragraph [0052], and Figure 2. Entry of the above is respectfully requested.

The Office Action

Claim Objection

Applicants note that the Office has renumbered claim 20 as claim 47.

Rejection under 35 USC 102

Claims 1-18 and 47 were rejected under 35 USC 102(e) as anticipated by U.S. Patent Application Publication 2005/0176155 to Klein et al. ("Klein").

This rejection is respectfully traversed.

Klein discloses a well plate. The Office Action refers to paragraph [0093] in Klein, that discloses probes **500** (see also, Figure 19), and indicates the probes "can be used for oxygen sensing," and alternatively, the probes "may be an optical fiber with a fluorescent material attached to the end of the fiber." There is no teaching in Klein of an optical sensing assembly comprising an optical fiber and a transparent optical element having end faces and first and second reflecting surfaces formed on the end faces, the first and second reflecting

surfaces separated by at least 50 nm, wherein the first reflecting surface comprises a layer of analyte binding molecules, as claimed in amended claim 1.

Since Klein does not disclose each and every element of claim 1, claim 1 and dependent claims 2-18 and 47 cannot be considered to be anticipated by Klein. Therefore, Applicants request that the anticipation rejection be withdrawn.

Since the independent claim is allowable for the reasons set forth above, the dependent claims are allowable as they depend from the novel and non-obvious independent claim.

For the reasons set forth above, reconsideration of the rejection is respectfully requested.

Conclusion

If, in the opinion of the Examiner, a telephone conference would expedite the prosecution of the subject application, the Examiner is invited to call the undersigned attorney.



/Jeremy M. Jay/

Jeremy M. Jay, Reg. No. 33587

Telephone: 202-737-6770

Facsimile: 202-737-6776

Date: September 6, 2013

Electronic Acknowledgement Receipt	
EFS ID:	16787870
Application Number:	13101112
International Application Number:	
Confirmation Number:	4330
Title of Invention:	Tip Tray Assembly For Optical Sensors
First Named Inventor/Applicant Name:	Michael W. Recknor
Customer Number:	23548
Filer:	Jeremy M. Jay/Michelle Peters
Filer Authorized By:	Jeremy M. Jay
Attorney Docket Number:	709972
Receipt Date:	06-SEP-2013
Filing Date:	04-MAY-2011
Time Stamp:	16:35:56
Application Type:	Utility under 35 USC 111(a)

Payment information:

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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Transmittal Letter	709972_ROA2Transmittal.pdf	68937 110bf1708745611940d75fb859658b44ad3746b5	no	1

Warnings:

Information:

2		709972_ROA2.pdf	131879	yes	6
			b02165fae0f917439cbe80e2102b0cb9e58a407f		
Multipart Description/PDF files in .zip description					
		Document Description	Start	End	
		Amendment/Req. Reconsideration-After Non-Final Reject	1	1	
		Claims	2	4	
		Applicant Arguments/Remarks Made in an Amendment	5	6	
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In re Application of: Michael W. RECKNOR et al.
 Application No. 13/101,112
 Confirmation No. 4330
 Filing or 371(c) Date: May 4, 2011

Transmitted herewith is a reply to office action in the subject application.

- ☐ Small entity status is claimed for this application under 37 CFR 1.27.
- ☒ Petition for an extension of time for the period noted below, as well as for any additional period necessary to render the present submission timely. Please charge Deposit Account No. 12-1216 for the appropriate petition fee.
- ☐ Other:
- ☒ Please charge Deposit Account No. 12-1216 in the total amount indicated below.

					SMALL ENTITY		OTHER THAN A SMALL ENTITY	
TIME EXTENSION PETITION FEE			none		\$ 0.00		\$ 0.00	
subtract time extension fee previously paid			none		(\$ 0.00)		(\$ 0.00)	
CLAIM FEE	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	EXTRA CLAIMS PRESENT	RATE	ADD'L CLAIM FEE	RATE	ADD'L CLAIM FEE
TOTAL		MINUS		= 0	x 40 =	\$	x 80 =	\$0.00
INDEPENDENT		MINUS		= 0	x 210 =	\$	x 420 =	\$0.00
☐	FIRST PRESENTATION OF MULTIPLE CLAIM				+ 390 =	\$	+ 780 =	\$0.00
OTHER FEES AS DESCRIBED:					\$		\$0.00	
TOTAL AMOUNT TO BE CHARGED TO DEPOSIT ACCOUNT					TOTAL	\$	TOTAL	\$0.00

- ☒ The Commissioner is hereby authorized to charge any deficiencies in the following fees associated with this communication or credit any overpayment to Deposit Account No. 12-1216.
- ☒ Any filing fees under 37 CFR 1.16 for the presentation of extra claims.
- ☒ Any patent application processing fees under 37 CFR 1.17.



/Jeremy M. Jay/
 Jeremy M. Jay, Reg. No. 33587
 Telephone: 202-737-6770
 Facsimile: 202-737-6776

Date: September 6, 2013

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875				Application or Docket Number 13/101,112		Filing Date 05/04/2011		☐ To be Mailed	
ENTITY: ☐ LARGE ☒ SMALL ☐ MICRO									
APPLICATION AS FILED – PART I									
(Column 1)		(Column 2)							
FOR	NUMBER FILED	NUMBER EXTRA		RATE (\$)		FEE (\$)			
☐ BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A		N/A					
☐ SEARCH FEE (37 CFR 1.16(k), (i), or (m))	N/A	N/A		N/A					
☐ EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A		N/A					
TOTAL CLAIMS (37 CFR 1.16(i))	minus 20 =	*		X \$ =					
INDEPENDENT CLAIMS (37 CFR 1.16(h))	minus 3 =	*		X \$ =					
☐ APPLICATION SIZE FEE (37 CFR 1.16(s))	If the specification and drawings exceed 100 sheets of paper, the application size fee due is \$310 (\$155 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).								
☐ MULTIPLE DEPENDENT CLAIM PRESENT (37 CFR 1.16(j))									
* If the difference in column 1 is less than zero, enter "0" in column 2.				TOTAL					
APPLICATION AS AMENDED – PART II									
(Column 1)		(Column 2)		(Column 3)					
AMENDMENT	09/06/2013	CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)		ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))	* 19	Minus	** 20	= 0	X \$40 =		0	
	Independent (37 CFR 1.16(h))	* 1	Minus	***3	= 0	X \$210 =		0	
	☐ Application Size Fee (37 CFR 1.16(s))								
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
TOTAL ADD'L FEE						0			
(Column 1)		(Column 2)		(Column 3)					
AMENDMENT		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)		ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))	*	Minus	**	=	X \$ =			
	Independent (37 CFR 1.16(h))	*	Minus	***	=	X \$ =			
	☐ Application Size Fee (37 CFR 1.16(s))								
	☐ FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))								
TOTAL ADD'L FEE									
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.									

This collection of information is required by 37 CFR 1.16. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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EXAMINER

KWAK, DEAN P

ART UNIT

PAPER NUMBER

1773

DATE MAILED: 10/29/2013

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/101,112	05/04/2011	Michael W. Recknor	709972	4330

TITLE OF INVENTION: Tip Tray Assembly For Optical Sensors

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$890	\$300	\$0	\$1190	01/29/2014

THE APPLICATION IDENTIFIED ABOVE HAS BEEN EXAMINED AND IS ALLOWED FOR ISSUANCE AS A PATENT. PROSECUTION ON THE MERITS IS CLOSED. THIS NOTICE OF ALLOWANCE IS NOT A GRANT OF PATENT RIGHTS. THIS APPLICATION IS SUBJECT TO WITHDRAWAL FROM ISSUE AT THE INITIATIVE OF THE OFFICE OR UPON PETITION BY THE APPLICANT. SEE 37 CFR 1.313 AND MPEP 1308.

THE ISSUE FEE AND PUBLICATION FEE (IF REQUIRED) MUST BE PAID WITHIN THREE MONTHS FROM THE MAILING DATE OF THIS NOTICE OR THIS APPLICATION SHALL BE REGARDED AS ABANDONED. THIS STATUTORY PERIOD CANNOT BE EXTENDED. SEE 35 U.S.C. 151. THE ISSUE FEE DUE INDICATED ABOVE DOES NOT REFLECT A CREDIT FOR ANY PREVIOUSLY PAID ISSUE FEE IN THIS APPLICATION. IF AN ISSUE FEE HAS PREVIOUSLY BEEN PAID IN THIS APPLICATION (AS SHOWN ABOVE), THE RETURN OF PART B OF THIS FORM WILL BE CONSIDERED A REQUEST TO REAPPLY THE PREVIOUSLY PAID ISSUE FEE TOWARD THE ISSUE FEE NOW DUE.

HOW TO REPLY TO THIS NOTICE:

I. Review the ENTITY STATUS shown above. If the ENTITY STATUS is shown as SMALL or MICRO, verify whether entitlement to that entity status still applies.

If the ENTITY STATUS is the same as shown above, pay the TOTAL FEE(S) DUE shown above.

If the ENTITY STATUS is changed from that shown above, on PART B - FEE(S) TRANSMITTAL, complete section number 5 titled "Change in Entity Status (from status indicated above)".

For purposes of this notice, small entity fees are 1/2 the amount of undiscounted fees, and micro entity fees are 1/2 the amount of small entity fees.

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III. All communications regarding this application must give the application number. Please direct all communications prior to issuance to Mail Stop ISSUE FEE unless advised to the contrary.

IMPORTANT REMINDER: Utility patents issuing on applications filed on or after Dec. 12, 1980 may require payment of maintenance fees. It is patentee's responsibility to ensure timely payment of maintenance fees when due.

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Complete and send this form, together with applicable fee(s), to: **Mail Stop ISSUE FEE**
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P.O. Box 1450
Alexandria, Virginia 22313-1450
or **Fax (571)-273-2885**

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700 THIRTEENTH ST. NW
SUITE 300
WASHINGTON, DC 20005-3960

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Depositor's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/101,112	05/04/2011	Michael W. Recknor	709972	4330

TITLE OF INVENTION: Tip Tray Assembly For Optical Sensors

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$890	\$300	\$0	\$1190	01/29/2014

EXAMINER	ART UNIT	CLASS-SUBCLASS
KWAK, DEAN P	1773	422-102000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.363).

- ☐ Change of correspondence address (or Change of Correspondence Address form PTO/SB/122) attached.
- ☐ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47; Rev 03-02 or more recent) attached. **Use of a Customer Number is required.**

2. For printing on the patent front page, list

- (1) the names of up to 3 registered patent attorneys or agents OR, alternatively, 1 _____
- (2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed. 2 _____
- 3 _____

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☐ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

- ☐ Issue Fee
- ☐ Publication Fee (No small entity discount permitted)
- ☐ Advance Order - # of Copies _____

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- ☐ A check is enclosed.
- ☐ Payment by credit card. Form PTO-2038 is attached.
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number _____ (enclose an extra copy of this form).

5. **Change in Entity Status** (from status indicated above)

☐ Applicant certifying micro entity status. See 37 CFR 1.29

☐ Applicant asserting small entity status. See 37 CFR 1.27

☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see form PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant; a registered attorney or agent; or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

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Date _____

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This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/101,112	05/04/2011	Michael W. Recknor	709972	4330

23548	7590	10/29/2013
LEYDIG VOIT & MAYER, LTD		
700 THIRTEENTH ST. NW		
SUITE 300		
WASHINGTON, DC 20005-3960		

EXAMINER	
KWAK, DEAN P	

ART UNIT	PAPER NUMBER
1773	

DATE MAILED: 10/29/2013

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment to date is 203 day(s). If the issue fee is paid on the date that is three months after the mailing date of this notice and the patent issues on the Tuesday before the date that is 28 weeks (six and a half months) after the mailing date of this notice, the Patent Term Adjustment will be 203 day(s).

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Customer Service Center of the Office of Patent Publication at 1-(888)-786-0101 or (571)-272-4200.

Privacy Act Statement

The Privacy Act of 1974 (P.L. 93-579) requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

**Notices of Allowance and Fee(s) Due mailed between October 1, 2013 and
December 31, 2013**

(Addendum to PTOL-85)

If the “Notice of Allowance and Fee(s) Due” has a mailing date on or after October 1, 2013 and before January 1, 2014, the following information is applicable to this application.

If the issue fee is being timely paid on or after January 1, 2014, the amount due is the issue fee and publication fee in effect January 1, 2014. On January 1, 2014, the issue fees set forth in 37 CFR 1.18 decrease significantly and the publication fee set forth in 37 CFR 1.18(d)(1) decreases to \$0.

If an issue fee or publication fee has been previously paid in this application, applicant is not entitled to a refund of the difference between the amount paid and the amount in effect on January 1, 2014.

Notice of Allowability	Application No. 13/101,112	Applicant(s) RECKNOR ET AL.	
	Examiner DEAN KWAK	Art Unit 1773	AIA (First Inventor to File) Status No

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address--

All claims being allowable, PROSECUTION ON THE MERITS IS (OR REMAINS) CLOSED in this application. If not included herewith (or previously mailed), a Notice of Allowance (PTOL-85) or other appropriate communication will be mailed in due course. **THIS NOTICE OF ALLOWABILITY IS NOT A GRANT OF PATENT RIGHTS.** This application is subject to withdrawal from issue at the initiative of the Office or upon petition by the applicant. See 37 CFR 1.313 and MPEP 1308.

1. ☒ This communication is responsive to amendment filed on 09/06/2013.
☐ A declaration(s)/affidavit(s) under **37 CFR 1.130(b)** was/were filed on _____.

2. ☐ An election was made by the applicant in response to a restriction requirement set forth during the interview on _____; the restriction requirement and election have been incorporated into this action.

3. ☒ The allowed claim(s) is/are 1-18 and 47. As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information, please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to PPHfeedback@uspto.gov.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
Certified copies:
a) ☐ All b) ☐ Some *c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☒ Notice of References Cited (PTO-892)	5. ☐ Examiner's Amendment/Comment
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____	6. ☒ Examiner's Statement of Reasons for Allowance
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material	7. ☐ Other _____
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____	

/Dean Kwak/ Primary Examiner, Art Unit 1773	
--	--

1. The present application is being examined under the pre-AIA first to invent provisions.

DETAILED ACTION

Allowable Subject Matter

2. Claims 1-18 & 47 are allowed.

REASONS FOR ALLOWANCE

3. The following is an examiner's statement of reasons for allowance: The prior art of record fails to teach or suggest the Applicants' claimed apparatus as recited in claim 1. The closest prior art to the Applicants' claimed invention are Klein et al. (US 2005/0176155), Marquiss et al. (US 6838051) & Gubernator et al. (US 6436351).

However, the prior art fail to teach or fairly suggest the Applicants' claimed apparatus for packaging an optical sensing assembly, the apparatus comprising at least one discrete optical sensing assembly comprising an optical fiber and a transparent optical element having end faces and first and second reflecting surfaces formed on the end faces, the first and second reflecting surfaces separated by at least 50 nm, wherein the first reflecting surface comprises a layer of analyte binding molecules; a substrate with a plurality of openings, each opening being configured for holding a discrete optical sensing assembly therein, the optical sensing assembly being positioned in the opening with a tip of the optical sensing assembly extending through the opening to be suspended from the substrate, wherein the plurality of openings are arranged so the optical sensing assembly positioned therein avoids contacting another optical sensing assembly

positioned therein, and wherein at least one opening holds an optical sensing assembly therein, with the tip of the optical sensing assembly extending through the opening.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Conclusion

4. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Picard (US 2004/0091397), Nomura (US 2009/0252649) & Muraishi (US 7838301).

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DEAN KWAK whose telephone number is (571)270-7072. The examiner can normally be reached on M-TH, 5:30 am - 3:30 pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jill A. Warden can be reached on 571-272-1267. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

17 October 2013

/Dean Kwak/
Primary Examiner, Art Unit 1773

Notice of References Cited	Application/Control No. 13/101,112	Applicant(s)/Patent Under Reexamination RECKNOR ET AL.	
	Examiner DEAN KWAK	Art Unit 1773	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2004/0091397	05-2004	Picard, Laurent A.G.	422/099
*	B	US-2009/0252649	10-2009	Nomura, Hiroshi	422/52
*	C	US-7,838,301	11-2010	Muraishi, Katsuaki	436/164
	D	US-			
	E	US-			
	F	US-			
	G	US-			
	H	US-			
	I	US-			
	J	US-			
	K	US-			
	L	US-			
	M	US-			

FOREIGN PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Country	Name	Classification
	N					
	O					
	P					
	Q					
	R					
	S					
	T					

NON-PATENT DOCUMENTS

*		Include as applicable: Author, Title Date, Publisher, Edition or Volume, Pertinent Pages)
	U	
	V	
	W	
	X	

*A copy of this reference is not being furnished with this Office action. (See MPEP § 707.05(a).)
Dates in MM-YYYY format are publication dates. Classifications may be US or foreign.

Search Notes 	Application/Control No. 13101112	Applicant(s)/Patent Under Reexamination RECKNOR ET AL.
	Examiner DEAN KWAK	Art Unit 1773

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
422	50, 400, 401, 407, 408, 503, 504, 511, 521	8/27/2011	dk
	class/subclass updated	11/1/2011	dk
	updated	12/16/2011	dk
	updated	8/10/2013	dk
	updated	10/17/2013	dk

SEARCH NOTES		
Search Notes	Date	Examiner
EAST search	8/27/2011	dk
inventor search	8/27/2011	dk
inventor search updated	11/1/2011	dk
inventor search updated	12/16/2011	dk
updated	8/10/2013	dk
updated	10/17/2013	dk
interference search	10/17/2013	dk

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
	see the 10/17/2013 EAST search	10/17/2013	dk

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<i>Index of Claims</i> 	Application/Control No. 13101112	Applicant(s)/Patent Under Reexamination RECKNOR ET AL.
	Examiner DEAN KWAK	Art Unit 1773

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant		☐ CPA		☐ T.D.		☐ R.1.47			
CLAIM		DATE							
Final	Original	08/27/2011	11/01/2011	12/16/2011	08/10/2013	10/17/2013			
1	1	✓	✓	✓	✓	=			
2	2	✓	✓	✓	✓	=			
3	3	✓	✓	✓	✓	=			
9	4	✓	✓	✓	✓	=			
10	5	✓	✓	✓	✓	=			
11	6	✓	✓	✓	✓	=			
4	7	✓	✓	✓	✓	=			
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7	10	✓	✓	✓	✓	=			
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	36	-	-	-	-	-			

<i>Index of Claims</i> 	Application/Control No. 13101112	Applicant(s)/Patent Under Reexamination RECKNOR ET AL.
	Examiner DEAN KWAK	Art Unit 1773

✓	Rejected	-	Cancelled	N	Non-Elected	A	Appeal
=	Allowed	÷	Restricted	I	Interference	O	Objected

☐ Claims renumbered in the same order as presented by applicant		☐ CPA		☐ T.D.		☐ R.1.47				
CLAIM		DATE								
Final	Original	08/27/2011	11/01/2011	12/16/2011	08/10/2013	10/17/2013				
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	45	-	-	-	-	-				
	46	-	-	-	-	-				
17	47				✓	=				

EAST Search History**EAST Search History (Prior Art)**

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	11	((MICHAEL) near2 (RECKNOR)).INV.	US-PGPUB; USPAT	OR	ON	2013/10/16 23:00
L2	163	((HONG) near2 (TAN)).INV.	US-PGPUB; USPAT	OR	ON	2013/10/16 23:00
L3	67	((ROBERT) near2 (ZUK)).INV.	US-PGPUB; USPAT	OR	ON	2013/10/16 23:00
L4	17	((KRISTA) near2 (WITTE)).INV.	US-PGPUB; USPAT	OR	ON	2013/10/16 23:00
L5	8	((SAE) near2 (CHOO)).INV.	US-PGPUB; USPAT	OR	ON	2013/10/16 23:00
L6	6	((SCOTT) near2 (LOCKARD)).INV.	US-PGPUB; USPAT	OR	ON	2013/10/16 23:00
L7	58	(L1 or L2 or L3 or L4 or L5 or L6) and (optic\$4 or support).clm.	US-PGPUB; USPAT	OR	ON	2013/10/16 23:00
L10	10455	(422/50,400,401,407,408,503,504,511,521).OCLS.	US-PGPUB; USPAT; USOCR; DERWENT	OR	OFF	2013/10/17 01:24
L11	339	L10 and (bind\$3 with surface).clm.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/10/17 01:24
L12	84	L11 and (reflect\$5 with surface)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	ON	2013/10/17 01:25
L13	24	L12 and (multiwell or multi-well or (multi adj well) or ("96" adj well) or (96-well))	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2013/10/17 01:26
L21	17	L12 and ("50nm" or "50 nm")	US-PGPUB; USPAT; EPO; JPO; DERWENT	OR	ON	2013/10/17 01:57

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L14	9170	(422/50,400,401,407,408,503,504,511,521).OCLS.	US-PGPUB; USPAT;	OR	OFF	2013/10/17 01:33

EAST Search History

			UPAD			
L18	339	L14 and (bind\$3 with surface).clm.	US- PGPUB; USPAT; UPAD	OR	ON	2013/10/17 01:35
L19	26	L18 and (reflect\$5 with surface).clm.	US- PGPUB; USPAT; UPAD	OR	ON	2013/10/17 01:35
L20	2	L19 and (multiwell or multi-well or (multi adj well) or ("96" adj well) or (96-well)).clm.	US- PGPUB; USPAT; UPAD	OR	ON	2013/10/17 01:35
L22	4	L19 and ("50nm" or "50 nm")	US- PGPUB; USPAT; UPAD	OR	ON	2013/10/17 02:17

10/ 17/ 2013 2:31:00 AM

C:\Users\dkwak\Documents\EAST\Workspaces\OA sent\13s\13101112_Tip
Tray_Recknor et al_27Aug11.wsp



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BIB DATA SHEET

CONFIRMATION NO. 4330

SERIAL NUMBER	FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.		
13/101,112	05/04/2011	422	1773	709972		
APPLICANTS Michael W. Recknor, Oakland, CA; Hong Tan, San Jose, CA; Robert Zuk, Atherton, CA; Krista Leah Witte, Hayward, CA; Sae Choo, Sunnyvale, CA; Scott Lockard, Los Gatos, CA;						
** CONTINUING DATA ***** This application is a DIV of 11/423,669 06/12/2006 ABN which claims benefit of 60/690,325 06/13/2005						
** FOREIGN APPLICATIONS *****						
** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** ** SMALL ENTITY ** 05/16/2011						
Foreign Priority claimed ☐ Yes ☒ No 35 USC 119(a-d) conditions met ☐ Yes ☒ No Verified and Acknowledged <u>/DEAN KWAK/</u> Examiner's Signature		☐ Met after Allowance Initials	STATE OR COUNTRY CA	SHEETS DRAWINGS 13	TOTAL CLAIMS 18	INDEPENDENT CLAIMS 1
ADDRESS LEYDIG VOIT & MAYER, LTD 700 THIRTEENTH ST. NW SUITE 300 WASHINGTON, DC 20005-3960 UNITED STATES						
TITLE Tip Tray Assembly For Optical Sensors						
FILING FEE RECEIVED 527	FEES: Authority has been given in Paper No. _____ to charge/credit DEPOSIT ACCOUNT No. _____ for following:			☐ All Fees ☐ 1.16 Fees (Filing) ☐ 1.17 Fees (Processing Ext. of time) ☐ 1.18 Fees (Issue) ☐ Other _____ ☐ Credit		

Issue Classification 	Application/Control No. 13101112	Applicant(s)/Patent Under Reexamination RECKNOR ET AL.
	Examiner DEAN KWAK	Art Unit 1773

CPC		
Symbol	Type	Version

CPC Combination Sets				
Symbol	Type	Set	Ranking	Version

NONE		Total Claims Allowed:	
(Assistant Examiner)	(Date)	19	
/DEAN KWAK/ Primary Examiner. Art Unit 1773	10/17/2013	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2, 4

Issue Classification 	Application/Control No. 13101112	Applicant(s)/Patent Under Reexamination RECKNOR ET AL.
	Examiner DEAN KWAK	Art Unit 1773

US ORIGINAL CLASSIFICATION						INTERNATIONAL CLASSIFICATION										
CLASS		SUBCLASS				CLAIMED					NON-CLAIMED					
422		407				G	0	1	N	21 / 75 (2006.01.01)						
CROSS REFERENCE(S)						B	0	1	L	3 / 00 (2006.01.01)						
						C	1	2	Q	1 / 68 (2006.01.01)						
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)															
422	50	400	401	408	417											
422	503	504	511	521												

NONE		Total Claims Allowed:	
		19	
(Assistant Examiner)	(Date)		
/DEAN KWAK/ Primary Examiner.Art Unit 1773	10/17/2013	O.G. Print Claim(s)	O.G. Print Figure
(Primary Examiner)	(Date)	1	2, 4

Issue Classification 	Application/Control No. 13101112	Applicant(s)/Patent Under Reexamination RECKNOR ET AL.
	Examiner DEAN KWAK	Art Unit 1773

☐ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	15	17		33										
2	2	16	18		34										
3	3		19		35										
9	4		20		36										
10	5		21		37										
11	6		22		38										
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7	10		26		42										
8	11		27		43										
12	12		28		44										
13	13		29		45										
18	14		30		46										
19	15		31	17	47										
14	16		32												

NONE (Assistant Examiner) _____ (Date) _____		Total Claims Allowed: 19	
/DEAN KWAK/ Primary Examiner. Art Unit 1773 (Primary Examiner) _____ (Date) _____		O.G. Print Claim(s) 1	O.G. Print Figure 2, 4

To: DCpatent@leydig.com,Chgpatent@leydig.com,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 23548

Oct 29, 2013 05:25:22 AM

Dear PAIR Customer:

LEYDIG VOIT & MAYER, LTD
700 THIRTEENTH ST. NW
SUITE 300
WASHINGTON, DC 20005-3960
UNITED STATES

The following USPTO patent application(s) associated with your Customer Number, 23548 , have new outgoing correspondence. This correspondence is now available for viewing in Private PAIR.

The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

Disclaimer:

The list of documents shown below is provided as a courtesy and is not part of the official file wrapper. The content of the images shown in PAIR is the official record.

Application	Document	Mailroom Date	Attorney Docket No.
13101112	NOA	10/29/2013	709972
	892	10/29/2013	709972

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Monday - Friday 6:00 a.m. to 12:00 a.m.

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UNITED STATES PATENT AND TRADEMARK OFFICE
PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), to: **Mail** Mail Stop ISSUE FEE
 Commissioner for Patents
 P.O. Box 1450
 Alexandria, Virginia 22313-1450
 or **Fax** (571)-273-2885

INSTRUCTIONS: This form should be used for transmitting the ISSUE FEE and PUBLICATION FEE (if required). Blocks 1 through 3 should be completed where appropriate. All further correspondence including the Patent, advance orders and notification of maintenance fees will be mailed to the current correspondence address as indicated unless corrected below or directed otherwise in Block 1, by (a) specifying a new correspondence address; and/or (b) indicating a separate "FEE ADDRESS" for maintenance fee notifications.

CURRENT CORRESPONDENCE ADDRESS (Note: Use Block 1 for any change of address)

23548 7590 10/29/2014
 LEYDIG VOIT & MAYER, LTD
 700 THIRTIETH ST. NW
 SUITE 300
 WASHINGTON, DC 20005-3960

Note: A certificate of mailing can only be used for domestic mailings of the Fee(s) Transmittal. This certificate cannot be used for any other accompanying papers. Each additional paper, such as an assignment or formal drawing, must have its own certificate of mailing or transmission.

Certificate of Mailing or Transmission

I hereby certify that this Fee(s) Transmittal is being deposited with the United States Postal Service with sufficient postage for first class mail in an envelope addressed to the Mail Stop ISSUE FEE address above, or being facsimile transmitted to the USPTO (571) 273-2885, on the date indicated below.

(Director's name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/101,112	05/04/2011	Michael W. Recknor	709972	4330

TITLE OF INVENTION: Tip Tray Assembly For Optical Sensors

APPL. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PRIV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	SMALL	\$890	\$360	\$0	\$1190	01/29/2014

EXAMINER	ART UNIT	CLASS-SUBCLASS
KWAK, DEAN P	1773	422-102000

1. Change of correspondence address or indication of "Fee Address" (37 CFR 1.563).

☐ Change of correspondence address for Change of Correspondence Address form PTO/SB/122 attached.

☒ "Fee Address" indication (or "Fee Address" Indication form PTO/SB/47, Rev 03-02 or more recent) attached. Use of a Customer Number is required.

2. For printing on the patent front page, list

(1) the names of up to 3 registered patent attorneys or agents OR, alternatively,

(2) the name of a single firm (having as a member a registered attorney or agent) and the names of up to 2 registered patent attorneys or agents. If no name is listed, no name will be printed.

1. LEYDIG, VOIT
 2. & MAYER, LTD.

3. ASSIGNEE NAME AND RESIDENCE DATA TO BE PRINTED ON THE PATENT (print or type)

PLEASE NOTE: Unless an assignee is identified below, no assignee data will appear on the patent. If an assignee is identified below, the document has been filed for recordation as set forth in 37 CFR 3.11. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

PALL CORPORATION

(B) RESIDENCE (CITY and STATE OR COUNTRY)

PORT WASHINGTON, NEW YORK

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government

4a. The following fee(s) are submitted:

☒ Issue Fee

☒ Publication Fee (No small entity discount permitted)

☐ Advance Order - # of Copies _____

4b. Payment of Fee(s): (Please first reapply any previously paid issue fee shown above)

☐ A check is enclosed.

☐ Payment by credit card. Form PTO-2032 is attached.

☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment, to Deposit Account Number 12-1216 (enclose an exact copy of this form).

5. Change in Entity Status (from status indicated above)

- ☐ Applicant certifying micro entity status. See 37 CFR 1.29
- ☐ Applicant asserting small entity status. See 37 CFR 1.27
- ☐ Applicant changing to regular undiscounted fee status.

NOTE: Absent a valid certification of Micro Entity Status (see form PTO/SB/15A and 15B), issue fee payment in the micro entity amount will not be accepted at the risk of application abandonment.

NOTE: If the application was previously under micro entity status, checking this box will be taken to be a notification of loss of entitlement to micro entity status.

NOTE: Checking this box will be taken to be a notification of loss of entitlement to small or micro entity status, as applicable.

NOTE: The Issue Fee and Publication Fee (if required) will not be accepted from anyone other than the applicant, a registered attorney or agent, or the assignee or other party in interest as shown by the records of the United States Patent and Trademark Office.

Authorized Signature /Jeremy M. Jay/

Date January 2, 2014

Typed or printed name Jeremy M. Jay

Registration No. 33,587

This collection of information is required by 37 CFR 1.311. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 12 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, Virginia 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, Virginia 22313-1450.

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it displays a valid OMB control number.

Electronic Patent Application Fee Transmittal				
Application Number:	13101112			
Filing Date:	04-May-2011			
Title of Invention:	Tip Tray Assembly For Optical Sensors			
First Named Inventor/Applicant Name:	Michael W. Recknor			
Filer:	Jeremy M. Jay/Michelle Peters			
Attorney Docket Number:	709972			
Filed as Small Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Utility Appl Issue Fee	2501	1	480	480
Publ. Fee- Early, Voluntary, or Normal	1504	1	0	0

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				480

Electronic Acknowledgement Receipt	
EFS ID:	17803363
Application Number:	13101112
International Application Number:	
Confirmation Number:	4330
Title of Invention:	Tip Tray Assembly For Optical Sensors
First Named Inventor/Applicant Name:	Michael W. Recknor
Customer Number:	23548
Filer:	Jeremy M. Jay/Michelle Peters
Filer Authorized By:	Jeremy M. Jay
Attorney Docket Number:	709972
Receipt Date:	02-JAN-2014
Filing Date:	04-MAY-2011
Time Stamp:	15:56:01
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$480
RAM confirmation Number	2971
Deposit Account	121216
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: Charge any Additional Fees required under 37 C.F.R. Section 1.20 (Post Issuance fees) Charge any Additional Fees required under 37 C.F.R. Section 1.21 (Miscellaneous fees and charges)	

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Miscellaneous Incoming Letter	709972_FeeAddressForm.pdf	150075	no	2
			fb6396046ec4bb0725429422404fae6f76a75108		
Warnings:					
Information:					
2	Issue Fee Payment (PTO-85B)	709972_IF.pdf	294554	no	2
			c734dbbaa8a5e45db689669adb74b75c46b4a6d0		
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	31541	no	2
			6ab66a562c09b99ce34c758e659a90ea929ec204		
Warnings:					
Information:					
Total Files Size (in bytes):			476170		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. New Applications Under 35 U.S.C. 111 If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. National Stage of an International Application under 35 U.S.C. 371 If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. New International Application Filed with the USPTO as a Receiving Office If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

"FEE ADDRESS" INDICATION FORM

Address to:
Mail Stop M Correspondence
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Fax to:
571-273-6500

- OR -

INSTRUCTIONS: The issue fee must have been paid for application(s) listed on this form. In addition, only an address represented by a Customer Number can be established as the fee address for maintenance fee purposes (hereafter, fee address). A fee address should be established when correspondence related to maintenance fees should be mailed to a different address than the correspondence address for the application. **When to check the first box below:** If you have a Customer Number to represent the fee address. **When to check the second box below:** If you have no Customer Number representing the desired fee address, in which case a completed Request for Customer Number (PTO/SB/125) must be attached to this form. For more information on Customer Numbers, see the Manual of Patent Examining Procedure (MPEP) § 403.

For the following listed application(s), please recognize as the "Fee Address" under the provisions of 37 CFR 1.363 the address associated with:

☒ Customer Number: 00197

OR

☐ The attached Request for Customer Number (PTO/SB/125) form.

PATENT NUMBER (if known)	APPLICATION NUMBER
	13/101,112

Completed by (check one):

- ☐ Applicant/Inventor /Jeremy M. Jay/
Signature
- ☒ Attorney or Agent of record Jeremy M. Jay
Typed or printed name
33,587
(Reg. No.)
- ☐ Assignee of record of the entire interest. See 37 CFR 3.71. (202) 737-6770
Requester's telephone number
 Statement under 37 CFR 3.73(b) is enclosed.
 (Form PTO/SB/96)
- ☐ Assignee recorded at Reel _____ Frame _____ 2 Jan. 2014
Date

NOTE: Signatures of all the inventors or assignees of record of the entire interest or their representative(s) are required. Submit multiple forms if more than one signature is required, see below.

☐ * Total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.363. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 5 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND COMPLETED FORMS TO THIS ADDRESS. SEND TO: Mail Stop M Correspondence, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 and select option 2.

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The **Privacy Act of 1974 (P.L. 93-579)** requires that you be given certain information in connection with your submission of the attached form related to a patent application or patent. Accordingly, pursuant to the requirements of the Act, please be advised that: (1) the general authority for the collection of this information is 35 U.S.C. 2(b)(2); (2) furnishing of the information solicited is voluntary; and (3) the principal purpose for which the information is used by the U.S. Patent and Trademark Office is to process and/or examine your submission related to a patent application or patent. If you do not furnish the requested information, the U.S. Patent and Trademark Office may not be able to process and/or examine your submission, which may result in termination of proceedings or abandonment of the application or expiration of the patent.

The information provided by you in this form will be subject to the following routine uses:

1. The information on this form will be treated confidentially to the extent allowed under the Freedom of Information Act (5 U.S.C. 552) and the Privacy Act (5 U.S.C. 552a). Records from this system of records may be disclosed to the Department of Justice to determine whether disclosure of these records is required by the Freedom of Information Act.
2. A record from this system of records may be disclosed, as a routine use, in the course of presenting evidence to a court, magistrate, or administrative tribunal, including disclosures to opposing counsel in the course of settlement negotiations.
3. A record in this system of records may be disclosed, as a routine use, to a Member of Congress submitting a request involving an individual, to whom the record pertains, when the individual has requested assistance from the Member with respect to the subject matter of the record.
4. A record in this system of records may be disclosed, as a routine use, to a contractor of the Agency having need for the information in order to perform a contract. Recipients of information shall be required to comply with the requirements of the Privacy Act of 1974, as amended, pursuant to 5 U.S.C. 552a(m).
5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the Patent Cooperation Treaty.
6. A record in this system of records may be disclosed, as a routine use, to another federal agency for purposes of National Security review (35 U.S.C. 181) and for review pursuant to the Atomic Energy Act (42 U.S.C. 218(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (*i.e.*, GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.



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UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/101,112	02/11/2014	8647588	709972	4330

23548 7590 01/22/2014
LEYDIG VOIT & MAYER, LTD
700 THIRTEENTH ST. NW
SUITE 300
WASHINGTON, DC 20005-3960

ISSUE NOTIFICATION

The projected patent number and issue date are specified above.

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (application filed on or after May 29, 2000)

The Patent Term Adjustment is 203 day(s). Any patent to issue from the above-identified application will include an indication of the adjustment on the front page.

If a Continued Prosecution Application (CPA) was filed in the above-identified application, the filing date that determines Patent Term Adjustment is the filing date of the most recent CPA.

Applicant will be able to obtain more detailed information by accessing the Patent Application Information Retrieval (PAIR) WEB site (<http://pair.uspto.gov>).

Any questions regarding the Patent Term Extension or Adjustment determination should be directed to the Office of Patent Legal Administration at (571)-272-7702. Questions relating to issue and publication fee payments should be directed to the Application Assistance Unit (AAU) of the Office of Data Management (ODM) at (571)-272-4200.

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

Michael W. Recknor, Oakland, CA;
Hong Tan, San Jose, CA;
Robert Zuk, Atherton, CA;
Krista Leah Witte, Hayward, CA;
Sae Choo, Sunnyvale, CA;
Scott Lockard, Los Gatos, CA;

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To: DCpatent@leydig.com,Chgpatent@leydig.com,
From: PAIR_eOfficeAction@uspto.gov
Cc: PAIR_eOfficeAction@uspto.gov
Subject: Private PAIR Correspondence Notification for Customer Number 23548

Jan 23, 2014 05:34:22 AM

Dear PAIR Customer:

LEYDIG VOIT & MAYER, LTD
700 THIRTEENTH ST. NW
SUITE 300
WASHINGTON, DC 20005-3960
UNITED STATES

The following USPTO patent application(s) associated with your Customer Number, 23548 , have new outgoing correspondence. This correspondence is now available for viewing in Private PAIR.

The official date of notification of the outgoing correspondence will be indicated on the form PTOL-90 accompanying the correspondence.

Disclaimer:

The list of documents shown below is provided as a courtesy and is not part of the official file wrapper. The content of the images shown in PAIR is the official record.

Application	Document	Mailroom Date	Attorney Docket No.
13101112	ISSUE.NTF	01/22/2014	709972

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Monday - Friday 6:00 a.m. to 12:00 a.m.

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PATENT APPLICATION INFORMATION RETRIEVAL SYSTEM

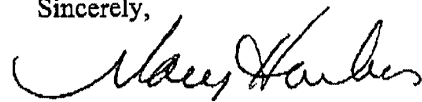
Please fax to: Status & Entity Branch, Office of Finance at 571-273-6500 or submit to:

Mail Stop M Correspondence
Director of the US Patent and Trademark Office
PO Box 1450
Alexandria, VA 22313-1450

Re: USA Application 13/10112, Patent 8647588;
Your Ref: 709972

Please note that the referenced patent(s) qualify as a Large entity.

Sincerely,


MARY HARKINS
PALL CORPORATION
Senior IP Paralegal