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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	MBOT-0002-P06
		Application Number	
Title of Invention	NETWORKED THREE-DIMENSIONAL PRINTER WITH THREE-DIMENSIONAL SCANNER		
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☐ 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.)

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	Nathaniel	B.	Pettis			
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service						
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Citizenship under 37 CFR 1.41(b) i		US				
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Application Information:

Title of the Invention	NETWORKED THREE-DIMENSIONAL PRINTER WITH THREE-DIMENSIONAL SCANNER		
Attorney Docket Number	MBOT-0002-P06	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)	6	Suggested Figure for Publication (if any)	

Application Data Sheet 37 CFR 1.76	Attorney Docket Number	MBOT-0002-P06
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Title of Invention	NETWORKED THREE-DIMENSIONAL PRINTER WITH THREE-DIMENSIONAL SCANNER	

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 I hereby request that the attached application not be published under 35 U.S.C. 122(b) and certify that the invention disclosed in the attached application has not and will not be the subject of an application filed in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.

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Prior Application Status	Pending	Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
	Continuation of	13/314337	2011-12-08
Prior Application Status	Pending	Remove	
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)
13/314337	Continuation in part of	12/858622	2010-08-18
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button.			Add

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Application Number	Country i	Parent Filing Date (YYYY-MM-DD)	Priority Claimed
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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	MBOT-0002-P06	
		Application Number		
Title of Invention	NETWORKED THREE-DIMENSIONAL PRINTER WITH THREE-DIMENSIONAL SCANNER			

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Signature	/John Nortrup/		Date (YYYY-MM-DD)	2012-07-24
First Name	John	Last Name	Nortrup	Registration Number
				59063

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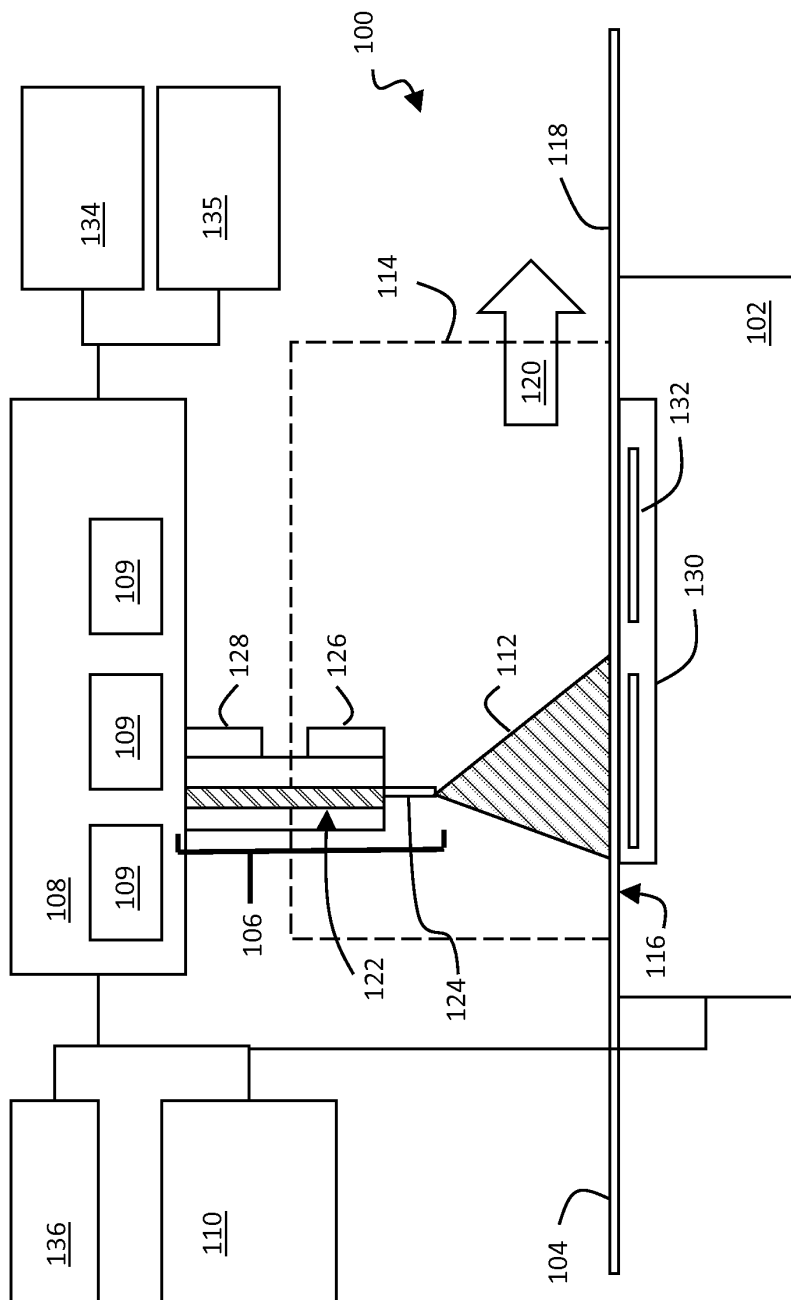


Fig. 1

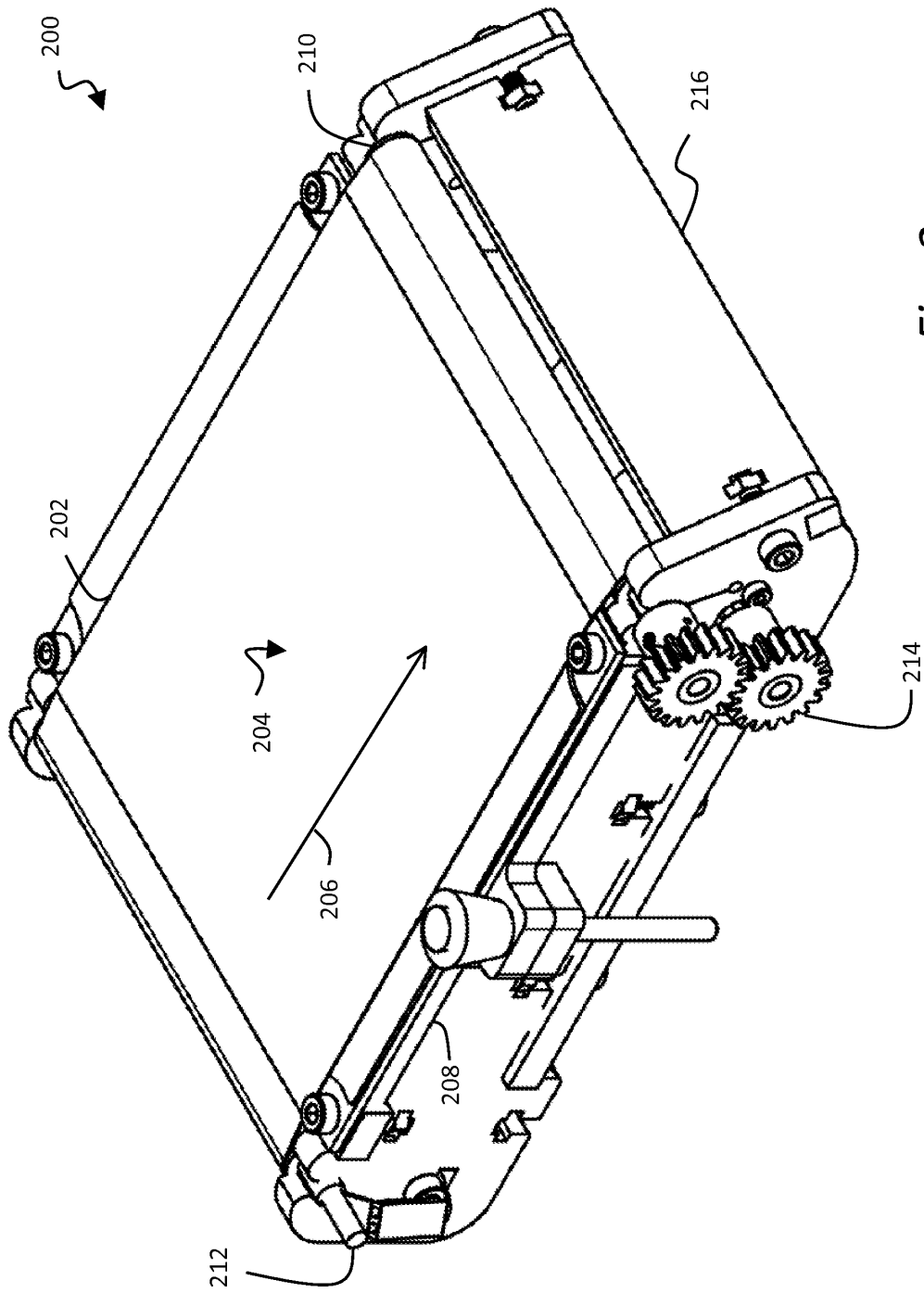


Fig. 2

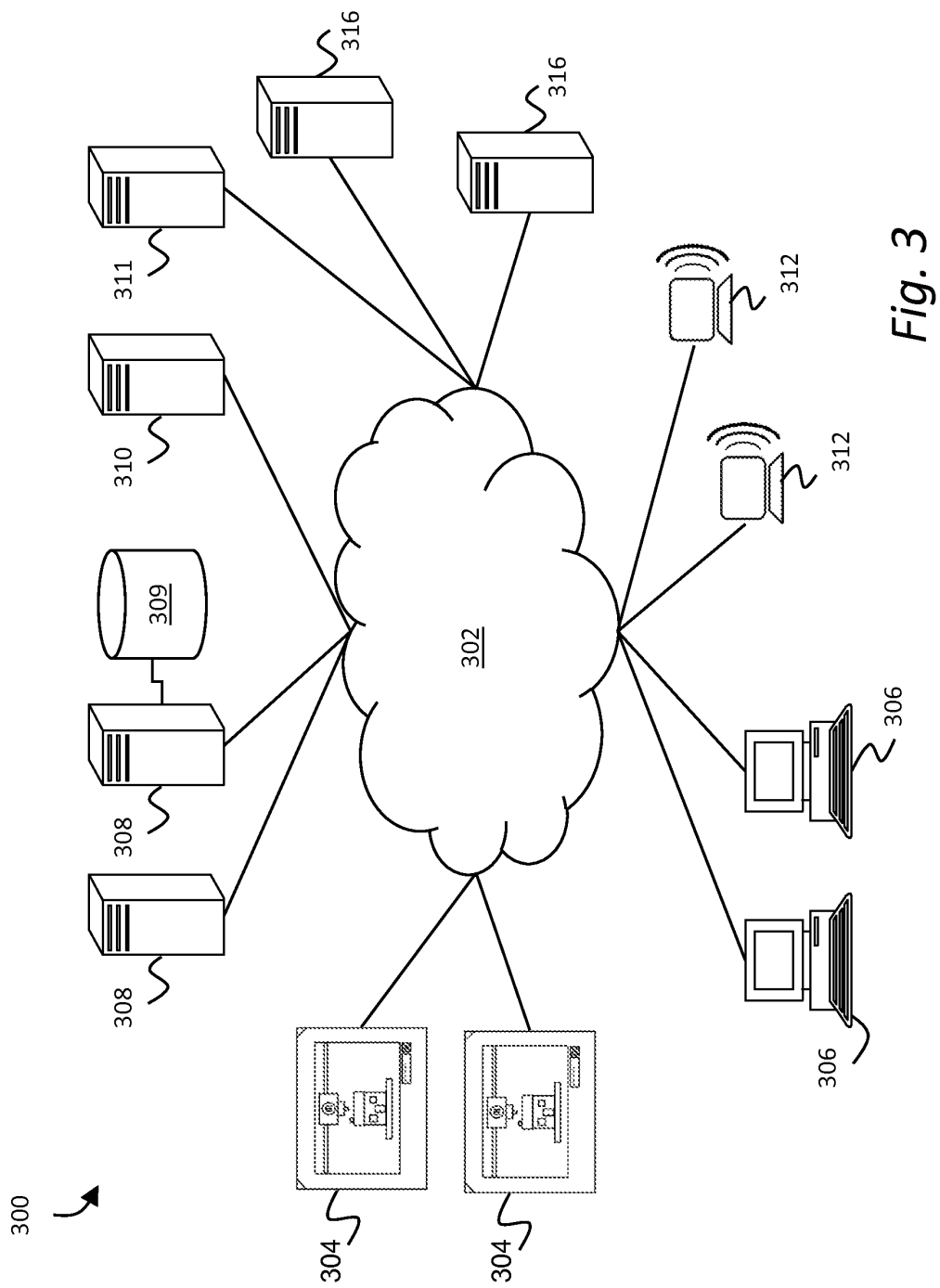


Fig. 3

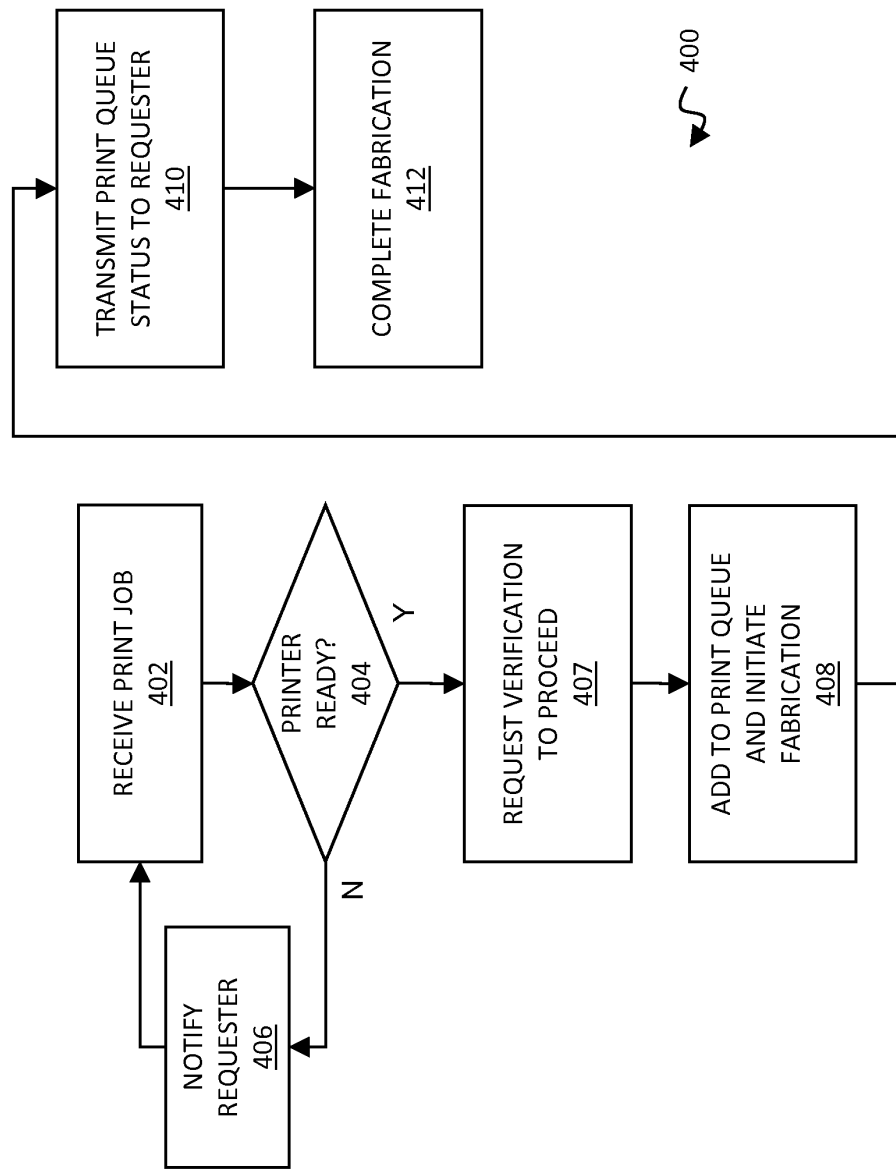


Fig. 4

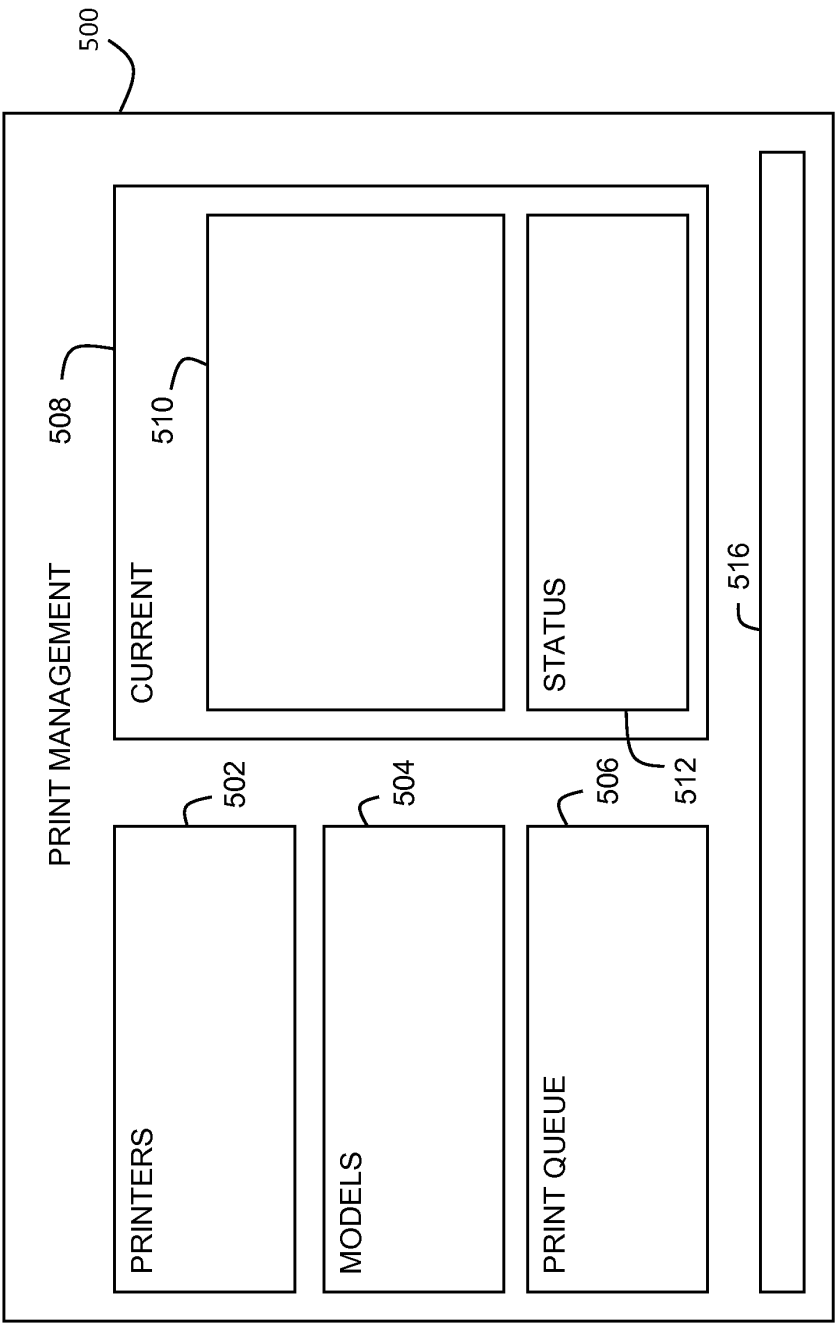


Fig. 5

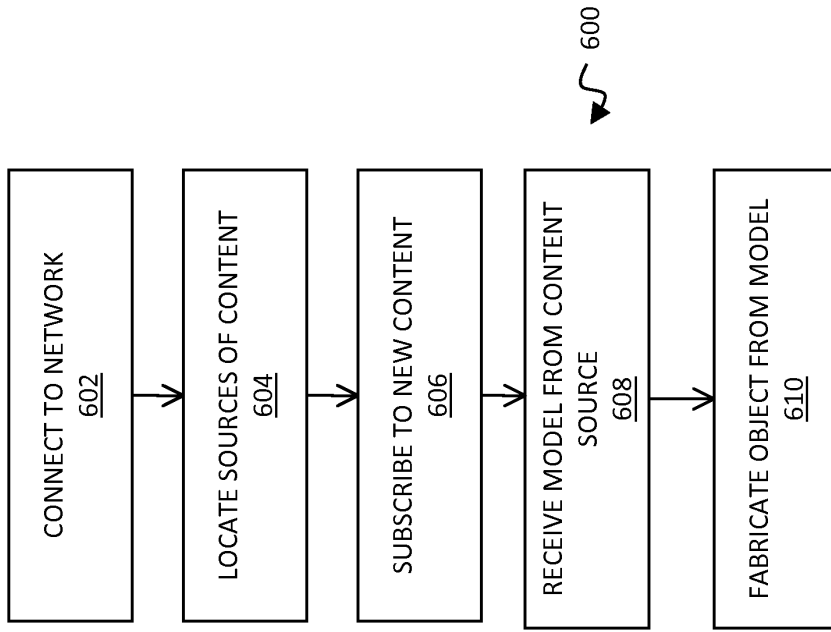


Fig. 6

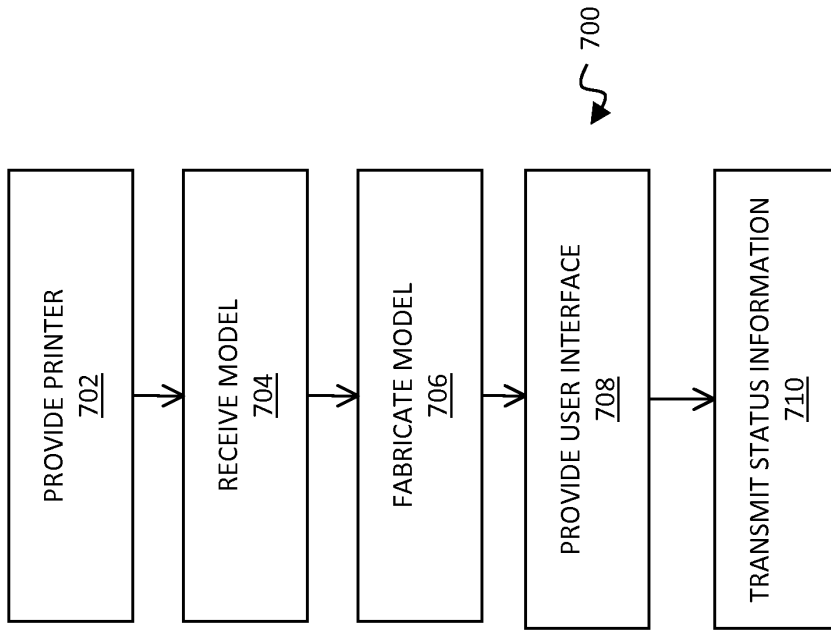


Fig. 7

United States Patent Application

COMBINED DECLARATION AND POWER OF ATTORNEY

As a below named inventor I hereby declare with respect to the U.S. patent application entitled

NETWORKED THREE-DIMENSIONAL PRINTING.

the specification of which was filed on December 8, 2011 as application serial no. 13/314,337 that:

(a) my residence, post office address, and citizenship are as stated below next to my name;

(b) I believe I am the original, sole inventor of the subject matter which is claimed and for which a patent is sought; and

(c) I have reviewed and understood the contents of the specification, including the claims, as amended by any amendment referred to above.

I acknowledge the duty to disclose information which is material to the patentability of this application as defined in 37 C.F.R. § 1.56 (attached hereto). I also acknowledge my duty to disclose all information known to be material to patentability which became available between a filing date of a prior application and the national or PCT international filing date in the event this is a Continuation-In-Part application in accordance with 37 C.F.R. § 1.63(e).

I hereby appoint the following attorney(s) and/or patent agent(s) to prosecute this application and to transact all business in the Patent and Trademark Office connected herewith, I hereby authorize them to act and rely on instructions from and communicate directly with the person/assignee/attorney/agent/firm/organization who/which first sends/sent this case to them and by whom/which I hereby declare that I have consented after full disclosure to be represented:

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I hereby declare that all statements made herein of my own knowledge are true and that all statements made 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 so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

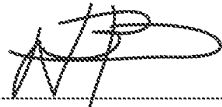
Full Name of inventor: Nathaniel B. Pettis

Citizenship: US

Residence: Brooklyn, NY

Post Office Address: 495 Pacific St. #2
Brooklyn, NY 11217

Signature: _____



Date: 1/3/2012

Nathaniel B. Pettis

§ 1.56 Duty to disclose information material to patentability.

(a) A patent by its very nature is affected with a public interest. The public interest is best served, and the most effective patent examination occurs when, at the time an application is being examined, the Office is aware of and evaluates the teachings of all information material to patentability. Each individual associated with the filing and prosecution of a patent application has a duty of candor and good faith in dealing with the Office, which includes a duty to disclose to the Office all information known to that individual to be material to patentability as defined in this section. The duty to disclose information exists with respect to each pending claim until the claim is canceled or withdrawn from consideration, or the application becomes abandoned. Information material to the patentability of a claim that is canceled or withdrawn from consideration need not be submitted if the information is not material to the patentability of any claim remaining under consideration in the application. There is no duty to submit information which is not material to the patentability of any existing claim. The duty to disclose all information known to be material to patentability is deemed to be satisfied if all information known to be material to patentability of any claim issued in a patent was cited by the Office or submitted to the Office in the manner prescribed by §§ 1.97(b)-(d) and 1.98. However, no patent will be granted on an application in connection with which fraud on the Office was practiced or attempted or the duty of disclosure was violated through bad faith or intentional misconduct. The Office encourages applicants to carefully examine:

- (1) prior art cited in search reports of a foreign patent office in a counterpart application, and
- (2) the closest information over which individuals associated with the filing or prosecution of a patent application believe any pending claim patentably defines, to make sure that any material information contained therein is disclosed to the Office.

(b) Under this section, information is material to patentability when it is not cumulative to information already of record or being made of record in the application, and

- (1) It establishes, by itself or in combination with other information, a prima facie case of unpatentability of a claim; or
- (2) It refutes, or is inconsistent with, a position the applicant takes in:
 - (i) Opposing an argument of unpatentability relied on by the Office, or
 - (ii) Asserting an argument of patentability.

A prima facie case of unpatentability is established when the information compels a conclusion that a claim is unpatentable under the preponderance of evidence, burden-of-proof standard, giving each term in the claim its broadest reasonable construction consistent with the specification, and before any consideration is given to evidence which may be submitted in an attempt to establish a contrary conclusion of patentability.

(c) Individuals associated with the filing or prosecution of a patent application within the meaning of this section are:

- (1) Each inventor named in the application;
- (2) Each attorney or agent who prepares or prosecutes the application; and
- (3) Every other person who is substantively involved in the preparation or prosecution of the application and who is associated with the inventor, with the assignee or with anyone to whom there is an obligation to assign the application.

(d) Individuals other than the attorney, agent or inventor may comply with this section by disclosing information to the attorney, agent, or inventor.

(e) In any continuation-in-part application, the duty under this section includes the duty to disclose to the Office all information known to the person to be material to patentability, as defined in paragraph (b) of this section, 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.

NETWORKED THREE-DIMENSIONAL PRINTER WITH THREE-DIMENSIONAL SCANNER

RELATED APPLICATIONS

[0001] This application is a continuation of U.S. Patent Application No. 13/314,337 filed December 8, 2011, which is a continuation-in-part of U.S. Patent Application No. 12/858,622, filed on August 18, 2010, the entire content of each of these applications is hereby incorporated by reference.

BACKGROUND

[0002] The invention relates to three-dimensional fabrication using networked resources.

[0003] A variety of three-dimensional fabrication techniques have been devised to support rapid prototyping from computer models. These techniques have been refined over the years to increase accuracy, working volume, and the variety of build materials available in a rapid prototyping environment. While these increasingly sophisticated and expensive machines appear regularly in commercial design and engineering settings, a more recent trend has emerged toward low-cost three-dimensional prototyping devices suitable for hobbyists and home users. As these resources become more readily and widely available, a need has emerged for networking capabilities and network management for three-dimensional printers.

SUMMARY

[0004] Three-dimensional fabrication resources are improved by adding networking capabilities to three-dimensional printers and providing a variety of tools for networked use of three-dimensional printers. Web-based servers or the like can provide a single point of access for remote users to manage access to distributed content on one hand, and to manage use of distributed fabrication resources on the other.

BRIEF DESCRIPTION OF THE DRAWINGS

[0005] The foregoing and other objects, features and advantages of the invention will be apparent from the following description of particular embodiments thereof, as illustrated in the accompanying drawings. The drawings are not necessarily to scale, emphasis instead being placed upon illustrating the principles of the invention.

[0006] Fig. 1 is a block diagram of a three-dimensional printer.

[0007] Fig. 2 is an isometric view of a conveyer for an automated build process.

[0008] Fig. 3 depicts a networked three-dimensional printing environment.

[0009] Fig. 4 is a flowchart of a method for using a three-dimensional printer, such as any of the three-dimensional printers described above, when coupled to a data network.

[0010] Fig. 5 depicts a user interface for management of networked printing.

[0011] Fig. 6 is a flowchart of a method for operating a three-dimensional printer coupled to a network.

[0012] Fig. 7 is a flowchart of a method for operating a three-dimensional printer coupled to a network.

DETAILED DESCRIPTION

[0013] Described herein are devices and methods for using networked three-dimensional printers. It will be understood that while the exemplary embodiments below emphasize fabrication techniques using extrusion, the principles of the invention may be adapted to a wide variety of three-dimensional fabrication processes, and in particular additive fabrication processes including without limitation selective laser sintering, fused deposition modeling, three-dimensional printing, and the like. All such variations that can be adapted to use with a networked fabrication resource as described herein are intended to fall within the scope of this disclosure. It should also be understood that any reference herein to a fabrication process such as printing or three-dimensional printing is intended to refer to any and all such additive fabrication process unless a different meaning is explicitly stated or otherwise clear from the context. Thus by way of example and not of

limitation, a three-dimensional printer (or simply “printer”) is now described that may be used in a networked three-dimensional printing environment.

[0014] Fig. 1 is a block diagram of a three-dimensional printer. In general, the printer 100 may include a build platform 102, a conveyor 104, an extruder 106, an x-y-z positioning assembly 108, and a controller 110 that cooperate to fabricate an object 112 within a working volume 114 of the printer 100.

[0015] The build platform 102 may include a surface 116 that is rigid and substantially planar. The surface 116 may support the conveyor 104 in order to provide a fixed, dimensionally and positionally stable platform on which to build the object 112.

[0016] The build platform 102 may include a thermal element 130 that controls the temperature of the build platform 102 through one or more active devices 132 such as resistive elements that convert electrical current into heat, Peltier effect devices that can create a heating or cooling effect, or any other thermoelectric heating and/or cooling devices. Thus the thermal element 130 may be a heating element that provides active heating to the build platform 102, a cooling element that provides active cooling to the build platform 102, or a combination of these. The heating element 130 may be coupled in a communicating relationship with the controller 110 in order for the controller 110 to controllably impart heat to or remove heat from the surface 116 of the build platform 102. Thus the thermal element 130 may include an active cooling element positioned within or adjacent to the build platform 102 to controllably cool the build platform 102.

[0017] It will be understood that a variety of other techniques may be employed to control a temperature of the build platform 102. For example, the build platform 102 may use a gas cooling or gas heating device such as a vacuum chamber or the like in an interior thereof, which may be quickly pressurized to heat the build platform 102 or vacated to cool the build platform 102 as desired. As another example, a stream of heated or cooled gas may be applied directly to the build platform 102 before, during, and/or after a build process. Any device or combination of devices suitable for controlling a temperature of the build platform 102 may be adapted to use as the thermal element 130 described herein.

[0018] The conveyer 104 may be formed of a sheet 118 of material that moves in a path 120 through the working volume 114. Within the working volume 114, the path 120 may pass proximal to the surface 116 of the build platform 102 – that is, resting directly on or otherwise supported by the surface 116 -- in order to provide a rigid, positionally stable working surface for a build. It will be understood that while the path 120 is depicted as a unidirectional arrow, the path 120 may be bidirectional, such that the conveyer 104 can move in either of two opposing directions through the working volume 114. It will also be understood that the path 120 may curve in any of a variety of ways, such as by looping underneath and around the build platform 102, over and/or under rollers, or around delivery and take up spools for the sheet 118 of material. Thus, while the path 120 may be generally (but not necessarily) uniform through the working volume 114, the conveyer 104 may move in any direction suitable for moving completed items from the working volume 114. The conveyer may include a motor or other similar drive mechanism (not shown) coupled to the controller 110 to control movement of the sheet 118 of material along the path 120. Various drive mechanisms are shown and described in further detail below.

[0019] In general, the sheet 118 may be formed of a flexible material such as a mesh material, a polyamide, a polyethylene terephthalate (commercially available in bi-axial form as MYLAR), a polyimide film (commercially available as KAPTON), or any other suitably strong polymer or other material. The sheet 118 may have a thickness of about three to seven thousandths of an inch, or any other thickness that permits the sheet 118 to follow the path 120 of the conveyer 104. For example, with sufficiently strong material, the sheet 118 may have a thickness of one to three thousandths of an inch. The sheet 118 may instead be formed of sections of rigid material joined by flexible links.

[0020] A working surface of the sheet 118 (e.g., an area on the top surface of the sheet 118 within the working volume 114) may be treated in a variety of manners to assist with adhesion of build material to the surface 118 and/or removal of completed objects from the surface 118. For example, the working surface may be abraded or otherwise textured (e.g., with grooves, protrusions, and the like) to improve adhesion between the working surface and the build material.

[0021] A variety of chemical treatments may be used on the working surface of the sheet 118 of material to further facilitate build processes as described herein. For example, the chemical treatment may include a deposition of material that can be chemically removed from the conveyor 104 by use of water, solvents, or the like. This may facilitate separation of a completed object from the conveyor by dissolving the layer of chemical treatment between the object 112 and the conveyor 104. The chemical treatments may include deposition of a material that easily separates from the conveyor such as a wax, mild adhesive, or the like. The chemical treatment may include a detachable surface such as an adhesive that is sprayed on to the conveyor 104 prior to fabrication of the object 112.

[0022] In one aspect, the conveyor 104 may be formed of a sheet of disposable, one-use material that is fed from a dispenser and consumed with each successive build.

[0023] In one aspect, the conveyor 104 may include a number of different working areas with different surface treatments adapted for different build materials or processes. For example, different areas may have different textures (smooth, abraded, grooved, etc.). Different areas may be formed of different materials. Different areas may also have or receive different chemical treatments. Thus a single conveyor 104 may be used in a variety of different build processes by selecting the various working areas as needed or desired.

[0024] The extruder 106 may include a chamber 122 in an interior thereof to receive a build material. The build material may, for example, include acrylonitrile butadiene styrene (“ABS”), high-density polyethylene (“HDPE”), polylactic acid, or any other suitable plastic, thermoplastic, or other material that can usefully be extruded to form a three-dimensional object. The extruder 106 may include an extrusion tip 124 or other opening that includes an exit port with a circular, oval, slotted or other cross-sectional profile that extrudes build material in a desired cross-sectional shape.

[0025] The extruder 106 may include a heater 126 to melt thermoplastic or other meltable build materials within the chamber 122 for extrusion through an extrusion tip 124 in liquid form. While illustrated in block form, it will be understood that the heater 124 may include, e.g., coils of resistive wire wrapped about the extruder 106, one or more

heating blocks with resistive elements to heat the extruder 106 with applied current, an inductive heater, or any other arrangement of heating elements suitable for creating heat within the chamber 122 to melt the build material for extrusion. The extruder 106 may also or instead include a motor 128 or the like to push the build material into the chamber 122 and/or through the extrusion tip 126.

[0026] In general operation (and by way of example rather than limitation), a build material such as ABS plastic in filament form may be fed into the chamber 122 from a spool or the like by the motor 128, melted by the heater 126, and extruded from the extrusion tip 124. By controlling a rate of the motor 128, the temperature of the heater 126, and/or other process parameters, the build material may be extruded at a controlled volumetric rate. It will be understood that a variety of techniques may also or instead be employed to deliver build material at a controlled volumetric rate, which may depend upon the type of build material, the volumetric rate desired, and any other factors. All such techniques that might be suitably adapted to delivery of build material for fabrication of a three-dimensional object are intended to fall within the scope of this disclosure. As noted above, other techniques may be employed for three-dimensional printing, including extrusion-based techniques using a build material that is curable and/or a build material of sufficient viscosity to retain shape after extrusion.

[0027] The x-y-z positioning assembly 108 may generally be adapted to three-dimensionally position the extruder 106 and the extrusion tip 124 within the working volume 114. Thus by controlling the volumetric rate of delivery for the build material and the x, y, z position of the extrusion tip 124, the object 112 may be fabricated in three dimensions by depositing successive layers of material in two-dimensional patterns derived, for example, from cross-sections of a computer model or other computerized representation of the object 112. A variety of arrangements and techniques are known in the art to achieve controlled linear movement along one or more axes. The x-y-z positioning assembly 108 may, for example, include a number of stepper motors 109 to independently control a position of the extruder within the working volume along each of an x-axis, a y-axis, and a z-axis. More generally, the x-y-z positioning assembly 108 may include without limitation various combinations of stepper motors, encoded DC motors,

gears, belts, pulleys, worm gears, threads, and so forth. Any such arrangement suitable for controllably positioning the extruder 106 within the working volume 114 may be adapted to use with the printer 100 described herein.

[0028] By way of example and not limitation, the conveyor 104 may be affixed to a bed that provides x-y positioning within the plane of the conveyor 104, while the extruder 106 can be independently moved along a z-axis. As another example, the extruder 106 may be stationary while the conveyor 104 is x, y, and z positionable. As another example, the extruder 106 may be x, y, and z positionable while the conveyor 104 remains fixed (relative to the working volume 114). In yet another example, the conveyor 104 may, by movement of the sheet 118 of material, control movement in one axis (e.g., the y-axis), while the extruder 106 moves in the z-axis as well as one axis in the plane of the sheet 118. Thus in one aspect, the conveyor 104 may be attached to and move with at least one of an x-axis stage (that controls movement along the x-axis), a y-axis stage (that controls movement along a y-axis), and a z-axis stage (that controls movement along a z-axis) of the x-y-z positioning assembly 108. More generally, any arrangement of motors and other hardware controllable by the controller 110 may serve as the x-y-z positioning assembly 108 in the printer 100 described herein. Still more generally, while an x, y, z coordinate system serves as a convenient basis for positioning within three dimensions, any other coordinate system or combination of coordinate systems may also or instead be employed, such as a positional controller and assembly that operates according to cylindrical or spherical coordinates.

[0029] The controller 110 may be electrically coupled in a communicating relationship with the build platform 102, the conveyor 104, the x-y-z positioning assembly 108, and the other various components of the printer 100. In general, the controller 110 is operable to control the components of the printer 100, such as the build platform 102, the conveyor 104, the x-y-z positioning assembly 108, and any other components of the printer 100 described herein to fabricate the object 112 from the build material. The controller 110 may include any combination of software and/or processing circuitry suitable for controlling the various components of the printer 100 described herein including without limitation microprocessors, microcontrollers, application-

specific integrated circuits, programmable gate arrays, and any other digital and/or analog components, as well as combinations of the foregoing, along with inputs and outputs for transceiving control signals, drive signals, power signals, sensor signals, and so forth. In one aspect, the controller 110 may include a microprocessor or other processing circuitry with sufficient computational power to provide related functions such as executing an operating system, providing a graphical user interface (e.g., to a display coupled to the controller 110 or printer 100), convert three-dimensional models into tool instructions, and operate a web server or otherwise host remote users and/or activity through the network interface 136 described below.

[0030] A variety of additional sensors may be usefully incorporated into the printer 100 described above. These are generically depicted as sensor 134 in Fig. 1, for which the positioning and mechanical/electrical interconnections with other elements of the printer 100 will depend upon the type and purpose of the sensor 134 and will be readily understood and appreciated by one of ordinary skill in the art. The sensor 134 may include a temperature sensor positioned to sense a temperature of the surface of the build platform 102. This may, for example, include a thermistor or the like embedded within or attached below the surface of the build platform 102. This may also or instead include an infrared detector or the like directed at the surface 116 of the build platform 102 or the sheet 118 of material of the conveyer 104. Other sensors that may be usefully incorporated into the printer 100 as the sensor 134 include a heat sensor, a volume flow rate sensor, a weight sensor, a sound sensor, and a light sensor. Certain more specific examples are provided below by way of example and not of limitation.

[0031] The sensor 134 may include a sensor to detect a presence (or absence) of the object 112 at a predetermined location on the conveyer 104. This may include an optical detector arranged in a beam-breaking configuration to sense the presence of the object 112 at a location such as an end of the conveyer 104. This may also or instead include an imaging device and image processing circuitry to capture an image of the working volume 114 and analyze the image to evaluate a position of the object 112. This sensor 134 may be used for example to ensure that the object 112 is removed from the conveyer 104 prior to beginning a new build at that location on the working surface such

as the surface 116 of the build platform 102. Thus the sensor 134 may be used to determine whether an object is present that should not be, or to detect when an object is absent. The feedback from this sensor 134 may be used by the controller 110 to issue processing interrupts or otherwise control operation of the printer 100.

[0032] The sensor 134 may include a sensor that detects a position of the conveyer 104 along the path. This information may be obtained from an encoder in a motor that drives the conveyer 104, or using any other suitable technique such as a visual sensor and corresponding fiducials (e.g., visible patterns, holes, or areas with opaque, specular, transparent, or otherwise detectable marking) on the sheet 118.

[0033] The sensor 134 may include a heater (instead of or in addition to the thermal element 130) to heat the working volume 114 such as a radiant heater or forced hot air to maintain the object 112 at a fixed, elevated temperature throughout a build. The sensor 134 may also or instead include a cooling element to maintain the object 112 at a predetermined sub-ambient temperature throughout a build.

[0034] The sensor 134 may also or instead include at least one video camera. The video camera may generally capture images of the working volume 114, the object 112, or any other hardware associated with the printer 100. The video camera may provide a remote video feed through the network interface 136, which feed may be available to remote users through a user interface maintained by, e.g., remote hardware such as the print servers described below with reference to Fig. 3, or within a web page provided by a web server hosted by the three-dimensional printer 100. Thus in one aspect there is disclosed herein a user interface adapted to present a video feed from at least one video camera of a three-dimensional printer to a remote user through a user interface.

[0035] The sensor 134 may include may also include more complex sensing and processing systems or subsystems, such as a three-dimensional scanner using optical techniques (e.g., stereoscopic imaging, or shape from motion imaging), structured light techniques, or any other suitable sensing and processing hardware that might extract three-dimensional information from the working volume 114. In another aspect, the sensor 134 may include a machine vision system that captures images and analyzes image content to obtain information about the status of a job, working volume 114, or an

object 112 therein. The machine vision system may support a variety of imaging-based automatic inspection, process control, and/or robotic guidance functions for the three-dimensional printer 100 including without limitation pass/fail decisions, error detection (and corresponding audible or visual alerts), shape detection, position detection, orientation detection, collision avoidance, and so forth.

[0036] Other components, generically depicted as other hardware 135, may also be included, such as input devices including a keyboard, touchpad, mouse, switches, dials, buttons, motion sensors, and the like, as well as output devices such as a display, a speaker or other audio transducer, light emitting diodes, and so forth. Other hardware 135 may also or instead include a variety of cable connections and/or hardware adapters for connecting to, e.g., external computers, external hardware, external instrumentation or data acquisition systems, and so forth.

[0037] The printer 100 may include, or be connected in a communicating relationship with, a network interface 136. The network interface 136 may include any combination of hardware and software suitable for coupling the controller 110 and other components of the printer 100 to a remote computer in a communicating relationship through a data network. By way of example and not limitation, this may include electronics for a wired or wireless Ethernet connection operating according to the IEEE 802.11 standard (or any variation thereof), or any other short or long range wireless networking components or the like. This may include hardware for short range data communications such as BlueTooth or an infrared transceiver, which may be used to couple into a local area network or the like that is in turn coupled to a data network such as the Internet. This may also or instead include hardware/software for a WiMax connection or a cellular network connection (using, e.g., CDMA, GSM, LTE, or any other suitable protocol or combination of protocols). Consistently, the controller 110 may be configured to control participation by the printer 100 in any network to which the network interface 136 is connected, such as by autonomously connecting to the network to retrieve printable content, or responding to a remote request for status or availability. Networked uses of the printer 100 are discussed in greater detail below.

[0038] Fig. 2 is an isometric view of a conveyer for an automated build process. The conveyer 200 may include a sheet 202 of material that provides a working surface 204 for three-dimensional fabrication. As depicted, the conveyer may form a continuous path 206 about a build platform 208 by arranging the sheet 202 as a belt or the like. Thus for example, the path 206 may move parallel to the surface of the build platform 208 along the top of the build platform 208 (from left to right in Fig. 2). The sheet 202 may then curve downward and around a roller 210 and reverse direction underneath the build platform 208, returning again at an opposing roller 212 to form a loop about the build platform 208.

[0039] The roller 210 may be coupled by gears 214 or the like to a motor (not shown) to move the sheet 202 of material. The motor may be controlled by a controller (such as the controller 110 described above) to control movement of the sheet 202 of material in a build process.

[0040] The conveyer 200 may include a scraper 216 to physically separate a completed object from the conveyer 200 based upon a relative movement of the sheet 202 of material of the conveyer 200 to the scraper 216. In general, adhesion of an object to a working surface maintains the object within the coordinate system of the printer during a build in order to facilitate the build process. Where good adhesion is achieved during a build, dislodging the completed object from the working surface may require significant force. Thus in order to ensure the availability of a continuous working surface, the conveyer 200 may enforce physical separation of the object from the working surface by passing the sheet 202 of material by the scraper 216 to dislodge the object. While the scraper 216 is depicted below the working surface of the sheet 202, it will be readily understood that a variety of positions and orientations of the scraper 216 may achieve similar results. Thus for example, the scraper 216 may extend vertically above or below the sheet 202, horizontally from the sheet 202, or in any other suitable orientation. It will also be appreciated that while the scraper 216 is depicted in an orientation perpendicular to the path 206, the scraper 216 may be angled in order to also urge a completed object off the sheet 202 in any desired direction, such as to a side of the working surface where a chute or receptacle may be provided to catch and store the completed object. In some

embodiments, the conveyor 200 may transport the object to a side of the printer 100, or alternatively the entire conveyor 200 assembly may be moved outside the printer, so that urging the completed object off the sheet 202 also causes the completed object to depart the printer 100. The term ‘scraper’ should be understood as referring in a non-limiting sense to any physical fixture that might be employed to remove an object from the sheet 202, and that many other shapes, sizes, orientations, and the like may also or instead be employed as the scraper 216 described herein without departing from the scope of this disclosure.

[0041] In one aspect, the conveyor 200 may support networked use of the printer 100 by permitting fabrication of multiple, consecutive parts under control by a remote computer without user intervention.

[0042] Fig. 3 depicts a networked three-dimensional printing environment. In general, the environment 300 may include a data network 302 interconnecting a plurality of participating devices in a communicating relationship. The participating devices may, for example, include any number of three-dimensional printers 304 (also referred to interchangeably herein as “printers”), client devices 306, print servers 308, content sources 310, mobile devices 314, and other resources 316.

[0043] The data network 302 may be any network(s) or internetwork(s) suitable for communicating data and control information among participants in the environment 300. This may include public networks such as the Internet, private networks, telecommunications networks such as the Public Switched Telephone Network or cellular networks using third generation (e.g., 3G or IMT-2000), fourth generation (e.g., LTE (E-UTRA) or WiMax-Advanced (IEEE 802.16m), as well as any of a variety of corporate area or local area networks and other switches, routers, hubs, gateways, and the like that might be used to carry data among participants in the environment 300.

[0044] The three-dimensional printers 304 may be any computer-controlled devices for three-dimensional fabrication, including without limitation any of the three-dimensional printers or other fabrication or prototyping devices described above. In general, each such device may include a network interface comprising, e.g., a network interface card, which term is used broadly herein to include any hardware (along with

software, firmware, or the like to control operation of same) suitable for establishing and maintaining wired and/or wireless communications. The network interface card may include without limitation wired Ethernet network interface cards (“NICs”), wireless 802.11 networking cards, wireless 802.11 USB devices, or other hardware for wireless local area networking. The network interface may also or instead include cellular network hardware, wide area wireless network hardware or any other hardware for centralized, ad hoc, peer-to-peer, or other radio communications that might be used to carry data. In another aspect, the network interface may include a serial or USB port used to directly connect to a computing device such as a desktop computer that, in turn, provides more general network connectivity to the data network 302.

[0045] Client devices 306 may in general be devices within the environment 300 operated by users to initiate and monitor print jobs at the three-dimensional printers 304. This may include desktop computers, laptop computers, network computers, tablets, or any other computing device that can participate in the environment 300 as contemplated herein. Each client device 306 generally provides a user interface, which may include a graphical user interface and/or text or command line interface to control operation of remote three-dimensional printers 304. The user interface may be maintained by a locally executing application on one of the client devices 306 that receives data and status information from, e.g., the printers 304 and print servers 308 concerning pending or executing print jobs, and creates a suitable display on the client device 306 for user interaction. In other embodiments, the user interface may be remotely served and presented on one of the client devices 306, such as where a print server 308 or one of the three-dimensional printers 304 includes a web server that provides information through one or more web pages or the like that can be displayed within a web browser or similar client executing on one of the client devices 306.

[0046] The print servers 308 may include data storage, a network interface, and a processor or other processing circuitry. In the following description, where the functions or configuration of a print server 308 are described, this is intended to include corresponding functions or configuration (e.g., by programming) of a processor of the print server 308. In general, the print servers 308 (or processors thereof) may perform a

variety of processing tasks related to management of networked printing. For example, the print servers 308 may manage print jobs received from one or more of the client devices 306, and provide related supporting functions such as content search and management. A print server 308 may also include a web server that provides web-based access by the client devices 306 to the capabilities of the print server 308. A print server 308 may also communicate periodically with three-dimensional printers 304 in order to obtain status information concerning, e.g., availability of printers and/or the status of particular print jobs, any of which may be subsequently presented to a user through the web server. A print server 308 may also maintain a list of available three-dimensional printers 304, and may automatically select one of the three-dimensional printers 304 for a user-submitted print job, or may permit a user to specify a single printer, or a group of preferred printers, for fabricating an object. Where the print server 308 selects the printer automatically, any number of criteria may be used such as geographical proximity, printing capabilities, current print queue, fees (if any) for use of a particular three-dimensional printer 304, and so forth. Where the user specifies criteria, this may similarly include any relevant aspects of three-dimensional printers 304, and may permit use of absolute criteria (e.g., filters) or preferences, which may be weighted preferences or unweighted preferences, any of which may be used by a print server 308 to allocate a print job to a suitable resource.

[0047] Other user preferences may be usefully stored at the print server 308 to facilitate autonomous, unsupervised fabrication of content from content sources 310. For example, a print server 308 may store a user's preference on handling objects greater than a build volume of a printer. These preferences may control whether to resize the object, whether to break the object into multiple sub-objects for fabrication, and whether to transmit multiple sub-objects to a single printer or multiple printers. In addition, user preferences or requirements may be stored, such as multi-color printing capability, build material options and capabilities, and so forth. More generally, the print queue may be managed by a print server 308 according to one or more criteria from a remote user requesting a print job. The print server 308 may also store user preferences or criteria for filtering content, e.g., for automatic printing or other handling. While this is described

below as a feature for autonomous operation of a printer (such as a printer that locally subscribes to a syndicated model source), any criteria that can be used to identify models of potential interest by explicit type (e.g., labeled in model metadata), implicit type (e.g., determined based on analysis of the model), source, and so forth, may be provided to the print server 308 and used to automatically direct new content to one or more user-specified ones of the three-dimensional printers 304.

[0048] In one aspect, the processor of the print server may be configured to store a plurality of print jobs submitted to the web server in a log and to provide an analysis of print activity based on the log. This may include any type of analysis that might be useful to participants in the environment 300. For example, the analysis may include tracking of the popularity of particular objects, or of particular content sources. The analysis may include tracking of which three-dimensional printers 304 are most popular or least popular, or related statistics such as the average backlog of pending print jobs at a number of the three-dimensional printers 304. More generally, any statistics or data may be obtained, and any analysis may be performed, that might be useful to users (e.g., when requesting prints), content sources (e.g., when choosing new printable objects for publication), providers of fabrication resources (e.g., when setting fees), or network facilitators such as the print servers 308.

[0049] A print server 308 may also maintain a database 309 of content, along with an interface for users at client devices 306 to search the database 309 and request fabrication of objects in the database 309 using any of the three-dimensional printers 304. Thus in one aspect, a print server 308 (or any system including the print server 308) may include a database 309 of three-dimensional models, and the print server 308 may act as a server that provides a search engine for locating a particular three-dimensional model in the database 309. The search engine may be a text-based search engine using keyword text queries, plain language queries, and so forth. The search engine may also or instead include an image-based search engine configured to identify three-dimensional models similar to a two-dimensional or three-dimensional image provide by a user.

[0050] In another aspect, the printer server 308 may periodically search for suitable content at remote locations on the data network, which content may be retrieved

to the database 309, or have its remote location (e.g., a URL or other network location identifier) stored in the database 309. In another aspect, the print server 308 may provide an interface for submission of objects from remote users, along with any suitable metadata such as a title, tags, creator information, descriptive narrative, pictures, recommended printer settings, and so forth. In one aspect, the database 309 may be manually curated according to any desired standards. In another aspect, printable objects in the database 309 may be manually or automatically annotated according to content type, popularity, editorial commentary, and so forth.

[0051] The print server 308 may more generally provide a variety of management functions. For example, the print server 304 may store a predetermined alternative three-dimensional printer to execute a print job from a remote user in the event of a failure by the one of the plurality of three-dimensional printers 304. In another aspect, the print server 308 may maintain exclusive control over at least one of the plurality of three-dimensional printers 304, such that other users and/or print servers cannot control the printer. In another aspect, the print server 308 may submit a print job to a first available one of the plurality of three-dimensional printers 304.

[0052] In another aspect, a print server 308 may provide an interface for managing subscriptions to sources of content. This may include tools for searching existing subscriptions, locating or specifying new sources, subscribing to sources of content, and so forth. In one aspect, a print server 308 may manage subscriptions and automatically direct new content from these subscriptions to a three-dimensional printer 304 according to any user-specified criteria. Thus while it is contemplated that a three-dimensional printer 304 may autonomously subscribe to sources of content through a network interface and receive new content directly from such sources, it is also contemplated that this feature may be maintained through a remote resource such as a print server 308.

[0053] A print server 308 may maintain print queues for participating three-dimensional printers 304. This approach may advantageously alleviate backlogs at individual printers 304, which may have limited memory capacity for pending print jobs. More generally, a print server 308 may, by communicating with multiple three-

dimensional printers 304, obtain a view of utilization of multiple networked resources that permits a more efficient allocation of print jobs than would be possible through simple point-to-point communications among users and printers. Print queues may also be published by a print server 308 so that users can view pending queues for a variety of different three-dimensional printers 304 prior to selecting a resource for a print job. In one aspect, the print queue may be published as a number of print jobs and size of print jobs so that a requester can evaluate likely delays. In another aspect, the print queue may be published as an estimated time until a newly submitted print job can be initiated.

[0054] In one aspect, the print queue of one of the print servers 308 may include one or more print jobs for one of the plurality of three-dimensional printers 304. The print queue may be stored locally at the one of the plurality of three-dimensional printers. In another aspect, the print queue may be allocated between the database 309 and a local memory of the three-dimensional printer 304. In another aspect, the print queue may be stored, for example, in the database 309 of the print server 308. As used here, the term ‘print queue’ is intended to include print data (e.g., the three-dimensional model or tool instructions to fabricate an object) for a number of print job (which may be arranged for presentation in order of expected execution), as well as any metadata concerning print jobs. Thus, a portion of the print queue such as the metadata (e.g., size, status, time to completion) may be usefully communicated to a print server 308 for sharing among users while another portion of the print queue such as the model data may be stored at a printer in preparation for execution of a print job.

[0055] Print queues may implement various user preferences on prioritization. For example, for a commercial enterprise, longer print jobs may be deferred for after normal hours of operation (e.g., after 5:00 p.m.), while shorter print jobs may be executed first if they can be completed before the end of a business day. In this manner, objects can be identified and fabricated from within the print queue in a manner that permits as many objects as possible to be fabricated before a predetermined closing time. Similarly, commercial providers of fabrication services may charge explicitly for prioritized fabrication, and implement this prioritization by prioritizing print queues in a corresponding fashion.

[0056] In another aspect, a print server 308 may provide a virtual workspace for a user. In this virtual workspace, a user may search local or remote databases of printable objects, save objects of interest (or links thereto), manage pending prints, specify preferences for receiving status updates (e.g., by electronic mail or SMS text), manage subscriptions to content, search for new subscription sources, and so forth. In one aspect, the virtual workspace may be, or may include, web-based design tools or a web-based design interface that permits a user to create and modify models. In one aspect, the virtual workspace may be deployed on the web, while permitting direct fabrication of a model developed within that environment on a user-specified one of the three-dimensional printers 304, thus enabling a web-based design environment that is directly coupled to one or more fabrication resources.

[0057] The content sources 310 may include any sources of content for fabrication with a three-dimensional printer 304. This may, for example, include databases of objects accessible through a web interface or application programming interface. This may also or instead include individual desktop computers or the like configured as a server for hosted access, or configured to operate as a peer in a peer-to-peer network. This may also or instead include content subscription services, which may be made available in an unrestricted fashion, or may be made available on a paid subscription basis, or on an authenticated basis based upon some other relationship (e.g., purchase of a related product or a ticket to an event). It will be readily appreciated that any number of content providers may serve as content sources 310 as contemplated herein. By way of non-limiting example, the content sources 310 may include destinations such as amusement parks, museums, theaters, performance venues, or the like, any of which may provide content related to users who purchase tickets. The content sources 310 may include manufacturers such as automobile, computer, consumer electronics, or home appliance manufacturers, any of which may provide content related to upgrades, maintenance, repair, or other support of existing products that have been purchased. The content sources 310 may include artists or other creative enterprises that sell various works of interest. The content sources 310 may include engineering or architectural firms that provide marketing or advertising pieces to existing or prospective

customers. The content sources 310 may include marketing or advertising firms that provide promotional items for clients. More generally, the content sources 310 may be any individual or enterprise that provides single or serial objects for fabrication by the three-dimensional printers 304 described herein.

[0058] One or more web servers 311 may provide web-based access to and from any of the other participants in the environment 300. While depicted as a separate network entity, it will be readily appreciated that a web server 311 may be logically or physically associated with one of the other devices described herein, and may, for example, provide a user interface for web access to one of the three-dimensional printers 304, one of the print servers 308 (or databases 309 coupled thereto), one of the content sources 310, or any of the other resources 316 described below in a manner that permits user interaction through the data network 302, e.g., from a client device 306 or mobile device 312.

[0059] The mobile devices 312 may be any form of mobile device, such as any wireless, battery-powered device, that might be used to interact with the networked printing environment 300. The mobile devices 312 may, for example, include laptop computers, tablets, thin client network computers, portable digital assistants, messaging devices, cellular phones, smart phones, portable media or entertainment devices, and so forth. In general, mobile devices 312 may be operated by users for a variety of user-oriented functions such as to locate printable objects, to submit objects for printing, to monitor a personally owned printer, and/or to monitor a pending print job. A mobile device 312 may include location awareness technology such as Global Positioning System (“GPS”), which may obtain information that can be usefully integrated into a printing operation in a variety of ways. For example, a user may select an object for printing and submit a model of the object to a print server, such as any of the print servers described above. The print server may determine a location of the mobile device 312 initiating the print job and locate a closest printer for fabrication of the object.

[0060] In another aspect, a printing function may be location-based, using the GPS input (or cellular network triangulation, proximity detection, or any other suitable location detection techniques). For example, a user may be authorized to print a model

only when the user is near a location (e.g., within a geo-fenced area or otherwise proximal to a location), or only after a user has visited a location. Thus a user may be provided with printable content based upon locations that the user has visited, or while within a certain venue such as an amusement park, museum, theater, sports arena, hotel, or the like.

[0061] The other resources 316 may include any other software or hardware resources that may be usefully employed in networked printing applications as contemplated herein. For example, the other resources 316 may include payment processing servers or platforms used to authorize payment for content subscriptions, content purchases, or printing resources. As another example, the other resources 316 may include social networking platforms that may be used, e.g., to share three-dimensional models and/or fabrication results according to a user's social graph. In another aspect, the other resources 316 may include certificate servers or other security resources for third party verification of identity, encryption or decryption of three-dimensional models, and so forth. In another aspect, the other resources 316 may include online tools for three-dimensional design or modeling, as well as databases of objects, surface textures, build supplies, and so forth. In another aspect, the other resources 316 may include a desktop computer or the like co-located (e.g., on the same local area network with, or directly coupled to through a serial or USB cable) with one of the three-dimensional printers 304. In this case, the other resource 316 may provide supplemental functions for the three-dimensional printer 304 in a networked printing context such as maintaining a print queue or operating a web server for remote interaction with the three-dimensional printer 304. More generally, any resource that might be usefully integrated into a networked printing environment may be one of the resources 316 as contemplated herein.

[0062] It will be readily appreciated that the various components of the networked printing environment 300 described above may be arranged and configured to support networked printing in a variety of ways. For example, in one aspect there is disclosed herein a networked computer with a print server and a web interface to support networked three-dimensional printing. This device may include a print server, a database,

and a web server as discussed above. The print server may be coupled through a data network to a plurality of three-dimensional printers and configured to receive status information from one or more sensors for each one of the plurality of three-dimensional printers. The print server may be further configured to manage a print queue for each one of the plurality of three-dimensional printers. The database may be coupled in a communicating relationship with the print server and configured to store print queue data and status information for each one of the plurality of three-dimensional printers. The web server may be configured to provide a user interface over the data network to a remote user, the user interface adapted to present the status information and the print queue data for one or more of the plurality of three-dimensional printers to the user and the user interface adapted to receive a print job from the remote user for one of the plurality of three-dimensional printers.

[0063] The three-dimensional printer 304 described above may be configured to autonomously subscribe to syndicated content sources and periodically receive and print objects from those sources. Thus in one aspect there is disclosed herein a device including any of the three-dimensional printers described above; a network interface; and a processor (which may without limitation include the controller for the printer). The processor may be configured to subscribe to a plurality of sources of content (such as the content sources 310 described above) selected by a user for fabrication by the three-dimensional printer through the network interface. The processor may be further configured to receive one or more three-dimensional models from the plurality of content sources 310, and to select one of the one or more three-dimensional models for fabrication by the three-dimensional printer 304 according to a user preference for prioritization. The user preference may, for example, preferentially prioritize particular content sources 310, or particular types of content (e.g., tools, games, artwork, upgrade parts, or content related to a particular interest of the user).

[0064] The memory of a three-dimensional printer 304 may be configured to store a queue of one or more additional three-dimensional models not selected for immediate fabrication. The processor may be programmed to periodically re-order or otherwise alter the queue according to pre-determined criteria or manual user input. For

example, the processor may be configured to evaluate a new three-dimensional model based upon a user preference for prioritization, and to place the new three-dimensional model at a corresponding position in the queue. The processor may also or instead be configured to retrieve content from one of the content sources 310 by providing authorization credentials for the user, which may be stored at the three-dimensional printer or otherwise accessible for presentation to the content source 310. The processor may be configured to retrieve content from at least one of the plurality of content sources 310 by authorizing a payment from the user to a content provider. The processor may be configured to search a second group of sources of content (such as any of the content sources 310 described above) according to one or more search criteria provide by a user. This may also or instead include demographic information for the user, contextual information for the user, or any other implicit or explicit user information.

[0065] In another aspect, there is disclosed herein a system for managing subscriptions to three-dimensional content sources such as any of the content sources 310 described above. The system may include a web server configured to provide a user interface over a data network, which user interface is adapted to receive user preferences from a user including a subscription to a plurality of sources of a plurality of three-dimensional models, a prioritization of content from the plurality of sources, and an identification of one or more fabrication resources coupled to the data network and suitable for fabricating objects from the plurality of three-dimensional models. The system may also include a database to store the user preferences, and to receive and store the plurality of three-dimensional models as they are issued by the plurality of sources. The system may include a processor (e.g., of a print server 308, or alternatively of a client device 306 interacting with the print server 308) configured select a selected one of the plurality of three-dimensional models for fabrication based upon the prioritization. The system may include a print server configured to communicate with the one or more fabrication resources through the data network, to determine an availability of the one or more fabrication resources, and to transmit the selected one of the plurality of three-dimensional models to one of the one or more fabrication resources.

[0066] In another aspect, there is disclosed herein a network of three-dimensional printing resources comprising: a plurality of three-dimensional printers, each one of the plurality of three-dimensional printers including a network interface; a server configured to manage execution of a plurality of print jobs by the plurality of three-dimensional printers; and a data network that couples the server and the plurality of three-dimensional printers in a communicating relationship.

[0067] In general as described above, the server may include a web-based user interface configured for a user to submit a new print job to the server and to monitor progress of the new print job. The web-based user interface may permit video monitoring of each one of the plurality of three-dimensional printers, or otherwise provide information useful to a remote user including image-based, simulation-based, textual-based or other information concerning status of a current print. Details of a suitable user interface are discussed in further detail with reference to Fig. 5.

[0068] The fabrication resources may, for example, include any of the three-dimensional printers 304 described above. One or more of the fabrication resources may be a private fabrication resource secured with a credential-based access system. The user may provide, as a user preference and prior to use of the private fabrication resource, credentials for accessing the private fabrication resource. In another aspect, the one or more fabrication resources may include a commercial fabrication resource. In this case the user may provide an authorization to pay for use of the commercial fabrication resource in the form of a user preference prior to use of the commercial fabrication resource.

[0069] Many current three-dimensional printers require significant manufacturing time to fabricate an object. At the same time, certain printers may include a tool or system to enable multiple, sequential object prints without human supervision or intervention, such as the conveyor belt described above. In this context, prioritizing content may be particularly important to prevent crowding out of limited fabrication resources with low priority content that arrives periodically for autonomous fabrication. As a significant advantage, the systems and methods described herein permit prioritization using a variety of user-specified criteria, and permit use of multiple

fabrication resources in appropriate circumstances. Thus prioritizing content as contemplated herein may include any useful form of prioritization. For example, this may include prioritizing the content according to source. The content sources 310 may have an explicit type that specifies the nature of the source (e.g., commercial or paid content, promotional content, product support content, non-commercial) or the type of content provided (e.g., automotive, consumer electronics, radio control hobbyist, contest prizes, and so forth). Prioritizing content may include prioritizing the content according to this type. The three-dimensional models themselves may also or instead include a type (e.g., tool, game, home, art, jewelry, replacement part, upgrade part, etc.), and prioritizing the content may include prioritizing the content according to this type.

[0070] In one aspect, the processor may be configured to select two or more of the plurality of three-dimensional models for concurrent fabrication by two or more of the plurality of fabrication resources based upon the prioritization when a priority of the two or more of the plurality of three-dimensional models exceeds a predetermined threshold. That is, where particular models individually have a priority above the predetermined threshold, multiple fabrication resources may be located and employed to fabricate these models concurrently. The predetermined threshold may be evaluated for each model individually, or for all of the models collectively such as on an aggregate or average basis.

[0071] In one aspect, the processor may be configured to adjust prioritization based upon a history of fabrication when a number of objects fabricated from one of the plurality of sources exceeds a predetermined threshold. Thus, for example, a user may limit the number of objects fabricated from a particular source, giving subsequent priority to content from other sources regardless of an objectively determined priority for a new object from the particular source. This prevents a single source from overwhelming a single fabrication resource, such as a personal three-dimensional printer operated by the user, in a manner that crowds out other content from other sources of possible interest. At the same time, this may enable content sources 310 to publish on any convenient schedule, without regard to whether and how subscribers will be able to fabricate objects.

[0072] In another aspect, the processor may be configured to identify one or more additional sources of content based upon a similarity to one of the plurality of sources of content. For example, where a content source 310 is an automotive manufacturer, the processor may perform a search for other automotive manufactures, related parts suppliers, mechanics, and so forth. The processor may also or instead be configured to identify one or more additional sources of content based upon a social graph of the user. This may, for example, include analyzing a social graph of relationships from the user to identify groups with common interests, shared professions, a shared history of schools or places of employment, or a common current or previous residence location, any of which may be used to locate other sources of content that may be of interest to the user.

[0073] Fig. 4 depicts a method for operating a three-dimensional printer, such as any of the three-dimensional printers described above, when coupled to a data network. As contemplated above, the three-dimensional printer may include a network interface for coupling to the data network, as well as any number of sensors that provide status information for various aspects of the three-dimensional printer, which status information may be communicated over the data network to a remote user or other automated or manual resource in order to monitor submission, progress, and completion of a print job. In general, the printer may operate as an autonomous network device coupled directly to the Internet through a cable mode, router, hub, or the like. In another aspect, the printer may use a computer or other computing resource coupled to the printer through a local area network or the like for steps requiring intensive computation (e.g., converting from a stereolithography or other computer automated design format into tool instructions), substantial storage (e.g., print queue management), or other hardware (e.g., cameras, environmental sensors, and so forth).

[0074] As shown in step 402, the method 400 may begin with receiving a print job over the data network, which may include any of the data networks described above. The print job may be received from a requester, which may for example include a remote device (or user of the remote device) such as a laptop or other computer. The requester may be coupled in a communicating relationship to the three-dimensional printer through the data network in a host-client relationship, a peer-to-peer relationship, a mutually

hosted relationship (e.g., with both devices hosted by a third networked device) or any other relationship capable of supporting communications and data transfer between the requester and the three-dimensional printer. In another aspect, a user may communicate indirectly with the three-dimensional printer, such as by interacting over the data network with a print server, subscription content source, or any other resource or service that facilitates managed access to the three-dimensional printer over the data network, and acts as the requester to submit the print job.

[0075] As shown in step 404, the method 400 may include evaluating an availability of the three-dimensional printer for the print job. This may be based upon a signal from any of the sensors associated with the three-dimensional printer. It will be understood that this evaluation may be performed locally at the three-dimensional printer, with an availability indicator transmitted back to the requester, or this evaluation may be performed remotely by a device that receives sensor data in raw or processed form from the sensor(s) of the three-dimensional printer.

[0076] A wide variety of evaluations may be performed. For example, the evaluation may relate to the status of a current job executing on the three-dimensional printer, or an analysis of one or more other jobs in a local queue of the three-dimensional printer, any of which might result in the three-dimensional printer being unavailable. For example, where the printer has a substantial number of queued jobs that will require several hours to fabricate, or that uses all available local memory of the printer, then the printer may be identified as unavailable for additional print jobs. As another example, the evaluation may be based upon other sensors such as thermostats, motion or position error detectors, or optical sensors, any of which might permit inferences concerning the ability of the three-dimensional printer to execute a print job. For example, if an optical sensor detects an object within a working volume of the three-dimensional printer, or if a thermal sensor detects that a print head is not at a suitable temperature (or is not responding correctly to a heating command), the printer may not be ready and a corresponding evaluation may be provided. As another example, a sensor may detect a quantity of build material available to the printer, and a processor on the printer may determine if the supply is inadequate for the requested print job. Thus evaluating the

availability of the three-dimensional printer may include accepting the print job only if a supply of build material available for the three-dimensional printer exceeds an amount of build material required for the print job and one or more additional jobs ahead of the requested print job in the queue.

[0077] Similarly, any of a variety of status checks for normal, error-free functioning of the three-dimensional printer may be undertaken prior to accepting (or transmitting from a requester) a new print job. More generally, a variety of sensors and other inputs (including, e.g., data that may be stored locally in a memory of the three-dimensional printer) may provide useful information for assessing the availability of the device, and may be used as the sensor(s) contemplated herein to evaluate availability of the three-dimensional printer for a print job.

[0078] In one aspect, the evaluation may be based on a receiving state of the three-dimensional printer. The receiving state may be inferred based on various sensor signals and/or data indicative of whether the three-dimensional printer is currently engaged in a print. In another aspect, the receiving state may be explicitly provided by an owner or administrator of the three-dimensional printer, thus providing an opportunity for the administrator to control what level of access to the printing resource will be provided to external users who might connect to the printer over the data network. Thus the receiving state may be selected from a group including, e.g., open, closed, or authenticated. In general, the open receiving state may permit access to any remote user, while the closed receiving state does not permit access to any remote users (such as where the owner wishes to connect to the data network to retrieve remote content, but does not wish to make the three-dimensional printer publicly available). The authenticated receiving state may permit remote access conditioned upon receipt of appropriate credentials. Thus in one aspect, availability may be based upon an identity of a user – the requester -- associated with the print job. In this case, evaluating availability of the three-dimensional printer may include assessing an identity of the user, which may be determined, e.g., using access credentials such as a user name and password, a digital certificate, or any other techniques for securely identifying the user, either locally or with reference to a trusted external resource such as a certificate server or the like.

[0079] In another aspect, the print job itself may be secured for communication to the three-dimensional printer using, e.g., encryption of print or model data. The printer may in turn conditionally authorize printing according to any related access credentials. Thus in one aspect the method may include securing the print job using a digital rights management technique that restricts execution of the print job to one or more predetermined three-dimensional printers or to a printer having suitable credentials. In this context, evaluating the availability of the three-dimensional printer may include determining whether the three-dimensional printer is one of the one or more predetermined three-dimensional printers, or whether the three-dimensional printer has appropriate credentials. This technique may be particularly useful, for example, where the print job includes purchased content or the like for which the content creator (or distributor) wishes to retain control of fabrication, e.g., by limiting who, where, when, or how many times the print job can be fabricated.

[0080] The evaluation may also or instead be based on a variety of sensor measurements and/or other data or information about the processing status of the three-dimensional printer. By way of example and not of limitation, evaluating the availability of the three-dimensional printer may include determining a percentage completion of a current print job at the three-dimensional printer. Evaluating the availability of the three-dimensional printer may include estimating a wait time until the three-dimensional printer will be available and transmitting the wait time to the requester. Evaluating the availability of the three-dimensional printer may include determining whether the three-dimensional printer is immediately available.

[0081] It will also be appreciated that a wide variety of sensors may usefully be employed in this evaluation. By way of non-limiting example, the plurality of sensors may include a video camera directed toward a working volume of the three-dimensional printer. The plurality of sensors may include an optical sensor that detects obstructions within a working volume of the three-dimensional printer. The plurality of sensors may include a sensor that detects a quantity of build material available. The plurality of sensors may include a sensor that detects a presence of build material in a material supply feed.

[0082] As shown in step 406, when the three-dimensional printer is not available for a print job, the method 400 may include electronically notifying the requester that the print job has been rejected. This may, for example, include a notification such as a textual message or graphic displayed within a user interface used by the requester to submit the print job, or this may include a notification using any suitable communication medium such as an SMS text message or electronic mail communication to the requester.

[0083] When the three-dimensional printer is not available for the print job, additional processing may be performed prior to notifying the requester, such as a search for additional, suitable printing resources and/or redirection of the print job. Thus in one aspect, the method may include identifying one or more alternative three-dimensional printers coupled to the data network as resources available for the print job when the three-dimensional printer is not available. In another aspect, when the three-dimensional printer is not available, the method may include identifying an alternative three-dimensional printer coupled to the data network and redirecting the requester to the alternative three-dimensional printer. The redirecting may include automatically redirecting the print job without user intervention, or the redirecting may include transmitting a suggestion to the requester to use the alternative three-dimensional printer. More generally, any suitable information about other available resources and/or redirection of the request may be transmitted to the requester when the three-dimensional printer that received the print job is determined to be unavailable. This may also include information about an expected wait time until the printer will be available, when such information is provided by the printer or can be reasonably inferred from other information.

[0084] As shown in step 407, a manual verification may be optionally requested, even where the three-dimensional printer is otherwise determined to be available, before adding the print job to the print queue. The request for manual verification by the requester may be provided, for example, along with contextual information such as an expected time before the print job can begin fabrication, or a current image of the three-dimensional printer (e.g., of the working volume or supply of build material). Thus in one aspect, evaluating the availability of the three-dimensional printer may include

transmitting an image of the three-dimensional printer to the requester, and receiving a manual confirmation to proceed with the print job from the requester.

[0085] As shown in step 408, when the three-dimensional printer is available, the method 400 may include adding the print job to a queue for the three-dimensional printer and initiating fabrication of an object according to the queue. It will be understood that the three-dimensional printer may only have storage for a current print job, in which case the print queue, or more specifically, the local print queue, may consist of a currently active print job containing zero or one print jobs at all times. In another aspect, the three-dimensional printer may have adequate storage and processing capabilities to locally manage a substantial queue of print jobs, or alternatively, may be coupled to a local resource such as a co-located desktop or laptop computer or networked-attached storage that can operate as a local print queue resource for the three-dimensional printer. When the print job is accepted, a notification may be sent to the requester using, e.g., any of the notification techniques described above.

[0086] It will be appreciated that certain print jobs may include multiple, separate physical objects. These objects may be generally unrelated, e.g., where a requester simply decides to build multiple objects at one time, or these objects may be related. Related objects may include structurally related objects, such as where an object larger than a build volume is constructed from several smaller pieces, where the object has several independent moving parts. Related objects may also or instead be contextually related, as with a collection of game pieces such as pieces for a chess board. When a request includes multiple objects, adding these objects to the print queue may include additional processing to allocate the objects among a number of suitable fabrication resources. Thus in one aspect where the print job includes a plurality of objects, the method may include identifying a plurality of printers in proximity to the three-dimensional printer and allocating the plurality of objects for concurrent fabrication among the plurality of printers. This allocation may be managed by the three-dimensional printer that received the request (e.g., by having the printer act as a requester for several other proximate resources), or this allocation may be managed by a remote print server that identifies and

coordinates operation of a number of physically proximate or otherwise suitable resources.

[0087] As shown in step 410, the method 400 may include providing information about a queue for the three-dimensional printer to the requester. This may include transmitting a print queue status to the requester for display in a user interface or within the body of an electronic mail message or text message, or more generally using any suitable communication medium. Although depicted in Fig. 4 as occurring after a print job is added to the print queue, it will be understood that the print queue status may be usefully shared with the requester at any time before or during processing of the print job, and/or periodically while the print job is pending or executing.

[0088] As shown in step 412, the method 400 may include completing fabrication, after which the requester may be notified and the object retrieved using any suitable online and/or offline techniques.

[0089] Print queue status information as contemplated above may also include information relating to operation of the three-dimensional printer. For example, the method may include transmitting status information from one or more of the plurality of sensors to the requester during an execution of the print job. The method may include notifying the requester of a successful completion of the print job, or the method may include notifying the requester if the print job fails to complete. In this communication of status information, the three-dimensional printer may also request further user input, such as by inquiring whether to try printing the object again, or whether to forward an unsuccessful print job to another resource. In one aspect, the status information may include at least one photograph captured, e.g., from a video camera or digital still camera associated with the printer, which may be transmitted directly to the requester, or to some other location such as a social networking platform. In one aspect, the social networking platform may include one or more of Flickr, Twitter, LinkedIn, Google+, and Facebook, or any other website or the like where the requester can share the at least one photograph with others using tools available within the social networking platform.

[0090] It will be readily appreciated that the above steps are provided by way of example and not limitation, and that numerous variations are possible including

additions, omissions, and or variations of the steps recited above. All such variations as would be appreciated by one of ordinary skill in the art are intended to fall within the scope of this disclosure. In particular, the various step described above may be performed by a networked printer that directly hosts a connection with a remote user, or by a print server or the like that mediates print job administration between users and fabrication resources. Thus the various steps may be performed in a distributed manner among two or more of a user, by a print server, and/or by a three-dimensional printer depending upon the specific network of devices performing the method. By way of example, a three-dimensional model may be transmitted directly from a three-dimensional scanner to a three-dimensional printer for fabrication. The scanner and the printer may be locally coupled to one another, or remotely coupled through a print server or the like, or connected through a network using a peer-to-peer or similar relationship.

[0091] It will also be understood that this disclosure includes apparatus for performing the methods described above. Thus in one aspect there is disclosed a three-dimensional printer including a network interface configured to receive a print job from a requester over a data network, a plurality of sensors that provide status information for a plurality of aspects of the three-dimensional printer; and a processor configured to evaluate an availability of the three-dimensional printer for the print job based upon a signal from at least one of the plurality of sensors. The processor may include any suitable processing circuitry such as any controller, microcontroller, microprocessor and/or other circuitry used to control the three-dimensional printer, and/or any similar processing circuitry in a co-located computer or the like. Where processing is distributed, e.g., among multiple printers, a print server, a requester device, and so forth, the various steps may be distributed in any suitable fashion consistent with networked printing as contemplated herein.

[0092] In another aspect, the method steps may be embodied in computer executable code stored in a non-transitory computer readable medium such as a computer memory. Thus there is disclosed herein a computer program product embodied in a non-transitory computer readable medium that, when executing on one or more computing devices, performs any of the steps described above. In one aspect, this may include the

steps of: receiving a print job from a requester over a data network at a three-dimensional printer, the three-dimensional printer including a plurality of sensors that provide status information for a plurality of aspects of the three-dimensional printer; and evaluating an availability of the three-dimensional printer for the print job based upon a signal from at least one of the plurality of sensors.

[0093] Fig. 5 depicts a user interface for networked three-dimensional printing. The user interface 500 may be a web page or other remotely created and executed interface supported, e.g., by one of the print servers or web servers described above. In another embodiment, the user interface 500 may be served by one of the three-dimensional printers described above, which may execute a web server for remote access to administrative or fabrication functions of the three-dimensional printer. In another embodiment, the user interface 500 may be created by a local application that retrieves data, images, print queue information, models, and so forth from a variety of remote applications and other resources, while also formatting outbound commands from the client device to the various resources so that the remote resources can be integrated within a single workspace on a client device. The user interface 500 may in general be rendered on a display or similar hardware on a client device or mobile device, and may permit user interaction through any suitable controls to permit local control and administration of remote fabrication resources. In general, the user interface 500 may be an interface for management of a variety of remote fabrication resources as generally described above.

[0094] For example, the user interface 500 may include a first display area 502 that shows a list of available online three-dimensional printers or other fabrication resources. This display area may be interactive, and may permit, e.g., sorting of fabrication resources, searching for new fabrication resources, and the like. The first display area 502 may also or instead provide status information for each listed fabrication resource, such as information about availability, recent print activity, a current queue of objects for printing at that resource, and so forth. In one aspect where the user interface 500 is a web page for remote users to manage fabrication, the first display area 502 may

be adapted to receive a manual selection of one of the plurality of three-dimensional printers from the remote user to execute a print job.

[0095] The user interface 500 may also or instead include a second display area 504 that shows a list of available models for fabrication by the fabrication resources. This may include any of a variety of interactive features such as search capabilities for models, and links to information about models such as cost, user reviews, complexity and print time, model renderings, descriptions, notes from a content provider, and so forth. This may also include an interface tool to permit a user to fabricate a model. The second display area 504 may be adapted to receive a batch print job from a remote user, the batch print job including a plurality of related print jobs. For example, a user may select an object displayed in the second display area 504 that includes multiple parts, or the user may select multiple items listed in the second display area 504 (using, e.g., a conventional control key and mouse click, or any other suitable user interface controls/techniques) for batch processing. This may also permit the remote user to provide additional, related information, such as a permissible allocation of the plurality of related print jobs among the plurality of three-dimensional printers, which permissible allocation may include general preferences (e.g., high-speed printers or local printers), specific preferences (e.g., use printer xyz), or firm requirements (e.g., use only printer xyz, or only printers selected from a specific group).

[0096] The user interface 500 may also or instead include a third display area 506 that shows a print queue. This may include a local print queue for a specific fabrication resource, or this may include a print queue stored at a print server for a user, along with information about where and when each object is scheduled for fabrication. The user interface 500 may permit one-click drag-and-drop print queue management of three-dimensional printing jobs. For example, a user may simply drag an object from the second display area 504 (objects) into the third display area 506 (print queue) where the object may be automatically or manually prioritized for execution. Alternatively, the user may drag an object from the second display area 504 into the first display area 502 (printers) to request (with a single operation) fabrication of the object by a specific printer. More generally, the user interface 500 may facilitate control over fabrication of

models from a variety of content sources using a variety of fabrication resources, some or all of which may be remote from a current user manipulating the user interface 500.

[0097] The user interface 500 may include a fourth display area 508 that displays information for a currently active print job. This area may usefully include any information related to the print job such as status, time to completion, source, current time, etc. Additionally, this area may include a control or group of controls for manual operation of the three-dimensional printer by a remote user. Thus for example a user may remotely stop fabrication, restart fabrication, cancel fabrication, change fabrication settings, perform a test extrusion, and so forth, as though the user were locally controlling the printer.

[0098] The fourth display area 506 may include a visualization area 510 that displays a visual representation of the print job. For example, the visualization area 510 may display a current tool path of the printer that is executing the print job, such as a two-dimensional layer of the object showing a path of a print head as it traverses that layer. The visualization area 510 may also or instead show a simulated print object, such as a rendering of a three-dimensional model depicting a current state of the completion of an object being fabricated according to a print job. The visualization area 510 may also or instead show an image of a working volume of a three-dimensional printer or other fabrication resource captured during execution of the print job. This may, for example, include a digital still image (which may be updated periodically) or a video image captured from a video camera at the three-dimensional printer. Thus a user may visually monitor progress or status of a remote print job through the user interface 500. A status area 512 may also be provided that shows current status information (e.g., percentage completion, time until start, time until completion, and so forth) for the active resource.

[0099] The user interface 500 may also include a menu bar 516 or the like for other functions not otherwise accounted for within the other active areas. This may include file information, search tools, help menus, user or account information, and so forth. This may include controls to share information about print activity. For example, the user interface may include at least one control to capture a frame of data from the video camera as a video image and to transmit the video image to a remote location

through the data network. The remote location may, for example, be a social networking site such as any of the social network platforms described above. In another aspect, the device may be configured to transmit the video image in an electronic mail communication to, e.g., the user or one or more recipients identified by the user. In another aspect, the user interface may include a control to capture a stop-motion animation of a fabrication of an object using the video camera. This may include user controls for a frame rate, duration, or other parameters of the stop-motion animation so that an animation of desired length and detail can be created for sharing or other use.

[00100] Fig. 6 is a flowchart of a method for operating a three-dimensional printer on a network. In particular, the method 600 of Fig. 6 emphasizes autonomous operation of the three-dimensional printer using content available through the data network.

[00101] The method 600 may begin with coupling a three-dimensional printer to a data network, as shown in step 602.

[00102] As shown in step 604, the method 600 may include locating one or more sources of content for fabrication by the three-dimensional printer on the data network according to one or more user-provided criteria. The sources of content may, for example, include any of the content sources described above, which may provide content on a syndicated basis using any suitable protocol (such as RSS or the like) so that the three-dimensional printer can identify new content from the content sources as the new content becomes available.

[00103] As shown in step 606, the method 600 may include subscribing to new content from the one or more sources of content.

[00104] As shown in step 608, the method may include receiving at least one three-dimensional model of new content from one of the one or more sources of content. This may occur in a variety of ways. For example, where the three-dimensional printer has subscribed to an RSS feed provided by the content source, a new item in the RSS feed (or media enclosure or similar content embedded in the feed) may provide a URL or the like that identifies a network location for a three-dimensional model, along with any metadata that the three-dimensional printer might use (or present to a user for evaluation)

to determine whether to retrieve the three-dimensional model. It will be understood that while RSS (“RDF Site Summary,” a.k.a., “Really Simple Syndication”) provides one useful platform for syndicating content including three-dimensional models, any suitable technology or combination of technologies may also or instead be employed, including ‘push’ technologies that forward notifications to clients and/or ‘pull’ technologies that explicitly request updates on any suitable regular or ad hoc basis.

[00105] It will be understood that fabrication of a single model using certain techniques may take a substantial amount of time, regardless of the rate at which individual models or groups of models are published from different sources. As such, a method as contemplated herein may advantageously apply local prioritization to ensure that more desirable content is not crowded out of limited fabrication resources by less desirable content. Receiving content as shown in step 608 may also include receiving a plurality of three-dimensional models and prioritizing fabrication of the plurality of three-dimensional models into an order of fabrication.

[00106] As shown in step 610, the method may include fabricating an object from the at least one three-dimensional model. As noted above, this may include fabricating a plurality of three-dimensional models in an order determined by a local prioritization scheme. Additional features may be usefully provided. For example, the model may be locally analyzed by a printer and automatically scaled according to the printer’s build volume, or the model may alternatively be divided into multiple, separate objects, each fitting within the build volume, and all capable of being assembled into the original object. This approach may be particularly advantageous where a printer is autonomously receiving and fabricating multiple objects in succession without user supervision.

[00107] Thus, in one aspect there is disclosed a three-dimensional printer configured for autonomous operation to retrieve and fabricate content published to a network. While the method 600 described above is generally local in nature, it will be appreciated that other collocated resources may be used, such as a desktop computer or the like coupled to a three-dimensional printer, which desktop computer may subscribe to content, prioritize new content, and then direct the content to the local three-dimensional

printer. In another aspect, the various steps may be performed by a print server or the like which couples remote content sources to remote three-dimensional printers according to any user criteria. More generally, a variety of additions, omissions, rearrangements and modifications to the steps described above may be employed without departing from the scope of this disclosure.

[00108] Fig. 7 is a flowchart of a method for operating a three-dimensional printer with a video camera and a network interface. In particular, the method 700 of Fig. 7 emphasizes incorporation of data from the video camera into operation and management of the three-dimensional printer.

[00109] As shown in step 702, the method 700 may begin with providing a three-dimensional printer including a build volume, a network interface coupled to a data network, and a video camera positioned to capture video of the build volume from a point of view, such as from above or in front a side of the build volume. This may, for example, include any of the three-dimensional printers described above.

[00110] As shown in step 704, the method 700 may include receiving a three-dimensional model through the network interface using, e.g., any of the techniques for locating and retrieving models as described above. By way of example, this may include direct access to a content source, syndicated access to a feed of content, and/or use of a print server or other remote print management tool.

[00111] As shown in step 706, the method 700 may include fabricating the three-dimensional model as an object within the build volume of the three-dimensional printer, all as generally contemplated above.

[00112] As shown in step 708, the method 700 may include providing a user interface to a remote user accessing the device through the network interface, wherein the user interface presents an image of the build volume from the camera and a two-dimensional projection of the three-dimensional model from the point of view of the video camera. This may be any of the user interfaces described above, or any other suitable interface for conveying visual information such as a video image and/or model projection. It will be understood that a variety of user interface technologies and techniques are well known in the art, any of which may be suitably adapted to providing

the user interface as contemplated herein. The two-dimensional projection may be any suitable rendering, simulation, or other visualization of the model and its current state of completion. Thus for example the two-dimensional projection may be obtained from a three-dimensional scanner or other data acquisition device coupled to a processor of the three-dimensional printer. The two-dimensional projection may be an image of the object as simulated based upon operation of the three-dimensional printer, using, e.g., a tool path history or a current state of completion. The two-dimensional projection may be dynamically updated to correspond to a state of physical completion of the object in order to provide real time, or quasi-real time visual status information. In one aspect, the two-dimensional projection may simply be a video image from the video camera.

[00113] As shown in step 710, the method 700 may include transmitting status information over the data network upon completion of the object. This may, for example, include data presented through the user interface, or any other status information or summary thereof. For example, the status information may include a digital image from the video camera, which may be transmitted with an electronic mail communication confirming completion of the object. More generally, status information may include any of the status information described above, and may be transmitted to a user through an electronic mail communication, instant messaging text message, or any other suitable communication medium.

[00114] It will be readily appreciated that a device such as a three-dimensional printer may be configured to perform the steps described above. Thus in one aspect there is disclosed herein a device including: a three-dimensional printer having a build volume; a network interface coupled to a data network; a video camera positioned to capture video of the build volume from a point of view; and a processor configured to receive a three-dimensional model through the network interface, and to control operation of the three-dimensional printer to fabricate the three-dimensional model as an object within the build volume of the three-dimensional printer, the processor further configured to provide a user interface to a remote user accessing the device through the network interface, and to present in the user interface an image of the build volume from the camera and a two-

dimensional projection of the three-dimensional model from the point of view of the video camera.

[00115] The processor may be configured to monitor operation of the three-dimensional printer based upon a comparison of the two-dimensional projection with the image of the build volume. Using this type of image analysis, it may be possible to track actual progress against predicted progress to identify equipment malfunctions or other interference that might cause the physical object to deviate from the model used to fabricate the physical object. For example, a temperature change in an extruder, an air bubble in a path of melted supply material, or a tool misstep might cause an unrecoverable error in a fabrication process. By comparing actual to expected two-dimensional or three-dimensional results, a fabrication process can be expeditiously aborted and restarted or otherwise addressed without waiting for completion and physical inspection of the constructed object. In addition, more subtle fabrication errors such as misalignment of layers, surface holes, inaccurate material build-ups or deposits, rotational distortion, and so forth may also be detected and address prior to completion of a build. More generally, a variety of machine vision functions may be implemented locally, or with cooperation between a local printer and a remote print server, using a video camera or digital still camera as a source of visual input.

[00116] As generally described above, the three-dimensional printer may be configured with a variety of tools and functions to facilitate networked use. For example, the processor may be configured to provide credential-based access to a user interface of the three-dimensional printer. As another example, the user interface may provide status information for the three-dimensional printer. This may include status information for a build process executing on the three-dimensional printer currently, or an anticipated build. The user interface may usefully display a two-dimensional tool path for the three-dimensional printer, the two-dimensional tool path corresponding to a current layer of the object during a fabrication of the object by the three-dimensional printer, or any other useful two-dimensional information. In one aspect, the processor may be configured to couple the three-dimensional printer in a communicating relationship with a remote print

server through the data network, such as to facilitate networked use or management of the three-dimensional printer through the remote print server.

[00117] The three-dimensional printer may also be configured for a variety of diagnostic and technical support functions. For example, the user interface may support remote access for technical support during local operation of the three-dimensional printer. Thus for example, technical support personnel may connect to the three-dimensional printer and employ the user interface to configure, troubleshoot, reprogram or update the three-dimensional printer from a remote location. The process may be programmed for supporting functions. For example, the processor may be configured to fabricate a test object, capture an image of the test object, and compare the image to the test object to validate operation of the three-dimensional printer.

[00118] Many of the above systems, devices, methods, processes, and the like may be realized in hardware, software, or any combination of these suitable for the control, data acquisition, and data processing described herein. This includes realization in one or more microprocessors, microcontrollers, embedded microcontrollers, programmable digital signal processors or other programmable devices or processing circuitry, along with internal and/or external memory, any of which may serve as the controller described above or supplement processing of the controller with additional circuitry. This may also, or instead, include one or more application specific integrated circuits, programmable gate arrays, programmable array logic components, or any other device(s) that may be configured to process electronic signals. It will further be appreciated that a realization of the processes or devices described above may include computer-executable code created using a structured programming language such as C, an object oriented programming language such as C++, or any other high-level or low-level programming language (including assembly languages, hardware description languages, and database programming languages and technologies) that may be stored, compiled or interpreted to run on one of the above devices, as well as heterogeneous combinations of processors, processor architectures, or combinations of different hardware and software. At the same time, processing may be distributed across devices such as the various systems described above, or all of the functionality may be integrated

into a dedicated, standalone device. All such permutations and combinations are intended to fall within the scope of the present disclosure.

[00119] In other embodiments, disclosed herein are computer program products comprising computer-executable code or computer-usable code that, when executing on one or more computing devices (such as the devices/systems described above), performs any and/or all of the steps described above. The code may be stored in a computer memory, which may be a memory from which the program executes (such as random access memory associated with a processor), or a storage device such as a disk drive, flash memory or any other optical, electromagnetic, magnetic, infrared or other device or combination of devices. In another aspect, any of the processes described above may be embodied in any suitable transmission or propagation medium carrying the computer-executable code described above and/or any inputs or outputs from same.

[00120] It will be appreciated that the methods and systems described above are set forth by way of example and not of limitation. Numerous variations, additions, omissions, and other modifications will be apparent to one of ordinary skill in the art. Thus, the order or presentation of method steps in the description and drawings above is not intended to require this order of performing the recited steps unless a particular order is expressly required or otherwise clear from the context.

[00121] While particular embodiments of the present invention have been shown and described, it will be apparent to those skilled in the art that various changes and modifications in form and details may be made therein without departing from the spirit and scope of the invention as defined by the following claims. The claims that follow are intended to include all such variations and modifications that might fall within their scope, and should be interpreted in the broadest sense allowable by law.

CLAIMS

What is claimed is:

1. A three-dimensional printer including a build volume, the three-dimensional printer comprising:
 - a three-dimensional scanner configured to capture three-dimensional information from the build volume;
 - a machine vision system configured to capture and analyze image content from the three-dimensional scanner, thereby providing a status of a print job executing on the three-dimensional printer;
 - a network interface configured to couple the three-dimensional printer in a communicating relationship with a data network; and
 - a web server configured to transmit the status of the print job for display at a remote client through the network interface.
2. The system of claim 1 wherein the three-dimensional printer is a fused deposition modeling printer.
3. The system of claim 1 wherein the three-dimensional printer is a stereolithography printer.
4. The system of claim 1 wherein the web server is configured to host a remote user of the three-dimensional printer through the network interface.
5. The system of claim 1 wherein the web server displays status information from one or more sensors of the three-dimensional printer.
6. The system of claim 1 wherein the three-dimensional scanner obtains three-dimensional data using stereoscopic imaging.

7. The system of claim 1 wherein the three-dimensional scanner obtains three-dimensional data using shape from motion.
8. The system of claim 1 wherein the three-dimensional scanner obtains three-dimensional data using structured light techniques.
9. The system of claim 1 wherein the machine vision system provides automatic inspection of an object within the build volume.
10. The system of claim 1 wherein the machine vision system provides a robotic guidance function for the three-dimensional printer.
11. The system of claim 1 wherein the machine vision system provide a pass/fail evaluation of a fabricated object within the build volume.
12. The system of claim 1 wherein the machine vision system provides error detection for an object within the build volume.
13. The system of claim 12 wherein the machine vision system creates an audible alert when an error is detected.
14. The system of claim 12 wherein the machine vision system creates a visual alert when an error is detected.
15. The system of claim 1 wherein the machine vision system tracks actual progress of a print job against a predicted progress of the print job.
16. The system of claim 1 wherein the machine vision system compares an actual three-dimensional result in the build volume with an expected three-dimensional result

based upon a source model.

17. The system of claim 16 wherein the machine vision system is configured to abort a fabrication process of the three-dimensional printer upon detection of an unrecoverable error in the fabrication process.

18. The system of claim 16 wherein the machine vision system is configured to detect a misalignment of layers.

19. The system of claim 16 wherein the machine vision system is configured to detect an unexpected surface hole.

20. The system of claim 1 further comprising a processor configured to respond to a remote request for status from the machine vision system.

ABSTRACT

Three-dimensional fabrication resources are improved by adding networking capabilities to three-dimensional printers and providing a variety of tools for networked use of three-dimensional printers. Web-based servers or the like can provide a single point of access for remote users to manage access to distributed content on one hand, and to manage use of distributed fabrication resources on the other.

Electronic Patent Application Fee Transmittal				
Application Number:				
Filing Date:				
Title of Invention:		NETWORKED THREE-DIMENSIONAL PRINTER WITH THREE-DIMENSIONAL SCANNER		
First Named Inventor/Applicant Name:		Nathaniel B. Pettis		
Filer:		John H. Nortrop		
Attorney Docket Number:		MBOT-0002-P06		
Filed as Large Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Utility application filing	1011	1	380	380
Utility Search Fee	1111	1	620	620
Utility Examination Fee	1311	1	250	250
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 (\$)				1250

Electronic Acknowledgement Receipt	
EFS ID:	13322659
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Confirmation Number:	9593
Title of Invention:	NETWORKED THREE-DIMENSIONAL PRINTER WITH THREE-DIMENSIONAL SCANNER
First Named Inventor/Applicant Name:	Nathaniel B. Pettis
Customer Number:	43520
Filer:	John H. Nortrop
Filer Authorized By:	
Attorney Docket Number:	MBOT-0002-P06
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Filing Date:	
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Application Type:	Utility under 35 USC 111(a)

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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)	

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Application Data Sheet	MBOT-0002-P06_072412_ADS.pdf	1357895	no	4
			9dfce7af1d8e3e02a91b862f5e701bc61a9d3b14		
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Information:					
2	Drawings-only black and white line drawings	MBOT-0002-P06_072412_Drawings.pdf	166923	no	6
			f25d14f8db18c89f73ddf88ebdb112fbbd2603d6		
Warnings:					
Information:					
3	Oath or Declaration filed	MBOT-0002-P06_072412_ExecutedDecPOA.pdf	1912077	no	3
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Warnings:					
Information:					
4		MBOT-0002-P06_072412_Specification.pdf	174847	yes	46
			456328f48975ac5cf95cd2c08931ec32e470a62c		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Specification		1	42	
	Claims		43	45	
	Abstract		46	46	
Warnings:					
Information:					
5	Fee Worksheet (SB06)	fee-info.pdf	32909	no	2
			943cade463e305b22e75d79b5df7ec06bad a37a3		
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Total Files Size (in bytes):			3644651		

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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

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	13/556,368
	Filing Date	Jul 24, 2012
	First Named Inventor	Nathaniel B. Pettis
	Art Unit	Unknown
	Examiner Name	Not Yet Known
Sheet 1 of 5	Attorney Docket No.	MBOT-0002-P06

U.S. PATENTS						
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-8226395		Jul 24, 2012	Pax, C. et al.	
		US-6841116 B2		Jan 11, 2005	Schmidt, Kris A.	
		US-6129872		Oct 10, 2000	Jang, Justin	
		US-5730817		Mar 24, 1998	Feygin, Michael et al.	
		US-5637175		Jun 10, 1997	Feygin, Michael et al.	
		US-5192559		Mar 9, 1993	Hull, Charles W., et al.	
		US-4097566		Jun 27, 1978	Bertin, Michael C., et al.	

U.S. PATENT APPLICATION PUBLICATIONS						
Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-20120113457A1		May 10, 2012	Pettis, N	
		US-20120113473A1		May 10, 2012	Pettis, N	
		US-20120105903A1		May 3, 2012	Pettis, N	
		US-20120092724A1		Apr 19, 2012	Pettis, Nathaniel B.	
		US-20120059503A1		Mar 8, 2012	Pax, Charles et al.	
		US-20120059504A1		Mar 8, 2012	Pax, Charles et al.	
		US-20120046779A1		Feb 23, 2012	Pax, Charles et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	13/556,368
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	First Named Inventor	Nathaniel B. Pettis
	Art Unit	Unknown
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Sheet 2 of 5	Attorney Docket No.	MBOT-0002-P06

U.S. PATENT APPLICATION PUBLICATIONS						
Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-20040175450A1		Sep 9, 2004	Yanagisawa, Kenji et al.	
		US-20020195746A1		Dec 26, 2002	Hull, Charles W., et al.	

FOREIGN PATENT DOCUMENTS								
Examiner Initial*	Cite No	Foreign Document Number ³	Cnty Code ²	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	T ⁵

NON-PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No	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 ⁵
	NPL-15	, "Application Serial No. 13/292,369 (Atty Ref MBOT-0001-P03), Notice of Allowance mailed 05-11-12", SN:13292369-NoA NPL-15 5/11/2012 , 9 pages	
	NPL-16	, "Application Serial No.13/292,369 (Atty Ref MBOT-0001-P03), Final Office Action mailed 04-25-12", SN:13292369-FOA NPL-16 4/25/2012 , 8 pages	
	NPL-4	ONAGORUWA, SEYI et al., "Fused Deposition of Ceramics (FDC) and Composites", School of Mechanical and Materials Engineering Washington State University Pullman, WA 99164-2920 amitband@wsu.edu NPL-4 2001 , pgs 224-231	
	NPL-12	, "Application Serial No. 12/858,622 (Atty Ref MBOT-0001-P01), Non-Final Office Action mailed 02-14-12", SN:12858622-NFOA NPL-12 2/14/2012 , 21 pgs	
	NPL-11	, "Application Serial No.13/292,369 (Atty Ref MBOT-0001-P03), Non-Final Office Action mailed 02-14-12", SN:13292369-NFOA NPL-11 2/14/2012 , 21 pgs	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	13/556,368
	Filing Date	Jul 24, 2012
	First Named Inventor	Nathaniel B. Pettis
	Art Unit	Unknown
	Examiner Name	Not Yet Known
Sheet 3 of 5	Attorney Docket No.	MBOT-0002-P06

NON-PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No	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 ⁵
	NPL-10	, "Fabbaloo Personal Manufacturing and 3D Printing, http://fabbaloo.com/blog/2012/1/6/kraftwurxs-patent-available.html ", http://fabbaloo.com/blog/2012/1/6/kraftwurxs-patent-available.html NPL-10 1/29/2012 , all pgs	
	NPL-1	PAX, CHARLES E. , "Awesome August Hack-a-thon", http://charlespax.com/2009/08/18/awesome-august-hack-a-thon/[8/5/2010 12:13:01 PM] Open Source 3D printing research and design NPL-1 08/18/2009 , all pages	
	NPL-2	PAX, CHARLES E. , "Motorized Conveyor Belt Sneak Peak", http://charlespax.com/2010/04/27/motorized-conveyor-belt-sneak-peek/ Open Source 3D printing research and design NPL-2 04/27/2010 , pages 1-10	
	NPL-8	PAX, CHARLES E. , "MakerBot Thoughts", http://charlespax.com/2009/04/22/makerbot-thoughts/[8/5/2010 12:10:55 PM] Open Source 3D printing research and design NPL-8 04/22/2009 , all pages	
	NPL-3	PAX, CHARLES E. , "Heated Conveyor Belt Build Platform", http://charlespax.com/2010/04/20/heated-conveyor-belt-build-platform/[8/5/2010 12:17:26 PM] Open Source 3D printing research and design NPL-3 04/20/10 , pgs 1-3	
	NPL-6	BROCKMEIER, OIVIND , "Automated Loading and Unloading of the Stratasys FDM 1600 Rapid Prototyping System", Thesis submitted to the Faculty of Virginia Polytechnic Institute and State University March 2000 NPL-6 03/2000 , all pgs	
	NPL-7	PAX, CHARLES E. , "MakerBot Conveyor Belt", http://charlespax.com/2010/03/17/makerbot-conveyor-belt/[8/5/2010 12:14:05 PM] Open Source 3D printing research and design NPL-7 03/17/2010 , all pages	
	NPL-5	PAX, CHARLES E. , "MakerBot Thoughts 3", http://charlespax.com/2010/01/27/makerbot-thoughts-3/[8/5/2010 12:13:39 PM] Open Source 3D printing research and design NPL-5 01/27/10 , all pages	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	13/556,368
	Filing Date	Jul 24, 2012
	First Named Inventor	Nathaniel B. Pettis
	Art Unit	Unknown
	Examiner Name	Not Yet Known
Sheet 4 of 5	Attorney Docket No.	MBOT-0002-P06

EXAMINER SIGNATURE			
Examiner Signature		Date Considered	
*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.			
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CERTIFICATION STATEMENT			
Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):			
☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (1).			
OR			
☐ That no item of information contained in the 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 the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (2).			
☐ See attached certification statement.			
☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.			
☒ Applicant believes that no fees are required with this filing. However, if an Office Action on the merits has been mailed, or a fee is otherwise required, the Commissioner is hereby authorized to charge any fees due under 37 C.F.R. §§1.16 or 1.17, or to credit any overpayments, to Deposit Account No. 50-4262 in order to have this information disclosure statement considered.			
SIGNATURE			
A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.			
Signature	/John Nortrup/	Date (YYYY-MM-DD)	2012-07-24
Name/Print	John Nortrup	Registration Number	59,063

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	13/556,368
	Filing Date	Jul 24, 2012
	First Named Inventor	Nathaniel B. Pettis
	Art Unit	Unknown
	Examiner Name	Not Yet Known
Sheet 5 of 5	Attorney Docket No.	MBOT-0002-P06

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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.**

Electronic Acknowledgement Receipt	
EFS ID:	13325961
Application Number:	13556368
International Application Number:	
Confirmation Number:	9593
Title of Invention:	NETWORKED THREE-DIMENSIONAL PRINTER WITH THREE-DIMENSIONAL SCANNER
First Named Inventor/Applicant Name:	Nathaniel B. Pettis
Customer Number:	43520
Filer:	John H. Nortrop/Elizabeth Nortrup
Filer Authorized By:	John H. Nortrop
Attorney Docket Number:	MBOT-0002-P06
Receipt Date:	24-JUL-2012
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Time Stamp:	15:10:10
Application Type:	Utility under 35 USC 111(a)

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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	MBOT-0002-P06_072412_Form1449.pdf	108752 4df5e2b082e234ae08cf110e675b7ba0a3cb769d	no	5

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Information:					
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Information:					
13	Non Patent Literature	NPL-7_MakerBotConveyorBelt_031710.pdf	70583 6da89d0bb7595d49cc5c82f33a80fed4d6d9e57	no	5
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Information:					
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Information:					
Total Files Size (in bytes):			21330015		
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 13/556,368				
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			N/A	380			
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A			N/A	620			
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	250			
TOTAL CLAIMS (37 CFR 1.16(i))	20	minus 20 = *			OR	x 60 =	0.00			
INDEPENDENT CLAIMS (37 CFR 1.16(h))	1	minus 3 = *			OR	x 250 =	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 \$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).						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	1250			
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	
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OTHER THAN SMALL ENTITY		
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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United States Patent and Trademark Office
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APPLICATION NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
13/556,368	07/24/2012	1742	1250	MBOT-0002-P06	20	1

CONFIRMATION NO. 9593

43520
STRATEGIC PATENTS P.C..
C/O CPA Global
P.O. BOX 52050
MINNEAPOLIS, MN 55402

FILING RECEIPT



OC000000055734454

Date Mailed: 08/06/2012

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)

Nathaniel B. Pettis, Brooklyn, NY;

Power of Attorney: The patent practitioners associated with Customer Number 43520

Domestic Priority data as claimed by applicant

This application is a CON of 13/314,337 12/08/2011
which is a CIP of 12/858,622 08/18/2010

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: 08/01/2012

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 13/556,368**

Projected Publication Date: 11/15/2012

Non-Publication Request: No

Early Publication Request: No

Title

NETWORKED THREE-DIMENSIONAL PRINTER WITH THREE-DIMENSIONAL SCANNER

Preliminary Class

264

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>.

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	13/556,368
	Filing Date	Jul 24, 2012
	First Named Inventor	Nathaniel B. Pettis
	Art Unit	1743
	Examiner Name	Not Yet Known
Sheet 1 of 2	Attorney Docket No.	MBOT-0002-P06

U.S. PATENTS						
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-8282380		Oct 9, 2012	Pax, Charles et al.	

U.S. PATENT APPLICATION PUBLICATIONS						
Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-2004/0232601		Nov 25, 2004	Kundinger, J. et al.	

FOREIGN PATENT DOCUMENTS								
Examiner Initial*	Cite No	Foreign Document Number ³	Cnty Code ²	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	T ⁵

NON-PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No	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 ⁵
	NPL-17	, "Application Serial No. 12/858,622 (Atty Ref MBOT-0001-P01) Notice of Allowance mailed 08/02/12", SN:12858622 NPL-17 8/2/2012 , 13 pages	

EXAMINER SIGNATURE			
Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	13/556,368
	Filing Date	Jul 24, 2012
	First Named Inventor	Nathaniel B. Pettis
	Art Unit	1743
	Examiner Name	Not Yet Known
Sheet 2 of 2	Attorney Docket No.	MBOT-0002-P06

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (1).

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☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ Applicant believes that no fees are required with this filing. However, if an Office Action on the merits has been mailed, or a fee is otherwise required, the Commissioner is hereby authorized to charge any fees due under 37 C.F.R. §§1.16 or 1.17, or to credit any overpayments, to Deposit Account No. 50-4262 in order to have this information disclosure statement considered.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/John Nortrup/	Date (YYYY-MM-DD)	2012-10-11
Name/Print	John Nortrup	Registration Number	59,063

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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.**

Electronic Acknowledgement Receipt	
EFS ID:	13966732
Application Number:	13556368
International Application Number:	
Confirmation Number:	9593
Title of Invention:	NETWORKED THREE-DIMENSIONAL PRINTER WITH THREE-DIMENSIONAL SCANNER
First Named Inventor/Applicant Name:	Nathaniel B. Pettis
Customer Number:	43520
Filer:	John H. Nortrop/Elizabeth Nortrup
Filer Authorized By:	John H. Nortrop
Attorney Docket Number:	MBOT-0002-P06
Receipt Date:	11-OCT-2012
Filing Date:	24-JUL-2012
Time Stamp:	18:29:00
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	MBOT-0002-P06_101112_Form1449.pdf	77077 833857f05d78a9bb0a3dfa29db88f8e979856d1d	no	2

Warnings:

Information:

This is not an USPTO supplied IDS fillable form					
2	Non Patent Literature	NPL-17_SN12858622_NoA-080 212.pdf	672870 4d9d56ea7d7fa8011292ffa60d10b52573f7 3c4c	no	13
Warnings:					
Information:					
Total Files Size (in bytes):			749947		
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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/556,368	07/24/2012	Nathaniel B. Pettis	MBOT-0002-P06

CONFIRMATION NO. 9593

43520
STRATEGIC PATENTS P.C..
C/O CPA Global
P.O. BOX 52050
MINNEAPOLIS, MN 55402

PUBLICATION NOTICE



Title:NETWORKED THREE-DIMENSIONAL PRINTER WITH THREE-DIMENSIONAL SCANNER

Publication No.US-2012-0286453-A1

Publication Date:11/15/2012

NOTICE OF PUBLICATION OF APPLICATION

The above-identified application will be electronically published as a patent application publication pursuant to 37 CFR 1.211, et seq. The patent application publication number and publication date are set forth above.

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

Electronic Acknowledgement Receipt	
EFS ID:	15557211
Application Number:	13556368
International Application Number:	
Confirmation Number:	9593
Title of Invention:	NETWORKED THREE-DIMENSIONAL PRINTER WITH THREE-DIMENSIONAL SCANNER
First Named Inventor/Applicant Name:	Nathaniel B. Pettis
Customer Number:	43520
Filer:	Robert A. Mazzaresse/Paula Ng
Filer Authorized By:	Robert A. Mazzaresse
Attorney Docket Number:	MBOT-0002-P06
Receipt Date:	18-APR-2013
Filing Date:	24-JUL-2012
Time Stamp:	16:50:31
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	MBOT-0002-P06_041813_Form1449.pdf	90031 0cb773e458b1172c91414379423f96405641e037	no	5

Warnings:

Information:

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2	Non Patent Literature	NPL-29_Design_Principles_for_Rapid_Prototyping_Forces.pdf	991585 a20e98785f29a6e6fa656ac17363d035e793f55d	no	5
Warnings:					
Information:					
3	Non Patent Literature	NPL-25_SN13348728_NFOA-012213.pdf	1199420 bf46393b36aee7ce2fd63df6f42537ca603540e	no	15
Warnings:					
Information:					
4	Non Patent Literature	NPL-28_SN13348728_NOA-021513.pdf	687768 40915640ba5d8d181ac998792fd1918c078e01d7	no	6
Warnings:					
Information:					
5	Non Patent Literature	NPL-24_SN13348863_NFOA-011813.pdf	1159304 4027f9e29df4db47985e72943261cfa913845ea4	no	14
Warnings:					
Information:					
6	Non Patent Literature	NPL-27_SN13348863_NOA-021113.pdf	697520 b17dabbd1b4bd3acc424bb48409a8ab4f14c7165	no	6
Warnings:					
Information:					
7	Non Patent Literature	NPL-26_SN13348896_NFOA-012213.pdf	1299062 e5aed7882fd15ab9195bff5a991bf4569227f93a	no	16
Warnings:					
Information:					
8	Non Patent Literature	NPL-30_PCTUS1268429_ISR-022113.pdf	5830240 b3b8b4b29349de1dd2fd9ae62fa938c3bc0efa99	no	36
Warnings:					
Information:					
9	Non Patent Literature	NPL-31_Towards_a_Cloud-based_design_and_manufacturing_paradigm.pdf	2371704 cbf105f14d292ea5a235536a6252393135fd3efe	no	14
Warnings:					
Information:					
Total Files Size (in bytes):			14326634		

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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.



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/556,368	07/24/2012	Nathaniel B. Pettis	MBOT-0002-P06	9593
43520 7590 07/11/2013 STRATEGIC PATENTS P.C. P.O. BOX 920629 NEEDHAM, MA 02492			EXAMINER BROWN II, DAVID N	
			ART UNIT 1743	PAPER NUMBER
			NOTIFICATION DATE 07/11/2013	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):

patents@stratpat.com

Office Action Summary	Application No. 13/556,368	Applicant(s) PETTIS, NATHANIEL B.	
	Examiner DAVID N. BROWN II	Art Unit 1743	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 _____.
☐ 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) 1-20 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) 1-20 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.

Interim copies:

- a) ☐ All b) ☐ Some c) ☐ None of the: Interim copies of the priority documents have been received.

Attachment(s)

- | | |
|--|---|
| 1) ☒ Notice of References Cited (PTO-892) | 3) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>04/18/2013 12/04/2012 10/11/2012 07/24/2012</u> | 4) ☐ Other: _____ |

DETAILED ACTION

This is a first action on the merits.

Specification

1. The disclosure is objected to because of the following informalities: in [0025] element 126 is labeled the extrusion tip. The extrusion tip is element 124.

Appropriate correction is required.

Drawings

2. The drawings are objected to under 37 CFR 1.83(a) because they fail to show element 314 as described in the specification. Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the

examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

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. Claims 1-4, 9, 10, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2009/0287332 (Adusumilli) in view of US 2004/0207662 (Anderson).

Claims 1-3:

Adusumilli teaches comprising 3D printer [0028, 0029, 0032] including a build volume, the 3D printer comprises a 3D scanner [0010] (the scanner is capable of scanning the build volume), and a machine vision system (This is taken to be a scanner driver for a computer with a GUI. It is necessary to include such a driver in order to interpret the information received from the scanner. The scanner is connected to the

computer [0020] and may include its own processor and interface). Adusumilli teaches that the data received from the scanning device may be stored in separate memory and be transferred to the fabricator [0020] and that the storage media could be located on a remote storage system [0024]. Adusumilli does not teach the use of a network interface or a web server.

Anderson teaches a system for fabricating 3D objects (abstract). Anderson teaches connecting a 3D fabricator (which may be an SFF device [0016]) to an interface controller. Anderson teaches that the interface controller may be a print server that receives information from the printer and then provides this information to a user's computer via a web page [0018]. It would have been obvious to one having ordinary skill in the art at the time of the invention to include a network interface and a web server motivated by a desire to give remote users access to the 3D printer.

Claim 4:

Fig. 1 of Anderson shows the GUI of a remote user connected to the 3D printer through network interface 104.

Claim 9:

When the machine vision system starts the scanner, automatic inspection of the scanned object is initiated.

Claim 10:

The machine vision system causes the printer to operate. This operation can be considered to be robotic. Therefore the system provides robotic guidance.

Claim 20:

Anderson teaches a print server that polls the status of the printer [0018] and teaches the use of a remote interface (fig 1). The information in the interface is updated with respect to the information gained in the polling process.

6. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 2009/0287332 (Adusumilli) in view of US 2004/0207662 (Anderson) as applied to claim 1 above, and further in view of US 2006/0127153 (Menchik).

Adusumilli and Anderson teach the aspects of applicant's claims previously mentioned but do not teach that the web server displays status information from a sensor. The interface taught by Anderson displays job status information related to how close to completion the print job is or the location of the print job in the queue. Menchik teaches the use of sensors associated with the print cartridges that monitor the amount of build material (abstract) and the use of a controller that sends messages to an operator [0006]. It would have been obvious to one having ordinary skill in the art at the time of the invention to use the material monitoring methods of Menchik in the interface taught by Anderson motivated by a desire to assist the user in managing the supply of materials for usage during a printing process [0005].

7. Claim 6 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 2009/0287332 (Adusumilli) in view of US 2004/0207662 (Anderson) as applied to claim 1 above, and further in view of US 2007/0172112 (Paley).

Adusumilli teaches the use of a scanner but does not teach that the scanner obtains 3D data using stereoscopic imaging. Paley teaches the acquisition of 3D data using stereoscopic imaging [0029]. Accordingly, spectroscopic imaging is an art

recognized scanning method for acquiring 3D data. It would have been obvious to one having ordinary skill in the art at the time of the invention to use a stereoscopic imaging method as performed by Paley as this is an art recognized method for obtaining 3D data.

8. Claim 7 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 2009/0287332 (Adusumilli) in view of US 2004/0207662 (Anderson) as applied to claim 1 above, and further in view of US 2004/0136574 (Kozakaya).

Adusumilli teaches the use of a scanner but does not teach that the scanner obtains 3D data using shape from motion. Kozakaya teaches the acquisition of 3D data from shape from motion [0009]. Accordingly, shape from motion is an art recognized scanning method for obtaining 3D data. It would have been obvious to one having ordinary skill in the art at the time of the invention to use the shape from motion imaging method as performed by Kozakaya as this is an art recognized method for obtaining 3D data.

9. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over US 2009/0287332 (Adusumilli) in view of US 2004/0207662 (Anderson) as applied to claim 1 above, and further in view of US 6,529,627 (Callari).

Adusumilli teaches the use of a scanner but does not teach that the scanner obtains data using the structured light technique. Callari teaches a method of obtaining 3D data using the structured light technique (abstract). Accordingly, the structured light technique is an art recognized scanning method for obtaining 3D data. It would have been obvious to one having ordinary skill in the art at the time of the invention to use the

structured light technique as performed by Callari as this is an art recognized method for obtaining 3D data.

10. Claims 11-19 are rejected under 35 U.S.C. 103(a) as being unpatentable over US 2009/0287332 (Adusumilli) in view of US 2004/0207662 (Anderson) as applied to claim 1 above, and further in view of US 7,168,935 (Taminger).

Claims 11 and 12:

Adusimilli and Anderson teach the aspects of applicant's claims previously mentioned but do not teach that the machine vision system provides a pass/fail evaluation of a fabricated object within the build volume.

Taminger teaches a system comprising a 3D printer having a build volume (SFF apparatus shown in figure 1), a video camera directed toward the build volume and configured to provide a video feed of the build (column 4 lines 56-58), a processor coupled to the 3D printer (22) and a network interface configured to couple the 3D printer and the processor (controlled deposition of material using CAD data and a computer-based system, column 3 lines 3-7; means for commanding and controlling the fabrication process, column 11 lines 11-14; the printer is connected to the computer) in a communicating relationship with a data network (means for networking, column 11 lines 20- 22; plurality of sensors interconnected by a network column 11 lines 24-28).

Taminger teaches providing sensor signals to an external PC via a wireless connection (column 12 lines 21-25). Taminger teaches that such sensor signals could be video information (column 11 lines 24-31) or a means for measuring processing conditions (column 11 lines 5-8). Taminger teaches that instrumentation in the container

provides signals to an external PC (column 12 lines 21-25). All of the controls and data acquisition are managed through a user interface (column 11 lines 33-34). Therefore, via the user interface, a pass/fail evaluation and error detection for the object may be obtained. It would have been obvious to one having ordinary skill in the art at the time of the invention to include the video feed and sensors of Taminger into the apparatus of the combined invention motivated by a desire to monitor and control the building process.

Claims 13 and 14:

The controls and data acquisition are managed through a user interface. The interface, in order to communicate to the user, would necessarily have to depend on sensory information. It would have been obvious to one having ordinary skill in the art to use a visual alert or an audio alert to communicate such information to the user as there are only 5 senses by which a user obtains such information.

Claims 15 and 16:

Anderson teaches that the print register has a "pass number" which is related to the rendered 3D wireframe model representing the amount of the job completed. Anderson teaches that the print driver calculates how many passes are required to complete the job and compares this to the pass number. At specified intervals, the server polls the printer for the pass number [0018]. The comparison between the pass number and the required number of passes determines the predicted progress. The polling of the printer compared to the number of passes required determines the actual progress. The use of the video camera in the build area coupled with the user interface

taught by Taminger provides the actual 3D result in the build volume which can be compared to the expected result.

Claims 17-19:

Since the system is capable of detecting an error in the fabrication process and the system is capable of initiating and terminating the process, it is taken to be capable of aborting the process upon the detection of an unrecoverable error. The misalignment of layers and the presence of an unexpected surface hole are other examples of errors in the fabrication process. Since the system is capable of monitoring the build volume, it is capable of recognizing these errors.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID N. BROWN II whose telephone number is (571)270-5497. The examiner can normally be reached on Monday-Thursday 9:30a-5:00p EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Del Sole can be reached on (571)-272-1130. 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.

/DAVID N BROWN II/
Examiner, Art Unit 1743

/JOSEPH S. DEL SOLE/

Supervisory Patent Examiner, Art Unit 1743

Notice of References Cited	Application/Control No. 13/556,368		Applicant(s)/Patent Under Reexamination PETTIS, NATHANIEL B.	
	Examiner DAVID N. BROWN II		Art Unit 1743	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	Classification
*	A	US-2009/0287332	11-2009	Adusumilli et al.	700/98
*	B	US-2004/0207662	10-2004	Anderson et al.	345/772
*	C	US-2006/0127153	06-2006	Menchik et al.	400/062
*	D	US-2007/0172112	07-2007	Paley et al.	382/154
*	E	US-2004/0136574	07-2004	Kozakaya et al.	382/118
*	F	US-6,529,627	03-2003	Callari et al.	382/154
*	G	US-7,168,935	01-2007	Taminger et al.	425/174.4
	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.

Electronic Acknowledgement Receipt	
EFS ID:	16705291
Application Number:	13556368
International Application Number:	
Confirmation Number:	9593
Title of Invention:	NETWORKED THREE-DIMENSIONAL PRINTER WITH THREE-DIMENSIONAL SCANNER
First Named Inventor/Applicant Name:	Nathaniel B. Pettis
Customer Number:	43520
Filer:	Robert A. Mazzaresse/Paula Ng
Filer Authorized By:	Robert A. Mazzaresse
Attorney Docket Number:	MBOT-0002-P06
Receipt Date:	28-AUG-2013
Filing Date:	24-JUL-2012
Time Stamp:	11:09:25
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	MBOT-0002-P06_082813_Form1449.pdf	78787 96e4ff1ed98ad4a8fdebe8b1a346d9afc294b95a	no	3

Warnings:

Information:

This is not an USPTO supplied IDS fillable form					
2	Foreign Reference	WO2013086309.pdf	3611724	no	81
			7def07874e23d330b872f01ac66f77cb566c02ed		
Warnings:					
Information:					
3	Non Patent Literature	NPL-34_SN13314337_NFOA-073113.pdf	1555431	no	37
			f85facda3ed924aa3fc482cb2cb8dcb8dfb105d5		
Warnings:					
Information:					
4	Non Patent Literature	NPL-39_SN13348896_NOA-080513.pdf	544887	no	12
			509b836ff8c40dcc8722cfb4ac8008b0014d385		
Warnings:					
Information:					
5	Non Patent Literature	NPL-35_SN13556315_NFOA-070513.pdf	1103455	no	28
			779a61447203f088da559110cca63fd836568		
Warnings:					
Information:					
6	Non Patent Literature	NPL-36_SN13556515_NFOA-080113.pdf	966060	no	25
			b25c0bb9c340636a85876e17d0ddfd5d8e72ef00		
Warnings:					
Information:					
7	Non Patent Literature	NPL-37_SN13557353_NFOA-080213.pdf	1122559	no	29
			edd9a50df1acde6b575f2f27b8a0a0029f771844		
Warnings:					
Information:					
Total Files Size (in bytes):			8982903		

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

Serial No.: 13/556,368
Filing Date: July 24, 2012
In re: PETTIS, Nathaniel B.
Art Unit: 1743
Examiner: BROWN II, David N.
Conf. No.: 9593

Commissioner for Patents
PO Box 1450
Alexandria, Virginia 22313-1450

AMENDMENT AND REMARKS

Dear Examiner:

Please enter and consider the following Amendment and Remarks, which are responsive to the non-final Office Action mailed July 11, 2013:

A Request for Extension of Time begins on page 2 of this paper.

Amendments to the Specification begin on page 3 of this paper.

Amendments to the Claims begin on page 4 of this paper.

Remarks begin on page 7 of this paper.

Request for Extension of Time

The applicant respectfully requests that the time for responding to the outstanding action be extended for one month, from October 11, 2013 to November 11, 2013, the next business day falling on November 12, 2013. The fee of \$200 as specified by 37 C.F.R. § 1.17(a)(1) accompanies this request.

Amendments to the Specification

Please replace paragraphs [0025] and [0042], respectively, of the as-filed Specification with the following amended paragraphs:

--[0025] The extruder 106 may include a heater 126 to melt thermoplastic or other meltable build materials within the chamber 122 for extrusion through an extrusion tip 124 in liquid form. While illustrated in block form, it will be understood that the heater ~~[[124]]~~126 may include, e.g., coils of resistive wire wrapped about the extruder 106, one or more heating blocks with resistive elements to heat the extruder 106 with applied current, an inductive heater, or any other arrangement of heating elements suitable for creating heat within the chamber 122 to melt the build material for extrusion. The extruder 106 may also or instead include a motor 128 or the like to push the build material into the chamber 122 and/or through the extrusion tip ~~[[126]]~~124.--

--[0042] Fig. 3 depicts a networked three-dimensional printing environment. In general, the environment 300 may include a data network 302 interconnecting a plurality of participating devices in a communicating relationship. The participating devices may, for example, include any number of three-dimensional printers 304 (also referred to interchangeably herein as “printers”), client devices 306, print servers 308, content sources 310, mobile devices ~~[[314]]~~312, and other resources 316.--

Amendments to the Claims

Please amend the claims according to the following claim listing, which replaces all prior versions and listings of the claims in this application:

1. (Currently amended) A three-dimensional printer including a build volume, the three-dimensional printer comprising:
 - a three-dimensional scanner configured to capture three-dimensional information from an object being fabricated within the build volume during a print job executing on the three-dimensional printer;
 - a machine vision system configured to capture and analyze image content from the three-dimensional scanner, thereby providing a status of ~~[[a]]~~the print job executing on the three-dimensional printer;
 - a network interface configured to couple the three-dimensional printer in a communicating relationship with a data network; and
 - a web server configured to transmit the status of the print job for display at a remote client through the network interface.
2. (Original) The system of claim 1 wherein the three-dimensional printer is a fused deposition modeling printer.
3. (Original) The system of claim 1 wherein the three-dimensional printer is a stereolithography printer.
4. (Original) The system of claim 1 wherein the web server is configured to host a remote user of the three-dimensional printer through the network interface.
5. (Original) The system of claim 1 wherein the web server displays status information from one or more sensors of the three-dimensional printer.
6. (Original) The system of claim 1 wherein the three-dimensional scanner obtains three-dimensional data using stereoscopic imaging.

7. (Original) The system of claim 1 wherein the three-dimensional scanner obtains three-dimensional data using shape from motion.

8. (Original) The system of claim 1 wherein the three-dimensional scanner obtains three-dimensional data using structured light techniques.

9. (Currently amended) The system of claim 1 wherein the machine vision system provides automatic inspection of ~~[[an]]the object~~ being fabricated within the build volume.

10. (Original) The system of claim 1 wherein the machine vision system provides a robotic guidance function for the three-dimensional printer.

11. (Currently amended) The system of claim 1 wherein the machine vision system provide a pass/fail evaluation of ~~a fabricated~~ the object being fabricated within the build volume.

12. (Currently amended) The system of claim 1 wherein the machine vision system provides error detection for ~~[[an]]the object~~ being fabricated within the build volume.

13. (Original) The system of claim 12 wherein the machine vision system creates an audible alert when an error is detected.

14. (Original) The system of claim 12 wherein the machine vision system creates a visual alert when an error is detected.

15. (Currently amended) The system of claim 1 wherein the machine vision system tracks actual progress of ~~[[a]]the~~ print job against a predicted progress of the print job.

16. (Original) The system of claim 1 wherein the machine vision system compares an actual three-dimensional result in the build volume with an expected three-dimensional result based upon a source model.
17. (Original) The system of claim 16 wherein the machine vision system is configured to abort a fabrication process of the three-dimensional printer upon detection of an unrecoverable error in the fabrication process.
18. (Original) The system of claim 16 wherein the machine vision system is configured to detect a misalignment of layers.
19. (Original) The system of claim 16 wherein the machine vision system is configured to detect an unexpected surface hole.
20. (Original) The system of claim 1 further comprising a processor configured to respond to a remote request for status from the machine vision system.

Remarks

Status of the Claims

Claims 1, 9, 11, 12 and 15 are amended. Claims 1–20 are presented for examination, where claim 1 is independent.

The claim amendments find support in at least ¶ [0035] of the as-filed Specification. No new matter is added.

Objections to the Specification and Drawings

Paragraph [0025] of the Specification is amended to correctly label the heater 126 and the extrusion tip 124 in response to the objection to the specification. Paragraph [0042] of the Specification is amended to correctly label the mobile devices as element number 312 in response to the objection to the drawings. No new matter is added by these amendments.

The applicant thanks the examiner for identifying these informalities, and requests that these objections be withdrawn in view of the changes above.

Claim Rejections – 35 U.S.C. § 103

Independent claim 1 stands rejected under 35 U.S.C. § 103(a) as obvious over U.S. Pat. Pub. No. 2009/0287332 to *Adusumilli, et al.* (“*Adusumilli*”) in view of U.S. Pat. Pub. No. 2004/0207662 to *Anderson, et al.* (“*Anderson*”). This rejection is traversed for at least the following reasons.

The applicant has devised a three-dimensional printing system with a scanner that captures three-dimensional information from an object being fabricated within the build volume during a print job.¹ A machine vision system captures images from the scanner and analyzes image content to obtain information about the status of the print job.² A remote user may then, through a web server and network interface, view the status of the print job. The claims have been amended to clarify that the scanner captures three-dimensional information from *an object being fabricated* within the build volume *during a print job* executing on the three-dimensional printer. There is no teaching or suggestion

¹ See As-filed Specification, ¶ [0035].

² *Id.*

of this inventive concept in the cited prior art.

Adusumilli is directed to a system for manufacturing a denture using a three-dimensional fabricator.³ In *Adusumilli*, a three-dimensional scanner “directly scan[s] portions of the upper or lower palate, or scan[s] an impression or model of the upper and/or lower palate.”⁴ The scan is then sent to a computer program that uses the scan to create a three-dimensional model of a denture, which is then constructed on a three-dimensional fabricator.⁵ All of the scanning in *Adusumilli* is done prior to fabrication for the purpose of “captur[ing] the contour of the entire upper or lower gum line” for creating a model as the basis for a denture fabrication.⁶ Because the scanner in *Adusumilli* expressly performs a scan prior to fabrication, there is no teaching or suggestion of a scanner that captures three-dimensional information from *an object being fabricated* within the build volume *during a print job* executing on the three-dimensional printer as presently claimed.

Anderson does not fill the void left by *Adusumilli*. *Anderson* is directed to a “method and apparatus for providing three-dimensional object fabrication status in the form of a progressively filled-in wireframe model representation of the three-dimensional object.”⁷ *Anderson* does not teach or suggest “a three-dimensional scanner configured to capture three-dimensional information from an object being fabricated within the build volume during a print job executing on the three-dimensional printer,” as presently claimed. Instead, *Anderson* includes “a print server which receives print job progress information from the printer(s) and then provides this information to the user’s computer via web pages or other active (real time) windows.”⁸ The “print progress information” in *Anderson* is determined by a status register that uses the “number of passes completed by the printhead” and compares this to “how many passes are required to complete the job.”⁹ This teaching does not lead directly or indirectly to the scanner of the present invention, which captures three-dimensional information from an object being fabricated during a

³ See, e.g., *Adusumilli*, Abstract.

⁴ *Id.* at ¶ [0010] (“The palate includes the gum line, musculature and tissue surrounding the gum line, and tissue forming the arch or areas between the gum line.”).

⁵ *Id.*; see also *id.* at ¶¶ [0020]–[0023] and [0040]–[0044].

⁶ *Id.* at ¶ [0022].

⁷ *Anderson*, ¶ [0015].

⁸ *Id.* at ¶ [0018].

⁹ *Id.*

print job.

For the foregoing reasons, independent claim 1 is believed to be patentable over the art of record. The remaining claims depend from an allowable base claim and are likewise in condition for allowance. The applicant requests reconsideration and withdrawal of the outstanding claim rejections under 35 U.S.C. § 103.

Conclusion

In view of the foregoing, the applicant believes that the currently pending claims are in condition for allowance and respectfully requests a corresponding Notice of Allowance.

The applicant believes that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed.

Nothing in this paper should be construed as intent to concede any issue with regard to any claim, except as specifically stated in this paper. The amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

The Director is hereby authorized to charge any fees or to credit any overpayments associated with this filing to Deposit Account No. 50-4262. If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at (617) 916-2658.

Respectfully submitted
STRATEGIC PATENTS, P.C.

/Robert Mazzaresse/
Robert A. Mazzaresse
Reg. No. 42,852
Tel.: (617)-916-2658

November 12, 2013

Electronic Patent Application Fee Transmittal				
Application Number:		13556368		
Filing Date:		24-Jul-2012		
Title of Invention:		NETWORKED THREE-DIMENSIONAL PRINTER WITH THREE-DIMENSIONAL SCANNER		
First Named Inventor/Applicant Name:		Nathaniel B. Pettis		
Filer:		John H. Nortrop		
Attorney Docket Number:		MBOT-0002-P06		
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 - 1 month with \$0 paid	1251	1	200	200

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Total in USD (\$)				200

Electronic Acknowledgement Receipt	
EFS ID:	17380732
Application Number:	13556368
International Application Number:	
Confirmation Number:	9593
Title of Invention:	NETWORKED THREE-DIMENSIONAL PRINTER WITH THREE-DIMENSIONAL SCANNER
First Named Inventor/Applicant Name:	Nathaniel B. Pettis
Customer Number:	43520
Filer:	John H. Nortrop
Filer Authorized By:	
Attorney Docket Number:	MBOT-0002-P06
Receipt Date:	12-NOV-2013
Filing Date:	24-JUL-2012
Time Stamp:	16:31:38
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$200
RAM confirmation Number	4108
Deposit Account	504262
Authorized User	NORTRUP, JOHN
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)	

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		MBOT-0002-P06_111213_OAResponse.pdf	142061 7e026d5fe29debed9e1af7421fccbbdadcc0ec38	yes	10
	Multipart Description/PDF files in .zip description				
	Document Description	Start	End		
	Amendment/Req. Reconsideration-After Non-Final Reject	1	1		
	Extension of Time	2	2		
	Specification	3	3		
	Claims	4	6		
	Applicant Arguments/Remarks Made in an Amendment	7	10		
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30356 33d71f6b72078de4c84e7fabcb8bbb974745a3ac	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			172417		
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.					

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 13/556,368		Filing Date 07/24/2012		☐ 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	11/12/2013		CLAIMS REMAINING AFTER AMENDMENT			HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA		
	Total (37 CFR 1.16(i))		* 20		Minus	** 20	= 0		
	Independent (37 CFR 1.16(h))		* 1		Minus	*** 3	= 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		
	Total (37 CFR 1.16(i))		*		Minus	**	=		
	Independent (37 CFR 1.16(h))		*		Minus	***	=		
	☐ 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.									

LIE
/RENEE COLLINS/

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.**

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	13/556,368
	Filing Date	Jul 24, 2012
	First Named Inventor	Nathaniel B. Pettis
	Art Unit	1743
	Examiner Name	BROWN II, DAVID N
Sheet 1 of 2	Attorney Docket No.	MBOT-0002-P06

U.S. PATENTS						
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear

U.S. PATENT APPLICATION PUBLICATIONS						
Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear

FOREIGN PATENT DOCUMENTS								
Examiner Initial*	Cite No	Foreign Document Number ³	Cnty Code ²	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	T ⁵

NON-PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No	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 ⁵
	NPL-43	, "Application Serial No. 13/556,698 (Atty Ref MBOT-0002-P08), Non-Final Office Action mailed 10-04-2013", 30 pages	
	NPL-44	, "Application Serial No. 13/557,616 (Atty Ref MBOT-0002-P10), Non-Final Office Action mailed 10-01-2013", 27 pages	

EXAMINER SIGNATURE			
Examiner Signature		Date Considered	

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	13/556,368
	Filing Date	Jul 24, 2012
	First Named Inventor	Nathaniel B. Pettis
	Art Unit	1743
	Examiner Name	BROWN II, DAVID N
Sheet 2 of 2	Attorney Docket No.	MBOT-0002-P06

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (1).

OR

☒ That no item of information contained in the 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 the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (2).

☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ Applicant believes that no fees are required with this filing. However, if an Office Action on the merits has been mailed, or a fee is otherwise required, the Commissioner is hereby authorized to charge any fees due under 37 C.F.R. §§1.16 or 1.17, or to credit any overpayments, to Deposit Account No. 50-4262 in order to have this information disclosure statement considered.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Robert Mazzaresse/	Date (YYYY-MM-DD)	2013-11-13
Name/Print	Robert A. Mazzaresse	Registration Number	42,852

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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.**

Electronic Acknowledgement Receipt	
EFS ID:	17392323
Application Number:	13556368
International Application Number:	
Confirmation Number:	9593
Title of Invention:	NETWORKED THREE-DIMENSIONAL PRINTER WITH THREE-DIMENSIONAL SCANNER
First Named Inventor/Applicant Name:	Nathaniel B. Pettis
Customer Number:	43520
Filer:	Robert A. Mazzaresse/Paula Ng
Filer Authorized By:	Robert A. Mazzaresse
Attorney Docket Number:	MBOT-0002-P06
Receipt Date:	13-NOV-2013
Filing Date:	24-JUL-2012
Time Stamp:	15:40:25
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	MBOT-0002-P06_111313_Form1449.pdf	76615 eb9df06b97eeaf8f8b3524fdeb2dce43b7c0c6a	no	2

Warnings:

Information:

This is not an USPTO supplied IDS fillable form					
2	Non Patent Literature	NPL-43_SN13556698_NFOA-10 0413.pdf	1221113 a77c8845cb39a36462b69ad65437db9140f 26565	no	30
Warnings:					
Information:					
3	Non Patent Literature	NPL-44_SN13557616_NFOA-10 0113.pdf	1139189 571dd8b93930ea52acbc83bcb41b34de43 71f73e	no	27
Warnings:					
Information:					
Total Files Size (in bytes):			2436917		
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.					



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/556,368	07/24/2012	Nathaniel B. Pettis	MBOT-0002-P06	9593
43520 7590 12/03/2013 STRATEGIC PATENTS P.C. P.O. BOX 920629 NEEDHAM, MA 02492			EXAMINER BROWN II, DAVID N	
			ART UNIT 1743	PAPER NUMBER
			NOTIFICATION DATE 12/03/2013	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):

patents@stratpat.com

Office Action Summary	Application No. 13/556,368	Applicant(s) PETTIS, NATHANIEL B.	
	Examiner DAVID N. BROWN II	Art Unit 1743	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 MONTHS 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 11/12/2013.
☐ 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) 1-20 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) 1-20 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) | 3) ☐ Interview Summary (PTO-413) |
| 2) ☒ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b) | Paper No(s)/Mail Date. ____. |
| Paper No(s)/Mail Date <u>11/13/2013 08/28/2013</u> | 4) ☐ Other: ____. |

1. The present application is being examined under the pre-AIA first to invent provisions.

DETAILED ACTION

This is a non-final action in response to 11/12/2013.

Double Patenting

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the “right to exclude” granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory double patenting rejection is appropriate where the claims at issue are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the reference application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of

activities undertaken within the scope of a joint research agreement. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO internet Web site contains terminal disclaimer forms which may be used. Please visit <http://www.uspto.gov/forms/>. The filing date of the application will determine what form should be used. A web-based eTerminal Disclaimer may be filled out completely online using web-screens. An eTerminal Disclaimer that meets all requirements is auto-processed and approved immediately upon submission. For more information about eTerminal Disclaimers, refer to <http://www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp>.

3. Claims 1-20 are rejected on the ground of nonstatutory double patenting as being unpatentable over claim 2 of U.S. Patent No. 8,562,324 in view of US 2004/0207662 (Anderson), US 2006/0127153 (Menchik), US 2007/0172112 (Paley), US 6,529,627 (Callari), and US 7,168,935 (Taminger).

US 8,562,324 claims the use of a user interface provided to a remote user comprising a two-dimensional projection of a three dimensional model which is obtained from a three-dimensional scanner. US 8,562,324 does not teach the use of a machine vision system or a web server. Anderson teaches a system for fabricating 3D objects (abstract). Anderson teaches connecting a 3D fabricator (which may be an SFF device [0016]) to an interface controller. Anderson teaches that the interface controller may be a print server that receives information from the printer and then provides this information to a user's computer via a web page [0018]. It would have been obvious to one having ordinary skill in the art at the time of the invention to include a network

interface and a web server motivated by a desire to give remote users access to the 3D printer. As for claims 2-20, the cited prior art teaches or renders the claims obvious as indicated in the previous office action dated 07/11/2013.

4. Claims 1-20 are provisionally rejected on the ground of nonstatutory double patenting as being unpatentable over claim 19 of copending Application No. 13/556,315. Although the claims at issue are not identical, they are not patentably distinct from each other because claim 19 teaches a 3D scanner directed toward the build volume to extract 3D information from the build volume. 13/556,315 does not teach the inclusion of a machine vision system, however, the aforementioned prior art teaches or renders obvious the limitations of applicant's claims as indicated.

This is a provisional nonstatutory double patenting rejection because the patentably indistinct claims have not in fact been patented.

Allowable Subject Matter

5. Claims 1-20 would be allowable if a timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) is used to overcome the rejections based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID N. BROWN II whose telephone number is

(571)270-5497. The examiner can normally be reached on Monday-Thursday 9:30a-5:00p EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Del Sole can be reached on (571)-272-1130. 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.

/DAVID N BROWN II/
Examiner, Art Unit 1743

/JOSEPH S. DEL SOLE/

Supervisory Patent Examiner, Art Unit 1743

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	1028	pettis.inv. or pax.inv.	US-PGPUB; USPAT; USOCR; DERWENT	ADJ	ON	2013/11/26 11:46
L2	4	1 and scanner.clm.	US-PGPUB; USPAT; USOCR; DERWENT	ADJ	ON	2013/11/26 11:46
S1	21	((NATHANIEL) near2 (PETTIS)).INV.	US-PGPUB; USPAT	ADJ	ON	2013/06/11 16:14
S2	52	((("20090164379") or ("7168935") or ("20060127153") or ("20040175450") or ("6490496") or ("6195205") or ("6193923") or ("5738817") or ("20120280415") or ("20110137578") or ("20110029591") or ("20100131584") or ("20080269939") or ("20080228434") or ("20080018018") or ("20070172112") or ("20070124436") or ("20070088640") or ("20070061393") or ("20060192315") or ("20060111807") or ("20060095152") or ("20060077413") or ("20050234577") or ("20040207662") or ("20040203872")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/12 10:41
S3	2	("20110313878").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/12 10:45
S4	34	((("7168935") or ("8286236") or ("20120280415") or ("20060192315") or ("20080018018") or ("20110029591") or ("20060041443") or ("20040232601") or ("5637175") or ("6129872") or ("20040175450") or ("4097566") or ("20020195746") or ("5192559") or ("5730817") or ("6841116") or ("4097566")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/12 11:06
S5	2	("20120287472").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/12 12:17
S6	2	("20120105903").PN.	US-PGPUB; USPAT; USOCR;	OR	OFF	2013/06/12 12:18

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S7	10290	((264/401) or (264/40.1) or (425/130) or (425/131.1) or (425/135) or (425/144) or (425/174.4) or (425/375)).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/12 14:34
S8	1646	((700/98) or (700/118) or (700/204)).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/12 14:35
S9	76	S7 and S8	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/12 14:35
S10	52	((("20090164379") or ("7168935") or ("20060127153") or ("20040175450") or ("6490496") or ("6195205") or ("6193923") or ("5738817") or ("20120280415") or ("20110137578") or ("20110029591") or ("20100131584") or ("20080269939") or ("20080228434") or ("20080018018") or ("20070172112") or ("20070124436") or ("20070088640") or ("20070061393") or ("20060192315") or ("20060111807") or ("20060095152") or ("20060077413") or ("20050234577") or ("20040207662") or ("20040203872"))).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/12 14:36
S11	34	((("7168935") or ("8286236") or ("20120280415") or ("20060192315") or ("20080018018") or ("20110029591") or ("20060041443") or ("20040232601") or ("5637175") or ("6129872") or ("20040175450") or ("4097566") or ("20020195746") or ("5192559") or ("5730817") or ("6841116") or ("4097566"))).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/12 14:36
S12	18	(S10 or S11) and web	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/12 14:36
S13	12	(S10 or S11) and stereolithography	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/12 15:45

S14	3	("4575330").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/12 16:11
S15	52	((("20090164379") or ("7168935") or ("20060127153") or ("20040175450") or ("6490496") or ("6195205") or ("6193923") or ("5738817") or ("20120280415") or ("20110137578") or ("20110029591") or ("20100131584") or ("20080269939") or ("20080228434") or ("20080018018") or ("20070172112") or ("20070124436") or ("20070088640") or ("20070061393") or ("20060192315") or ("20060111807") or ("20060095152") or ("20060077413") or ("20050234577") or ("20040207662") or ("20040203872")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/13 11:29
S16	34	((("7168935") or ("8286236") or ("20120280415") or ("20060192315") or ("20080018018") or ("20110029591") or ("20060041443") or ("20040232601") or ("5637175") or ("6129872") or ("20040175450") or ("4097566") or ("20020195746") or ("5192559") or ("5730817") or ("6841116") or ("4097566")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/13 11:29
S17	10294	((264/401) or (264/40.1) or (425/130) or (425/131.1) or (425/135) or (425/144) or (425/174.4) or (425/375)).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/13 11:29
S18	1647	((700/98) or (700/118) or (700/204)).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/13 11:29
S19	76	S17 and S18	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/13 11:29
S20	11	cellular and (S16 or S15 or S19)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/13 11:29
S21	0	((3d or "3"?d or "3"?dimensional) near3 scanner) and (S16 or S15 or S19)	US-PGPUB; USPAT; USOCR;	ADJ	ON	2013/06/13 12:25

			FPRS; EPO; JPO; DERWENT; IBM_TDB			
S22	0	((3d or "3"?d or "3"?dimensional) near3 scanner) and (S16 or S15 or S19)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/13 12:26
S23	1305	(3d or "3"?d or "3"?dimensional) scanner	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/13 12:26
S24	0	S23 and S19	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/13 12:27
S25	45	S23 and S18	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/13 12:27
S26	7	S23 and S17	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/13 12:41
S27	10311	((264/401) or (264/40.1) or (425/130) or (425/131.1) or (425/135) or (425/144) or (425/174.4) or (425/375)).OCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/25 14:57
S28	1652	((700/98) or (700/118) or (700/204)).OCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/25 14:57
S29	11887	S27 or S28	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/25 14:57
S30	1313	(3d or "3"?d or "3"?dimensional) scanner	US-PGPUB;	ADJ	ON	2013/06/25

			USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			15:02
S31	16208	(3d or "3"?d or "3"?dimensional) near5 (scan or scanning or scanned or scanner)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/25 15:03
S32	14895	S31 xor S30	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/25 15:03
S33	16208	S30 or S31	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/25 15:03
S34	238	S33 and S29	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/25 15:03
S35	108	("20120287459" "20070061393" "5738817" "6193923" "2012011" "20020194746" "20120049779" "20120287473" "20060077413" "20080269939" "20120059504" "20120113473" "4097566" "5730817" "6841116" "8226395" "20120287472" "8286236" "20050234577" "20060127153" "20060192315" "20120287470" "7168935" "20120105903" "20040232601" "20070124436" "20090164379" "20110029591" "6195205" "20120059503" "20040175450" "20040203872" "20060041443" "20060111807" "20070088640" "20070172112" "20080018018" "20120092724" "5192559" "6129872" "8282380" "20080228434" "6490496" "20040175450" "5637175" "20120287259" "20060095152" "20100131584" "20110137578" "20120280415").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/26 11:25
S36	0	shape from motion	US-PGPUB; USPAT; USOCR; FPRS;	ADJ	ON	2013/06/27 10:31

			EPO; JPO; DERWENT; IBM_TDB			
S37	20	shape?from?motion	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/27 10:32
S38	10318	((264/401) or (264/40.1) or (425/130) or (425/131.1) or (425/135) or (425/144) or (425/174.4) or (425/375)).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/27 10:39
S39	1652	((700/98) or (700/118) or (700/204)).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/27 10:39
S40	11894	S38 or S39	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/27 10:39
S41	1315	(3d or "3"?d or "3"?dimensional) scanner	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/27 10:39
S42	16224	(3d or "3"?d or "3"?dimensional) near5 (scan or scanning or scanned or scanner)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/27 10:39
S43	16224	S41 or S42	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/27 10:39
S44	238	S43 and S40	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/27 10:39
S45	108	("20120287459" "20070061393" "5738817" "6193923" "2012011"	US-PGPUB; USPAT;	ADJ	ON	2013/06/27 10:39

		"20020194746" "20120049779" "20120287473" "20060077413" "20080269939" "20120059504" "20120113473" "4097566" "5730817" "6841116" "8226395" "20120287472" "8286236" "20050234577" "20060127153" "20060192315" "20120287470" "7168935" "20120105903" "20040232601" "20070124436" "20090164379" "20110029591" "6195205" "20120059503" "20040175450" "20040203872" "20060041443" "20060111807" "20070088640" "20070172112" "20080018018" "20120092724" "5192559" "6129872" "8282380" "20080228434" "6490496" "20040175450" "5637175" "20120287259" "20060095152" "20100131584" "20110137578" "20120280415").PN.	USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S46	346	S44 or S45	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/27 10:39
S47	34	S46 and sensor and supply	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/27 10:40
S48	147	structured light technique	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/27 11:27
S49	14328	printer and driver and (sound or audible or wav or ?wav) and error	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/27 12:27
S50	802	(3d or "3"?d or "3"?dimensional) printer	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/27 12:27
S51	8	S49 and S50	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	ADJ	ON	2013/06/27 12:28

			DERWENT; IBM_TDB			
S52	2034	(printer near3 driver) and (sound or audible or wav or ?wav) and error	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/27 12:52
S53	11971	(rapid prototyping) or ((3d or "3"?d or "3"?dimensional) (printer or printing))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/27 12:53
S54	2	S52 and S53	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/27 12:53
S55	10318	((264/401) or (264/40.1) or (425/130) or (425/131.1) or (425/135) or (425/144) or (425/174.4) or (425/375)).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/28 09:46
S56	1652	((700/98) or (700/118) or (700/204)).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/28 09:46
S57	348	((alignment or misalignment or aligned or misaligned or aligning or misaligning or mis?alignment or mis?aligned or mis?aligning) near5 (layer or slice or section)) and (S55 or S56)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/28 09:46
S58	447	(surface near5 hole) and (S55 or S56)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/28 10:14
S59	157	S58 and (3d or "3"?d or "3"?dimensional or sl or sls or (rapid prototyping) or fdm or (fused deposition))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/28 10:15
S60	14	((("20080309665") or ("20070264727") or ("20070024895") or ("20040162629") or ("20040030741") or ("20040010801") or	US-PGPUB; USPAT; USOCR;	OR	OFF	2013/11/18 19:52

		("20030200308")).PN.	FPRS; EPO; JPO; DERWENT; IBM_TDB			
S61	14116	("3"?d or "3"?dimensional or "3"?dimension or three?dimensional or three?dimension) near3 (scan or scanning or scanner)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/11/18: 19:58
S62	11179	((264/401) or (264/40.1) or (425/130) or (425/131.1) or (425/135) or (425/144) or (425/174.4) or (425/375)).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/11/18: 19:59
S63	1959	((700/98) or (700/118) or (700/204)).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/11/18: 19:59
S64	223	S61 and (S62 or S63)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/11/18: 19:59
S65	733	((("3"?d or "3"?dimensional or "3"?dimension or three?dimensional or three?dimension) near3 (scan or scanning or scanner)) and ("3"?d printer or "3"?d? printing or three?dimensional printing or "3"?dimension printing or stereolithography or rapid prototyping or fdm or fused deposition or laser sintering or laser sinter)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/11/18: 20:13
S66	360	(view or watch or live or real?time or examine or inspect or viewed or viewing or watching or watched or examining or examined or inspecting or inspected or survey or surveyed or surveying or surveyed or observe or observing or observed or check or checking or checked) near ((("3"?d or "3"?dimensional or "3"?dimension or three?dimensional or three?dimension) near3 (scan or scanning or scanner))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/11/18: 20:18
S67	8	S65 and S66	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/11/18: 20:19
S68	4849	((425/131.1) or (425/375) or (264/40.1)).CCLS.	US-PGPUB; USPAT;	OR	OFF	2013/11/18: 20:27

EAST Search History

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S69	1797	((700/98) or (700/118)).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/11/18 20:29

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S70	1	((425/131.1) or (425/375) or (264/40.1)).CCLS.	UPAD	OR	OFF	2013/11/19 08:45
S71	4	((700/98) or (700/118)).CCLS.	UPAD	OR	OFF	2013/11/19 08:45
S72	0	("(scannerandprinterandnetworkandserver).clm. ").PN.	US- PGPUB; USPAT; UPAD	OR	OFF	2013/11/21 17:08
S73	300	(scanner and printer and server).clm.	USPAT; UPAD	ADJ	ON	2013/11/21 17:09
S74	207	(scanner and printer and server and network).clm.	USPAT; UPAD	ADJ	ON	2013/11/21 17:09
S75	101	(scanner and printer and server and network and (gui or interface or vision system)).clm.	USPAT; UPAD	ADJ	ON	2013/11/21 17:09

11/ 26/ 2013 1:08:52 PM

C:\Users\dbrown\Documents\EAST\Workspaces\13556368.wsp

Receipt date: 08/28/2013

13556368 - GAU: 1743

Doc code: IDS
 Doc description: Information Disclosure Statement (IDS) Field

SUBSTITUTE PTO/SB/08 (01-10)
 SPPC v1.5 011712

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	13/556,368
	Filing Date	Jul 24, 2012
	First Named Inventor	Nathaniel B. Pettis
	Art Unit	1743
	Examiner Name	BROWN II, DAVID N
Sheet 1 of 3	Attorney Docket No.	MBOT-0002-P06

U.S. PATENTS						
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-8425218		Apr 23, 2013	Pettis, Nathaniel B.	
		US-7958236		Jun 7, 2011	Motoyama, Tetsuro et al.	
		US-4575330		Mar 11, 1986	HULL, CHARLES	

U.S. PATENT APPLICATION PUBLICATIONS						
Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-20080309665		Dec 18, 2008	Gregory, II et al.	
		US-20070265727		Nov 15, 2007	Bae, Seockhoon et al.	
		US-20070024895		Feb 1, 2007	Clark, Gordon R.	
		US-20040162629		Aug 19, 2004	Kondou, Nobuyuki et al.	
		US-20040030741		Feb 12, 2004	Wolton, Richard E., et al.	
		US-20040010801		Jan 15, 2004	Kim, Kyong H., et al.	
		US-20030200308		Oct 23, 2003	Tameda, Eiji et al.	

FOREIGN PATENT DOCUMENTS								
Examiner Initial*	Cite No	Foreign Document Number ³	Cnty Code ²	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	T ⁵
		WO-2013086309			Jun 13, 2013	PETTIS, Nathaniel		

NON-PATENT LITERATURE DOCUMENTS

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DNB I

Receipt date: 08/28/2013

13556368 - GAU: 1743

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Field

SUBSTITUTE PTO/SB/08 (01-10)
SPPC v1.5 011712

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	13/556,368
	Filing Date	Jul 24, 2012
	First Named Inventor	Nathaniel B. Pettis
	Art Unit	1743
	Examiner Name	BROWN II, DAVID N
Sheet 2 of 3	Attorney Docket No.	MBOT-0002-P06

Examiner Initials*	Cite No	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 ⁵
	NPL-34	, "Application Serial No. 13/314,337(Atty Ref MBOT-0002-P01), Non-Final Office Action mailed 07-31-2013", 37 pages	
	NPL-39	, "Application Serial No. 13/348,896 (Atty Ref MBOT-0002-P04) Notice of Allowance dated 08-05-2013", 12 pages	
	NPL-35	, "Application Serial No. 13/556,315 (Atty Ref: MBOT-0002-P05), Non-Final Office Acton mailed 07/05/2013", 28 pages	
	NPL-36	, "Application Serial No. 13/556,515 (Atty Ref MBOT-0002-P07), Non-Final Office Action mailed 08-01-2013", 25 pages	
	NPL-37	, "Application Serial No. 13/557,353 (Atty Ref MBOT-0002-P09), Non-Final Office Action mailed 08-02-2013", 29 pages	

EXAMINER SIGNATURE			
Examiner Signature	/David Brown II/	Date Considered	11/26/2013
*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.			
¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.			

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DNB I

Receipt date: 08/28/2013

13556368 - GAU: 1743

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Field

SUBSTITUTE PTO/SB/08 (01-10)
SPPC v1.5 011712

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	13/556,368
	Filing Date	Jul 24, 2012
	First Named Inventor	Nathaniel B. Pettis
	Art Unit	1743
	Examiner Name	BROWN II, DAVID N
Sheet 3 of 3	Attorney Docket No.	MBOT-0002-P06

CERTIFICATION STATEMENT

Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):

☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (1).

OR

☒ That no item of information contained in the 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 the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (2).

☐ See attached certification statement.

☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.

☒ Applicant believes that no fees are required with this filing. However, if an Office Action on the merits has been mailed, or a fee is otherwise required, the Commissioner is hereby authorized to charge any fees due under 37 C.F.R. §§1.16 or 1.17, or to credit any overpayments, to Deposit Account No. 50-4262 in order to have this information disclosure statement considered.

SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Robert Mazzaresse/	Date (YYYY-MM-DD)	2013-08-28
Name/Print	Robert A. Mazzaresse	Registration Number	42,852

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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.**

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DNB I

Receipt date: 11/13/2013

13556368 - GAU: 1743

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SPPC v1.5 011712

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	13/556,368
	Filing Date	Jul 24, 2012
	First Named Inventor	Nathaniel B. Pettis
	Art Unit	1743
	Examiner Name	BROWN II, DAVID N
Sheet 1 of 2	Attorney Docket No.	MBOT-0002-P06

U.S. PATENTS						
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear

U.S. PATENT APPLICATION PUBLICATIONS						
Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear

FOREIGN PATENT DOCUMENTS								
Examiner Initial*	Cite No	Foreign Document Number ³	Cnty Code ²	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	T ⁵

NON-PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No	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 ⁵
	NPL-43	, "Application Serial No. 13/556,698 (Atty Ref MBOT-0002-P08), Non-Final Office Action mailed 10-04-2013", 30 pages	
	NPL-44	, "Application Serial No. 13/557,616 (Atty Ref MBOT-0002-P10), Non-Final Office Action mailed 10-01-2013", 27 pages	

EXAMINER SIGNATURE			
Examiner Signature	/David Brown II/	Date Considered	11/26/2013

*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.

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

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Receipt date: 11/13/2013

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Doc code: IDS
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SUBSTITUTE PTO/SB/08 (01-10)
SPPC v1.5 011712

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	13/556,368
	Filing Date	Jul 24, 2012
	First Named Inventor	Nathaniel B. Pettis
	Art Unit	1743
	Examiner Name	BROWN II, DAVID N
Sheet 2 of 2	Attorney Docket No.	MBOT-0002-P06

CERTIFICATION STATEMENT

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SIGNATURE

A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.

Signature	/Robert Mazzaresse/	Date (YYYY-MM-DD)	2013-11-13
Name/Print	Robert A. Mazzaresse	Registration Number	42,852

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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.**

ALL REFERENCES CONSIDERED EXCEPT WHERE LINED THROUGH. /DNB I

Search Notes 	Application/Control No. 13556368	Applicant(s)/Patent Under Reexamination PETTIS, NATHANIEL B.
	Examiner DAVID N BROWN II	Art Unit 1743

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
425264700	131.137540.198118	21 NOV 2013	DNB II

SEARCH NOTES		
Search Notes	Date	Examiner
inv PETTIS searchedreviewed 13/34889613/34886313/34872813/85862213/29236813/556315search assist J DelSole264/ 401 40.1 text limited425/ 130 131.1 135 144 174.4 375 text limited700/ 98 118 204 text limitedupdated search	07/11/201321 NOV 2013	DNB IIDNB II

INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
425	131.1	21 NOV 2013	DNB II
	375		
264	40.1		
700	98		
	118included PGPUB/UPAD text search		

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	13/556,368
	Filing Date	Jul 24, 2012
	First Named Inventor	Nathaniel B. Pettis
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Sheet 1 of 3	Attorney Docket No.	MBOT-0002-P06

U.S. PATENTS						
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear

U.S. PATENT APPLICATION PUBLICATIONS						
Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		US-20110126236		May 26, 2011	Arrasvuori, Juha et al.	
		US-20050066279		Mar 24, 2005	LeBarton, Jeffrey et al.	

FOREIGN PATENT DOCUMENTS								
Examiner Initial*	Cite No	Foreign Document Number ³	Cnty Code ²	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	T ⁵

NON-PATENT LITERATURE DOCUMENTS			
Examiner Initials*	Cite No	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 ⁵
	NPL-45	"Application Serial No. 13/314,337(Atty Ref MBOT-0002-P01), Final Office Action mailed 11-20-2013", 22 pages	
	NPL-46	"Application Serial No. 13/556,315 (Atty Ref: MBOT-0002-P05), Final Office Acton mailed 11-19-2013", 20 pages	
	NPL-47	"Application Serial No. 13/556,515 (Atty Ref MBOT-0002-P07), Final Office Action mailed 11-20-2013", 19 pages	
	NPL-48	"Application Serial No. 13/557,353 (Atty Ref MBOT-0002-P09), Final Office Action mailed 11-19-2013", 20 pages	

EXAMINER SIGNATURE

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	13/556,368
	Filing Date	Jul 24, 2012
	First Named Inventor	Nathaniel B. Pettis
	Art Unit	1743
	Examiner Name	BROWN II, DAVID N
Sheet 2 of 3	Attorney Docket No.	MBOT-0002-P06

Examiner Signature		Date Considered	
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SIGNATURE			
A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.			
Signature	/Robert Mazzaresel/	Date (YYYY-MM-DD)	2013-12-03
Name/Print	Robert A. Mazzaresel	Registration Number	42,852

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	13/556,368
	Filing Date	Jul 24, 2012
	First Named Inventor	Nathaniel B. Pettis
	Art Unit	1743
	Examiner Name	BROWN II, DAVID N
Sheet 3 of 3	Attorney Docket No.	MBOT-0002-P06

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Electronic Acknowledgement Receipt	
EFS ID:	17548747
Application Number:	13556368
International Application Number:	
Confirmation Number:	9593
Title of Invention:	NETWORKED THREE-DIMENSIONAL PRINTER WITH THREE-DIMENSIONAL SCANNER
First Named Inventor/Applicant Name:	Nathaniel B. Pettis
Customer Number:	43520
Filer:	Robert A. Mazzaresse/Paula Ng
Filer Authorized By:	Robert A. Mazzaresse
Attorney Docket Number:	MBOT-0002-P06
Receipt Date:	03-DEC-2013
Filing Date:	24-JUL-2012
Time Stamp:	11:37:39
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Information Disclosure Statement (IDS) Form (SB08)	MBOT-0002-P06_120313_Form1449.pdf	79366 cfe306750f37b72e156e39651e0b20917ee84e66	no	3

Warnings:

Information:

This is not an USPTO supplied IDS fillable form					
2	Non Patent Literature	NPL-45_SN13314337_FOA-112 013.pdf	845682 2e767a7320211a5edd74feaea3e507b977d3198	no	22
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Information:					
3	Non Patent Literature	NPL-46_SN13556315_FOA-111 913.pdf	757676 46c4cc0cc4d6feb5f925e9ea85fe8eb2ff4c a3b	no	20
Warnings:					
Information:					
4	Non Patent Literature	NPL-47_SN13556515_FOA-112 013.pdf	679900 8be00b1742e03f7aecd0d5bcc165dd49be7 30ce5	no	19
Warnings:					
Information:					
5	Non Patent Literature	NPL-48_SN13557353_FOA-111 913.pdf	748184 eb4782d21cf137b7534a3b348cade93dd7d ed9a6	no	20
Warnings:					
Information:					
Total Files Size (in bytes):			3110808		
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.					

Doc Code: DIST.E.FILE Document Description: Electronic Terminal Disclaimer - Filed		PTO/SB/25 PTO/SB/26 U.S. Patent and Trademark Office Department of Commerce
Electronic Petition Request	TERMINAL DISCLAIMER TO OBVIATE A PROVISIONAL DOUBLE PATENTING REJECTION OVER A PENDING "REFERENCE" APPLICATION AND TERMINAL DISCLAIMER TO OBVIATE A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT	
Application Number	13556368	
Filing Date	24-Jul-2012	
First Named Inventor	Nathaniel Pettis	
Attorney Docket Number	MBOT-0002-P06	
Title of Invention	NETWORKED THREE-DIMENSIONAL PRINTER WITH THREE-DIMENSIONAL SCANNER	
☒ Filing of terminal disclaimer does not obviate requirement for response under 37 CFR 1.111 to outstanding Office Action ☒ This electronic Terminal Disclaimer is not being used for a Joint Research Agreement.		
Owner	Percent Interest	
MakerBot Industries, LLC	100 %	
The owner(s) of percent interest listed above in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of any patent granted on pending reference Application Number(s)		
13556315 filed on 07/24/2012 as the term of any patent granted on said reference application may be shortened by any terminal disclaimer filed prior to the grant of any patent on the pending reference application. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and any patent granted on the reference application are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns. In making the above disclaimer, the owner does not disclaim the terminal part of any patent granted on the instant application that would extend to the expiration date of the full statutory term of any patent granted on said reference application, "as the term of any patent granted on said reference application may be shortened by any terminal disclaimer filed prior to the grant of any patent on the pending reference application," in the event that any such patent granted on the pending reference application: expires for failure to pay a maintenance fee, is held unenforceable, is found invalid by a court of competent jurisdiction, is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321, has all claims canceled by a reexamination certificate, is reissued, or is in any manner terminated prior to the expiration of its full statutory term as shortened by any terminal disclaimer filed prior to its grant.		
The owner(s) with percent interest listed above in the instant application hereby disclaims, except as provided below, the terminal part of the statutory term of any patent granted on the instant application which would extend beyond the expiration date of the full statutory term of prior patent number(s)		

8562324

as the term of said prior patent is presently shortened by any terminal disclaimer. The owner hereby agrees that any patent so granted on the instant application shall be enforceable only for and during such period that it and the prior patent are commonly owned. This agreement runs with any patent granted on the instant application and is binding upon the grantee, its successors or assigns.

In making the above disclaimer, the owner does not disclaim the terminal part of the term of any patent granted on the instant application that would extend to the expiration date of the full statutory term of the prior patent, "as the term of said prior patent is presently shortened by any terminal disclaimer," in the event that said prior patent later:

- expires for failure to pay a maintenance fee;
- is held unenforceable;
- is found invalid by a court of competent jurisdiction;
- is statutorily disclaimed in whole or terminally disclaimed under 37 CFR 1.321;
- has all claims canceled by a reexamination certificate;
- is reissued; or
- is in any manner terminated prior to the expiration of its full statutory term as presently shortened by any terminal disclaimer.

☒ Terminal disclaimer fee under 37 CFR 1.20(d) is included with Electronic Terminal Disclaimer request.

☐ I certify, in accordance with 37 CFR 1.4(d)(4), that the terminal disclaimer fee under 37 CFR 1.20(d) required for this terminal disclaimer has already been paid in the above-identified application.

Applicants claims the following fee status:

☐ Small Entity

☐ Micro Entity

☒ Regular Undiscounted

I hereby declare that all statements made herein of my own knowledge are true and that all statements made 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 so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

THIS PORTION MUST BE COMPLETED BY THE SIGNATORY OR SIGNATORIES

I certify, in accordance with 37 CFR 1.4(d)(4) that I am:

☒ An attorney or agent registered to practice before the Patent and Trademark Office who is of record in this application

Registration Number 59063

☐ A sole inventor

☐ A joint inventor; I certify that I am authorized to sign this submission on behalf of all of the inventors

☐ A joint inventor; all of whom are signing this request

☐ The assignee of record of the entire interest that has properly made itself of record pursuant to 37 CFR 3.71

Signature

/John H. Nortrup/

Name	John H. Nortrup
------	-----------------

*Statement under 37 CFR 3.73(b) is required if terminal disclaimer is signed by the assignee (owner).
Form PTO/SB/96 may be used for making this certification. See MPEP § 324.

Electronic Patent Application Fee Transmittal				
Application Number:		13556368		
Filing Date:		24-Jul-2012		
Title of Invention:		NETWORKED THREE-DIMENSIONAL PRINTER WITH THREE-DIMENSIONAL SCANNER		
First Named Inventor/Applicant Name:		Nathaniel B. Pettis		
Filer:		John H. Nortrop		
Attorney Docket Number:		MBOT-0002-P06		
Filed as Large Entity				
Utility under 35 USC 111(a) Filing Fees				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Statutory or Terminal Disclaimer	1814	1	160	160
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:				
Total in USD (\$)				160

Doc Code: DISQ.E.FILE

Document Description: Electronic Terminal Disclaimer – Approved

Application No.: 13556368

Filing Date: 24-Jul-2012

Applicant/Patent under Reexamination: Pettis et al.

Electronic Terminal Disclaimer filed on December 3, 2013

☒ APPROVED

This patent is subject to a terminal disclaimer

☐ DISAPPROVED

Approved/Disapproved by: Electronic Terminal Disclaimer automatically approved by EFS-Web

U.S. Patent and Trademark Office

Electronic Acknowledgement Receipt	
EFS ID:	17552860
Application Number:	13556368
International Application Number:	
Confirmation Number:	9593
Title of Invention:	NETWORKED THREE-DIMENSIONAL PRINTER WITH THREE-DIMENSIONAL SCANNER
First Named Inventor/Applicant Name:	Nathaniel B. Pettis
Customer Number:	43520
Filer:	John H. Nortrop
Filer Authorized By:	
Attorney Docket Number:	MBOT-0002-P06
Receipt Date:	03-DEC-2013
Filing Date:	24-JUL-2012
Time Stamp:	15:16:31
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Credit Card
Payment was successfully received in RAM	\$160
RAM confirmation Number	2012
Deposit Account	504262
Authorized User	NORTRUP, JOHN
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 1.20 (Post Issuance fees)

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Electronic Terminal Disclaimer-Filed	eTerminal-Disclaimer.pdf	36639 c2df5f171d8d31917f951dbe983a4dc47909de7e	no	3

Warnings:

Information:

2	Fee Worksheet (SB06)	fee-info.pdf	30176 e6e9e65956f17c2f484f9a8a0f793c4b8014e257	no	2
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Warnings:

Information:

Total Files Size (in bytes):	66815
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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.

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No.: 13/556,368
Filing Date: July 24, 2012
In re: Nathaniel B. Pettis
Art Unit: 1743
Examiner: David N. Brown II
Conf. No.: 9593

Commissioner for Patents
PO Box 1450
Alexandria, Virginia 22313-1450

RESPONSE

Dear Examiner:

Please consider the following Response, which is responsive to the non-final
Office Action mailed December 3, 2013:

A Claim Listing begins on page 2 of this paper.

Remarks begin on page 5 of this paper.

Claim Listing

Although no amendments to the claims are submitted with this response, the pending claims are set out in their entirety for the examiner's convenience.

1. (Previously presented) A three-dimensional printer including a build volume, the three-dimensional printer comprising:
 - a three-dimensional scanner configured to capture three-dimensional information from an object being fabricated within the build volume during a print job executing on the three-dimensional printer;
 - a machine vision system configured to capture and analyze image content from the three-dimensional scanner, thereby providing a status of the print job executing on the three-dimensional printer;
 - a network interface configured to couple the three-dimensional printer in a communicating relationship with a data network; and
 - a web server configured to transmit the status of the print job for display at a remote client through the network interface.
2. (Original) The system of claim 1 wherein the three-dimensional printer is a fused deposition modeling printer.
3. (Original) The system of claim 1 wherein the three-dimensional printer is a stereolithography printer.
4. (Original) The system of claim 1 wherein the web server is configured to host a remote user of the three-dimensional printer through the network interface.
5. (Original) The system of claim 1 wherein the web server displays status information from one or more sensors of the three-dimensional printer.
6. (Original) The system of claim 1 wherein the three-dimensional scanner obtains three-dimensional data using stereoscopic imaging.

7. (Original) The system of claim 1 wherein the three-dimensional scanner obtains three-dimensional data using shape from motion.
8. (Original) The system of claim 1 wherein the three-dimensional scanner obtains three-dimensional data using structured light techniques.
9. (Previously presented) The system of claim 1 wherein the machine vision system provides automatic inspection of the object being fabricated within the build volume.
10. (Original) The system of claim 1 wherein the machine vision system provides a robotic guidance function for the three-dimensional printer.
11. (Previously presented) The system of claim 1 wherein the machine vision system provide a pass/fail evaluation of the object being fabricated within the build volume.
12. (Previously presented) The system of claim 1 wherein the machine vision system provides error detection for the object being fabricated within the build volume.
13. (Original) The system of claim 12 wherein the machine vision system creates an audible alert when an error is detected.
14. (Original) The system of claim 12 wherein the machine vision system creates a visual alert when an error is detected.
15. (Previously presented) The system of claim 1 wherein the machine vision system tracks actual progress of the print job against a predicted progress of the print job.

16. (Original) The system of claim 1 wherein the machine vision system compares an actual three-dimensional result in the build volume with an expected three-dimensional result based upon a source model.
17. (Original) The system of claim 16 wherein the machine vision system is configured to abort a fabrication process of the three-dimensional printer upon detection of an unrecoverable error in the fabrication process.
18. (Original) The system of claim 16 wherein the machine vision system is configured to detect a misalignment of layers.
19. (Original) The system of claim 16 wherein the machine vision system is configured to detect an unexpected surface hole.
20. (Original) The system of claim 1 further comprising a processor configured to respond to a remote request for status from the machine vision system.

Remarks

Status of the Claims

Claims 1–20 are presented for examination, where claim 1 is independent.

Double Patenting

The claims stand rejected on the ground of nonstatutory double patenting as unpatentable over claim 2 of the applicant's U.S. Pat. No. 8,562,324 in view of US 2004/0207662 to Anderson, US 2006/0127153 to Menchik, US 2007/0172112 to Paley, US 6,529,627 to Callari, and US 7,168,935 to Taminger. Additionally, the claims are provisionally rejected on ground of nonstatutory double patenting as unpatentable over claim 19 of the applicant's U.S. App. No. 13/556,315.

Without conceding the propriety of this rejection, the applicant has filed an eTerminal Disclaimer over U.S. Pat. No. 8,562,324 and U.S. App. No. 13/556,315. A fee of \$160 as specified by 37 C.F.R. § 1.20(d) accompanied the terminal disclaimer. Evidence of the approved eTerminal Disclaimer can be obtained from PAIR.

The applicant requests reconsideration and withdrawal of the outstanding double patenting rejection based upon the applicant's terminal disclaimer.

Conclusion

In view of the foregoing, the applicant believes that the currently pending claims are in condition for allowance and respectfully requests a corresponding Notice of Allowance.

The applicant believes that all of the pending claims have been addressed. However, the absence of a reply to a specific rejection, issue or comment does not signify agreement with or concession of that rejection, issue or comment. In addition, because the arguments made above may not be exhaustive, there may be reasons for patentability of any or all pending claims (or other claims) that have not been expressed.

Nothing in this paper should be construed as intent to concede any issue with regard to any claim, except as specifically stated in this paper. The amendment of any claim does not necessarily signify concession of unpatentability of the claim prior to its amendment.

The Director is hereby authorized to charge any fees or to credit any overpayments associated with this filing to Deposit Account No. 50-4262. If the Examiner believes a telephone conference would expedite prosecution of this application, please telephone the undersigned at (207) 590-0723.

Respectfully submitted
STRATEGIC PATENTS, P.C.

/John H. Nortrup/
John H. Nortrup
Reg. No. 59,063
Tel.: (207) 590-0723

December 3, 2013

Electronic Acknowledgement Receipt	
EFS ID:	17553834
Application Number:	13556368
International Application Number:	
Confirmation Number:	9593
Title of Invention:	NETWORKED THREE-DIMENSIONAL PRINTER WITH THREE-DIMENSIONAL SCANNER
First Named Inventor/Applicant Name:	Nathaniel B. Pettis
Customer Number:	43520
Filer:	John H. Nortrop
Filer Authorized By:	
Attorney Docket Number:	MBOT-0002-P06
Receipt Date:	03-DEC-2013
Filing Date:	24-JUL-2012
Time Stamp:	15:47:44
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
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File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		MBOT-0002-P06_120313_OAResponse.pdf	100379 0072a5f087cca3a5868e07b06b351502dbbabbce	yes	6

	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
Warnings:			
Information:			
Total Files Size (in bytes):		100379	
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.			

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 13/556,368		Filing Date 07/24/2012		☐ 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(j))		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	12/03/2013		CLAIMS REMAINING AFTER AMENDMENT			HIGHEST NUMBER PREVIOUSLY PAID FOR		PRESENT EXTRA		RATE (\$)		ADDITIONAL FEE (\$)	
	Total (37 CFR 1.16(i))		* 20		Minus	** 20		= 0		X \$80 =		0	
	Independent (37 CFR 1.16(h))		* 1		Minus	***3		= 0		X \$420 =		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.													

LIE
/DORIS BURNS/

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.**

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



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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Alexandria, Virginia 22313-1450
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NOTICE OF ALLOWANCE AND FEE(S) DUE

43520 7590 02/03/2014
STRATEGIC PATENTS P.C.
P.O. BOX 920629
NEEDHAM, MA 02492

EXAMINER

BROWN II, DAVID N

ART UNIT

PAPER NUMBER

1743

DATE MAILED: 02/03/2014

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/556,368	07/24/2012	Nathaniel B. Pettis	MBOT-0002-P06	9593

TITLE OF INVENTION: NETWORKED THREE-DIMENSIONAL PRINTER WITH THREE-DIMENSIONAL SCANNER

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$960	\$0	\$0	\$960	05/05/2014

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.

II. PART B - FEE(S) TRANSMITTAL, or its equivalent, must be completed and returned to the United States Patent and Trademark Office (USPTO) with your ISSUE FEE and PUBLICATION FEE (if required). If you are charging the fee(s) to your deposit account, section "4b" of Part B - Fee(s) Transmittal should be completed and an extra copy of the form should be submitted. If an equivalent of Part B is filed, a request to reapply a previously paid issue fee must be clearly made, and delays in processing may occur due to the difficulty in recognizing the paper as an equivalent of Part B.

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.

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 5 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)

43520 7590 02/03/2014
STRATEGIC PATENTS P.C.
P.O. BOX 920629
NEEDHAM, MA 02492

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.
13/556,368	07/24/2012	Nathaniel B. Pettis	MBOT-0002-P06	9593

TITLE OF INVENTION: NETWORKED THREE-DIMENSIONAL PRINTER WITH THREE-DIMENSIONAL SCANNER

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$960	\$0	\$0	\$960	05/05/2014

EXAMINER	ART UNIT	CLASS-SUBCLASS
BROWN II, DAVID N	1743	425-145000

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 _____

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-2038 is attached.
- ☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credits 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 forms 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: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature _____ Date _____

Typed or printed name _____ Registration No. _____



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
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www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/556,368	07/24/2012	Nathaniel B. Pettis	MBOT-0002-P06	9593

43520	7590	02/03/2014
STRATEGIC PATENTS P.C.		
P.O. BOX 920629		
NEEDHAM, MA 02492		

EXAMINER	
BROWN II, DAVID N	

ART UNIT	PAPER NUMBER
1743	

DATE MAILED: 02/03/2014

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 0 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 0 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.

OMB Clearance and PRA Burden Statement for PTOL-85 Part B

The Paperwork Reduction Act (PRA) of 1995 requires Federal agencies to obtain Office of Management and Budget approval before requesting most types of information from the public. When OMB approves an agency request to collect information from the public, OMB (i) provides a valid OMB Control Number and expiration date for the agency to display on the instrument that will be used to collect the information and (ii) requires the agency to inform the public about the OMB Control Number's legal significance in accordance with 5 CFR 1320.5(b).

The information collected by PTOL-85 Part B 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.

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.

Notice of Allowability	Application No. 13/556,368	Applicant(s) PETTIS, NATHANIEL B.	
	Examiner DAVID N. BROWN II	Art Unit 1743	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 12/03/2013.
☐ 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 1-20. 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 <u>12/03/2013</u>	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 _____.	

/DAVID N BROWN II/ Examiner, Art Unit 1743	
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1. The present application is being examined under the pre-AIA first to invent provisions.

DETAILED ACTION

This is an allowance in response to 12/03/2013

Allowable Subject Matter

2. Claims 1-20 are allowed.
3. The following is an examiner's statement of reasons for allowance: Applicant's terminal disclaimer filed 12/03/2013 obviates the double patenting rejections set forth in the previous office action.

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

Any inquiry concerning this communication or earlier communications from the examiner should be directed to DAVID N. BROWN II whose telephone number is (571)270-5497. The examiner can normally be reached on Monday-Thursday 9:30a-5:00p EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph Del Sole can be reached on (571)-272-1130. 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.

/DAVID N BROWN II/
Examiner, Art Unit 1743

/JOSEPH S. DEL SOLE/
Supervisory Patent Examiner, Art Unit 1743

Search Notes 	Application/Control No. 13556368	Applicant(s)/Patent Under Reexamination PETTIS, NATHANIEL B.
	Examiner DAVID N BROWN II	Art Unit 1743

CPC- SEARCHED		
Symbol	Date	Examiner

CPC COMBINATION SETS - SEARCHED		
Symbol	Date	Examiner

US CLASSIFICATION SEARCHED			
Class	Subclass	Date	Examiner
425	131.1	21 NOV 2013	DNB II
	375		
264	40.1		
700	98		
	118		

SEARCH NOTES		
Search Notes	Date	Examiner
inv PETTIS searched	07/11/2013	DNB II
reviewed 13/348896		
13/348863		
13/348728		
13/858622		
13/292368		
13/556315		
search assist J DeSole		
264/ 401 40.1 text limited		
425/ 130 131.1 135 144 174.4 375 text limited		
700/ 98 118 204 text limited		
updated search	21 NOV 2013	DNB II

/DAVID N BROWN II/ Examiner.Art Unit 1743	
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INTERFERENCE SEARCH			
US Class/ CPC Symbol	US Subclass / CPC Group	Date	Examiner
425	131.1	21 NOV 2013	DNB II
	375		
264	40.1		
700	98		
	118		
	included PGPUB/UPAD text search		

/DAVID N BROWN II/ Examiner.Art Unit 1743	
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Issue Classification 	Application/Control No. 13556368	Applicant(s)/Patent Under Reexamination PETTIS, NATHANIEL B.	
	Examiner DAVID N BROWN II	Art Unit 1743	

CPC						
Symbol					Type	Version

CPC Combination Sets					
Symbol			Type	Set	Ranking

/DAVID N BROWN II/ Examiner.Art Unit 1743 (Assistant Examiner)	01/16/2014 (Date)	Total Claims Allowed: 20	
/JOSEPH S DEL SOLE/ Supervisory Patent Examiner.Art Unit 1743 (Primary Examiner)	01/23/2014 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 1

Issue Classification 	Application/Control No. 13556368	Applicant(s)/Patent Under Reexamination PETTIS, NATHANIEL B.
	Examiner DAVID N BROWN II	Art Unit 1743

US ORIGINAL CLASSIFICATION						INTERNATIONAL CLASSIFICATION										
CLASS		SUBCLASS				CLAIMED					NON-CLAIMED					
425		375				A	0	1	J	21 / 00 (2006.01.01)						
CROSS REFERENCE(S)																
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)															
425	131.1															
264	40.1															
700	98	118														

/DAVID N BROWN II/ Examiner.Art Unit 1743 (Assistant Examiner)	01/16/2014 (Date)	Total Claims Allowed: 20	
/JOSEPH S DEL SOLE/ Supervisory Patent Examiner.Art Unit 1743 (Primary Examiner)	01/23/2014 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 1

Issue Classification 	Application/Control No. 13556368	Applicant(s)/Patent Under Reexamination PETTIS, NATHANIEL B.
	Examiner DAVID N BROWN II	Art Unit 1743

☐ 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	17	17												
2	2	18	18												
3	3	19	19												
4	4	20	20												
5	5														
6	6														
7	7														
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11	11														
12	12														
13	13														
14	14														
15	15														
16	16														

/DAVID N BROWN II/ Examiner.Art Unit 1743 (Assistant Examiner)	01/16/2014 (Date)	Total Claims Allowed: 20	
/JOSEPH S DEL SOLE/ Supervisory Patent Examiner.Art Unit 1743 (Primary Examiner)	01/23/2014 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 1

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	4	((("20110126236") or ("20050066279")).PN.	US-PGPUB; USPAT; USOCR; DERWENT	OR	OFF	2014/01/16 18:06
S1	21	((NATHANIEL) near2 (PETTIS)).INV.	US-PGPUB; USPAT	ADJ	ON	2013/06/11 16:14
S2	52	((("20090164379") or ("7168935") or ("20060127153") or ("20040175450") or ("6490496") or ("6195205") or ("6193923") or ("5738817") or ("20120280415") or ("20110137578") or ("20110029591") or ("20100131584") or ("20080269939") or ("20080228434") or ("20080018018") or ("20070172112") or ("20070124436") or ("20070088640") or ("20070061393") or ("20060192315") or ("20060111807") or ("20060095152") or ("20060077413") or ("20050234577") or ("20040207662") or ("20040203872")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/12 10:41
S3	2	("20110313878").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/12 10:45
S4	34	((("7168935") or ("8286236") or ("20120280415") or ("20060192315") or ("20080018018") or ("20110029591") or ("20060041443") or ("20040232601") or ("5637175") or ("6129872") or ("20040175450") or ("4097566") or ("20020195746") or ("5192559") or ("5730817") or ("6841116") or ("4097566")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/12 11:06
S5	2	("20120287472").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/12 12:17
S6	2	("20120105903").PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/12 12:18

S7	10290	((264/401) or (264/40.1) or (425/130) or (425/131.1) or (425/135) or (425/144) or (425/174.4) or (425/375)).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/12 14:34
S8	1646	((700/98) or (700/118) or (700/204)).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/12 14:35
S9	76	S7 and S8	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/12 14:35
S10	52	((("20090164379") or ("7168935") or ("20060127153") or ("20040175450") or ("6490496") or ("6195205") or ("6193923") or ("5738817") or ("20120280415") or ("20110137578") or ("20110029591") or ("20100131584") or ("20080269939") or ("20080228434") or ("20080018018") or ("20070172112") or ("20070124436") or ("20070088640") or ("20070061393") or ("20060192315") or ("20060111807") or ("20060095152") or ("20060077413") or ("20050234577") or ("20040207662") or ("20040203872")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/12 14:36
S11	34	((("7168935") or ("8286236") or ("20120280415") or ("20060192315") or ("20080018018") or ("20110029591") or ("20060041443") or ("20040232601") or ("5637175") or ("6129872") or ("20040175450") or ("4097566") or ("20020195746") or ("5192559") or ("5730817") or ("6841116") or ("4097566")).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/12 14:36
S12	18	(S10 or S11) and web	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/12 14:36
S13	12	(S10 or S11) and stereolithography	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/12 15:45
S14	3	("4575330").PN.	US-PGPUB; USPAT; USOCR; FPRS;	OR	OFF	2013/06/12 16:11

			EPO; JPO; DERWENT; IBM_TDB			
S15	52	((("20090164379") or ("7168935") or ("20060127153") or ("20040175450") or ("6490496") or ("6195205") or ("6193923") or ("5738817") or ("20120280415") or ("20110137578") or ("20110029591") or ("20100131584") or ("20080269939") or ("20080228434") or ("20080018018") or ("20070172112") or ("20070124436") or ("20070088640") or ("20070061393") or ("20060192315") or ("20060111807") or ("20060095152") or ("20060077413") or ("20050234577") or ("20040207662") or ("20040203872"))).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/13 11:29
S16	34	((("7168935") or ("8286236") or ("20120280415") or ("20060192315") or ("20080018018") or ("20110029591") or ("20060041443") or ("20040232601") or ("5637175") or ("6129872") or ("20040175450") or ("4097566") or ("20020195746") or ("5192559") or ("5730817") or ("6841116") or ("4097566"))).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/13 11:29
S17	10294	((264/401) or (264/40.1) or (425/130) or (425/131.1) or (425/135) or (425/144) or (425/174.4) or (425/375)).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/13 11:29
S18	1647	((700/98) or (700/118) or (700/204)).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/13 11:29
S19	76	S17 and S18	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/13 11:29
S20	11	cellular and (S16 or S15 or S19)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/13 11:29
S21	0	((3d or "3"?d or "3"?dimensional) near3 scanner) and (S16 or S15 or S19)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/13 12:25

S22	0	((3d or "3"?d or "3"?dimensional) near3 scanner) and (S16 or S15 or S19)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/13 12:26
S23	1305	(3d or "3"?d or "3"?dimensional) scanner	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/13 12:26
S24	0	S23 and S19	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/13 12:27
S25	45	S23 and S18	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/13 12:27
S26	7	S23 and S17	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/13 12:41
S27	10311	((264/401) or (264/40.1) or (425/130) or (425/131.1) or (425/135) or (425/144) or (425/174.4) or (425/375)).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/25 14:57
S28	1652	((700/98) or (700/118) or (700/204)).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/25 14:57
S29	11887	S27 or S28	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/25 14:57
S30	1313	(3d or "3"?d or "3"?dimensional) scanner	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO;	ADJ	ON	2013/06/25 15:02

			DERWENT; IBM_TDB			
S31	16208	(3d or "3"?d or "3"?dimensional) near5 (scan or scanning or scanned or scanner)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/25 15:03
S32	14895	S31 xor S30	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/25 15:03
S33	16208	S30 or S31	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/25 15:03
S34	238	S33 and S29	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/25 15:03
S35	108	("20120287459" "20070061393" "5738817" "6193923" "2012011" "20020194746" "20120049779" "20120287473" "20060077413" "20080269939" "20120059504" "20120113473" "4097566" "5730817" "6841116" "8226395" "20120287472" "8286236" "20050234577" "20060127153" "20060192315" "20120287470" "7168935" "20120105903" "20040232601" "20070124436" "20090164379" "20110029591" "6195205" "20120059503" "20040175450" "20040203872" "20060041443" "20060111807" "20070088640" "20070172112" "20080018018" "20120092724" "5192559" "6129872" "8282380" "20080228434" "6490496" "20040175450" "5637175" "20120287259" "20060095152" "20100131584" "20110137578" "20120280415").FN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/26 11:25
S36	0	shape from motion	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/27 10:31
S37	20	shape?from?motion	US-PGPUB;	ADJ	ON	2013/06/27

			USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			10:32
S38	10318	((264/401) or (264/40.1) or (425/130) or (425/131.1) or (425/135) or (425/144) or (425/174.4) or (425/375)).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/27 10:39
S39	1652	((700/98) or (700/118) or (700/204)).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/27 10:39
S40	11894	S38 or S39	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/27 10:39
S41	1315	(3d or "3"?d or "3"?dimensional) scanner	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/27 10:39
S42	16224	(3d or "3"?d or "3"?dimensional) near5 (scan or scanning or scanned or scanner)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/27 10:39
S43	16224	S41 or S42	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/27 10:39
S44	238	S43 and S40	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/27 10:39
S45	108	("20120287459" "20070061393" "5738817" "6193923" "2012011" "20020194746" "20120049779" "20120287473" "20060077413" "20080269939" "20120059504" "20120113473" "4097566" "5730817"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT;	ADJ	ON	2013/06/27 10:39

		"6841116" "8226395" "20120287472" "8286236" "20050234577" "20060127153" "20060192315" "20120287470" "7168935" "20120105903" "20040232601" "20070124436" "20090164379" "20110029591" "6195205" "20120059503" "20040175450" "20040203872" "20060041443" "20060111807" "20070088640" "20070172112" "20080018018" "20120092724" "5192559" "6129872" "8282380" "20080228434" "6490496" "20040175450" "5637175" "20120287259" "20060095152" "20100131584" "20110137578" "20120280415").PN.	IBM_TDB			
S46	346	S44 or S45	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/27 10:39
S47	34	S46 and sensor and supply	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/27 10:40
S48	147	structured light technique	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/27 11:27
S49	14328	printer and driver and (sound or audible or wav or ?wav) and error	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/27 12:27
S50	802	(3d or "3"?d or "3"?dimensional) printer	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/27 12:27
S51	8	S49 and S50	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/27 12:28
S52	2034	(printer near3 driver) and (sound or audible or wav or ?wav) and error	US-PGPUB; USPAT;	ADJ	ON	2013/06/27 12:52

			USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB			
S53	11971	((rapid prototyping) or ((3d or "3"?d or "3"?dimensional) (printer or printing))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/27 12:53
S54	2	S52 and S53	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/27 12:53
S55	10318	((264/401) or (264/40.1) or (425/130) or (425/131.1) or (425/135) or (425/144) or (425/174.4) or (425/375)).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/28 09:46
S56	1652	((700/98) or (700/118) or (700/204)).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/06/28 09:46
S57	348	((alignment or misalignment or aligned or misaligned or aligning or misaligning or mis?alignment or mis?aligned or mis?aligning) near5 (layer or slice or section)) and (S55 or S56)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/28 09:46
S58	447	(surface near5 hole) and (S55 or S56)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/28 10:14
S59	157	S58 and (3d or "3"?d or "3"?dimensional or sl or sls or (rapid prototyping) or fdm or (fused deposition))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/06/28 10:15
S60	14	((("20080309665") or ("20070264727") or ("20070024895") or ("20040162629") or ("20040030741") or ("20040010801") or ("20030200308"))).PN.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/11/18 19:52

S61	14116	("3"?d or "3"?dimensional or "3"?dimension or three?dimensional or three?dimension) near3 (scan or scanning or scanner)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/11/18 19:58
S62	11179	((264/401) or (264/40.1) or (425/130) or (425/131.1) or (425/135) or (425/144) or (425/174.4) or (425/375)).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/11/18 19:59
S63	1959	((700/98) or (700/118) or (700/204)).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/11/18 19:59
S64	223	S61 and (S62 or S63)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/11/18 19:59
S65	733	((("3"?d or "3"?dimensional or "3"?dimension) near3 (scan or scanning or scanner)) and ("3"?d printer or "3"?d? printing or three?dimensional printing or "3"?dimension printing or stereolithography or rapid prorotyping or fdm or fused deposition or laser sintering or laser sinter)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/11/18 20:13
S66	360	(view or watch or live or real?time or examine or inspect or viewed or viewing or watching or watched or examining or examined or inspecting or inspected or survey or surveyed or surveying or surveyed or observe or observing or observed or check or checking or checked) near (("3"?d or "3"?dimensional or "3"?dimension or three?dimensional or three?dimension) near3 (scan or scanning or scanner))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/11/18 20:18
S67	8	S65 and S66	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	ADJ	ON	2013/11/18 20:19
S68	4849	((425/131.1) or (425/375) or (264/40.1)).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/11/18 20:27

S69	1797	((700/98) or (700/118)).CCLS.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT; IBM_TDB	OR	OFF	2013/11/18: 20:29
S76	1028	pettis.inv. or pax.inv.	US-PGPUB; USPAT; USOCR; DERWENT	ADJ	ON	2013/11/26: 11:46
S77	4	S76 and scanner.clm.	US-PGPUB; USPAT; USOCR; DERWENT	ADJ	ON	2013/11/26: 11:46

EAST Search History (Interference)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S70	1	((425/131.1) or (425/375) or (264/40.1)).CCLS.	UPAD	OR	OFF	2013/11/19: 08:45
S71	4	((700/98) or (700/118)).CCLS.	UPAD	OR	OFF	2013/11/19: 08:45
S72	0	("(scannerandprinterandnetworkandserver).clm.").PN.	US- PGPUB; USPAT; UPAD	OR	OFF	2013/11/21: 17:08
S73	300	(scanner and printer and server).clm.	USPAT; UPAD	ADJ	ON	2013/11/21: 17:09
S74	207	(scanner and printer and server and network).clm.	USPAT; UPAD	ADJ	ON	2013/11/21: 17:09
S75	101	(scanner and printer and server and network and (gui or interface or vision system)).clm.	USPAT; UPAD	ADJ	ON	2013/11/21: 17:09

1/ 16/ 2014 6:07:09 PM

C:\Users\dbrown\Documents\EAST\Workspaces\13556368.wsp

Receipt date: 12/03/2013

13556368 - GAU: 1743

Doc code: IDS
 Doc description: Information Disclosure Statement (IDS) Field

SUBSTITUTE PTO/SB/08 (01-10)
 SPPC v1.5 011712

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	13/556,368
	Filing Date	Jul 24, 2012
	First Named Inventor	Nathaniel B. Pettis
	Art Unit	1743
	Examiner Name	BROWN II, DAVID N
Sheet 1 of 3	Attorney Docket No.	MBOT-0002-P06

U.S. PATENTS						
Examiner Initial*	Cite No	Patent Number	Kind Code ¹	Issue Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear

U.S. PATENT APPLICATION PUBLICATIONS						
Examiner Initial*	Cite No	Publication Number	Kind Code ¹	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
/DNB II/		US-20110126236		May 26, 2011	Arrasvuori, Juha et al.	
/DNB III/		US-20050066279		Mar 24, 2005	LeBarton, Jeffrey et al.	

FOREIGN PATENT DOCUMENTS								
Examiner Initial*	Cite No	Foreign Document Number ³	Cnty Code ²	Kind Code ⁴	Publication Date	Name of Patentee or Applicant of cited Document	Pages, Columns, Lines where Relevant Passages or Relevant Figures Appear	T ⁵

NON-PATENT LITERATURE DOCUMENTS				
Examiner Initials*	Cite No	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 ⁵	
/DNB II/	NPL-45	"Application Serial No. 13/314,337(Atty Ref MBOT-0002-P01), Final Office Action mailed 11-20-2013", 22 pages		
/DNB II/	NPL-46	"Application Serial No. 13/556,315 (Atty Ref: MBOT-0002-P05), Final Office Acton mailed 11-19-2013", 20 pages		
/DNB II/	NPL-47	"Application Serial No. 13/556,515 (Atty Ref MBOT-0002-P07), Final Office Action mailed 11-20-2013", 19 pages		
/DNB II/	NPL-48	"Application Serial No. 13/557,353 (Atty Ref MBOT-0002-P09), Final Office Action mailed 11-19-2013", 20 pages		

EXAMINER SIGNATURE

Receipt date: 12/03/2013

13556368 - GAU: 1743

Doc code: IDS
Doc description: Information Disclosure Statement (IDS) Field

SUBSTITUTE PTO/SB/08 (01-10)
SPPC v1.5 011712

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	13/556,368
	Filing Date	Jul 24, 2012
	First Named Inventor	Nathaniel B. Pettis
	Art Unit	1743
	Examiner Name	BROWN II, DAVID N
Sheet 2 of 3	Attorney Docket No.	MBOT-0002-P06

Examiner Signature	/David Brown II/	Date Considered	01/16/2014
*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through a citation if not in conformance and not considered. Include copy of this form with next communication to applicant.			
¹ See Kind Codes of USPTO Patent Documents at www.USPTO.GOV or MPEP 901.04. ² Enter office that issued the document, by the two-letter code (WIPO Standard ST.3). ³ For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. ⁴ Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. ⁵ Applicant is to place a check mark here if English language translation is attached.			

CERTIFICATION STATEMENT			
Please see 37 CFR 1.97 and 1.98 to make the appropriate selection(s):			
☐ That each item of information contained in the information disclosure statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (1).			
OR			
☒ That no item of information contained in the 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 the certification after making reasonable inquiry, no item of information contained in the information disclosure statement was known to any individual designated in 37 CFR 1.56(c) more than three months prior to the filing of the information disclosure statement. See 37 CFR 1.97(e) (2).			
☐ See attached certification statement.			
☐ Fee set forth in 37 CFR 1.17 (p) has been submitted herewith.			
☒ Applicant believes that no fees are required with this filing. However, if an Office Action on the merits has been mailed, or a fee is otherwise required, the Commissioner is hereby authorized to charge any fees due under 37 C.F.R. §§1.16 or 1.17, or to credit any overpayments, to Deposit Account No. 50-4262 in order to have this information disclosure statement considered.			
SIGNATURE			
A signature of the applicant or representative is required in accordance with CFR 1.33, 10.18. Please see CFR 1.4(d) for the form of the signature.			
Signature	/Robert Mazzaresel/	Date (YYYY-MM-DD)	2013-12-03
Name/Print	Robert A. Mazzaresel	Registration Number	42,852

Receipt date: 12/03/2013

13556368 - GAU: 1743

Doc code: IDS

SUBSTITUTE PTO/SB/08 (01-10)

Doc description: Information Disclosure Statement (IDS) Field

SPPC v1.5 011712

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	13/556,368
	Filing Date	Jul 24, 2012
	First Named Inventor	Nathaniel B. Pettis
	Art Unit	1743
	Examiner Name	BROWN II, DAVID N
Sheet 3 of 3	Attorney Docket No.	MBOT-0002-P06

This collection of information is required by 37 CFR 1.97 and 1.98. 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 1 hour 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.**



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

BIB DATA SHEET

CONFIRMATION NO. 9593

SERIAL NUMBER 13/556,368	FILING or 371(c) DATE 07/24/2012 RULE	CLASS 425	GROUP ART UNIT 1743	ATTORNEY DOCKET NO. MBOT-0002-P06		
APPLICANTS INVENTORS Nathaniel B. Pettis, Brooklyn, NY; ** CONTINUING DATA ***** This application is a CON of 13/314,337 12/08/2011 which is a CIP of 12/858,622 08/18/2010 PAT 8282380 /DNBII/ ** FOREIGN APPLICATIONS ***** ** IF REQUIRED, FOREIGN FILING LICENSE GRANTED ** /DNBII/ 08/01/2012						
Foreign Priority claimed ☐ Yes ☒ No 35 USC 119(a-d) conditions met ☐ Yes ☒ No Verified and Acknowledged <u>/DAVID N BROWN II/</u> Examiner's Signature		☐ Met after Allowance Initials	STATE OR COUNTRY NY	SHEETS DRAWINGS 6	TOTAL CLAIMS 20	INDEPENDENT CLAIMS 1
ADDRESS STRATEGIC PATENTS P.C. P.O. BOX 920629 NEEDHAM, MA 02492 UNITED STATES						
TITLE NETWORKED THREE-DIMENSIONAL PRINTER WITH THREE-DIMENSIONAL SCANNER						
FILING FEE RECEIVED 1250	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		

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 5 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)

43520 7590 02/03/2014
STRATEGIC PATENTS P.C.
P.O. BOX 920629
NEEDHAM, MA 02492

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.

John H. Nortrup	(Depositor's name)
/John H. Nortrup, Reg. No. 59,063/	(Signature)
May 1, 2014	(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/556,368	07/24/2012	Nathaniel B. Pettis	MBOT-0002-P06	9593

TITLE OF INVENTION: NETWORKED THREE-DIMENSIONAL PRINTER WITH THREE-DIMENSIONAL SCANNER

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$960	\$0	\$0	\$960	05/05/2014

EXAMINER	ART UNIT	CLASS-SUBCLASS
BROWN II, DAVID N	1743	425-145000

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,
- (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 Strategic Patents, P.C.

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 3.111. Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

(B) RESIDENCE: (CITY and STATE OR COUNTRY)

MakerBot Industries, LLC

Brooklyn, NY

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-2038 is attached.
- ☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credits any overpayment, to Deposit Account Number 50-4262 (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 forms 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: This form must be signed in accordance with 37 CFR 1.31 and 1.33. See 37 CFR 1.4 for signature requirements and certifications.

Authorized Signature /John H. Nortrup/

Date May 1, 2014

Typed or printed name John H. Nortrup

Registration No. 59,063

EFS-WEB

PATENTS
MBOT-0002-P06

In re application of Nathaniel B. Pettis

: Group Art Unit: 1743

Serial No. 13/556,368

: Confirmation No. 9593

Filed: July 24, 2012

: Examiner: Brown II, David N.

ISSUE FEE COMMUNICATION

Mail Stop Issue Fee
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Examiner:

For the above identified application, the applicant submits herewith the Issue Fee Transmittal Form (PTO-85B) and the application issue fee. The application issue fee is paid by EFS Web.

The applicant hereby authorizes the Patent Office to charge any deficiencies or credit any overpayments associated with this filing to Deposit Account No. 50-4262.

Please direct any inquiry regarding this matter to the below signed agent.

Respectfully Submitted,

STRATEGIC PATENTS, P.C.

/John H. Nortrup/

John H. Nortrup
Reg. No. 59,063
(207) 590-0723
Customer Number 43,520

May 1, 2014

Electronic Patent Application Fee Transmittal				
Application Number:		13556368		
Filing Date:		24-Jul-2012		
Title of Invention:		NETWORKED THREE-DIMENSIONAL PRINTER WITH THREE-DIMENSIONAL SCANNER		
First Named Inventor/Applicant Name:		Nathaniel B. Pettis		
Filer:		John H. Nortrop		
Attorney Docket Number:		MBOT-0002-P06		
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:				
Utility Appl Issue Fee	1501	1	960	960
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Miscellaneous:				
Total in USD (\$)				960

Electronic Acknowledgement Receipt	
EFS ID:	18915967
Application Number:	13556368
International Application Number:	
Confirmation Number:	9593
Title of Invention:	NETWORKED THREE-DIMENSIONAL PRINTER WITH THREE-DIMENSIONAL SCANNER
First Named Inventor/Applicant Name:	Nathaniel B. Pettis
Customer Number:	43520
Filer:	John H. Nortrop
Filer Authorized By:	
Attorney Docket Number:	MBOT-0002-P06
Receipt Date:	01-MAY-2014
Filing Date:	24-JUL-2012
Time Stamp:	13:10:42
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	Deposit Account
Payment was successfully received in RAM	\$ 960
RAM confirmation Number	13035
Deposit Account	504262
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)	

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Issue Fee Payment (PTO-85B)	MBOT-0002-P06_050114_IssueFeeForm.pdf	266324 fc4e9082b9a00efa38128c7052f2833d32895b4	no	1
Warnings:					
Information:					
2	Transmittal Letter	MBOT-0002-P06_050114_IssueCommunication.pdf	70071 256997c4c179e5ff71dbb1add90de9ba8745c5c	no	1
Warnings:					
Information:					
3	Fee Worksheet (SB06)	fee-info.pdf	30297 cf79749c07615ebdf1ed4e016419737fd141e361	no	2
Warnings:					
Information:					
Total Files Size (in bytes):			366692		
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.					



UNITED STATES PATENT AND TRADEMARK OFFICE

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 NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
13/556,368	06/10/2014	8747097	MBOT-0002-P06	9593

43520 7590 05/21/2014
STRATEGIC PATENTS P.C.
P.O. BOX 920629
NEEDHAM, MA 02492

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 0 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):

Nathaniel B. Pettis, Brooklyn, NY;

The United States represents the largest, most dynamic marketplace in the world and is an unparalleled location for business investment, innovation, and commercialization of new technologies. The USA offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to encourage and facilitate business investment. To learn more about why the USA is the best country in the world to develop technology, manufacture products, and grow your business, visit SelectUSA.gov.

STATEMENT UNDER 37 CFR 3.73(b)

Applicant/Patent Owner: Stratasys, Inc.

Application No./Patent No.: 8747097

Filed/Issue Date: June 10, 2014

Titled: NETWORKED THREE-DIMENSIONAL PRINTER WITH THREE-DIMENSIONAL SCANNER

Stratasys, 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 _____, Frame _____, 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: Nathaniel B. Pettis To: Makerbot Industries, LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 029135, Frame 0532, or for which a copy thereof is attached.

2. From: Makerbot Industries, LLC To: Makerbot Industries, LLC

The document was recorded in the United States Patent and Trademark Office at
Reel 031377, Frame 0799, or for which a copy thereof is attached.

3. From: Makerbot Industries, LLC To: Stratasys, Inc.

The document was recorded in the United States Patent and Trademark Office at
Reel 060731, Frame 0077, 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.

/Peter J. Ims/

2024-11-13

Signature

Date

Peter J. Ims

Attorney

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.



UNITED STATES
PATENT AND TRADEMARK OFFICE

Patent assignment 060731/0077

ASSIGNMENT OF ASSIGNORS INTEREST (SEE DOCUMENT FOR DETAILS).

Date recorded

Jul 19, 2022

Reel/frame

060731/0077

Pages

11

Assignors

MAKERBOT INDUSTRIES, LLC

Execution Date

Jun 30, 2022

Assignee

STRATASYS, INC.
7665 COMMERCE WAY
EDEN PRAIRIE, MINNESOTA 55344

Correspondent

PETER J. IMS
121 SOUTH EIGHTH STREET
SUITE 1100
MINNEAPOLIS, MN 55402

Properties (25 of 46 total)

Patent	Publication	Application	PCT	International registration
1. AUTOMATED 3D BUILD PROCESSES Inventors: Charles Pax, Zach Smith, Adam Mayer, Nathaniel Pettis				
8282380 Oct 09, 2012	20120046779 Feb 23, 2012	12858622 Aug 18, 2010		
2. AUTOMATED 3D BUILD PROCESSES Inventors: Charles Pax, Zach Smith, Adam Mayer, Nathaniel Pettis				
8287794 Oct 16, 2012	20120059504 Mar 08, 2012	13292209 Nov 09, 2011		
3. AUTOMATED 3D BUILD PROCESSES Inventors: Charles Pax, Zach Smith, Adam Mayer, Nathaniel Pettis				
8226395 Jul 24, 2012	20120059503 Mar 08, 2012	13292369 Nov 09, 2011		
4. NETWORKED THREE-DIMENSIONAL PRINTING Inventors: Nathaniel B. Pettis				
8425218 Apr 23, 2013	20120113473 May 10, 2012	13348728 Jan 12, 2012		
5. NETWORKED THREE-DIMENSIONAL PRINTING Inventors: Nathaniel B. Pettis				
8414280 Apr 09, 2013	20120113457 May 10, 2012	13348863 Jan 12, 2012		
6. NETWORKED THREE-DIMENSIONAL PRINTING Inventors: Nathaniel B. Pettis				
8562324 Oct 22, 2013	20120105903 May 03, 2012	13348896 Jan 12, 2012		
7. NETWORKED THREE-DIMENSIONAL PRINTER WITH WEB-BASED VIDEO FEED Inventors: Nathaniel B. Pettis				

9430169	20120287259	13556315
Aug 30, 2016	Nov 15, 2012	Jul 24, 2012

8. NETWORKED THREE-DIMENSIONAL PRINTER WITH THREE-DIMENSIONAL SCANNER
Inventors: Nathaniel B. Pettis

8747097	20120286453	13556368
Jun 10, 2014	Nov 15, 2012	Jul 24, 2012

9. WEB-BASED DESIGN TOOLS FOR THREE-DIMENSIONAL PRINTING
Inventors: Nathaniel B. Pettis

9022770	20120287470	13556515
May 05, 2015	Nov 15, 2012	Jul 24, 2012

10. SOCIAL NETWORKING FOR THREE-DIMENSIONAL PRINTERS
Inventors: Nathaniel B. Pettis

8992202	20120287472	13557353
Mar 31, 2015	Nov 15, 2012	Jul 25, 2012

11. FABRICATION OF OBJECTS WITH ENHANCED STRUCTURAL CHARACTERISTICS
Inventors: Hugo Boyer, Ariel Douglas, Nathaniel B. Pettis

9308690	20140039659	13624067
Apr 12, 2016	Feb 06, 2014	Sep 21, 2012

12. AUTOMATED 3D BUILD PROCESSES
Inventors: Nathaniel B. Pettis

8668859	20130073073	13652608
Mar 11, 2014	Mar 21, 2013	Oct 16, 2012

13. DOWNLOADABLE THREE-DIMENSIONAL MODELS
Inventors: Nathaniel B. Pettis, Anthony James Buser, Justin Day, Jonah Gold, Bryan Vaccaro, Joseph Neal

9844914	20130329243	13914448
Dec 19, 2017	Dec 12, 2013	Jun 10, 2013

14. AUTOMATED MODEL SELECTION
Inventors: Nathaniel B. Pettis, Joseph Neal

9626142	20150036174	13958701
Apr 18, 2017	Feb 05, 2015	Aug 05, 2013

15. THREE-DIMENSIONAL PRINTING OF LARGE OBJECTS
Inventors: Ariel Douglas, Theodore Brandston

9878495	20140074274	14020658
Jan 30, 2018	Mar 13, 2014	Sep 06, 2013

16. TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING
Inventors: Ariel Douglas, Robert J. Steiner, Aric Lynn Jennings, William B. Buel, Anthony D. Moschella

9233504	20140117585	14064974
Jan 12, 2016	May 01, 2014	Oct 28, 2013

17. THREE-DIMENSIONAL FABRICATION WITH CAVITY FILLING
Inventors: Peter Joseph Schmehl

9475233	20140121813	14065449
Oct 25, 2016	May 01, 2014	Oct 29, 2013

18. THREE-DIMENSIONAL PRINTER WITH FORCE DETECTION
Inventors: Aljosa Kemperle, Filipp Gelman, Peter Joseph Schmehl

9168698	20140117575	14065516
Oct 27, 2015	May 01, 2014	Oct 29, 2013

19. CONTROLLING BUILD CHAMBER TEMPERATURE
Inventors: James Griszbacher, Samuel Holland

9561626	20150190966	14147567
Feb 07, 2017	Jul 09, 2015	Jan 05, 2014

20. PURGE WALL FOR THREE-DIMENSIONAL PRINTING
Inventors: Filipp Gelman, Joseph Sadusk, Andrey V. Patrov

9545756	20150093588	14499464
Jan 17, 2017	Apr 02, 2015	Sep 29, 2014

21. THREE-DIMENSIONAL PRINTER TOOL SYSTEMS
Inventors: Peter Joseph Schmehl, Aljosa Kemperle, Stewart Schmehl

9481132	20150140151	14580530
Nov 01, 2016	May 21, 2015	Dec 23, 2014

22. THREE-DIMENSIONAL PRINTER TOOL SYSTEMS
Inventors: Peter Joseph Schmehl, Aljosa Kemperle, Stewart Schmehl

9469072	20150137402	14580711
Oct 18, 2016	May 21, 2015	Dec 23, 2014

23. DETECTION AND USE OF PRINTER CONFIGURATION INFORMATION
Inventors: Joseph Sadusk, Alison N. Leonard

10421238	20160185044	14587548
Sep 24, 2019	Jun 30, 2016	Dec 31, 2014

24. THREE-DIMENSIONAL PRINTER WITH FORCE DETECTION
Inventors: Aljosa Kemperle, Filipp Gelman, Peter Joseph Schmehl

10556381	20160039150	14922267
Feb 11, 2020	Feb 11, 2016	Oct 26, 2015

25. TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING
Inventors: Ariel Douglas, Robert J. Steiner, Aric Lynn Jennings, William B. Buel, Anthony D. Moschella

10093061	20160121550	14992127
Oct 09, 2018	May 05, 2016	Jan 11, 2016

PATENT ASSIGNMENT COVER SHEET

Electronic Version v1.1
 Stylesheet Version v1.2

EPAS ID: PAT7439278

SUBMISSION TYPE:	NEW ASSIGNMENT	
NATURE OF CONVEYANCE:	ASSIGNMENT	
CONVEYING PARTY DATA		
Name		Execution Date
MAKERBOT INDUSTRIES, LLC		06/30/2022
RECEIVING PARTY DATA		
Name:	STRATASYS, INC.	
Street Address:	7665 COMMERCE WAY	
City:	EDEN PRAIRIE	
State/Country:	MINNESOTA	
Postal Code:	55344	
PROPERTY NUMBERS Total: 47		
Property Type	Number	
Patent Number:	8282380	
Patent Number:	8287794	
Patent Number:	8226395	
Patent Number:	8668859	
Patent Number:	8425218	
Patent Number:	8414280	
Patent Number:	8562324	
Patent Number:	9430169	
Patent Number:	8747097	
Patent Number:	9022770	
Patent Number:	8992202	
Patent Number:	10114591	
Patent Number:	10908849	
Patent Number:	9308690	
Patent Number:	10800105	
Patent Number:	9844914	
Patent Number:	10005226	
Patent Number:	10150248	
Patent Number:	9626142	
Patent Number:	9878495	

Property Type	Number
Patent Number:	9481132
Patent Number:	9469072
Patent Number:	10214004
Patent Number:	11285649
Patent Number:	9233504
Patent Number:	10093061
Patent Number:	10569466
Patent Number:	11167464
Patent Number:	9475233
Patent Number:	9884450
Patent Number:	10836090
Patent Number:	9168698
Patent Number:	10556381
Patent Number:	10994462
Patent Number:	9561626
Patent Number:	9545756
Patent Number:	10421238
Patent Number:	10987878
Patent Number:	10532511
Patent Number:	10532552
Patent Number:	10500837
Patent Number:	10773511
Application Number:	17516974
Application Number:	17690334
Application Number:	17163795
Application Number:	17239885
PCT Number:	US1268429

CORRESPONDENCE DATA

Fax Number:
Correspondence will be sent to the e-mail address first; if that is unsuccessful, it will be sent using a fax number, if provided; if that is unsuccessful, it will be sent via US Mail.

Phone: 6123343222
Email: epeters@wck.com
Correspondent Name: PETER J. IMS
Address Line 1: 121 SOUTH EIGHTH STREET
Address Line 2: SUITE 1100
Address Line 4: MINNEAPOLIS, MINNESOTA 55402

ATTORNEY DOCKET NUMBER:	S697.01-0001
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NAME OF SUBMITTER:	PETER J. IMS
SIGNATURE:	/Peter J. Ims/
DATE SIGNED:	07/19/2022
Total Attachments: 8 source=Executed Assignment#page1.tif source=Executed Assignment#page2.tif source=Executed Assignment#page3.tif source=Executed Assignment#page4.tif source=Executed Assignment#page5.tif source=Executed Assignment#page6.tif source=Executed Assignment#page7.tif source=Executed Assignment#page8.tif	

ASSIGNMENT

WHEREAS, MakerBot Industries, LLC (the ASSIGNOR), a New York corporation having a place of business at 1 Metrotech Center, 21st Floor, Brooklyn, NY 11201, desires to convey its entire right, title, and interest in and to the patents and patent applications set forth in Exhibit A hereto, along with any subsequent reissues or extensions thereof, and any and all resulting patents in any jurisdiction worldwide, along with all rights of priority, all rights and benefits under any applicable treaty or convention, and rights to sue for past, present, and future infringement including all rights to and claims for damages, restitution, and injunctive and other legal and equitable relief (collectively, the "Patents"), and the ASSIGNOR owns the entire right, title, and interest in and to the Patents, and has full right to convey the entire interest, both legal and equitable, in and to said Patents free from all prior assignments, agreements, licenses, mortgages, security interests, or other encumbrances whatsoever; and

WHEREAS, Stratasys, Inc. (the ASSIGNEE), an entity organized and existing under the laws of the State of Delaware, and having a place of business at 7665 Commerce Way, Eden Prairie, MN 55344, is desirous of acquiring the entire right, title, and interest in and to the Patents;

NOW, THEREFORE, for good and valuable consideration, the receipt and sufficiency of which are hereby acknowledged by the ASSIGNOR, the ASSIGNOR hereby sells, assigns, and transfers unto the ASSIGNEE, its successors and assigns, the ASSIGNOR's entire right, title, and interest in and to the Patents;

AND the ASSIGNOR hereby authorizes and requests the issuing authority to issue any and all patents issuing from any of the foregoing to the ASSIGNEE or its successors and assigns;

AND the ASSIGNOR represents to the ASSIGNEE, its successors, and assigns, that Assignor has not and shall not execute any writing or do any act whatsoever conflicting with this Assignment;

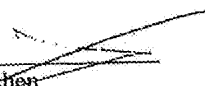
AND the ASSIGNOR further agrees, with reasonable compensation by the ASSIGNEE or its successors and assigns, to communicate to the ASSIGNEE, its representatives or agents or its successors and assigns, any facts relating to the Inventions including evidence for administrative or legal proceedings whenever requested; to testify in any administrative or legal proceedings, whenever requested; to execute and deliver, on request, all lawful papers required to make any of the foregoing provisions effective; and to generally do everything possible to aid the ASSIGNEE, its successors or assigns and nominees to secure, obtain, defend, and enforce proper patent protection for the Inventions in this or any foreign country.

The ASSIGNOR and ASSIGNEE hereby authorize the attorneys and agents associated with Patent Office Customer Number 43520 to insert hereon any further information necessary or desirable for recordation of this document.

AGREED by the ASSIGNOR

MakerBot Industries, LLC
1 Metrotech Center
Brooklyn, NY 11201

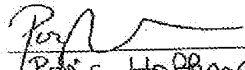
By: _____


Nadav Qoshen
Chief Executive Officer

Date: 6-30-2022

Witness Signature: _____

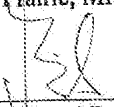
Witness Name: _____


Pooja Hoffman

AGREED and ACCEPTED by the ASSIGNEE

Stratasys, Inc.
7665 Commerce Way
Eden Prairie, MN 55344

 By: _____


Vered Ben Jacob
General Counsel & Head of Intellectual Property
Chief Legal Officer

Date: _____

July 7, 2022

Witness Signature: _____

Witness Name: _____

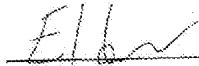

Eldad Itzhak

Exhibit A

Country	File Number	Title	App. Number	Filing Date	Patent Number
U.S.A.	MBOT-0001-P01	AUTOMATED 3D BUILD PROCESSES	12/858,622	August 18, 2010	8282380
U.S.A.	MBOT-0001-P02	AUTOMATED 3D BUILD PROCESSES	13/292,209	November 9, 2011	8287794
U.S.A.	MBOT-0001-P03	AUTOMATED 3D BUILD PROCESSES	13/292,369	November 9, 2011	8226395
U.S.A.	MBOT-0001-P04	AUTOMATED 3D BUILD PROCESSES	13/652,608	October 16, 2012	8668859
U.S.A.	MBOT-0002-P02	NETWORKED THREE-DIMENSIONAL PRINTING	13/348,728	January 12, 2012	8425218
U.S.A.	MBOT-0002-P03	NETWORKED THREE-DIMENSIONAL PRINTING	13/348,863	January 12, 2012	8414280
U.S.A.	MBOT-0002-P04	NETWORKED THREE-DIMENSIONAL PRINTING	13/348,896	January 12, 2012	8562324
U.S.A.	MBOT-0002-P05	NETWORKED THREE-DIMENSIONAL PRINTER WITH WEB-BASED VIDEO FEED	13/556,315	July 24, 2012	9430169
U.S.A.	MBOT-0002-P06	NETWORKED THREE-DIMENSIONAL PRINTER WITH THREE-DIMENSIONAL SCANNER	13/556,368	July 24, 2012	8747097
U.S.A.	MBOT-0002-P07	WEB-BASED DESIGN TOOLS FOR THREE-DIMENSIONAL PRINTING	13/556,515	July 24, 2012	9022770
U.S.A.	MBOT-0002-P09	SOCIAL NETWORKING FOR THREE-DIMENSIONAL PRINTERS	13/557,353	July 25, 2012	8992202

Country	File Number	Title	App. Number	Filing Date	Patent Number
U.S.A.	MBOT-0002-P11	NETWORKED THREE- DIMENSIONAL PRINTING SYSTEM WITH A DRAG-AND- DROP INTERFACE FOR QUEUE MANAGEMENT	15/233,287	August 10, 2016	10114591
U.S.A.	MBOT-0002-P12	NETWORKED THREE- DIMENSIONAL PRINTING	16/171,449	October 26, 2018	10908849
U.S.A.	MBOT-0002-P13	NETWORKED THREE- DIMENSIONAL PRINTING	17/163,795	February 1, 2021	
Australia	MBOT-0002-PAU	NETWORKED THREE- DIMENSIONAL PRINTING	2012347683	December 7, 2012	2012347683
China	MBOT-0002-PC1	NETWORKED THREE- DIMENSIONAL PRINTING	201710343314.5	December 7, 2012	ZL201710343314.5
China	MBOT-0002-PCN	NETWORKED THREE- DIMENSIONAL PRINTING	201280069378.6	December 7, 2012	ZL201280069378.6
Germany	MBOT-0002-PDE	NETWORKED THREE- DIMENSIONAL PRINTING	12856556.1	December 7, 2012	602012071788.2
Europe	MBOT-0002-PE1	NETWORKED THREE- DIMENSIONAL PRINTING	20190330.9	December 7, 2012	
Europe	MBOT-0002-PBP	NETWORKED THREE- DIMENSIONAL PRINTING	12856556.1	December 7, 2012	2788910
France	MBOT-0002-PFR	NETWORKED THREE- DIMENSIONAL PRINTING	12856556.1	December 7, 2012	2788910
United Kingdom	MBOT-0002-PGB	NETWORKED THREE- DIMENSIONAL PRINTING	12856556.1	December 7, 2012	2788910

Country	File Number	Title	App. Number	Filing Date	Patent Number
Japan	MBOT-0002-PJP	NETWORKED THREE- DIMENSIONAL PRINTING	2014-546114	December 7, 2012	6159734
Republic of Korea	MBOT-0002-PKR	NETWORKED THREE- DIMENSIONAL PRINTING	10-2014-7017129	December 7, 2012	10-2157637
New Zealand	MBOT-0002-PNZ	NETWORKED THREE- DIMENSIONAL PRINTING	626212	December 7, 2012	626212
PCT	MBOT-0002-PWO	NETWORKED THREE- DIMENSIONAL PRINTING	PCT/US12/68429	December 7, 2012	
U.S.A.	MBOT-0016-P01	FABRICATION OF OBJECTS WITH ENHANCED STRUCTURAL CHARACTERISTICS	13/624,067	September 21, 2012	9308690
U.S.A.	MBOT-0017-P04	AUGMENTED THREE- DIMENSIONAL PRINTING	15/854,695	December 26, 2017	10800105
U.S.A.	MBOT-0027-P01	DOWNLOADABLE THREE- DIMENSIONAL MODELS	13/914,448	June 10, 2013	9844914
U.S.A.	MBOT-0027-P04	DOWNLOADABLE THREE- DIMENSIONAL MODELS	15/844,744	December 18, 2017	10005226
U.S.A.	MBOT-0027-P05	DOWNLOADABLE THREE- DIMENSIONAL MODELS	16/013,066	June 20, 2018	10150248
U.S.A.	MBOT-0034-P01	AUTOMATED MODEL SELECTION	13/958,701	August 5, 2013	9626142
U.S.A.	MBOT-0044-P01	THREE- DIMENSIONAL PRINTING OF LARGE OBJECTS	14/020,658	September 6, 2013	9878495
U.S.A.	MBOT-0046-P03	THREE- DIMENSIONAL PRINTER TOOL SYSTEMS	14/580,530	December 23, 2014	9481132

Country	File Number	Title	App. Number	Filing Date	Patent Number
U.S.A.	MBOT-0046-P04	THREE-DIMENSIONAL PRINTER TOOL SYSTEMS	14/580,711	December 23, 2014	9469072
U.S.A.	MBOT-0046-P05	THREE-DIMENSIONAL PRINTER TOOL SYSTEMS	15/337,477	October 28, 2016	10214004
U.S.A.	MBOT-0046-P08	THREE-DIMENSIONAL PRINTER TOOL SYSTEMS	16/733,871	January 3, 2020	11285649
U.S.A.	MBOT-0046-P09	THREE-DIMENSIONAL PRINTER TOOL SYSTEMS	17/690,334	March 9, 2022	
Germany	MBOT-0046-PD1	THREE-DIMENSIONAL PRINTER TOOL SYSTEMS	19189799.0	November 10, 2014	60 2014 079 474.2
Europe	MBOT-0046-PE1	THREE-DIMENSIONAL PRINTER TOOL SYSTEMS	19189799.0	November 10, 2014	3581365
United Kingdom	MBOT-0046-PG1	THREE-DIMENSIONAL PRINTER TOOL SYSTEMS	19189799.0	November 10, 2014	3581365
Netherlands	MBOT-0046-PN1	THREE-DIMENSIONAL PRINTER TOOL SYSTEMS	19189799.0	November 10, 2014	3581365
U.S.A.	MBOT-0049-P01	TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING	14/064,974	October 28, 2013	9233504
U.S.A.	MBOT-0049-P02	TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING	14/992,127	January 11, 2016	10093061
U.S.A.	MBOT-0049-P03	TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING	16/153,224	October 5, 2018	10569466

Country	File Number	Title	App. Number	Filing Date	Patent Number
U.S.A.	MBOT-0049-P04	TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING	16/796,122	February 20, 2020	11167464
U.S.A.	MBOT-0049-P05	TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING	17/516,974	November 2, 2021	
U.S.A.	MBOT-0050-P01	THREE-DIMENSIONAL FABRICATION WITH CAVITY FILLING	14/065,449	October 29, 2013	9475233
U.S.A.	MBOT-0050-P02	DEVICE FOR THREE-DIMENSIONAL FABRICATION WITH CAVITY FILLING	15/332,653	October 24, 2016	9884450
U.S.A.	MBOT-0050-P03	THREE-DIMENSIONAL FABRICATION WITH CAVITY FILLING	15/866,990	January 10, 2018	10836090
U.S.A.	MBOT-0051-P01	THREE-DIMENSIONAL PRINTER WITH FORCE DETECTION	14/065,516	October 29, 2013	9168698
U.S.A.	MBOT-0051-P02	THREE-DIMENSIONAL PRINTER WITH FORCE DETECTION	14/922,267	October 26, 2015	10556381
U.S.A.	MBOT-0051-P03	PLANARIZING BUILD SURFACES IN THREE-DIMENSIONAL PRINTING	16/784,889	February 7, 2020	10994462
U.S.A.	MBOT-0054-P01	CONTROLLING BUILD CHAMBER TEMPERATURE	14/147,567	January 5, 2014	9561626
U.S.A.	MBOT-0067-P01	PURGE WALL FOR THREE-DIMENSIONAL PRINTING	14/499,464	September 29, 2014	9545756
U.S.A.	MBOT-0070-P01	DETECTION AND USE OF PRINTER CONFIGURATION INFORMATION	14/587,548	December 31, 2014	10421238
U.S.A.	MBOT-0070-P02	DETECTION AND USE OF PRINTER CONFIGURATION INFORMATION	16/576,044	September 19, 2019	10987878

Country	File Number	Title	App. Number	Filing Date	Patent Number
U.S.A.	MBOT-0070-P03	DETECTION AND USE OF PRINTER CONFIGURATION INFORMATION	17/239,885	April 26, 2021	
U.S.A.	MBOT-0074-P01	INFILL TECHNIQUES IN THREE-DIMENSIONAL PRINTING	15/167,422	May 27, 2016	10532511
U.S.A.	MBOT-0078-P01	BUILD PATTERNS FOR SURFACES OF A THREE-DimensionALLY PRINTED OBJECT	15/331,290	October 21, 2016	10532552
U.S.A.	MBOT-0081-P01	FILAMENT SWAPPING IN THREE-DIMENSIONAL PRINTING	15/395,230	December 30, 2016	10500837
U.S.A.	MBOT-0081-P02	FILAMENT SWAPPING IN THREE-DIMENSIONAL PRINTING	16/676,885	November 7, 2019	10773511



UNITED STATES
PATENT AND TRADEMARK OFFICE

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ELECTRONIC ACKNOWLEDGEMENT RECEIPT

APPLICATION #
13/556,368

RECEIPT DATE / TIME
11/13/2024 04:31:30 PM Z ET

ATTORNEY DOCKET #
MBOT-0002-P06

Title of Invention

NETWORKED THREE-DIMENSIONAL PRINTER WITH THREE-DIMENSIONAL SCANNER

Application Information

APPLICATION TYPE Utility - Nonprovisional Application
 under 35 USC 111(a)

PATENT # 8747097

CONFIRMATION # 9593

FILED BY LYNNELLE SWAJA

PATENT CENTER # 67953063

FILING DATE 07/24/2012

CUSTOMER # 43520

FIRST NAMED Nathaniel B. Pettis
INVENTOR

CORRESPONDENCE -
ADDRESS

AUTHORIZED BY Peter Ims

Documents

TOTAL DOCUMENTS: 3

DOCUMENT	PAGES	DESCRIPTION	SIZE (KB)
2024-11-13 POA.pdf	2	Power of Attorney	76 KB
2024-11-13 Change of Correspondence Address.pdf	2	Change of Address	418 KB
2024-11-13 373b.pdf	16	Assignee showing of ownership per 37 CFR 3.73	577 KB

Digest

DOCUMENT	MESSAGE DIGEST(SHA-512)
2024-11-13 POA.pdf	CB4F5633DB18A97827A911EFB4FE0DAA990B5804764BC0E35 188B8FD00AB849BF041F709F0FFE90DDC377AAFBF44B1AB8 907D91831E5DEFECF0628A16AA40507

2024-11-13 Change of Correspondence Address.pdf	9BD6E7175E3866BF56C5EBE0EEA0BDC81D8FCA968FEDD65 FC83C998D9DE832FD6EEC78BE0B7481038F1A7A46C0E2DC0 5F2A80093F66EE9D318E33A55DE23D294
2024-11-13 373b.pdf	B4572C7EB57F6CD8A1CFA0C6DB27ACEF13EC2B30F085C7F DAB1B365A4F5E67E017E2D2773601DC249711C27DCFED480 9AFFD26E444DA5A3356AC986C43E3863D

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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 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.

TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

Note: This form is to be submitted with a Power of Attorney to identify the application to which the Power of Attorney is directed.

Application Number	<u>13/556,368</u>
Filing Date	<u>July 24, 2012</u>
First Named Inventor	<u>Nathaniel B. Pettis</u>
Title	<u>NETWORKED THREE-DIMENSIONAL PRINTER WITH THREE-DIMENSIONAL SCANNER</u>
Art Unit	<u>1743</u>
Examiner Name	<u>DAVID N. BROWN II</u>
Attorney Docket Number	<u>---</u>

SIGNATURE of Patent Practitioner

Signature	<u>/Peter J. Ims/</u>	Date	<u>2024-11-13</u>
Name	<u>PETER J. IMS</u>	Telephone	<u>612/334-3222</u>
Registration Number	<u>48774</u>		

POWER OF ATTORNEY

Principal's Name: Stratasys, Inc.

Principal's Address: 7665 Commerce Way, Eden Prairie, MN 55344

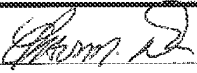
Principal hereby revokes all previous powers of attorney given in the application identified in the attached transmittal letter (the APPLICATION).

Principal hereby appoints Practitioner(s) associated with the following Customer Number as its attorney(s) or agent(s) to prosecute the APPLICATION and to transact all business in the United States Patent and Trademark Office connected therewith. Principal hereby ratifies all previous actions taken by the Practitioner(s) in connection with the APPLICATION:

27,367

Principal is empowered to act in the APPLICATION because Principal is the sole owner of the entire right, title and interest of the APPLICATION, one owner of a collection of owners of the entire right, title and interest of the APPLICATION, a person to whom at least one inventor is under an obligation to assign the APPLICATION, and/or a person who otherwise has sufficient proprietary interest to act as Applicant for the APPLICATION.

SIGNATURE of Principal

Signature		Date	April 2, 2013
Name	Larry Doerr		
Title	Executive Vice President		

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.

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Patent**Address to:
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P.O. Box 1450
Alexandria, VA 22313-1450

Patent Number	8747097
Issue Date	2012-0724
Application Number	13556368
Filing Date	2014-06-10
First Named Inventor	Nathaniel B. Pettis
Attorney Docket Number	

Please change the Correspondence Address for the above-identified patent to:

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I am the:

☐ Patentee.☐ If the Patentee was not the applicant for patent (37 CFR 1.42), then a Statement under 37 CFR 3.73(c) (Form PTO/AIA/96 or equivalent) is enclosed or was filed on _____. See 37 CFR 3.71.☒ Attorney or agent of record. Registration Number 48774.☐ Patent practitioner acting in a representative capacity whose correspondence address is the correspondence address of record. Notice has been given to the patentee or owner. Registration Number 48774.

Signature /Peter J. Ims/

Typed or
Printed Name Peter J. Ims

Date 2024-11-13

Telephone 612/334-3222

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. Submit multiple forms if more than one signature is required, see below*.

☒ *Total of 1 forms are submitted.

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

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Routine uses of the information in this record may include disclosure to: 1) law enforcement, in the event that the system of records indicates a violation or potential violation of law; 2) a Federal, state, local, or international agency, in response to its request; 3) a contractor of the USPTO having need for the information in order to perform a contract; 4) the Department of Justice for determination of whether the Freedom of Information Act (FOIA) requires disclosure of the record; 5) a Member of Congress submitting a request involving an individual to whom the record pertains, when the individual has requested the Member's assistance with respect to the subject matter of the record; 6) a court, magistrate, or administrative tribunal, in the course of presenting evidence, including disclosures to opposing counsel in the course of settlement negotiations; 7) the Administrator, General Services Administration (GSA), or their designee, during an inspection of records conducted by GSA under authority of 44 U.S.C. 2904 and 2906, in accordance with the GSA regulations and any other relevant (i.e., GSA or Commerce) directive, where such disclosure shall not be used to make determinations about individuals; 8) 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)); 9) the Office of Personnel Management (OPM) for personnel research purposes; and 9) the Office of Management and Budget (OMB) for legislative coordination and clearance.

If you do not furnish the information requested on this form, the USPTO may not be able to process and/or examine your submission, which may result in termination of proceedings, abandonment of the application, and/or expiration of the patent.

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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/556,368	07/24/2012	Nathaniel B. Pettis	MBOT-0002-P06

CONFIRMATION NO. 9593

27367

WESTMAN CHAMPLIN & KOEHLER, P.A.

121 South Eighth Street

Suite 1100

Minneapolis, MN 55402

POA ACCEPTANCE LETTER



OC000000080820948

Date Mailed: 11/19/2024

NOTICE OF ACCEPTANCE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 11/13/2024.

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.

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/nhassani/



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
13/556,368	07/24/2012	Nathaniel B. Pettis	MBOT-0002-P06

CONFIRMATION NO. 9593

43520
STRATEGIC PATENTS P.C.
P.O. BOX 920629
NEEDHAM, MA 02492

POWER OF ATTORNEY NOTICE



OC000000080820826

Date Mailed: 11/19/2024

NOTICE REGARDING CHANGE OF POWER OF ATTORNEY

This is in response to the Power of Attorney filed 11/13/2024.

- 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).

Questions about the contents of this notice and the requirements it sets forth should be directed to the Office of Data Management, Application Assistance Unit, at (571) 272-4000 or (571) 272-4200 or 1-888-786-0101.

/nhassani/