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Application Number: 16796122

Document Date: 02/20/2020

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- Drawing

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TRANSMITTAL FOR POWER OF ATTORNEY TO ONE OR MORE REGISTERED PRACTITIONERS

NOTE: This form is to be submitted with the Power of Attorney by Applicant form (PTO/AIA/82B) to identify the application to which the Power of Attorney is directed, in accordance with 37 CFR 1.5, unless the application number and filing date are identified in the Power of Attorney by Applicant form. If neither form PTO/AIA/82A nor form PTO/AIA/82B identifies the application to which the Power of Attorney is directed, the Power of Attorney will not be recognized in the application.

Application Number	Filed Herewith
Filing Date	February 20, 2020
First Named Inventor	Ariel Douglas
Title	TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING
Art Unit	not yet assigned
Examiner Name	not yet assigned
Attorney Docket Number	MBOT-0049-P04

SIGNATURE of Applicant or Patent Practitioner

Signature	/Thomas J. Bassolino/	Date (Optional)	2020-02-20
Name	Thomas J. Bassolino	Registration Number	65946
Title (if Applicant is a juristic entity)			
Applicant Name (if Applicant is a juristic entity)	MakerBot Industries, LLC		

NOTE: This form must be signed in accordance with 37 CFR 1.33. See 37 CFR 1.4(d) for signature requirements and certifications. If more than one applicant, use multiple forms.

☐

*Total of _____ forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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

POWER OF ATTORNEY BY APPLICANT

I hereby revoke all previous powers of attorney given in the application identified in either the attached transmittal letter or the boxes below.

Application Number	Filing Date

(Note: The boxes above may be left blank if information is provided on form PTO/AIA/82A.)

☒ I hereby appoint the Patent Practitioner(s) associated with the following Customer Number as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above:

43520

OR

☐ I hereby appoint Practitioner(s) named in the attached list (form PTO/AIA/82C) as my/our attorney(s) or agent(s), and to transact all business in the United States Patent and Trademark Office connected therewith for the patent application referenced in the attached transmittal letter (form PTO/AIA/82A) or identified above. (Note: Complete form PTO/AIA/82C.)

Please recognize or change the correspondence address for the application identified in the attached transmittal letter or the boxes above to:

☒ The address associated with the above-mentioned Customer Number

OR

☐ The address associated with Customer Number:

OR

Firm or Individual Name				
Address				
City	State	Zip		
Country				
Telephone	Email			

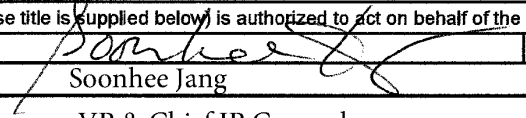
I am the Applicant (if the Applicant is a juristic entity, list the Applicant name in the box):

MakerBot Industries, LLC

- ☐ Inventor or Joint Inventor (title not required below)
- ☐ Legal Representative of a Deceased or Legally Incapacitated Inventor (title not required below)
- ☒ Assignee or Person to Whom the Inventor is Under an Obligation to Assign (provide signer's title if applicant is a juristic entity)
- ☐ Person Who Otherwise Shows Sufficient Proprietary Interest (e.g., a petition under 37 CFR 1.46(b)(2) was granted in the application or is concurrently being filed with this document) (provide signer's title if applicant is a juristic entity)

SIGNATURE of Applicant for Patent

The undersigned (whose title is supplied below) is authorized to act on behalf of the applicant (e.g., where the applicant is a juristic entity).

Signature		Date (Optional)	1/20/16
Name	Soonhee Jang		
Title	VP & Chief IP Counsel		

NOTE: Signature - This form must be signed by the applicant in accordance with 37 CFR 1.33. See 37 CFR 1.4 for signature requirements and certifications. If more than one applicant, use multiple forms.

☐ Total of forms are submitted.

This collection of information is required by 37 CFR 1.131, 1.32, and 1.33. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.11 and 1.14. This collection is estimated to take 3 minutes to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. **SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.**

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

POWER OF ATTORNEY BY APPLICANT

No more than ten (10) patent practitioners total may be appointed as set forth below by name and registration number. This page need not be submitted if appointing the Patent Practitioner(s) associated with a Customer Number (see form PTO/AIA/82B):

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

Electronic Patent Application Fee Transmittal				
Application Number:				
Filing Date:				
Title of Invention:		TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING		
First Named Inventor/Applicant Name:		Ariel Douglas		
Filer:		Thomas John Bassolino/Paula Ng		
Attorney Docket Number:		MBOT-0049-P04		
Filed as Large Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
UTILITY APPLICATION FILING	1011	1	300	300
UTILITY SEARCH FEE	1111	1	660	660
UTILITY EXAMINATION FEE	1311	1	760	760
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 (\$)				1720

Electronic Acknowledgement Receipt	
EFS ID:	38643389
Application Number:	16796122
International Application Number:	
Confirmation Number:	1760
Title of Invention:	TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING
First Named Inventor/Applicant Name:	Ariel Douglas
Customer Number:	43520
Filer:	Thomas John Bassolino/Paula Ng
Filer Authorized By:	Thomas John Bassolino
Attorney Docket Number:	MBOT-0049-P04
Receipt Date:	20-FEB-2020
Filing Date:	
Time Stamp:	14:34:19
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$1720
RAM confirmation Number	E20202JE34407248
Deposit Account	504262
Authorized User	Paula Ng
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.16 (National application filing, search, and examination fees) 37 CFR 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-0049-P04_20200220_ADS.pdf	1256733	no	10
			ec2c29de48fe6cf4a377b4d2df4c0a3f70e453cf		
Warnings:					
Information:					
2	Drawings-only black and white line drawings	MBOT-0049-P04_20200220_Drawings_PTO.pdf	157969	no	7
			c06c738dcc38537cd6744d5008ce9375255c1278		
Warnings:					
Information:					
3		MBOT-0049-P04_20200220_Specification.pdf	194773	yes	39
			882c5c5b2553b8cff33c4a86c1419c7052885e7e		
	Multipart Description/PDF files in .zip description				
	Document Description		Start	End	
	Specification		1	34	
	Claims		35	38	
	Abstract		39	39	
Warnings:					
Information:					
4	Oath or Declaration filed	MBOT-0049-P04_20200220_Executed_Substitute_Statement_Douglas.pdf	186905	no	3
			130c25c5baeb3c29fbdf6e68c8c96b5f0da7d4f0c		
Warnings:					
Information:					
5	Oath or Declaration filed	MBOT-0049-P04_20200220_ExecutedDeclaration_Steiner.pdf	96191	no	4
			e6fed9d41b8d488cd97257d091b046ada247c5e		

Warnings:					
Information:					
6	Oath or Declaration filed	MBOT-0049-P04_20200220_ExecutedDeclaration_Jennings.pdf	1018460	no	4
			e2773580fbb5e0f6d2355b6e0e7f6330c40ff280		
Warnings:					
Information:					
7	Oath or Declaration filed	MBOT-0049-P04_20200220_ExecutedDeclaration_Buel.pdf	117984	no	4
			403ee1ee82cecb40b5736c26fc523d69b0f79842		
Warnings:					
The page size in the PDF is too large. The pages should be 8.5 x 11 or A4. If this PDF is submitted, the pages will be resized upon entry into the Image File Wrapper and may affect subsequent processing					
Information:					
8	Oath or Declaration filed	MBOT-0049-P04_20200220_ExecutedDeclaration_Moschella.pdf	118957	no	4
			6ce1a831d760e38a1feac09efc78f13494f723f7		
Warnings:					
The page size in the PDF is too large. The pages should be 8.5 x 11 or A4. If this PDF is submitted, the pages will be resized upon entry into the Image File Wrapper and may affect subsequent processing					
Information:					
9	Power of Attorney	MBOT-0049-P04_20200220_POA.pdf	283001	no	4
			a590756781b3a962f62c3a8220e96c1085d52676		
Warnings:					
Information:					
10	Fee Worksheet (SB06)	fee-info.pdf	34783	no	2
			004d7562106c77a664974e7611b501b7d9abef0b		
Warnings:					
Information:					
Total Files Size (in bytes):			3465756		

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.

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

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	MBOT-0049-P04
		Application Number	
Title of Invention	TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING		
The application data sheet is part of the provisional or nonprovisional application for which it is being submitted. The following form contains the bibliographic data arranged in a format specified by the United States Patent and Trademark Office as outlined in 37 CFR 1.76. This document may be completed electronically and submitted to the Office in electronic format using the Electronic Filing System (EFS) or the document may be printed and included in a paper filed application.			

Secrecy Order 37 CFR 5.2:

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

Inventor Information:

Inventor	1				Remove	
Legal Name						
Prefix	Given Name	Middle Name	Family Name	Suffix		
	Ariel		Douglas			
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service						
City	Brooklyn	State/Province	NY	Country of Residence	US	
Mailing Address of Inventor:						
Address 1	442-d Lorimer Street					
Address 2	#135					
City	Brooklyn	State/Province	NY			
Postal Code	11206	Country	US			
Inventor	2				Remove	
Legal Name						
Prefix	Given Name	Middle Name	Family Name	Suffix		
	Robert	J.	Steiner			
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service						
City	Brooklyn	State/Province	NY	Country of Residence	US	
Mailing Address of Inventor:						
Address 1	MakerBot Industries, LLC					
Address 2	1 Metrotech Center, 21st Floor					
City	Brooklyn	State/Province	NY			
Postal Code	11201	Country	US			
Inventor	3				Remove	
Legal Name						
Prefix	Given Name	Middle Name	Family Name	Suffix		
	Aric	Lynn	Jennings			
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service						

Application Data Sheet 37 CFR 1.76		Attorney Docket Number		MBOT-0049-P04	
		Application Number			
Title of Invention		TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING			
City	Brooklyn	State/Province	NY	Country of Residence ⁱ	US
Mailing Address of Inventor:					
Address 1		MakerBot Industries, LLC			
Address 2		1 Metrotech Center, 21st Floor			
City	Brooklyn	State/Province	NY		
Postal Code	11201	Country ⁱ	US		
Inventor	4				Remove
Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
	William	B.	Buel		
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service					
City	Sunnyvale	State/Province	CA	Country of Residence ⁱ	US
Mailing Address of Inventor:					
Address 1		395 E. Evelyn Avenue			
Address 2		Apt. 127			
City	Sunnyvale	State/Province	CA		
Postal Code	94086	Country ⁱ	US		
Inventor	5				Remove
Legal Name					
Prefix	Given Name	Middle Name	Family Name	Suffix	
	Anthony	D.	Moschella		
Residence Information (Select One) ☒ US Residency ☐ Non US Residency ☐ Active US Military Service					
City	Brooklyn	State/Province	NY	Country of Residence ⁱ	US
Mailing Address of Inventor:					
Address 1		MakerBot Industries, LLC			
Address 2		1 Metrotech Center, 21st Floor			
City	Brooklyn	State/Province	NY		
Postal Code	11201	Country ⁱ	US		
All Inventors Must Be Listed - Additional Inventor Information blocks may be generated within this form by selecting the Add button. Add					

Correspondence Information:

Enter either Customer Number or complete the Correspondence Information section below.
For further information see 37 CFR 1.33(a).

☐ An Address is being provided for the correspondence information of this application.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	MBOT-0049-P04	
		Application Number		
Title of Invention	TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING			
Customer Number	43520			
Email Address	patents@stratpat.com		Add Email	Remove Email

Application Information:

Title of the Invention	TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING			
Attorney Docket Number	MBOT-0049-P04	Small Entity Status Claimed	☐	
Application Type	Nonprovisional			
Subject Matter	Utility			
Total Number of Drawing Sheets (if any)	7	Suggested Figure for Publication (if any)	3	

Filing By Reference:

Only complete this section when filing an application by reference under 35 U.S.C. 111(c) and 37 CFR 1.57(a). Do not complete this section if application papers including a specification and any drawings are being filed. Any domestic benefit or foreign priority information must be provided in the appropriate section(s) below (i.e., "Domestic Benefit/National Stage Information" and "Foreign Priority Information").

For the purposes of a filing date under 37 CFR 1.53(b), the description and any drawings of the present application are replaced by this reference to the previously filed application, subject to conditions and requirements of 37 CFR 1.57(a).

Application number of the previously filed application	Filing date (YYYY-MM-DD)	Intellectual Property Authority or Country

Publication Information:

☐ Request Early Publication (Fee required at time of Request 37 CFR 1.219)

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

Representative Information:

Representative information should be provided for all practitioners having a power of attorney in the application. Providing this information in the Application Data Sheet does not constitute a power of attorney in the application (see 37 CFR 1.32). Either enter Customer Number or complete the Representative Name section below. If both sections are completed the customer Number will be used for the Representative Information during processing.

Please Select One:	☒ Customer Number	☐ US Patent Practitioner	☐ Limited Recognition (37 CFR 11.9)
Customer Number	43520		

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	MBOT-0049-P04
		Application Number	
Title of Invention	TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING		

Domestic Benefit/National Stage Information:

This section allows for the applicant to either claim benefit under 35 U.S.C. 119(e), 120, 121, 365(c), or 386(c) or indicate National Stage entry from a PCT application. Providing benefit claim information in the Application Data Sheet constitutes the specific reference required by 35 U.S.C. 119(e) or 120, and 37 CFR 1.78.

When referring to the current application, please leave the "Application Number" field blank.

Prior Application Status	Pending				Remove
Application Number	Continuity Type		Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)	
	Continuation of		16/153224	2018-10-05	
Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
16/153224	Continuation of	14/992127	2016-01-11	10093061	2018-10-09
Prior Application Status	Patented				Remove
Application Number	Continuity Type	Prior Application Number	Filing Date (YYYY-MM-DD)	Patent Number	Issue Date (YYYY-MM-DD)
14/992127	Continuation of	14/064974	2013-10-28	9233504	2016-01-12
Prior Application Status	Expired				Remove
Application Number	Continuity Type		Prior Application Number	Filing or 371(c) Date (YYYY-MM-DD)	
14/064974	Claims benefit of provisional		61/719874	2012-10-29	
Additional Domestic Benefit/National Stage Data may be generated within this form by selecting the Add button.					

Foreign Priority Information:

This section allows for the applicant to claim priority to a foreign application. Providing this information in the application data sheet constitutes the claim for priority as required by 35 U.S.C. 119(b) and 37 CFR 1.55. When priority is claimed to a foreign application that is eligible for retrieval under the priority document exchange program (PDX)ⁱ the information will be used by the Office to automatically attempt retrieval pursuant to 37 CFR 1.55(i)(1) and (2). Under the PDX program, applicant bears the ultimate responsibility for ensuring that a copy of the foreign application is received by the Office from the participating foreign intellectual property office, or a certified copy of the foreign priority application is filed, within the time period specified in 37 CFR 1.55(g)(1).

Application Number	Country ⁱ	Filing Date (YYYY-MM-DD)	Access Code ⁱ (if applicable)	Remove
Additional Foreign Priority Data may be generated within this form by selecting the Add button.				

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	MBOT-0049-P04
		Application Number	
Title of Invention	TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING		

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications

☐ This application (1) claims priority to or the benefit of an application filed before March 16, 2013 and (2) also contains, or contained at any time, a claim to a claimed invention that has an effective filing date on or after March 16, 2013. NOTE: By providing this statement under 37 CFR 1.55 or 1.78, this application, with a filing date on or after March 16, 2013, will be examined under the first inventor to file provisions of the AIA.

Application Data Sheet 37 CFR 1.76		Attorney Docket Number	MBOT-0049-P04
		Application Number	
Title of Invention	TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING		

Authorization or Opt-Out of Authorization to Permit Access:

When this Application Data Sheet is properly signed and filed with the application, applicant has provided written authority to permit a participating foreign intellectual property (IP) office access to the instant application-as-filed (see paragraph A in subsection 1 below) and the European Patent Office (EPO) access to any search results from the instant application (see paragraph B in subsection 1 below).

Should applicant choose not to provide an authorization identified in subsection 1 below, applicant **must opt-out** of the authorization by checking the corresponding box A or B or both in subsection 2 below.

NOTE: This section of the Application Data Sheet is **ONLY** reviewed and processed with the **INITIAL** filing of an application. After the initial filing of an application, an Application Data Sheet cannot be used to provide or rescind authorization for access by a foreign IP office(s). Instead, Form PTO/SB/39 or PTO/SB/69 must be used as appropriate.

1. Authorization to Permit Access by a Foreign Intellectual Property Office(s)

A. Priority Document Exchange (PDX) - Unless box A in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the European Patent Office (EPO), the Japan Patent Office (JPO), the Korean Intellectual Property Office (KIPO), the State Intellectual Property Office of the People's Republic of China (SIPO), the World Intellectual Property Organization (WIPO), and any other foreign intellectual property office participating with the USPTO in a bilateral or multilateral priority document exchange agreement in which a foreign application claiming priority to the instant patent application is filed, access to: (1) the instant patent application-as-filed and its related bibliographic data, (2) any foreign or domestic application to which priority or benefit is claimed by the instant application and its related bibliographic data, and (3) the date of filing of this Authorization. See 37 CFR 1.14(h)(1).

B. Search Results from U.S. Application to EPO - Unless box B in subsection 2 (opt-out of authorization) is checked, the undersigned hereby **grants the USPTO authority** to provide the EPO access to the bibliographic data and search results from the instant patent application when a European patent application claiming priority to the instant patent application is filed. See 37 CFR 1.14(h)(2).

The applicant is reminded that the EPO's Rule 141(1) EPC (European Patent Convention) requires applicants to submit a copy of search results from the instant application without delay in a European patent application that claims priority to the instant application.

2. Opt-Out of Authorizations to Permit Access by a Foreign Intellectual Property Office(s)

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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	MBOT-0049-P04
		Application Number	
Title of Invention	TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING		

Applicant Information:

Providing assignment information in this section does not substitute for compliance with any requirement of part 3 of Title 37 of CFR to have an assignment recorded by the Office.			
Applicant	1	Remove	
If the applicant is the inventor (or the remaining joint inventor or inventors under 37 CFR 1.45), this section should not be completed. The information to be provided in this section is the name and address of the legal representative who is the applicant under 37 CFR 1.43; or the name and address of the assignee, person to whom the inventor is under an obligation to assign the invention, or person who otherwise shows sufficient proprietary interest in the matter who is the applicant under 37 CFR 1.46. If the applicant is an applicant under 37 CFR 1.46 (assignee, person to whom the inventor is obligated to assign, or person who otherwise shows sufficient proprietary interest) together with one or more joint inventors, then the joint inventor or inventors who are also the applicant should be identified in this section.			
		Clear	
☐ Assignee	Legal Representative under 35 U.S.C. 117		Joint Inventor
Person to whom the inventor is obligated to assign.		Person who shows sufficient proprietary interest	
If applicant is the legal representative, indicate the authority to file the patent application, the inventor is:			
Name of the Deceased or Legally Incapacitated Inventor:			
If the Applicant is an Organization check here. ☒			
Organization Name	MakerBot Industries, LLC		
Mailing Address Information For Applicant:			
Address 1	1 Metrotech Center		
Address 2	21st Floor		
City	Brooklyn	State/Province	NY
Country	US	Postal Code	11201
Phone Number		Fax Number	
Email Address			
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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	MBOT-0049-P04
		Application Number	
Title of Invention	TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING		

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Signature	/Thomas J. Bassolino/		Date (YYYY-MM-DD)	2020-02-20
First Name	Thomas	Last Name	Bassolino	Registration Number
				65946
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Application Data Sheet 37 CFR 1.76		Attorney Docket Number	MBOT-0049-P04
		Application Number	
Title of Invention	TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING		

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

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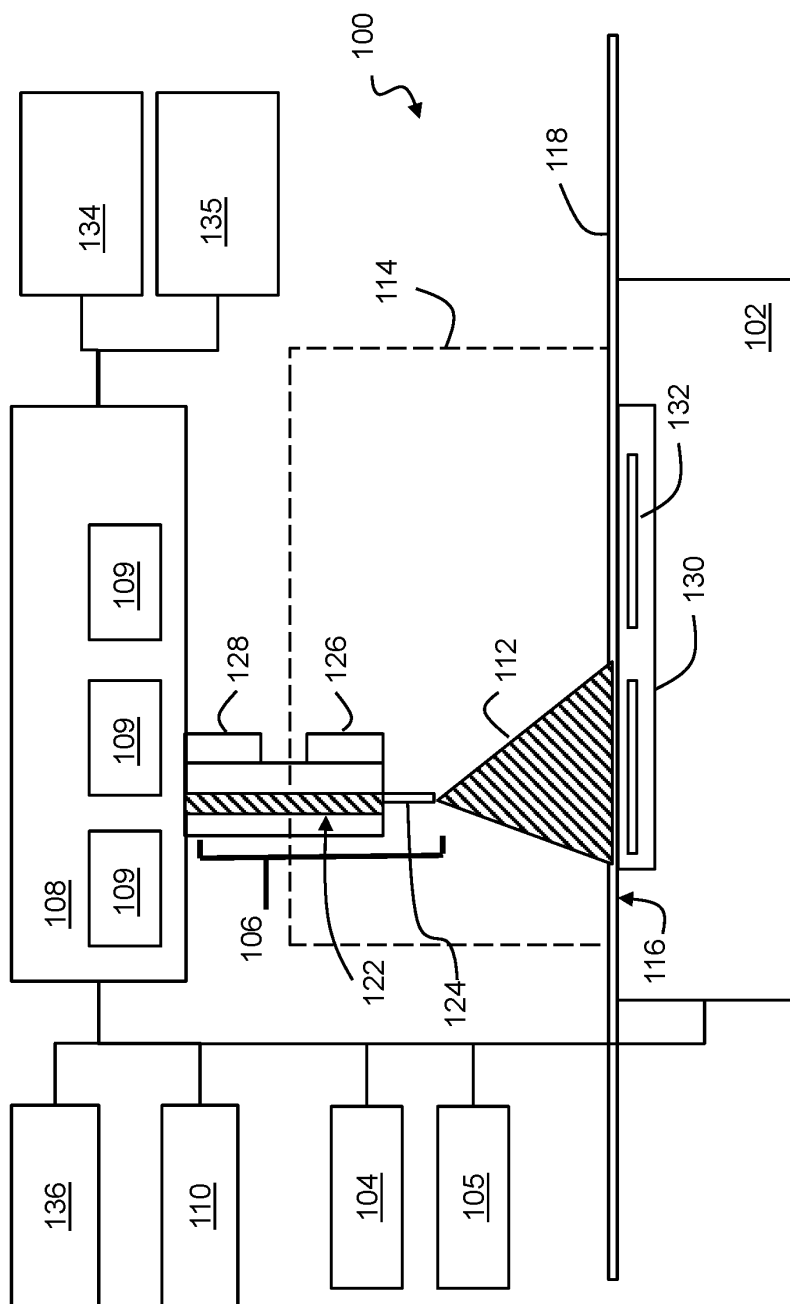
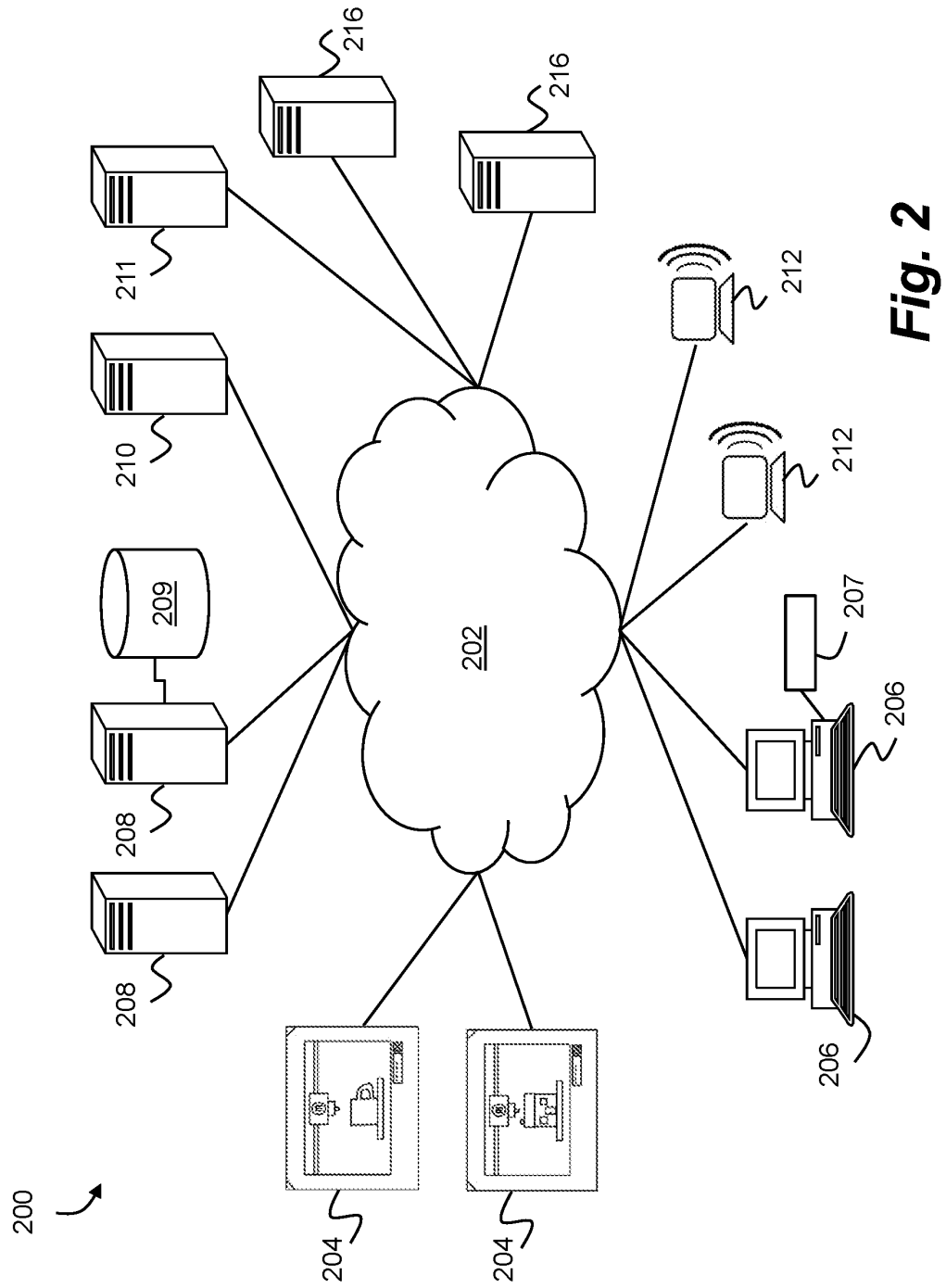
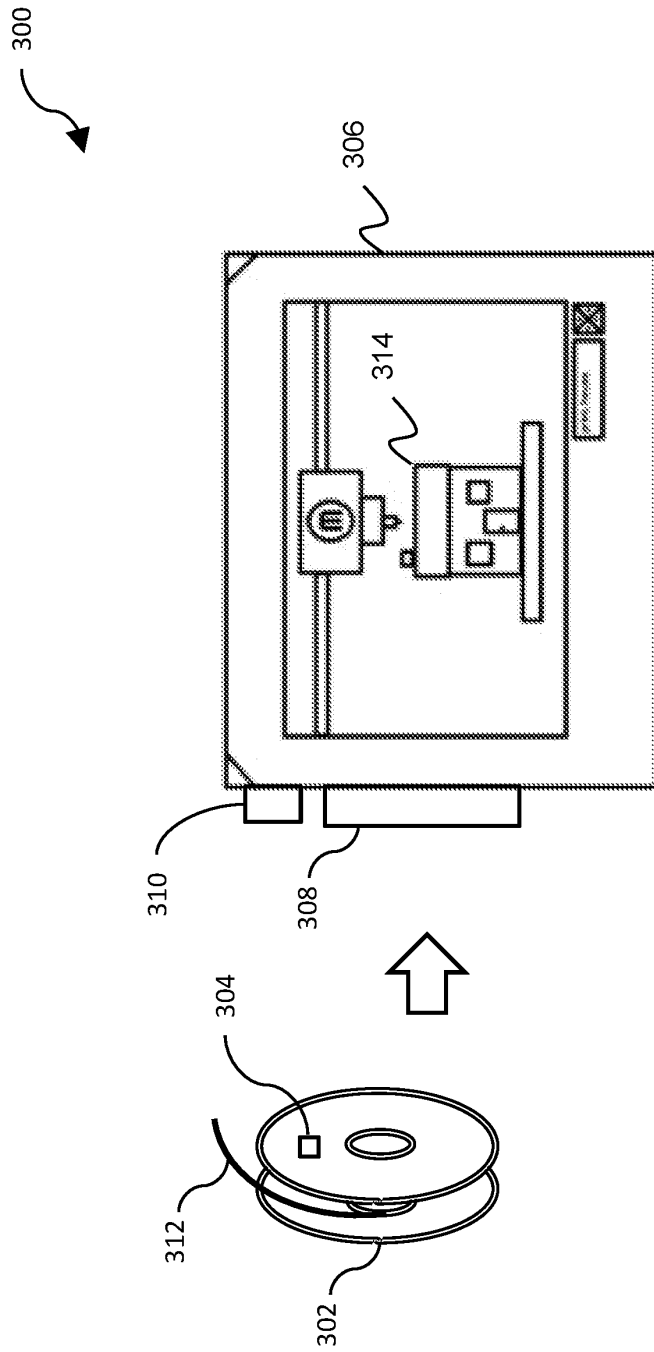


Fig. 1



*Fig. 3*

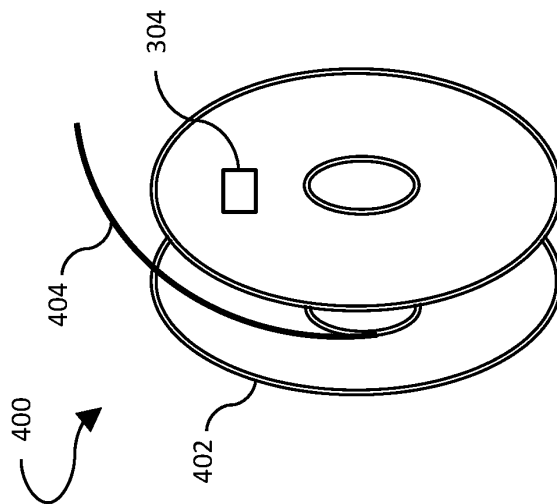


Fig. 4A

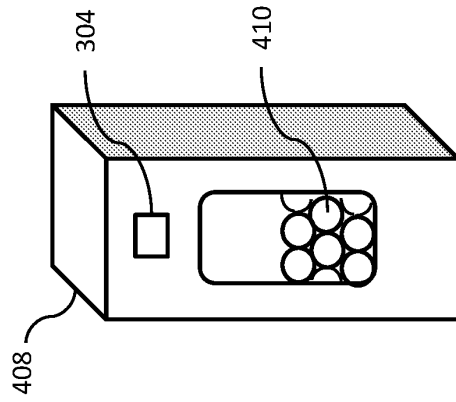


Fig. 4B

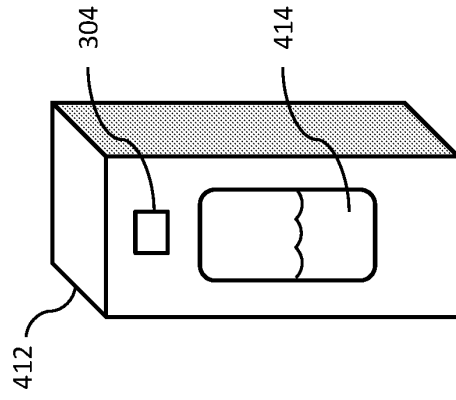


Fig. 4C

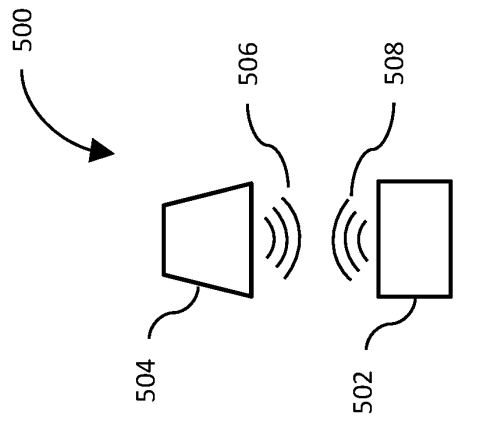


Fig. 5A

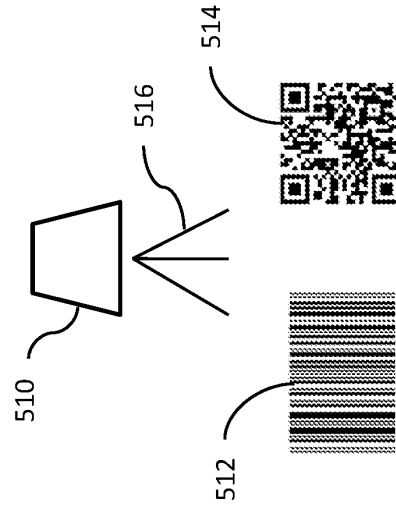


Fig. 5B

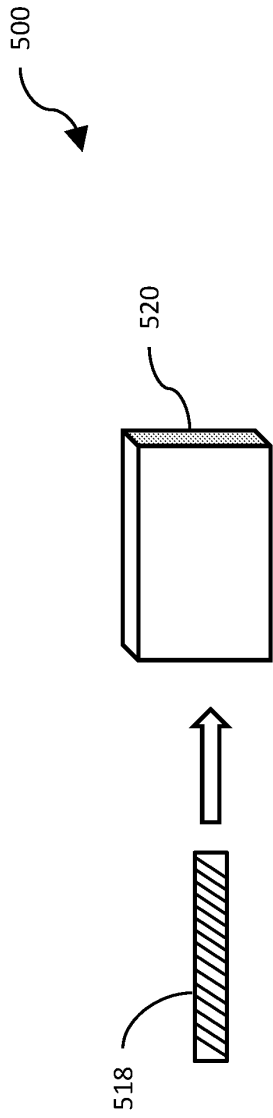


Fig. 5C

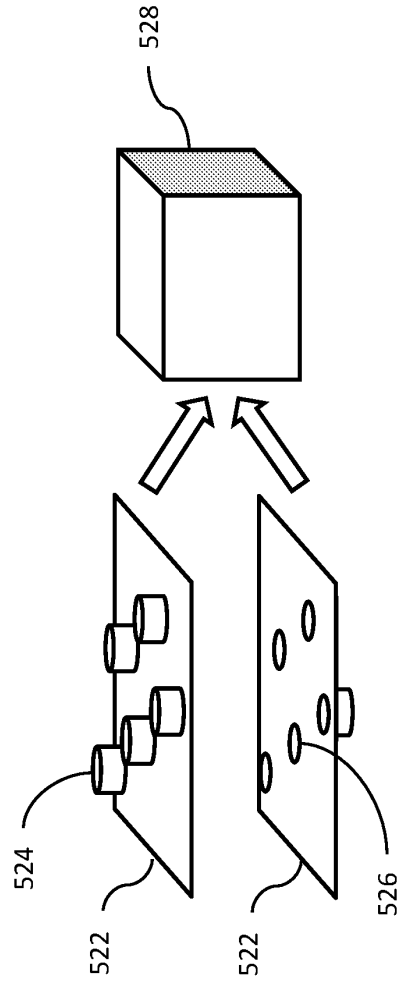
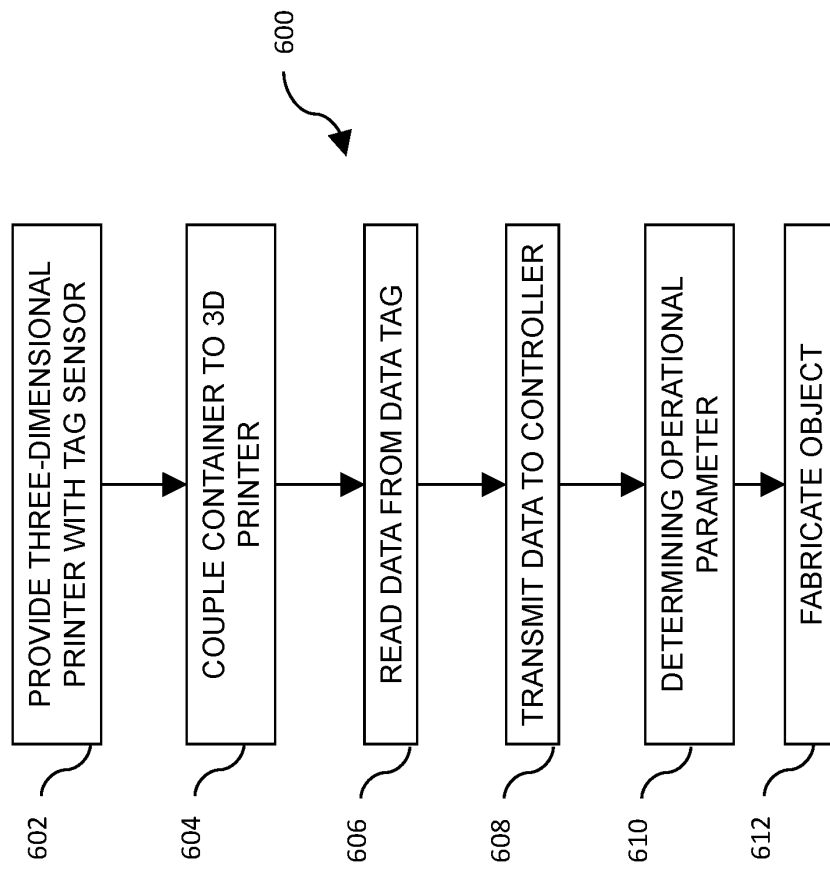


Fig. 5D

*Fig. 6*

TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING**RELATED APPLICATIONS**

[0001] This application is a continuation of U.S. Pat. App. No. 16/153,224 filed on October 5, 2018, which is a continuation of U.S. Pat. App. No. 14/992,127 filed on January 11, 2016 (now U.S. Pat. No. 10,093,061), which is a continuation of U.S. Pat. App. No. 14/064,974 filed on October 28, 2013 (now U.S. Pat. No. 9,233,504), which claims the benefit of U.S. App. No. 61/719,874 filed on October 29, 2012, where the entire content of each of the foregoing is hereby incorporated by reference.

BACKGROUND

[0002] In general, three-dimensional printers use build material of various type and configuration to print three-dimensional objects. In order to properly process the build material through the three-dimensional printer extruder for the fabrication of an object, the three-dimensional printer controller may need at least a basic set of characteristics of the build material to determine operation.

[0003] There remains a need for methods and systems for the automatic detection and acquiring of three-dimensional printer build material characteristics.

SUMMARY

[0004] A supply of build material such as a spool or cartridge is instrumented with a data tag that includes information about the build material. A three-dimensional printer can read the information from the tag and determine how to use the build material during fabrication of a three-dimensional object.

BRIEF DESCRIPTION OF THE FIGURES

[0005] The invention and the following detailed description of certain embodiments thereof may be understood by reference to the following figures:

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

[0007] Fig. 2 depicts a networked three-dimensional printing environment.

[0008] Fig. 3 is a block diagram of a three-dimensional printer and a supply of build material being connected through a coupling.

[0009] Figs. 4A-4C depict embodiments of build material supplies.

[0010] Figs. 5A-5D depict embodiments of tag sensors and data tags.

[0011] Fig. 6 is a flowchart of a method for using a three-dimensional printer to read build material supply tag data and fabricate an object.

DETAILED DESCRIPTION

[0012] All documents mentioned herein are hereby incorporated in their entirety by reference. References to items in the singular should be understood to include items in the plural, and vice versa, unless explicitly stated otherwise or clear from the text. Grammatical conjunctions are intended to express any and all disjunctive and conjunctive combinations of conjoined clauses, sentences, words, and the like, unless otherwise stated or clear from the context. Thus the term “or” should generally be understood to mean “and/or” and so forth.

[0013] The following description emphasizes three-dimensional printers using fused deposition modeling or similar techniques where a bead of material is extruded in a layered series of two dimensional patterns as “roads,” “paths” or the like to form a three-dimensional object from a digital model. It will be understood, however, that numerous additive fabrication techniques are known in the art including without limitation multijet printing, stereolithography, Digital Light Processor (“DLP”) three-dimensional printing, selective laser sintering, and so forth. Such techniques may benefit from the systems and methods described below, and all such printing technologies are intended to fall within the scope of this disclosure, and within the scope of terms such as “printer”, “three-dimensional printer”, “fabrication system”, and so forth, unless a more specific meaning is explicitly provided or otherwise clear from the context.

[0014] In the following description, a variety of terms are used to describe containers for build material such as a container, a spool, a cartridge, and so forth. Unless a different meaning is explicitly provided or otherwise clear from the context, all such terms are intended to refer generally to a container or the like that holds a build material for use by a three-dimensional printer, without regard to whether the container encloses

the build material and without regard to the manner in which the container provides the build material to the three-dimensional printer.

[0015] Fig. 1 is a block diagram of a three-dimensional printer. In general, the printer 100 may include a build platform 102, 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.

[0016] The build platform 102 may include a surface 116 that is rigid and substantially planar. The surface 116 may provide a fixed, dimensionally and positionally stable platform on which to build the object 112. 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. The thermal 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.

[0017] 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 (“PLA”), 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.

[0018] The extruder 106 may include a heater 126 (also referred to as a heating element) 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 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 sufficient 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 124.

[0019] 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.

[0020] 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 106 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. For example, in one aspect the build platform 102 may be coupled to one or more threaded rods by a threaded nut so that the threaded rods can be rotated to provide z-axis positioning of the build platform 102 relative to the extruder 106. This arrangement may advantageously simplify design and improve accuracy by permitting an x-y positioning mechanism for the extruder 106 to be fixed relative to a build volume. 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.

[0021] In general, this may include moving the extruder 106, or moving the build platform 102, or some combination of these. Thus it will be appreciated that any reference to moving an extruder relative to a build platform, working volume, or object, is intended to include movement of the extruder or movement of the build platform, or both, unless a more specific meaning is explicitly provided or otherwise clear from the context. 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.

[0022] The controller 110 may be electrically or otherwise coupled in a communicating relationship with the build platform 102, 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 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, this may include circuitry directly and physically associated with the printer 100 such as an on-board processor. In another aspect, this may be a processor associated with a personal computer or other computing device coupled to the printer 100, e.g., through a wired or wireless connection. Similarly, various functions described herein may be allocated between an on-board processor for the printer 100 and a separate computer. All such computing devices and environments are intended to fall within the meaning of the term “controller” or “processor” as used herein, unless a different meaning is explicitly provided or otherwise clear from the context.

[0023] A variety of additional sensors and other components may be usefully incorporated into the printer 100 described above. These other components are generically depicted as other hardware 134 in Fig. 1, for which the positioning and mechanical/electrical interconnections with other elements of the printer 100 will be readily understood and appreciated by one of ordinary skill in the art. The other hardware 134 may include a temperature sensor positioned to sense a temperature of the surface of the build platform 102, the extruder 126, or any other system components. 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.

[0024] In another aspect, the other hardware 134 may include a sensor to detect a presence of the object 112 at a predetermined location. This may include an optical detector arranged in a beam-breaking configuration to sense the presence of the object 112 at a predetermined location. This may also or instead include an imaging device and image processing circuitry to capture an image of the working volume and to analyze the image to evaluate a position of the object 112. This sensor may be used for example to ensure that the object 112 is removed from the build platform 102 prior to beginning a new build on the working surface 116. Thus the sensor 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 may be used by the controller 110 to issue processing interrupts or otherwise control operation of the printer 100.

[0025] The other hardware 134 may also or instead include a heating element (instead of or in addition to the thermal element 130) to heat the working volume such as a radiant heater or forced hot air heater to maintain the object 112 at a fixed, elevated temperature throughout a build, or the other hardware 134 may include a cooling element to cool the working volume.

[0026] Fig. 2 depicts a networked three-dimensional printing environment. In general, the environment 200 may include a data network 202 interconnecting a plurality of participating devices in a communicating relationship. The participating devices may, for example, include any number of three-dimensional printers 204 (also referred to

interchangeably herein as “printers”), client devices 206, print servers 208, content sources 210, mobile devices 212, and other resources 216.

[0027] The data network 202 may be any network(s) or internetwork(s) suitable for communicating data and control information among participants in the environment 200. 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)) and/or other technologies, 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 200.

[0028] The three-dimensional printers 204 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 to directly connect to a computing device such as a desktop computer that, in turn, provides more general network connectivity to the data network 202.

[0029] The printers 204 might be made to fabricate any object, practical or otherwise, that is amenable to fabrication according to each printer’s capabilities. This may be a model of a house or a tea cup, as depicted, or any other object such as gears or other machine hardware, replications of scanned three-dimensional objects, or fanciful works of art.

[0030] Client devices 206 may be any devices within the environment 200 operated by users to initiate, manage, monitor, or otherwise interact with print jobs at the three-dimensional printers 204. This may include desktop computers, laptop computers, network computers, tablets, or any other computing device that can participate in the environment 200 as contemplated herein. Each client device 206 generally provides a user interface, which may include a graphical user interface, a text or command line interface, a voice-controlled interface, and/or a gesture-based interface to control operation of remote three-dimensional printers 204. The user interface may be maintained by a locally executing application on one of the client devices 206 that receives data and status information from, e.g., the printers 204 and print servers 208 concerning pending or executing print jobs. The user interface may create a suitable display on the client device 206 for user interaction. In other embodiments, the user interface may be remotely served and presented on one of the client devices 206, such as where a print server 208 or one of the three-dimensional printers 204 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 206. In one aspect, the user interface may include a voice controlled interface that receives spoken commands from a user and/or provides spoken feedback to the user.

[0031] A client device 206 may, for example include a removable memory device 207 such as a USB drive, memory stick, or the like, which may be used for example to transfer digital models of three-dimensional objects to printers 204.

[0032] The print servers 208 may include data storage, a network interface, and a processor and/or other processing circuitry. In the following description, where the functions or configuration of a print server 208 are described, this is intended to include corresponding functions or configuration (e.g., by programming) of a processor of the print server 208. In general, the print servers 208 (or processors thereof) may perform a variety of processing tasks related to management of networked printing. For example, the print servers 208 may manage print jobs received from one or more of the client devices 206, and provide related supporting functions such as content search and management. A print server 208 may also include a web server that provides web-based access by the client devices 206 to the capabilities of the print server 208. A print server

208 may also communicate periodically with three-dimensional printers 204 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 or any other suitable interface. A print server 208 may also maintain a list of available three-dimensional printers 204, and may automatically select one of the three-dimensional printers 204 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 208 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 204, and so forth. Where the user specifies criteria, this may similarly include any relevant aspects of three-dimensional printers 204, 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 208 to allocate a print job to a suitable resource.

[0033] In one aspect, the print server 208 may be configured to support interactive voice control of one of the printers 204. For example, the print server 208 may be configured to receive a voice signal (e.g., in digitized audio form) from a microphone or other audio input of the printer 204, and to process the voice signal to extract relevant content such as a command for the printer. Where the command is recognized as a print command, the voice signal may be further processed to extract additional context or relevant details. For example, the voice signal may be processed to extract an object identifier that specifies an object for printing, e.g., by filename, file metadata, or semantic content. The voice signal may also be processed to extract a dimensional specification, such as a scale or absolute dimension for an object. The print server 208 may then generate suitable control signals for return to the printer 204 to cause the printer 204 to fabricate the object. Where an error or omission is detected, the print server 208 may return a request for clarification to the printer 204, which may render the request in spoken form through a speaker, or within a user interface of the printer 204 or an associated device.

[0034] Other user preferences may be usefully stored at the print server 208 to facilitate autonomous, unsupervised fabrication of content from content sources 210. For

example, a print server 208 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, a print queue (which may be a printer-specific or user-specific queue, and which may be hosted at a printer 204, a server 208, or some combination of these) may be managed by a print server 208 according to one or more criteria from a remote user requesting a print job. The print server 208 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 208 and used to automatically direct new content to one or more user-specified ones of the three-dimensional printers 204.

[0035] 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 200. 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 204 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 204. The analysis may include success of a particular printer in fabricating a particular model or of a particular printer in completing print jobs generally. 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 208.

[0036] A print server 208 may also maintain a database 209 of content, along with an interface for users at client devices 206 to search the database 209 and request fabrication of objects in the database 209 using any of the three-dimensional printers 204. Thus in one aspect, a print server 208 (or any system including the print server 208) may include a database 209 of three-dimensional models, and the print server 208 may act as a server that provides a search engine for locating a particular three-dimensional model in the database 209. 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.

[0037] In another aspect, the printer server 208 may periodically search for suitable content at remote locations on the data network, which content may be retrieved to the database 209, or have its remote location (e.g., a URL or other network location identifier) stored in the database 209. In another aspect, the print server 208 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 209 may be manually curated according to any desired standards. In another aspect, printable objects in the database 209 may be manually or automatically annotated according to content type, popularity, editorial commentary, and so forth.

[0038] The print server 208 may more generally provide a variety of management functions. For example, the print server 204 may store a location of 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 204. In another aspect, the print server 208 may maintain exclusive control over at least one of the plurality of three-dimensional printers 204, such that other users and/or print servers cannot control the printer. In another aspect, the print server 208 may submit a print job to a first available one of the plurality of three-dimensional printers 204.

[0039] In another aspect, a print server 208 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 208 may manage subscriptions and automatically direct new content from these subscriptions to a three-dimensional printer 204 according to any user-specified criteria. Thus while it is contemplated that a three-dimensional printer 204 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 208.

[0040] A print server 208 may maintain print queues for participating three-dimensional printers 204. This approach may advantageously alleviate backlogs at individual printers 204, which may have limited memory capacity for pending print jobs. More generally, a print server 208 may, by communicating with multiple three-dimensional printers 204, 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 208 so that users can view pending queues for a variety of different three-dimensional printers 204 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.

[0041] In one aspect, the print queue of one of the print servers 208 may include one or more print jobs for one of the plurality of three-dimensional printers 204. 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 209 and a local memory of the three-dimensional printer 204. In another aspect, the print queue may be stored, for example, in the database 209 of the print server 208. 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 208 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.

[0042] 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.

[0043] In another aspect, a print server 208 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 204, thus enabling a web-based design environment that is directly coupled to one or more fabrication resources.

[0044] The content sources 210 may include any sources of content for fabrication with a three-dimensional printer 204. 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 210 as contemplated herein. By way of non-limiting example, the content sources 210 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 210 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 210 may include artists or other creative enterprises that sell various works of interest. The content sources 210 may include engineering or architectural firms that provide marketing or advertising pieces to existing or prospective customers. The content sources 210 may include marketing or advertising firms that provide promotional items for clients. More generally, the content sources 210 may be any individual or enterprise that provides single or serial objects for fabrication by the three-dimensional printers 204 described herein.

[0045] One or more web servers 211 may provide web-based access to and from any of the other participants in the environment 200. While depicted as a separate network entity, it will be readily appreciated that a web server 211 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 204, one of the print servers 208 (or databases 209 coupled thereto), one of the content sources 210, or any of the other resources 216 described below in a manner that permits user interaction through the data network 202, e.g., from a client device 206 or mobile device 212.

[0046] The mobile devices 212 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 200. The mobile devices 212 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 212 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 212 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 212 initiating the print job and locate a closest printer for fabrication of the object.

[0047] 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. Similarly, a matrix barcode such as a QR code may be employed for localization.

[0048] The other resources 216 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 216 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 216 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 216 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 216 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 216 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 204. In this case, the other resource 216 may provide supplemental functions for the three-dimensional printer 204 in a networked printing context such as

maintaining a print queue or operating a web server for remote interaction with the three-dimensional printer 204. Other resources 216 also include supplemental resources such as three-dimensional scanners, cameras, and post-processing/finishing machines or resources. More generally, any resource that might be usefully integrated into a networked printing environment may be one of the resources 216 as contemplated herein.

[0049] It will be readily appreciated that the various components of the networked printing environment 200 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.

[0050] The three-dimensional printer 204 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 210 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 210 and to select one of the one or more three-dimensional models for fabrication by the three-dimensional printer 204 according to a user preference for prioritization. The user preference may, for example, preferentially prioritize particular content sources 210, or particular types of content (e.g., tools, games, artwork, upgrade parts, or content related to a particular interest of the user).

[0051] The memory of a three-dimensional printer 204 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 210 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 210. The processor may be configured to retrieve content from at least one of the plurality of content sources 210 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 210 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.

[0052] In another aspect, there is disclosed herein a system for managing subscriptions to three-dimensional content sources such as any of the content sources 210 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 208, or alternatively of a client device 206 interacting with the print server 208) configured to select 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.

[0053] 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.

[0054] 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. The web-based user interface may include voice input and/or output for network-based voice control of a printer.

[0055] The fabrication resources may, for example, include any of the three-dimensional printers 204 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.

[0056] 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 a conveyor belt. 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 210 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.) or any other metadata, and prioritizing the content may include prioritizing the content according to this type and/or metadata.

[0057] 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.

[0058] 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 210 to publish on any convenient schedule, without regard to whether and how subscribers will be able to fabricate objects.

[0059] 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 210 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.

[0060] Fig. 3 is a block diagram of a three-dimensional printer system 300 that includes a three-dimensional printer 306 and a supply 302 of build material 312. The three-dimensional printer 306 may, for example, be any of the three-dimensional printers described herein, and may include a network interface and other hardware and software to couple the three-dimensional printer 306 in a communicating relationship with a data network as generally contemplated herein, and more specifically to retrieve data from remote resources concerning build materials detected using tags and tag readers.

[0061] The supply 302 may be adapted to be coupled to the three-dimensional print using a coupling 308. For example, the supply 302 may include a spool of filament, and the coupling 308 may be a spindle or the like on the three-dimensional printer 306 to receive the spool in a manner that permits the spool to rotate and deliver the filament. In another aspect, the supply 302 may include a cartridge of any size and shape suitable for containing build material, with the coupling 308 including a corresponding cartridge receptacle on the three-dimensional printer 306. The supply 302 may include any suitable container for build material 312, such as a spool of build material, a cartridge of filament,

or a container of bulk material such as pellets, or a container of liquid, as well as combinations of these for a multi-modal printer. For example, the build material 312 may include at least one of acrylonitrile butadiene styrene (ABS), high-density polyethylene (HDPE), polylactic acid (PLA), a photocurable polymer, or other suitable build material 312. More generally, any build material 312 suitable for a corresponding three-dimensional printer 306 in any suitable container or format may be used as the supply 302.

[0062] The supply 302 may include a data tag 304 that stores data providing information on characteristics of the build material 312. Once the supply 302 is coupled to the three-dimensional printer 306, the data tag 304 may be automatically read by a tag sensor 310 on the three-dimensional printer 306.

[0063] The data tag 304 may be any device or combination of devices suitable for storing data relating to the build material 312. This may, for example, include a radio frequency identification (RFID) tag such as an active or passive RFID tag, an optically-identifiable tag such as a bar code, quick read (QR) code, or the like, a magnetically-identifiable tag such as a magnetic swipe strip, or any other tag that can be automatically detected and correlated by the controller 110 to identify information for the build material 312 in the supply 302. The tag 304 may also or instead include a number of mechanical features that encode information in a manner that can be detected by corresponding sensors (e.g., contact switches or the like) when the supply 302 is coupled to the printer 306. The mechanical features may include a plurality of recesses or protrusions encoding information about the build material 312. As with the other tag sensors 310 described above, a tag sensor 310 that mechanically reads data from the supply 302 may automatically identify the supply 302 and provide data concerning a type of build material and the like to a controller.

[0064] The tag sensor 310 may be communicatively associated with the three-dimensional printer 306 and the tag sensor 310 may be configured to automatically read data from the data tag 304 regarding the supply 302 of build material 312. The data may characterize at least one property of the build material 312. For example, characteristic data stored on the data tag 304 may include at least one of a material identification number, a build material type, a build material diameter, an extruder temperature

requirement, a build material melting temperature, a build material color, a build material color lot number, a cost per unit of build material, a build material density, a build material tensile strength, a build material viscosity, a build material recycle code, a build material expiration date, or other characteristic information appropriate for a three-dimensional printer. In another aspect, the data tag 304 may encode a unique identifier for the supply 302, which can be used by the three-dimensional printer 306, e.g., in combination with a remote network resource, to determine properties of the build material 312 from which to further determine operational parameters for a fabrication process using the build material 312.

[0065] Once the supply 302 has been coupled to the coupling 308 and the tag sensor 310 has read the data tag 304 data, the data may be transmitted to the controller, which may be any of the controllers described herein, to determine at least one operational parameter for the three-dimensional printer 306 based on at least one characteristic of the build material 312 for the fabrication of an object 314. For example, the operational parameter may be at least one of an extruder temperature, a feed rate, a build platform temperature, a build volume temperature, an infill requirement, a rafting requirement, a support structure requirement, a cooling requirement, or other operational parameter that might usefully be determined by the controller from the data stored by the data tag 304.

[0066] In one embodiment, the controller may make the determination of operational parameters using only the data from the data tag 304. For example, the data tag 304 may explicitly specify an extruder temperature and the controller may use the extruder temperature as an operational parameter, or the data tag 304 may identify a type of build material and the controller may calculate a suitable extruder temperature based on the type. Similarly, the controller may calculate other operational parameters such as build platform temperature, feed rate, cooling parameters, build chamber heating parameters, and so forth.

[0067] In another embodiment, the controller may include, or have access to, a data store that includes data related to a build material identification number stored on the data tag 304. In this embodiment, the controller may make the determination of operational parameters using the material identification number stored on the data tag

304, such as by using the material identification number as a key to look up corresponding operational parameters (or information from which operational parameters can be determined) in the data store.

[0068] As should be appreciated, the controller may use any combination of data from the data tag 304 and a local or remote data store to determine the operational parameters. For example, the controller may receive the data provided by the data tag 304, lookup additional data within the data store, and combine the two sets of data to determine the operational parameters of the three-dimensional printer 306.

[0069] In another aspect, the determination of operational parameters may include preliminary diagnostic tests such as whether the diameter of the build material, size of a build material pellet, build material fluid viscosity, or the like is appropriate for the three-dimensional printer 306. Additional diagnostic test may be performed such as whether the correct build material 312 is provided on the supply 302, whether the correct color or color lot build material 312 is on the supply, or any other appropriate preliminary diagnostic build material test used to determine, as a threshold matter, whether a desired fabrication can be performed with the supply 302.

[0070] In another aspect, the tag sensor 310 may be configured to read an authentication code from the data tag 304 and the controller may be configured to conditionally build with the supply 302 of build material 312 only when the authentication code can be authenticated by the controller. This form of authentication can provide a digital rights management system for three-dimensional printers and build materials by ensuring that only authorized materials are used with suitably equipped three-dimensional printers. A variety of cryptographic techniques are known in the art for this type of authentication, any of which may be suitably employed to ensure that a proper authorization protocol is followed. This may, for example, include processing circuitry within the data tag 304 along with processing circuitry in the three-dimensional printer 306, to authenticate the supply 302 in any suitable manner. This process may also cooperate with a remote resource such as a private or third party key management system to provide any desired level of trust in the authentication process. This approach may generally facilitate quality control for suppliers of build material and greater consistency in results obtained by end users.

[0071] In one aspect, an authentication code may be mechanically encoded into a spool or other container in a manner that keys the container so that it cannot be fitted to an incorrect three-dimensional printer, or in a manner that can be interpreted by the printer so that the printer will not print in the absence of a suitable authentication code.

[0072] As described in Fig. 2, the three-dimensional printer 306 may be included in the networked three-dimensional printing environment 200. In an embodiment, as part of the networked environment 200, the three-dimensional printer system 300 may print an object 314 for a remote client device 206 using the network remote sources. In this embodiment, the determination of operational parameters may be performed by the client device 206 or one of the other remote sources such as a printer server 208, content source 210, web server 211, or other resource 216. The three-dimensional printer 306 may transmit the data tag 304 data to one of the remote sources configured for determination of the operational parameters and the appropriate remote source may transmit the determined operational parameters back to the three-dimensional printer 306 for fabrication of the object 314.

[0073] As a non-limiting example, a remote client device 206 may request an object 314 be printed on the network connected three-dimensional printer 306. The three-dimensional printer 306 may have one or more supplies 302, containing build material 312, connected to one or more couplings 308. The client device 206 may request the three-dimensional printer 306 to transmit the data tag 304 data for one or more of the connected supplies 302 for the determination of operational parameters for at least one of the connected supplies 302. The client device 206 may select which of the one or more supplies 302 to use in fabricating the object 314, determine the operational parameters for the selected supply 302, and transmit the operational parameters back to the three-dimensional printer 306 for fabrication of the object 314.

[0074] As another non-limiting example, the three-dimensional printer 306 may be configured to use other network entities to determine the operational parameters for the fabrication of the object 314. If a print job is received, the three-dimensional printer 306 may transmit the data tag 304 data for all of the connected supplies 302 to one or more of the remote sources for determination of operational parameters for the connected supplies. The one or more remote source may determine the operational parameters for

the connected supplies 302 and transmit the operational parameters back to the three-dimensional printer 306. The operational parameters may then be combined with the three-dimensional printer 306 print job information for the fabrication of the object 314. In another aspect, a print server 208 may request build material information from one or more supplies coupled to a three-dimensional printer, and may store this information and make this information available to users of the print server, or as an input to a process on the print server for allocating print requests to various three-dimensional printers. More generally, data available from data tags 304 on supplies 302 may be used within the networked three-dimensional printing environment 200 to facilitate the distribution and execution of print requests in any desired manner.

[0075] As should be appreciated, the communication between the three-dimensional printer 306 and the remote sources of the networked three-dimensional printing environment 200 for the determination of operational parameters may be completed using any combination of the three-dimensional printer 306 capabilities and network source capabilities. For example, the three-dimensional printer 306 may determine some or all of the operational parameters of the available supplies 302 or the remote sources may determine some or all of the operational parameters of the available supplies 302. The operational parameters determined by the three-dimensional printer 306 and the remote resource may be combined into a single set of operational parameters by either the three-dimensional printer 306 or the remote source.

[0076] Returning to Fig. 3, the data tag 304 may also or instead encode data to identify a recycling code or the like for the build material 312, and a corresponding recycling code or similar information may be incorporated into an object 314 fabricated from the build material 312, such as by creating a corresponding symbol in an object 314 to be fabricated or by automatically or manually fixing a corresponding symbol in a build platform onto which the object 314 is fabricated so that the symbol is imparted onto the object 314 during fabrication. Recycling codes may, for example, include Society of the Plastics Industry (SPI) resin identification codes (currently 1-7 and 9 or ABS) or any other suitable notations. Where multiple build materials are used in a single model, the multiple types, or a general indication (e.g., “mixed plastics”) may also or instead be

used. In one aspect, the three-dimensional printer may be configured to accept user instructions concerning whether and how to deploy recycling labeling.

[0077] In another aspect, the data tag 304 may encode ordering information, such as information on how to purchase replacement build material, or information including an identifier of a suitable replacement container (with build material). When a three-dimensional printer or a suitably instrumented container detects a depletion of build material, the data tag 304 may be referenced by the three-dimensional printer to automatically order a suitable replacement, or to generate an alert to a user to order replacement material. In the latter case, the alert to the user may automatically be annotated to identify a part number, build material type, or the like to assist the user in ordering a suitable replacement.

[0078] Figs. 4A-4C depict embodiments of a build material supply 400 that include a supply (402, 408, 412), a data tag 304, and build material (404, 410, 414). In general, Figs. 4A-4C show the data tag 304 at certain locations (i.e. the side of a spool or the front of a container), however, it should be appreciated that the data tag 304 may be placed on any surface of the supply (402, 408, 412) that allows the data tag 304 to be readable by the tag sensor 310. Additionally, Figs. 4A-4C depict non-limiting examples of supply containers (402, 408, 412), and any container that may be adapted to connect to the three-dimensional printer 306 may be used to contain build material (404, 408, 412).

[0079] Fig. 4A depicts a container for a build material including a spool 402 that contains a filament build material 404 and a data tag 304. The coupling 308 may include a spindle, and the spool 402 may be rotatably coupled to the coupling 308 by the spindle. As the build material 404 is consumed, the spool may rotate on the spindle of the coupling 308. The spindle may include a key (not shown) that couples in a keyed manner to the spool in order to ensure proper orientation of the spool 402 to the three-dimensional printer 306 and the tag sensor 308, which may include axial orientation (i.e., so that the build material extends from the correct side of the spool) as well as rotational orientation (i.e., to orient a data tag 304 to a tag sensor 308 when the spool is placed for use). In an embodiment, as the spool 402 is coupled to the three-dimensional printer 308, the data tag 304 may be orientated with the tag sensor 308 in a manner that allows the reading of the data tag 304, and the tag sensor 308 may automatically read the data from the data tag

304. In another embodiment, after the spool 402 is coupled to the three-dimensional printer 306, spool 402 may rotate about the spindle until the data tag 304 is orientated with the tag sensor 308 allowing the data tag 304 to be read by the tag sensor 308.

[0080] It will be appreciated that a filament of build material may be provided in other forms than on a spool, such as in a box from which the filament freely exits, or a cartridge that mates with a receptacle on a three-dimensional printer. All such forms of packaging may serve as a container as contemplated herein provided they can accommodate a data tag 304 that can be reliably detected and interpreted by a tag sensor 308.

[0081] Fig. 4B depicts a container for a build material that includes a cartridge 408 that contains pelletized build material 410 and a data tag 304. While the cartridge 408 is shown with a viewing window, it should be appreciated that a viewing window is not a requirement of the cartridge 408 and that the cartridge 408 may incorporate one or more windows or no windows. The cartridge 408 may optionally include sensors and processing circuitry to actively provide data concerning an amount of build material in the cartridge 408, which processing circuitry may be locally powered by a battery or powered through an electronic coupling to a three-dimensional printer. The cartridge 408 may be coupled to the coupling 308 of the three-dimensional printer 306 in a manner allowing the pellets of build material 410 to be fed into three-dimensional printer for use in fabrication, e.g., by an extruder or other tool. As the cartridge 408 is coupled to the three-dimensional printer 308, the data tag 304 may be orientated with the tag sensor 308 in a manner that allows the reading of the data tag 304, and the tag sensor 308 may automatically read the data from the data tag 304.

[0082] It will be understood that the pellets of build material 410 may be any size or combination of sizes ranging from a fine powder to relatively large spheres or other shapes that can be melted and extruded. Similarly, the pellets may be of different colors, and the pellets may include different materials that may be mixed during a fabrication process to obtain desired aggregate properties in a fabricated object.

[0083] Fig. 4C depicts a container for a build material that includes a cartridge 412 containing a liquid build material 414 and a data tag 304. While the cartridge 412 is shown with a viewing window, it should be appreciated that a viewing window is not a

requirement of the cartridge 412 and that the cartridge 412 may incorporate one or more windows or no windows. The cartridge 408 may optionally include sensors and processing circuitry to actively provide data concerning an amount of build material in the cartridge 408, which processing circuitry may be locally powered by a battery or powered through an electronic coupling to a three-dimensional printer. In an embodiment, the cartridge 412 may be coupled to the three-dimensional printer 306 coupling 308 in a manner allowing the liquid 414 to be fed into an extruder or other tool for use in fabrication. As the cartridge 412 is coupled to the three-dimensional printer 308, the data tag 304 may be orientated with the tag sensor 308 in a manner that allows the reading of the data tag 304, and the tag sensor 308 may automatically read the data from the data tag 304.

[0084] Figs. 5A-5D depict embodiments of tag sensors and data tags. As may be appreciated, any of the data tags described in Figs. 5A-5D may be incorporated into or attached to any of the supplies described in Figs. 4A-4C.

[0085] Fig. 5A depicts an embodiment of an RFID data tag 502 and an RFID tag sensor 504. The RFID data tag 502 may be a passive RFID tag or an active RFID tag. As known by one with knowledge in the art, an active RFID tag includes a power source that provides power to the active RFID tag to broadcast a signal 508 that includes the data stored on the active RFID tag. A passive RFID tag does not include an internal power source and the passive RFID tag is powered by converting the RFID tag sensor 504 signal 506 into a voltage. As previously discussed, the RFID data tag 502 may be attached to the supply 302 in a position to allow the RFID data tag 502 to be read by the RFID tag sensor 504. The RFID tag sensor 504 may be incorporated into the tag sensor 310 in a position to read the RFID data tag 502. As a non-limiting example, as the supply 302 may be coupled to the three-dimensional printer 306 coupling 308, and the RFID tag sensor 504 may broadcast a signal 506 requesting data from the RFID data tag 502. When the RFID data tag 502 receives the RFID tag sensor 504 broadcast 506, the RFID data tag 1002 may broadcast 508 the requested data to the RFID tag sensor 504. Once all the data has been received by the RFID tag sensor 504, the RFID tag sensor 504 may transmit the data to the controller 110 as discussed above.

[0086] Fig. 5B depicts an embodiment of an optical tag sensor 510 reading an optically-identifiable tag (512, 514). The optically-identifiable tag (512, 514) may be a bar code 512, a QR code 514, or other optically-identifiable tag. As known by one with knowledge in the art, the optically-identifiable tag (512, 514) encodes data using lines or points arranged according to certain rules onto the optically-identifiable tag (512, 514). The optically-identifiable tag (512, 514) may be attached to the supply 302 in a position accessible to the optical tag sensor 510. The optical tag sensor 510 may be positioned to read the optically-identifiable tag (512, 514) in any suitable manner. For example, when the supply 302 is coupled to the three-dimensional printer 306 coupling 308, the optical tag sensor 510 may optically capture 516 features of the optically-identifiable tag (512, 514), and convert the optically captured features to data. It will also be understood that other optical detection techniques may be used, such as Optical Character Recognition or any other standardized or proprietary technique for encoding and reading data with optical sensors. Once the data has been converted by the optical tag sensor 510, the optical tag sensor 510 may transmit the data to the controller 110 as discussed above.

[0087] Fig. 5C depicts an embodiment of a magnetic tag sensor 520 reading a magnetically-identifiable tag 518. In an embodiment, the magnetically-identifiable tag 518 may be a magnetic swipe strip. As known to one with knowledge in the art, the magnetically-identifiable tag 518 includes data magnetically encoded into a magnetic strip which may be read as the magnetic strip is passed by a magnetic sensor. As previously discussed, the magnetically-identifiable tag 518 may be attached to the supply 302 in a position to allow the magnetically-identifiable tag 518 to be read by the magnetic tag sensor 520. The magnetic tag sensor 520 may be incorporated into the tag sensor 310 in a position to read the magnetically-identifiable tag 518. In a non-limiting example, as the supply 302 is coupled to the three-dimensional printer 306 coupling 308, the magnetic tag sensor 520 may read the magnetic data of the magnetically-identifiable tag 518. Once the data has been read by the magnetic tag sensor 520, the magnetic tag sensor 520 may transmit the data to the controller 110 as discussed above.

[0088] Fig. 5D depicts an embodiment of a mechanical tag sensor 528 reading a mechanical feature tag (524, 526). In an embodiment, a mechanical feature tag (524, 526) may include a plurality of protrusions 524, recesses 526, or other physical features on a

container. While cylindrical features are depicted by way of illustration, it should be understood that the physical feature may be of any shape or size suitable for encoding data to be read by a mechanical tag sensor 528 including without limitation hemispheres, grooves, holes, notches, blocks, and the like. Additionally, the physical feature types may be intermixed on the same mechanical feature tag (524, 526). For example, a mechanical feature tag (524, 526) may include both protruding features and recessed features. In embodiments, the physical features may be incorporated onto a separate substrate 522 that is attached to the supply 302, or may be incorporated directly into or onto the supply 302. The mechanical feature sensor 528 may include switches, transducers, or other devices for reading protruding or recessed physical features.

[0089] In general, the mechanical features forming the mechanical feature tags 524, 526 may be formed into a spool or other container, and may include features of the container itself, which may be further adapted to include human-readable information or the like to facilitate manual review prior to coupling to a three-dimensional printer.

[0090] In embodiments, the mechanical feature tag 524, 526 may be read by the mechanical tag sensor 528 through physical contact such as by pressing into the mechanical tag sensor 528, passing through the mechanical tag sensor 528, passing over the mechanical tag sensor 528, passing under the mechanical tag sensor 528, or any other suitable technique. The mechanical feature tag (524, 526) may also or instead be detected using non-contact methods such as capacitance, optical analysis, and so forth. The mechanical feature tag (524, 526) may be attached to the supply 302 in a position to allow the mechanical feature tag (524, 526) to be read by the mechanical tag sensor 528. The mechanical tag sensor 528 may be incorporated into the tag sensor 310 in a position to read the mechanical feature tag (524, 526). In a non-limiting example, as the supply 302 is coupled to the three-dimensional printer 306 coupling 308, the mechanical tag sensor 528 may read the physical feature data of the mechanical feature tag (524, 526). Once the data has been read by the mechanical tag sensor 528, the mechanical tag sensor 528 may transmit the data to the controller 110 as discussed above.

[0091] Fig. 6 is a flowchart of a method for using a three-dimensional printer to read build material supply tag data and fabricate an object.

[0092] As shown in step 602, the method 600 may include providing a three-dimensional printer with a controller and a tag sensor. In one aspect, this may include providing a tag sensor as an add-on component to a three-dimensional printer and coupling the tag sensor to the controller for the three-dimensional printer. In another aspect, this may simply include providing a three-dimensional printer that is equipped with a suitable tag sensor.

[0093] As shown in step 604, the method 600 may include coupling a container with a data tag to the three-dimensional printer. The container may be any of the containers of build material described above, and the data tag may store information about the build material such as a property of the build material in the container. The data tag may be a radio frequency identification (RFID) tag, an optically-identifiable tag, a magnetically-identifiable tag, or a mechanically encoded feature of the container.

[0094] Types of data that may be usefully stored by the data tag are described above. Without limiting the generality of the foregoing, the data may include information about mechanical or structural properties of the build material, thermal properties of the build material (including phase change data), aesthetic properties of the build material, or any other properties useful for determining operational parameters. Other data that is not necessarily specifically tied to operational parameters may also be included, such as an amount of material in the container (which may be an initial amount when shipped, or a measured amount using active circuitry as described above), an expiration date, a brand name, and so forth, as well as data indirectly related to build material properties such as a unique identifier for the build material or the container. By way of non-limiting examples, the property characteristic encoded on the data tag may include a material identification number, a type of the build material, a diameter of the build material, an extruder temperature requirement, a melting temperature of the build material, a color of the build material, a lot number of the build material, a unit cost of the build material, a density of the build material, a tensile strength of the build material, a viscosity of the build material, a recycling category or code for the build material, and an expiration date for the build material.

[0095] As shown in step 606, the method 600 may include reading data from the data tag using the tag sensor of the three-dimensional printer. As described above, the

data may be read by an RFID sensor, optical sensor, magnetic sensor, or mechanical sensor.

[0096] As shown in step 608, the method 600 may include transmitting the data from tag sensor to the controller. As discussed above, the controller may be associated with the local three-dimensional printer printing the object, or the controller may be associated with a remote resource within a networked three-dimensional printing environment.

[0097] As shown in step 610, the method 600 may include determining an operational parameter for the fabrication of an object by the three-dimensional printer based on data from the data tag. More specifically information about the build material stored in the data tag may be used to determine how the build material should be used in a fabrication process. For example, based upon the type of build material, the controller may determine a variety of parameters such as an extruder temperature, a feed rate, a build platform temperature, a build volume temperature, an infill requirement, a rafting requirement, a support structure requirement, an extruder movement speed, and a cooling requirement. More generally, any parameter that can be controlled by the three-dimensional printer might usefully be determined with reference to the type of material and/or other information available on the data tag.

[0098] In one aspect where the data tag and reader implement a rights management protocol for build material, the operational parameter may be an authorization to print. Thus for example, the reader may read an authentication code which may be transmitted to a controller and used to authenticate the build material for the printer. It will be understood that a variety of cryptographic techniques may be suitably employed to implement rights management for build material. For example, the container may have a private key that is used to sign a message from the controller, with the corresponding signed message confirmed by a remote resource. More generally, any suitable protocol may be usefully employed with varying degrees of security and trust, including without limitation techniques ranging from a direct reading of a static code encoded on a data tag to public key management infrastructures (either implemented directly or through a trusted third party) to multi-factor security techniques including security cards or equivalents (e.g., for the container, printer, and/or user of the printer),

passwords or other credentials, biometric identification (e.g., voice identification, fingerprint detection, facial recognition, etc.), and so forth.

[0099] As shown in step 612, the method 600 may include fabricating an object while using the operational parameter(s) to control operation of a three-dimensional printer. It will be appreciated that this approach can dramatically simplify use of a three-dimensional printer by automating those aspects of printer configuration that depend on the type of build material being used. Thus a user may simply load a build material from a suitably instrumented container and select an object to print without specifying various configuration details that might otherwise be required. At the same time, a printer may simply select default operational parameters that a user can override if further customization of a fabrication process is desired.

[00100] The methods or processes described above, and steps thereof, may be realized in hardware, software, or any combination of these suitable for a particular application. The hardware may include a general-purpose computer and/or dedicated computing device. The processes may be realized in one or more microprocessors, microcontrollers, embedded microcontrollers, programmable digital signal processors, or other programmable device, along with internal and/or external memory. The processes may also, or instead, be embodied in an application specific integrated circuit, a programmable gate array, programmable array logic, or any other device or combination of devices that may be configured to process electronic signals. It will further be appreciated that one or more of the processes may be realized as 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.

[00101] Thus, in one aspect, each method described above and combinations thereof may be embodied in computer executable code that, when executing on one or more computing devices, performs the steps thereof. In another aspect, the methods may be embodied in systems that perform the steps thereof, and may be distributed across

devices in a number of ways, or all of the functionality may be integrated into a dedicated, standalone device or other hardware. In another aspect, means for performing the steps associated with the processes described above may include any of the hardware and/or software described above. All such permutations and combinations are intended to fall within the scope of the present disclosure.

[00102] It should further be appreciated that the methods above are provided by way of example. Absent an explicit indication to the contrary, the disclosed steps may be modified, supplemented, omitted, and/or re-ordered without departing from the scope of this disclosure.

[00103] The method steps of the invention(s) described herein are intended to include any suitable method of causing such method steps to be performed, consistent with the patentability of the following claims, unless a different meaning is expressly provided or otherwise clear from the context. So for example performing the step of X includes any suitable method for causing another party such as a remote user or a remote processing resource (e.g., a server or cloud computer) to perform the step of X. Similarly, performing steps X, Y and Z may include any method of directing or controlling any combination of such other individuals or resources to perform steps X, Y and Z to obtain the benefit of such steps.

[00104] 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 this disclosure and are intended to form a part of the invention as defined by the following claims, which are to be interpreted in the broadest sense allowable by law.

CLAIMS

What is claimed is:

1. A method, comprising:
reading data from a tag included on a supply of a build material using a tag sensor in communication with a controller of a three-dimensional printer, the data including at least one property of the build material;
determining an operational parameter of a fabrication process using the three-dimensional printer based upon the data, the operational parameter including at least one of a build platform temperature, a build volume temperature, an infill requirement, a rafting requirement, a support structure requirement, and a cooling requirement; and
controlling operation of the three-dimensional printer during the fabrication process with the controller according to the operational parameter to fabricate an object with the three-dimensional printer.
2. The method of claim 1, wherein the tag includes at least one of a radio frequency identification (RFID) tag, an optically-identifiable tag, a magnetically-identifiable tag, and a mechanical feature of the supply.
3. The method of claim 1, wherein the tag sensor includes at least one of a radio frequency identification (RFID) reader, an optical scanner, a magnetic reader, and a contact point sensor.
4. The method of claim 1, wherein the data includes at least one of a material identification number, a build material type, a build material diameter, an extruder temperature requirement, a build material melting temperature, a build material color, a build material color lot number, a cost per unit of build material, a build material density, a build material tensile strength, a build material viscosity, a build material recycle code, and a build material expiration date.

5. The method of claim 1, wherein the supply includes at least one of a cartridge, a spool, a filament, a number of pellets, and a liquid.
6. The method of claim 1, wherein the tag includes a radio frequency identification (RFID) tag, and the RFID tag is at least one of a passive RFID tag and an active RFID tag.
7. The method of claim 1, wherein the tag includes an optically-identifiable tag, and the optically-identifiable tag is at least one of bar code and quick read (QR) code.
8. The method of claim 1, wherein the tag includes a magnetically-identifiable tag, and the magnetically-identifiable tag is a magnetic swipe strip.
9. The method of claim 1, wherein the tag includes a mechanical feature of the supply, and the mechanical feature includes a plurality of recesses or protrusions encoding information about the build material.
10. The method of claim 1, further comprising performing a diagnostic test to determine whether the operational parameter is suitable for the three-dimensional printer.
11. The method of claim 1, wherein the operational parameter is based upon a build material identification number contained in the data.
12. The method of claim 1, wherein the operational parameter further includes at least one of an extruder temperature and a feed rate.
13. A system, comprising:
 - a three-dimensional printer;
 - a coupling adapted to receive a supply of a build material;

a tag sensor communicatively associated with the three-dimensional printer, the tag sensor configured to read data from a data tag associated with the supply of the build material, the data including at least one property of the build material;

a processor configured to determine an operational parameter of a fabrication process using the three-dimensional printer based upon the data, the operational parameter including at least one of a build platform temperature, a build volume temperature, an infill requirement, a rafting requirement, a support structure requirement, and a cooling requirement; and

a controller for the three-dimensional printer, the controller configured to control operation of the three-dimensional printer during the fabrication process according to the operational parameter to fabricate an object with the three-dimensional printer.

14. The system of claim 13, further comprising a container holding the supply of the build material, wherein the container is configured to connect to the coupling, and wherein the container includes the data tag.

15. The system of claim 14, wherein the container includes at least one of a cartridge and a spool.

16. The system of claim 13, wherein the build material includes at least one of a filament, a number of pellets, and a liquid.

17. The system of claim 13, wherein the processor is included on a remote network resource.

18. The system of claim 13, wherein the processor is included on one or more of the controller and the three-dimensional printer.

19. The system of claim 13, wherein the tag sensor includes at least one of a radio frequency identification (RFID) reader, an optical scanner, a magnetic reader, and a contact point sensor.

20. A method, comprising:
- reading first data from a tag included on a supply of a build material using a tag sensor associated with a three-dimensional printer, the first data related to the build material;
 - retrieving second data from a data store, the second data including additional data related to the build material;
 - combining the first data and the second data;
 - determining an operational parameter to configure the three-dimensional printer for a fabrication process using the build material based upon the combination of the first data and the second data; and
 - controlling operation of the three-dimensional printer during the fabrication process according to the operational parameter to fabricate an object with the three-dimensional printer.

TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING

ABSTRACT

A supply of build material such as a spool or cartridge is instrumented with a data tag that includes information about the build material. A three-dimensional printer, or a tag reader in communication therewith (directly or indirectly), can read the information from the tag for a determination as to how to use the build material during fabrication of a three-dimensional object.

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Title of Invention	TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING		
This statement is directed to:			
☐ The attached application,			
OR			
☒ United States application or PCT international application number <u>14/064,974</u> filed on <u>October 28, 2013</u>			
LEGAL NAME of inventor to whom this substitute statement applies:			
(E.g., Given Name (first and middle (if any)) and Family Name or Surname)			
Ariel Douglas			
Residence (except for a deceased or legally incapacitated inventor):			
City	State	Country	
Brooklyn	NY	US	
Mailing Address (except for a deceased or legally incapacitated inventor):			
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[Page 1 of 2]

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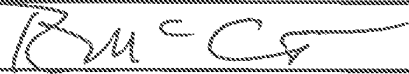
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5. A record related to an International Application filed under the Patent Cooperation Treaty in this system of records may be disclosed, as a routine use, to the International Bureau of the World Intellectual Property Organization, pursuant to the 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. 216(c)).
7. A record from this system of records may be disclosed, as a routine use, to the Administrator, General Services, or his/her designee, during an inspection of records conducted by GSA as part of that agency's responsibility to recommend improvements in records management practices and programs, under authority of 44 U.S.C. 2904 and 2906. Such disclosure shall be made in accordance with the GSA regulations governing inspection of records for this purpose, and any other relevant (i.e., GSA or Commerce) directive. Such disclosure shall not be used to make determinations about individuals.
8. A record from this system of records may be disclosed, as a routine use, to the public after either publication of the application pursuant to 35 U.S.C. 122(b) or issuance of a patent pursuant to 35 U.S.C. 151. Further, a record may be disclosed, subject to the limitations of 37 CFR 1.14, as a routine use, to the public if the record was filed in an application which became abandoned or in which the proceedings were terminated and which application is referenced by either a published application, an application open to public inspection or an issued patent.
9. A record from this system of records may be disclosed, as a routine use, to a Federal, State, or local law enforcement agency, if the USPTO becomes aware of a violation or potential violation of law or regulation.

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DECLARATION

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TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING

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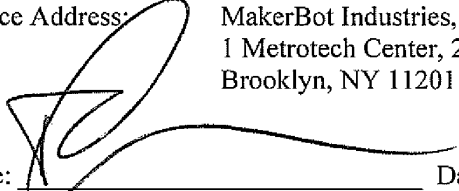
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Full Name of inventor: Robert J. Steiner

Residence: Port Jefferson, NY

Post Office Address: MakerBot Industries, LLC
1 Metrotech Center, 21st Floor
Brooklyn, NY 11201

Signature: 

Robert J. Steiner

Date: 1-29-2014

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Full Name of inventor: Aric Lynn Jennings

Residence: Brooklyn, NY

Post Office Address: MakerBot Industries, LLC
1 Metrotech Center, 21st Floor
Brooklyn, NY 11201

Signature: _____

Aric Lynn Jennings

Date: _____

10/28/14

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Full Name of inventor: William B. Buel

Residence: New York, NY

Post Office Address: MakerBot Industries, LLC
1 Metrotech Center, 21st Floor
Brooklyn, NY 11201

Signature: 
William B. Buel

Date: 2-17-14

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Full Name of inventor: Anthony D. Moschella

Residence: Brooklyn, NY

Post Office Address: MakerBot Industries, LLC
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Signature:


Anthony D. Moschella

Date:

2/19/14

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INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	16/796,122
	Filing Date	Feb 20, 2020
	First Named Inventor	Ariel Douglas
	Art Unit	1742
	Examiner Name	Unknown
Sheet 1 of 4	Attorney Docket No.	MBOT-0049-P04

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-8286236		Oct 9, 2012	Jung, Edward K., et al.	
		US-8222908		Jul 17, 2012	Paul, Thomas P., et al.	
		US-8157202		Apr 17, 2012	Taatjes, Thomas L., et al.	
		US-7996101		Aug 9, 2011	Menchik, Guy et al.	
		US-7690909		Apr 6, 2010	Wahlstrom, Ben	
		US-7621733		Nov 24, 2009	Reynolds, Gary L., et al.	
		US-7520740		Apr 21, 2009	Wahlstrom, Ben et al.	
		US-6505926		Jan 14, 2003	Trafton, R. W., et al.	
		US-6022207		Feb 8, 2000	Dahlin, Thomas J., 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-20190134901		May 9, 2019	Douglas, Ariel et al.	
		US-20160121550		May 5, 2016	Douglas, Ariel et al.	
		US-20160067927		Mar 10, 2016	VORIS, JEFFREY et al.	
		US-20140117585		May 1, 2014	Douglas, Ariel et al.	
		US-20130161439		Jun 27, 2013	Beery, Chad E., et al.	
		US-20110121476		May 26, 2011	Batchelder, J. S., et al.	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	16/796,122
	Filing Date	Feb 20, 2020
	First Named Inventor	Ariel Douglas
	Art Unit	1742
	Examiner Name	Unknown
Sheet 2 of 4	Attorney Docket No.	MBOT-0049-P04

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-20100289627		Nov 18, 2010	McAllister, Clarke W., et al.	
		US-2006127153		Jun 15, 2006	MENCHIK, GUY et al.	
		US-20030217275		Nov 20, 2003	Bentley, Keith 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-87	"Cartridges and Filament Flow Errors", CubeX 3D Printing Blog. http://cubex3dprinting.blogspot.com/2013/07/cartridges-and-filament-flow-errors.html July 10, 2013 , 6 Pages	
	NPL-307	USPTO, "Application No. 14/992,127 (Atty Ref MBOT-0049-P02) Final Office Action mailed 09-22-2017", 8 pages	
	NPL-308	USPTO, "Application No. 14/992,127 (Atty Ref MBOT-0049-P02) Non-Final Office Action mailed 01-12-2018", 10 pages	
	NPL-309	USPTO, "Application No. 14/992,127 (Atty Ref MBOT-0049-P02) Notice of Allowance mailed 06-06-2018", 5 pages	
	NPL-341	USPTO, "Application No. 16/153,224 (Atty Ref MBOT-0049-P03) Non-Final Office Action mailed 04-05-2019", 13 pages	
	NPL-342	USPTO, "Application No. 16/153,224 (Atty Ref MBOT-0049-P03) Notice of Allowance mailed 10-18-2019", 7 pages	

INFORMATION DISCLOSURE STATEMENT BY APPLICANT (Not for submission under 37 CFR 1.99)	Application Number	16/796,122
	Filing Date	Feb 20, 2020
	First Named Inventor	Ariel Douglas
	Art Unit	1742
	Examiner Name	Unknown
Sheet 3 of 4	Attorney Docket No.	MBOT-0049-P04

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-190	USPTO, "Application Serial No. 14/064,974 (Atty Ref MBOT-0049-P01), Non-Final Office Action mailed 04-10-2015", 10 pages	
	NPL-191	USPTO, "Application Serial No. 14/064,974 (Atty Ref MBOT-0049-P01), Notice of Allowance mailed 10-08-2015", 7 pages	
	NPL-310	USPTO, "Application Serial No. 14/992,127 (Atty Ref MBOT-0049-P02), Non-Final Office Action mailed 11-21-2016", 8 pages	
	NPL-311	USPTO, "Application Serial No.14/992,127 (Atty Ref MBOT-0049-P02), Notice of Allowance mailed 06-02-2017", 9 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	16/796,122
	Filing Date	Feb 20, 2020
	First Named Inventor	Ariel Douglas
	Art Unit	1742
	Examiner Name	Unknown
Sheet 4 of 4	Attorney Docket No.	MBOT-0049-P04

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	/Thomas J. Bassolino/	Date (YYYY-MM-DD)	2020-02-28
Name/Print	Thomas J. Bassolino	Registration Number	65946

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:	38726726
Application Number:	16796122
International Application Number:	
Confirmation Number:	1760
Title of Invention:	TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING
First Named Inventor/Applicant Name:	Ariel Douglas
Customer Number:	43520
Filer:	Thomas John Bassolino/Bryan Calci
Filer Authorized By:	Thomas John Bassolino
Attorney Docket Number:	MBOT-0049-P04
Receipt Date:	28-FEB-2020
Filing Date:	
Time Stamp:	15:21:24
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	Transmittal Letter	MBOT-0049-P04_20200228_IDS_Communication.pdf	85413 b9336d3ad07f2ef844214a425358e4f0ad3be5cd	no	1

Warnings:

Information:					
2	Information Disclosure Statement (IDS) Form (SB08)	MBOT-0049- P04_20200228_Form1449.pdf	108694	no	4
			744cb072bd5ea0efc2efc5ab474f479b6ec7645d		
Warnings:					
Information:					
This is not an USPTO supplied IDS fillable form					
Total Files Size (in bytes):			194107		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No.: 16/796,122
Filing Date: February 20, 2020
In re: Ariel Douglas
Art Unit: 1742
Examiner: Unknown
Conf. No.: 1760

Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

INFORMATION DISCLOSURE STATEMENT

Please consider the references listed on the enclosed Information Disclosure Statement by the Applicant. Foreign patent documents and non-patent literature are enclosed, except where such references need not be submitted because they have been previously submitted in an Information Disclosure Statement that complies with 37 C.F.R. § 1.98(a) from a parent application (see MPEP 609.02 (II)).

Please apply any necessary charges or credits to deposit account No. 50-4262.

Respectfully submitted
STRATEGIC PATENTS, P.C.

/Thomas J. Bassolino/

Thomas J. Bassolino
Reg. No. 65,946
(646) 238-1234

Date February 28, 2020



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 NUMBER	FILING or 371(c) DATE	GRP ART UNIT	FIL FEE REC'D	ATTY. DOCKET NO	TOT CLAIMS	IND CLAIMS
16/796,122	02/20/2020	1742	1720	MBOT-0049-P04	20	3

CONFIRMATION NO. 1760

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

FILING RECEIPT



0000000115244547

Date Mailed: 03/10/2020

Receipt is acknowledged of this non-provisional utility 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 FIRST INVENTOR, 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 corrected Filing Receipt, including a properly marked-up ADS showing the changes with strike-through for deletions and underlining for additions. If you received a "Notice to File Missing Parts" or other Notice requiring a response for this application, please submit any request for correction 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 provided that the request is grantable.

Inventor(s)

Ariel Douglas, Brooklyn, NY;
Robert J. Steiner, Brooklyn, NY;
Aric Lynn Jennings, Brooklyn, NY;
William B. Buel, Sunnyvale, CA;
Anthony D. Moschella, Brooklyn, NY;

Applicant(s)

MakerBot Industries, LLC, 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 16/153,224 10/05/2018 PAT 10569466
which is a CON of 14/992,127 01/11/2016 PAT 10093061
which is a CON of 14/064,974 10/28/2013 PAT 9233504
which claims benefit of 61/719,874 10/29/2012

Foreign Applications for which priority is claimed (You may be eligible to benefit from the **Patent Prosecution Highway** program at the USPTO. Please see <http://www.uspto.gov> for more information.) - None.

Foreign application information must be provided in an Application Data Sheet in order to constitute a claim to foreign priority. See 37 CFR 1.55 and 1.76.

Permission to Access Application via Priority Document Exchange: Yes

Permission to Access Search Results: Yes

Applicant may provide or rescind an authorization for access using Form PTO/SB/39 or Form PTO/SB/69 as appropriate.

If Required, Foreign Filing License Granted: 03/06/2020

The country code and number of your priority application, to be used for filing abroad under the Paris Convention, is **US 16/796,122**

Projected Publication Date: 06/18/2020

Non-Publication Request: No

Early Publication Request: No

Title

TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING

Preliminary Class

264

Statement under 37 CFR 1.55 or 1.78 for AIA (First Inventor to File) Transition Applications: No

PROTECTING YOUR INVENTION OUTSIDE THE UNITED STATES

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

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

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

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

For information on preventing theft of your intellectual property (patents, trademarks and copyrights), you may wish to consult the U.S. Government website, <http://www.stopfakes.gov>. Part of a Department of Commerce initiative, this website includes self-help "toolkits" giving innovators guidance on how to protect intellectual property in specific

page 2 of 4

countries such as China, Korea and Mexico. For questions regarding patent enforcement issues, applicants may call the U.S. Government hotline at 1-866-999-HALT (1-866-999-4258).

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

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

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

NOT GRANTED

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

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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 U.S. offers tremendous resources and advantages for those who invest and manufacture goods here. Through SelectUSA, our nation works to promote and facilitate business investment. SelectUSA provides information assistance to the international investor community; serves as an ombudsman for existing and potential investors; advocates on behalf of U.S. cities, states, and regions competing for global investment; and counsels U.S. economic development organizations on investment attraction best practices. To learn more about why the United States is the best country in the world to develop

technology, manufacture products, deliver services, and grow your business, visit <http://www.SelectUSA.gov> or call +1-202-482-6800.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875						Application or Docket Number 16/796,122				
APPLICATION AS FILED - PART I										
(Column 1)		(Column 2)		SMALL ENTITY		OR OTHER THAN SMALL ENTITY				
FOR	NUMBER FILED	NUMBER EXTRA	RATE(\$)	FEE(\$)		RATE(\$)	FEE(\$)			
BASIC FEE (37 CFR 1.16(a), (b), or (c))	N/A	N/A	N/A			N/A	300			
SEARCH FEE (37 CFR 1.16(k), (l), or (m))	N/A	N/A	N/A			N/A	660			
EXAMINATION FEE (37 CFR 1.16(o), (p), or (q))	N/A	N/A	N/A			N/A	760			
TOTAL CLAIMS (37 CFR 1.16(i))	20	minus 20 = *				x 100 =	0.00			
INDEPENDENT CLAIMS (37 CFR 1.16(h))	3	minus 3 = *				x 460 =	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	1720			
APPLICATION AS AMENDED - PART II										
(Column 1)		(Column 2)		(Column 3)		SMALL ENTITY		OR 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	=		x	=
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x	=		x	=
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))									
TOTAL ADD'L FEE									TOTAL ADD'L FEE	
AMENDMENT B		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE(\$)	ADDITIONAL FEE(\$)		RATE(\$)	ADDITIONAL FEE(\$)
	Total (37 CFR 1.16(i))	*	Minus	**	=	x	=		x	=
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x	=		x	=
	Application Size Fee (37 CFR 1.16(s))									
	FIRST PRESENTATION OF MULTIPLE DEPENDENT CLAIM (37 CFR 1.16(j))									
TOTAL ADD'L FEE									TOTAL ADD'L FEE	
* If the entry in column 1 is less than the entry in column 2, write "0" in column 3. ** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20". *** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3". The "Highest Number Previously Paid For" (Total or Independent) is the highest found in the appropriate box in column 1.										



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APPLICATION NUMBER	FILING OR 371(C) DATE	FIRST NAMED APPLICANT	ATTY. DOCKET NO./TITLE
16/796,122	02/20/2020	Ariel Douglas	MBOT-0049-P04

CONFIRMATION NO. 1760

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

PUBLICATION NOTICE



Title:TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING

Publication No.US-2020-0189186-A1

Publication Date:06/18/2020

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.

The publication may be accessed through the USPTO's publically available Searchable Databases via the Internet at www.uspto.gov. The direct link to access the publication is currently <http://www.uspto.gov/patft/>.

The publication process established by the Office does not provide for mailing a copy of the publication to applicant. A copy of the publication may be obtained from the Office upon payment of the appropriate fee set forth in 37 CFR 1.19(a)(1). Orders for copies of patent application publications are handled by the USPTO's Public Records Division. The Public Records Division can be reached by telephone at (571) 272-3150 or (800) 972-6382, by facsimile at (571) 273-3250, by mail addressed to the United States Patent and Trademark Office, Public Records Division, Alexandria, VA 22313-1450 or via the Internet.

In addition, information on the status of the application, including the mailing date of Office actions and the dates of receipt of correspondence filed in the Office, may also be accessed via the Internet through the Patent Electronic Business Center at www.uspto.gov using the public side of the Patent Application Information and Retrieval (PAIR) system. The direct link to access this status information is currently <https://portal.uspto.gov/pair/PublicPair>. Prior to publication, such status information is confidential and may only be obtained by applicant using the private side of PAIR.

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



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Alexandria, Virginia 22313-1450
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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/796,122	02/20/2020	Ariel Douglas	MBOT-0049-P04	1760
43520	7590	10/07/2020	EXAMINER	
STRATEGIC PATENTS P.C.			NGUYEN, THUKHANH T	
P.O. BOX 920629			ART UNIT	
NEEDHAM, MA 02492			PAPER NUMBER	
			1743	
			NOTIFICATION DATE	
			DELIVERY MODE	
			10/07/2020	
			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

DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Claim Rejections - 35 USC § 102

2. In the event the determination of the status of the application as subject to AIA 35 U.S.C. 102 and 103 (or as subject to pre-AIA 35 U.S.C. 102 and 103) is incorrect, any correction of the statutory basis for the rejection will not be considered a new ground of rejection if the prior art relied upon, and the rationale supporting the rejection, would be the same under either status.
3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a)(1) the claimed invention was patented, described in a printed publication, or in public use, on sale, or otherwise available to the public before the effective filing date of the claimed invention.

4. Claims 1-20 are rejected under 35 U.S.C. 102(a)(1) as being anticipated by Batchelder et al. (8,658,250).

Batchelder et al. discloses an additive manufacturing system 10 directed sensor assemblies configured to read the encoded markings from successive portions of the marked consumable materials and to transmit the information read from the encoded markings to one or more control components of the additive manufacturing systems, wherein the system 10 includes build chamber 12, platen 14, gantry 16, extrusion head 18, supply sources 20 and 22, and sensor assemblies 24 and 26, where sensor assemblies 24 and 26 are configured to read information

from marked consumable materials (not shown in FIG. 1) provided in supply sources 20 and 22 wherein the sensor assembly 24 may communicate with controller 32 and/or any other control component of system 10 over communication line 38, 42, wherein the filament material 44 includes an encoded markings 50 include encoded information, which may be read by sensor assembly 24 or 26 as successive portions of filament 44 pass through pathway 36 or 40 of system 10. As discussed above, the read information may then be transmitted to controller 32 over communication line 38 or 42, thereby allowing controller 32 to use the received information to assist in building 3D model 28 and/or support structure 30.

Wherein encoded markings 50 may extend in multiple linear paths along length 46 (referred to as paths 50a and 50b), and include a variety of different information, such as information relating to filament 44 and/or system 10, include local filament cross-sections (e.g., diameters and root-mean-square variations), volume increments, local and global filament extrusion parameters, length of filament 44 remaining in supply source 20 or 22, measurements of local filament fingerprint characteristics, material type, material composition, material color, manufacturing information for filament 44 (e.g., manufacturing dates, manufacturing locations, and lot numbers), product codes, material origin information, software and firmware updates for system 10, and combinations thereof.

In addition, encoded markings 50 may also include media-based information, such as operating and use instructions, artistic works (e.g., textual, video, and audio information), and the like. In these embodiments, system 10 may include capabilities for playing the encoded media, such as textual and/or graphical information that may be displayed for a user of system 10 to read, and/or audio information that may be played for a user of system 10 to hear. The amount of data per unit length along length 46 of filament 44 may vary depending on the particular

marking technique used, the encoding scheme used, the dimensions of encoded markings 50, the number of encoded markings per unit length along length 46, the use of sub-markings (e.g., binary bits), etc.

Double Patenting

5. The no statutory 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 time wise 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 conflicting claims 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); *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 nonstatutory double patenting provided the reference application or patent either is shown to be commonly owned with the examined application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement. See MPEP § 717.02 for applications subject to examination under the first inventor to file provisions of the AIA as explained in MPEP § 2159. See MPEP §

2146 *et seq.* for applications not subject to examination under the first inventor to file provisions of the AIA. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO Internet website contains terminal disclaimer forms which may be used. Please visit www.uspto.gov/patent/patents-forms. The filing date of the application in which the form is filed determines what form (e.g., PTO/SB/25, PTO/SB/26, PTO/AIA/25, or PTO/AIA/26) 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 www.uspto.gov/patents/process/file/efs/guidance/eTD-info-I.jsp.

6. Claims 1-20 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1-20 of U.S. Patent No. 10,569,466; claims 1-15 of U.S. Patent No. 10,093,061 and claims 1-9 of U.S. Patent No. 9,233,504. Although the claims at issue are not identical, they are not patentably distinct from each other because they are essentially overlapping.

7. Any inquiry concerning this communication or earlier communications from the examiner should be directed to THU-KHANH T. NGUYEN whose telephone number is (571)272-1136. The examiner can normally be reached on 7:30-4:30.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph S. 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 <https://ppair-my.uspto.gov/pair/PrivatePair>. 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.

/THU KHANH T NGUYEN/
Examiner, Art Unit 1743

<i>Notice of References Cited</i>	Application/Control No. 16/796,122		Applicant(s)/Patent Under Reexamination Douglas et al.	
	Examiner THU-KHANH T NGUYEN		Art Unit 1743	Page 1 of 1

U.S. PATENT DOCUMENTS

*		Document Number Country Code-Number-Kind Code	Date MM-YYYY	Name	CPC Classification	US Classification
*	A	US-8658250-B2	02-2014	Batchelder; J. Samuel	B33Y10/00	264/40.4
	B					
	C					
	D					
	E					
	F					
	G					
	H					
	I					
	J					
	K					
	L					
	M					

FOREIGN PATENT DOCUMENTS

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

NON-PATENT DOCUMENTS

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

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

<i>Search Notes</i> 	Application/Control No. 16/796,122	Applicant(s)/Patent Under Reexamination Douglas et al.
	Examiner THU-KHANH T NGUYEN	Art Unit 1743

CPC - Searched*		
Symbol	Date	Examiner
B29C64/209,40,205,393,118; B33Y 10/00	10/01/2020	TN

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
Inventor search	10/01/2020	TN
Checked parent applications 16/153,224; 14/992127; 14/064974	10/01/2020	TN

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

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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	16/796,122
	Filing Date	Feb 20, 2020
	First Named Inventor	Ariel Douglas
	Art Unit	1742
	Examiner Name	Unknown
Sheet 1 of 4	Attorney Docket No.	MBOT-0049-P04

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-8286236		Oct 9, 2012	Jung, Edward K., et al.	
		US-8222908		Jul 17, 2012	Paul, Thomas P., et al.	
		US-8157202		Apr 17, 2012	Taatjes, Thomas L., et al.	
		US-7996101		Aug 9, 2011	Menchik, Guy et al.	
		US-7690909		Apr 6, 2010	Wahlstrom, Ben	
		US-7621733		Nov 24, 2009	Reynolds, Gary L., et al.	
		US-7520740		Apr 21, 2009	Wahlstrom, Ben et al.	
		US-6505926		Jan 14, 2003	Trafton, R. W., et al.	
		US-6022207		Feb 8, 2000	Dahlin, Thomas J., 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-20190134901		May 9, 2019	Douglas, Ariel et al.	
		US-20160121550		May 5, 2016	Douglas, Ariel et al.	
		US-20160067927		Mar 10, 2016	VORIS, JEFFREY et al.	
		US-20140117585		May 1, 2014	Douglas, Ariel et al.	
		US-20130161439		Jun 27, 2013	Beery, Chad E., et al.	
		US-20110121476		May 26, 2011	Batchelder, J. S., et al.	

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	16/796,122
	Filing Date	Feb 20, 2020
	First Named Inventor	Ariel Douglas
	Art Unit	1742
	Examiner Name	Unknown
Sheet 2 of 4	Attorney Docket No.	MBOT-0049-P04

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-20100289627		Nov 18, 2010	McAllister, Clarke W., et al.	
		US-2006127153		Jun 15, 2006	MENCHIK, GUY et al.	
		US-20030217275		Nov 20, 2003	Bentley, Keith 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-87	"Cartridges and Filament Flow Errors", CubeX 3D Printing Blog. http://cubex3dprinting.blogspot.com/2013/07/cartridges-and-filament-flow-errors.html July 10, 2013 , 6 Pages	
	NPL-307	USPTO, "Application No. 14/992,127 (Atty Ref MBOT-0049-P02) Final Office Action mailed 09-22-2017", 8 pages	
	NPL-308	USPTO, "Application No. 14/992,127 (Atty Ref MBOT-0049-P02) Non-Final Office Action mailed 01-12-2018", 10 pages	
	NPL-309	USPTO, "Application No. 14/992,127 (Atty Ref MBOT-0049-P02) Notice of Allowance mailed 06-06-2018", 5 pages	
	NPL-341	USPTO, "Application No. 16/153,224 (Atty Ref MBOT-0049-P03) Non-Final Office Action mailed 04-05-2019", 13 pages	
	NPL-342	USPTO, "Application No. 16/153,224 (Atty Ref MBOT-0049-P03) Notice of Allowance mailed 10-18-2019", 7 pages	

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	16/796,122
	Filing Date	Feb 20, 2020
	First Named Inventor	Ariel Douglas
	Art Unit	1742
	Examiner Name	Unknown
Sheet 3 of 4	Attorney Docket No.	MBOT-0049-P04

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-190	USPTO, "Application Serial No. 14/064,974 (Atty Ref MBOT-0049-P01), Non-Final Office Action mailed 04-10-2015", 10 pages	
	NPL-191	USPTO, "Application Serial No. 14/064,974 (Atty Ref MBOT-0049-P01), Notice of Allowance mailed 10-08-2015", 7 pages	
	NPL-310	USPTO, "Application Serial No. 14/992,127 (Atty Ref MBOT-0049-P02), Non-Final Office Action mailed 11-21-2016", 8 pages	
	NPL-311	USPTO, "Application Serial No.14/992,127 (Atty Ref MBOT-0049-P02), Notice of Allowance mailed 06-02-2017", 9 pages	

EXAMINER SIGNATURE			
Examiner Signature	/THU KHANH T NGUYEN/	Date Considered	10/01/2020
*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.			

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	16/796,122
	Filing Date	Feb 20, 2020
	First Named Inventor	Ariel Douglas
	Art Unit	1742
	Examiner Name	Unknown
Sheet 4 of 4	Attorney Docket No.	MBOT-0049-P04

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	/Thomas J. Bassolino/	Date (YYYY-MM-DD)	2020-02-28
Name/Print	Thomas J. Bassolino	Registration Number	65946

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.**

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	7	"14064974"	US-PGPUB; USPAT; USOCR	OR	ON	2020/10/01 08:24
L2	301,546	((cryptographic\$4 secur\$3 authentication authenticat\$3) same code)	US-PGPUB; USPAT; USOCR	OR	OFF	2020/10/01 09:00
L3	17,173	B29C64\$ B33Y\$	US-PGPUB; USPAT; USOCR	OR	OFF	2020/10/01 09:01
L4	40,619	(material data) with tag with (sensor reading)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2020/10/01 09:02
L5	12	2 and 3 and 4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2020/10/01 09:07
L6	20,440	B29C64/386,393.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2020/10/01 09:12
L7	16,635	4 same (control controlling processor processing)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2020/10/01 09:14
L8	15	6 and 7	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2020/10/01 09:14
L9	8	8 not 1	US-PGPUB; USPAT; USOCR;	OR	ON	2020/10/01 09:14

			FPRS; EPO; JPO; DERWENT			
L10	325,306	(material data platform build temperature volume infill rafting support\$3 heat\$2 cool\$3) with (tag RFID optical magnetical\$3) with (sensor reading thermocouple)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2020/10/01 09:16
L11	124,839	10 same (control controlling processor processing)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2020/10/01 09:18
L12	334	6 and 11 not 8	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2020/10/01 09:20
L13	134,141	B33Y\$	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2020/10/01 09:21
L14	293	12 and 13	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2020/10/01 09:21
L15	280	12 and 13	US-PGPUB; USPAT; USOCR	OR	ON	2020/10/01 09:21
L16	185	(makerbot near Industries) and ((optical tag) same sensor)	US-PGPUB; USPAT; USOCR	OR	ON	2020/10/01 09:24
L17	94	13 and 16	US-PGPUB; USPAT; USOCR	OR	ON	2020/10/01 09:25
L18	2,109	(13 6) and ((optical tag) same sensor)	US-PGPUB; USPAT; USOCR	OR	ON	2020/10/01 09:25
L19	929	10 and 18	US-PGPUB; USPAT; USOCR	OR	ON	2020/10/01 09:26

L20	517	11 and 19	US-PGPUB; USPAT; USOCR	OR	ON	2020/10/01 09:26
S1	1,959	101/483.ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 16:00
S2	2,702	(movable moving sliding slidable slid\$3 mov\$3) with (extrusion extruder) with head	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 16:01
S3	0	S1 and S2	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 16:01
S4	267,807	"425"/\$.ccls. "264"/\$.ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 16:02
S5	1,437	S2 and S4	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 16:02
S6	557	700/118.ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 16:10
S7	3	S2 and S6	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 16:10
S8	123	("5216616").URPN.	USPAT	OR	ON	2015/02/21 16:15
S9	80	S4 and S8	USPAT	OR	ON	2015/02/21 16:16
S10	11	S2 and S9	USPAT	OR	ON	2015/02/21 16:16
S11	1,670	(movable moving sliding slidable slid\$3 mov\$3) with (extrusion extruder) with nozzle	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 16:18
S12	949	S4 and S11	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 16:19
S13	1	S6 and S12	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 16:19
S14	12	("20020165304" "20030232176" "20040238999" "20040241386" "20080099953" "20120211919" "5738817" "5764521" "6129872" "6797220" "7387757" "8192664").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 16:41
S15	1	("2012/0211919").URPN.	USPAT	OR	ON	2015/02/21 16:41

S16	88	("6129872").URPN.	USPAT	OR	ON	2015/02/21 16:45
S17	0	("8747097").URPN.	USPAT	OR	ON	2015/02/21 16:48
S18	65	("20020195746" "20030200308" "20040010801" "20040030741" "20040136574" "20040162629" "20040175450" "20040203872" "20040207662" "20040232601" "20050066279" "20050234577" "20060041443" "20060077413" "20060095152" "20060111807" "20060127153" "20060192315" "20070024895" "20070061393" "20070088640" "20070124436" "20070172112" "20070265727" "20080018018" "20080228434" "20080269939" "20080309665" "20090164379" "20090287332" "20100131584" "20110029591" "20110126236" "20110137578" "20120046779" "20120059503" "20120059504" "20120092724" "20120105903" "20120113457" "20120113473" "20120280415" "20120287259" "20120287459" "20120287470" "20120287472" "20120287473" "4097566" "4575330" "5192559" "5637175" "5730817" "5738817" "6129872" "6193923" "6195205" "6490496" "6529627" "6841116" "7168935" "7958236" "8226395" "8282380" "8286236" "8425218").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 16:48
S19	49	"6719551"	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 17:06
S20	0	S7 and S19	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 17:07
S21	26	S4 and S19	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 17:07
S22	127	("5738817").URPN.	USPAT	OR	ON	2015/02/21 20:05
S23	14	"MakerBot Industries"	USPAT	OR	ON	2015/02/21 20:30

S24	51	"MakerBot Industries"	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 20:30
S25	267,807	"425"/\$.ccls. "264"/\$.ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 20:31
S26	25	S24 and S25	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 20:54
S27	1,670	(movable moving sliding slidable slid\$3 mov\$3) with (extrusion extruder) with nozzle	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 21:24
S28	3	S24 and S27	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 21:25
S29	3,664	425/113,122,131.1,133.1.ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/22 09:03
S30	64,090	(movable moving slid\$3) with (nozzle head) with (housing chamber sleeve)	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/22 09:09
S31	100	S29 and S30	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/22 09:09
S32	14	("5571326").URPN.	USPAT	OR	ON	2015/02/22 10:31
S33	15	("20010030475" "20030023239" "20040045122" "20040107532" "20050110182" "20050172872" "20070071907" "20070132134" "3807882" "4262034" "4850717" "5443662" "6171280" "6273463" "7157032").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/23 01:46
S34	7	("2007/0132134").URPN.	USPAT	OR	ON	2015/02/23 02:23
S35	3,008	filament with nozzle	USPAT	OR	ON	2015/02/23 09:28
S36	594	S35 same (extrusion extruding extrude)	USPAT	OR	ON	2015/02/23 09:28
S37	154,652	"425"/\$.ccls. "264"/\$.ccls.	USPAT	OR	ON	2015/02/23 09:28
S38	270	S36 and S37	USPAT	OR	ON	2015/02/23 09:29
S39	3,590	(head nozzle) same (extrusion extruding extrude) same (movable moving slidable sliding adjust\$3)	USPAT	OR	ON	2015/02/23 09:30

S40	4,576	(head nozzle) same (extrusion extruding extrude extruder) same (movable moving slidable sliding adjust\$3)	USPAT	OR	ON	2015/02/23 09:30
S41	67	S38 and S40	USPAT	OR	ON	2015/02/23 09:31
S42	3	"8220725"	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/23 09:50
S43	3	("4969602" "5169071" "6210141").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/23 09:58
S44	1	"20130209600"	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/23 10:59
S45	0	("2013/0209600").URPN.	USPAT	OR	ON	2015/02/23 11:00
S46	5	"8419996"	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/23 11:02
S47	77	("20040004653" "20050173838" "20050280678" "20060077224" "20060134328" "20070228590" "20070228592" "20080036834" "20080169585" "20090035405" "20090263582" "20090273122" "20090274540" "20100021580" "20100096072" "20100096485" "20100096489" "20100100224" "20100283172" "20110074065" "20110076495" "20110076496" "20110117268" "20110121476" "20120018924" "20120068378" "20120070523" "4749347" "4937593" "5121329" "5303141" "5312224" "5340433" "5426722" "5503785" "5653925" "5738817" "5764521" "5866058" "5939008" "5968561" "5975688" "6004124" "6022207" "6028410" "6054077" "6067480" "6070107" "6085957" "6129872" "6137508" "6165406" "6227643" "6228923" "6250735" "6547995" "6629011" "6645412" "6685866" "6722872" "6749414" "6776602" "6790403" "6814907" "6840609" "6866807" "6869559" "6923634" "6998087" "7122246" "7169337" "7172715" "7297304" "7314591" "7384255" "7604470" "7625200").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/23 11:08

S48	9	US-8663533-\$.DID. OR US-8647102-\$.DID. OR US-8287959-\$.DID. OR US-7896209-\$.DID. OR US-7897074-\$.DID. OR US-7625200-\$.DID. OR US-7625198-\$.DID. OR US-6749414-\$.DID. OR US-6238613-\$.DID.	US-PGPUB; USPAT; USOCR; FPRS; JPO	OR	ON	2015/02/23 11:26
S49	17	("7625198").URPN.	USPAT	OR	ON	2015/02/23 12:07
S50	17	("7625198").URPN.	USPAT	OR	ON	2015/02/23 12:18
S51	35	("20020149137" "20020182241" "20030170285" "20040143358" "20050253308" "20060156978" "20060160250" "20070182799" "20080001997" "20080062214" "20080068416" "20080084450" "5121329" "5126529" "5134569" "5204055" "5260009" "5312224" "5900207" "6030199" "6036777" "6153034" "6224893" "6251340" "6658314" "6773713" "6850334" "6905738" "6986739" "7168935" "7195475" "7220112" "7220115" "7306323" "7322674").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/23 12:18
S52	70	("20050173838" "20070228590" "20070228592" "20080036834" "20080169585" "20090035405" "20090263582" "20090273122" "20090274540" "20100021580" "20100096072" "20100096485" "20100096489" "20100100224" "20100283172" "20110074065" "20110076495" "20110076496" "20110117268" "20110121476" "20120018924" "20120068378" "20120070523" "4749347" "5121329" "5303141" "5312224" "5340433" "5426722" "5503785" "5653925" "5738817" "5764521" "5866058" "5939008" "5968561" "5975688" "6004124" "6022207" "6028410" "6054077" "6067480" "6070107" "6085957" "6129872" "6165406" "6228923" "6250735" "6547995" "6629011" "6645412" "6685866" "6722872" "6749414" "6776602" "6790403" "6814907" "6840609" "6866807" "6869559" "6923634" "6998087" "7122246" "7169337" "7172715" "7297304" "7314591" "7384255" "7604470" "7625200").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/23 17:27

S53	1	"13914072"	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/24 17:36
S54	1	"14016269"	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/24 17:43
S55	2	"14064974" "14065516"	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/24 17:44
S56	1	"14580711"	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/24 17:46
S57	0	"14288893"	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/24 17:48
S58	14	makerbot near industries	USPAT	OR	ON	2015/02/27 15:57
S59	22	"12858622"	US-PGPUB; USPAT; USOCR	OR	ON	2015/03/03 17:04
S60	17	("7625198").URPN.	USPAT	OR	ON	2015/03/08 01:14
S61	1	"8419996".pn.	US-PGPUB; USPAT; USOCR	OR	ON	2015/03/08 04:16
S62	0	"7625200".pn. and magnet\$3	US-PGPUB; USPAT; USOCR	OR	ON	2015/03/08 06:17
S63	1	"7625200".pn.	US-PGPUB; USPAT; USOCR	OR	ON	2015/03/08 06:17
S64	1	"20130209600"	US-PGPUB; USPAT; USOCR	OR	ON	2015/03/08 11:35
S65	9	US-8663533-\$.DID. OR US-8647102- \$.DID. OR US-8287959-\$.DID. OR US- 7896209-\$.DID. OR US-7897074-\$.DID. OR US-7625200-\$.DID. OR US-7625198- \$.DID. OR US-6749414-\$.DID. OR US- 6238613-\$.DID.	US-PGPUB; USPAT; USOCR; FPRS; JPO	OR	ON	2015/03/08 11:36
S66	293	print\$3 with (head extrusion) with filament	US-PGPUB; USPAT; USOCR; FPRS; JPO	OR	ON	2015/03/09 00:57
S67	59	S66 same ((feed\$3 drive driving) with filament)	US-PGPUB; USPAT;	OR	ON	2015/03/09 00:58

			USOCR; FPRS; JPO			
S68	3	S66 same ((piston cylinder) with (feed\$3 drive driving) with filament)	US-PGPUB; USPAT; USOCR; FPRS; JPO	OR	ON	2015/03/09 01:02
S69	3	S66 same ((piston cylinder) with (feed\$3 drive driving) with (filament material strand))	US-PGPUB; USPAT; USOCR; FPRS; JPO	OR	ON	2015/03/09 01:03
S70	25,278	print\$3 with (head extrusion) with (filament strand material)	US-PGPUB; USPAT; USOCR; FPRS; JPO	OR	ON	2015/03/09 01:04
S71	69	S70 same (piston cylinder punch plunger ram) same (extrusion extruder extruding)	US-PGPUB; USPAT; USOCR; FPRS; JPO	OR	ON	2015/03/09 01:04
S72	9	US-8663533-\$.DID. OR US-8647102-\$.DID. OR US-8287959-\$.DID. OR US-7896209-\$.DID. OR US-7897074-\$.DID. OR US-7625200-\$.DID. OR US-7625198-\$.DID. OR US-6749414-\$.DID. OR US-6238613-\$.DID.	US-PGPUB; USPAT; USOCR; FPRS; JPO	OR	ON	2015/04/03 12:27
S73	77	("20040004653" "20050173838" "20050280678" "20060077224" "20060134328" "20070228590" "20070228592" "20080036834" "20080169585" "20090035405" "20090263582" "20090273122" "20090274540" "20100021580" "20100096072" "20100096485" "20100096489" "20100100224" "20100283172" "20110074065" "20110076495" "20110076496" "20110117268" "20110121476" "20120018924" "20120068378" "20120070523" "4749347" "4937593" "5121329" "5303141" "5312224" "5340433" "5426722" "5503785" "5653925" "5738817" "5764521" "5866058" "5939008" "5968561" "5975688" "6004124" "6022207" "6028410" "6054077" "6067480" "6070107" "6085957" "6129872" "6137508" "6165406" "6227643" "6228923" "6250735" "6547995" "6629011" "6645412" "6685866" "6722872" "6749414" "6776602" "6790403" "6814907" "6840609"	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/03 12:33

		"6866807" "6869559" "6923634" "6998087" "7122246" "7169337" "7172715" "7297304" "7314591" "7384255" "7604470" "7625200").PN.				
S74	302	("5121329").URPN.	USPAT	OR	ON	2015/04/03 12:34
S75	45	(second near3 filament) and (S72 S73 S74)	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/03 13:25
S76	30	("6998087").URPN.	USPAT	OR	ON	2015/04/03 13:32
S77	3	(second near3 filaments!) and (S72 S73 S74)	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/03 13:34
S78	3	(second near3 filaments!) and (S72 S73 S74 S76)	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/03 13:35
S79	0	(mix near3 filaments!) and (S72 S73 S74 S76)	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/03 16:11
S80	18	("7625198").URPN.	USPAT	OR	ON	2015/04/03 16:12
S81	93	("6129872").URPN.	USPAT	OR	ON	2015/04/03 16:12
S82	49	"6719551"	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/03 16:12
S83	268,729	"425"/\$.ccls. "264"/\$.ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/03 16:13
S84	352	(mix\$3 near3 filaments!) and (S80 S81 S82 S83)	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/03 16:14
S85	54,165	(extrusion extrud\$3) with (nozzle tip head)	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/03 16:15
S86	32	(mix\$3 near3 filaments!) same S85	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/03 16:15
S87	18	S84 and S86	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/03 16:16
S88	41	"6749414"	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/03 17:50

S89	0	(mix\$3 near3 filaments!) and S88	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/03 17:52
S90	29	(mix\$3 near3 filaments!) same (tip nozzle) same (extrud\$3 extrusion)	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/03 17:53
S91	4	(mix\$3 near3 filaments!) same (tip nozzle) same (print\$4 (three near dimension\$4))	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/03 18:13
S92	4	(mix\$3 near3 filaments!) same (tip nozzle) same (print\$4 (three near dimension\$4))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2015/04/03 18:14
S93	45	(mix\$3 near3 filaments!) same (print\$4 (three near dimension\$4))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2015/04/03 18:15
S94	3,587	((heat\$3 melt\$3 mix\$3) near3 (strands! filaments!)) same (nozzle inject\$3 head)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2015/04/04 01:11
S95	386	B29C\$ and S94	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2015/04/04 01:32
S96	30	("6998087").URPN.	USPAT	OR	ON	2015/04/04 03:55
S97	77	("20040004653" "20050173838" "20050280678" "20060077224" "20060134328" "20070228590" "20070228592" "20080036834" "20080169585" "20090035405" "20090263582" "20090273122" "20090274540" "20100021580" "20100096072" "20100096485" "20100096489" "20100100224" "20100283172" "20110074065" "20110076495" "20110076496" "20110117268" "20110121476" "20120018924" "20120068378" "20120070523" "4479347" "4937593"	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/04 03:56

		"5121329" "5303141" "5312224" "5340433" "5426722" "5503785" "5653925" "5738817" "5764521" "5866058" "5939008" "5968561" "5975688" "6004124" "6022207" "6028410" "6054077" "6067480" "6070107" "6085957" "6129872" "6137508" "6165406" "6227643" "6228923" "6250735" "6547995" "6629011" "6645412" "6685866" "6722872" "6749414" "6776602" "6790403" "6814907" "6840609" "6866807" "6869559" "6923634" "6998087" "7122246" "7169337" "7172715" "7297304" "7314591" "7384255" "7604470" "7625200").PN.				
S98	2	("612872" "6165406" "5121329").pn.	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/04 15:04
S99	3	("6129872" "6165406" "5121329").pn.	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/04 15:04
S100	1	("6129872" "6165406" "5121329").pn. and camera	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/04 18:22
S101	545	("6129872" "6165406" "5121329")	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/04 18:23
S102	207,088	camera with control\$4	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/04 18:24
S103	13	S101 and S102	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/04 18:24
S104	3,649	material same tag same sensor	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/05 10:45
S105	12	(US-20090309247-\$ or US- 20140120194-\$ or US-20120070619- \$).did. or (US-8011912-\$ or US- 8033811-\$ or US-7625198-\$ or US- 8419996-\$ or US-5900207-\$ or US- 8778380-\$ or US-7625200-\$ or US- 6998087-\$ or US-8403658-\$).did.	US-PGPUB; USPAT	OR	ON	2015/04/05 10:47
S106	0	S104 and S105	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/05 10:47

S107	12	(US-20090309247-\$ or US-20140120194-\$ or US-20120070619-\$).did. or (US-8011912-\$ or US-8033811-\$ or US-7625198-\$ or US-8419996-\$ or US-5900207-\$ or US-8778380-\$ or US-7625200-\$ or US-6998087-\$ or US-8403658-\$)	US-PGPUB; USPAT	OR	ON	2015/04/05 10:48
S108	208	"20090309247" "20140120194" "20120070619" "8011912" "8033811" "7625198" "8419996" "5900207" "8778380" "7625200" "6998087" "8403658"	US-PGPUB; USPAT	OR	ON	2015/04/05 10:49
S109	0	S104 and S108	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/05 10:50
S110	33,255	'tag same sensor	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/05 10:51
S111	33,255	tag same sensor	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/05 10:51
S112	3,649	S104 and S111	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/05 10:51
S113	0	S108 and S111	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/05 10:51
S114	268,729	"425"/\$.ccls. "264"/\$.ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/05 10:56
S115	36	S104 and S114	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/05 10:57
S116	69,898	(RFID QR magnetic\$4) with tag	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/05 11:00
S117	41,956	(sensor reader encod\$4) same S116	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/05 11:00
S118	108	S114 and S117	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/05 11:01
S119	5	US-8286236-\$.DID. OR US-8222908-\$.DID. OR US-8157202-\$.DID. OR US-7996101-\$.DID. OR US-6505926-\$.DID.	US-PGPUB; USPAT; USOCR; FPRS; JPO	OR	ON	2015/04/05 11:26

S120	1	"14064974"	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/05 11:50
S121	19	(US-20090309247-\$ or US-20140120194-\$ or US-20120070619-\$ or US-20130075954-\$ or US-20100038268-\$ or US-20070077323-\$ or US-20070075460-\$).did. or (US-8011912-\$ or US-8033811-\$ or US-7625198-\$ or US-8419996-\$ or US-5900207-\$ or US-8778380-\$ or US-7625200-\$ or US-6998087-\$ or US-8403658-\$ or US-7621733-\$ or US-7585450-\$ or US-7520740-\$).did.	US-PGPUB; USPAT	OR	ON	2015/07/17 06:23
S122	24,858	control\$3 with (sensor reader) with material	US-PGPUB; USPAT; USOCR	OR	ON	2015/07/17 06:24
S123	8	S121 and S122	US-PGPUB; USPAT; USOCR	OR	ON	2015/07/17 06:24
S124	3	"14064974"	US-PGPUB; USPAT; USOCR	OR	OFF	2016/11/09 07:03
S125	1	"20110121476"	US-PGPUB; USPAT; USOCR	OR	OFF	2016/11/09 07:21
S126	14	2006/0127153	US-PGPUB; USPAT; USOCR	OR	OFF	2016/11/09 12:56
S127	22	"20060127153"	US-PGPUB; USPAT; USOCR	OR	OFF	2016/11/09 13:03
S128	20	("20010028916" "20030026896" "20040207124" "20050104241" "20060127153" "20060263705" "20070179656" "20090020901" "20090304952" "6259962" "6569373" "6658314" "6850334" "7052263" "7183335" "7195472" "7209797" "7225045" "7300619" "7500846").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/11/09 14:56
S129	14	("2006/0127153").URPN.	USPAT	OR	OFF	2016/11/09 14:57
S130	1	"7520740".pn. and optical\$4	US-PGPUB; USPAT; USOCR	OR	ON	2016/11/11 12:59
S131	1	"7520740".pn. and magnet\$3	US-PGPUB; USPAT; USOCR	OR	ON	2016/11/11 13:01

S132	0	"7520740".pn. and remote	US-PGPUB; USPAT; USOCR	OR	ON	2016/11/11 13:17
S133	0	"7520740".pn. and remot\$3	US-PGPUB; USPAT; USOCR	OR	ON	2016/11/11 13:17
S134	20	(US-20090309247-\$ or US-20140120194-\$ or US-20120070619-\$ or US-20130075954-\$ or US-20100038268-\$ or US-20070077323-\$ or US-20070075460-\$ or US-20060127153-\$).did. or (US-8011912-\$ or US-8033811-\$ or US-7625198-\$ or US-8419996-\$ or US-5900207-\$ or US-8778380-\$ or US-7625200-\$ or US-6998087-\$ or US-8403658-\$ or US-7621733-\$ or US-7585450-\$ or US-7520740-\$).did.	US-PGPUB; USPAT	OR	OFF	2017/03/17 12:32
S135	1,662	cryptographical\$3 with (authentic authenticaut\$3 code)	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/17 12:33
S136	0	S135 same material same (tag sensor)	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/17 12:33
S137	54	S135 same (tag sensor)	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/17 12:34
S138	0	S134 and S137	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/17 12:34
S139	99,939	B29C\$ B33Y\$	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/17 12:38
S140	1,920	cryptographical\$3 with (authentic authenticaut\$3 code tag sensor)	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/17 12:39
S141	0	S139 and S140	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/17 12:42
S142	705	cryptographical\$3 with secur\$3 with (authentic authenticaut\$3 code tag sensor)	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/17 12:42
S143	17,481	(molding injection jet printer) same material same (tag sensor)	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/17 12:46

S144	3	S142 and S143	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/17 12:47
S145	1,359	(cryptographical\$3 with secur\$3) same (authentic authenticaut\$3 code tag sensor)	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/17 12:49
S146	9,224	cryptographical\$3 with (authentic authenticaut\$3 code tag sensor secur\$3)	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/17 12:50
S147	0	S139 and S146	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/17 12:50
S148	8,296	cryptographical\$3 with (secur\$3)	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/17 12:51
S149	1,359	S148 same (authentic authenticaut\$3 code tag sensor)	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/17 12:52
S150	67,868	(3D three-dimensional) same (print\$3 lithograph\$3 stereolithography sintering)	US-PGPUB; USPAT; USOCR	OR	ON	2017/03/17 12:53
S151	19	S149 and S150	US-PGPUB; USPAT; USOCR	OR	ON	2017/03/17 12:54
S152	84,254	700/\$.ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2017/03/17 14:28
S153	2	S151 and S152	US-PGPUB; USPAT; USOCR	OR	ON	2017/03/17 14:28
S154	164	"7136710"	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/17 14:38
S155	0	S139 and S154	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/17 14:39
S156	21	(US-20090309247-\$ or US-20140120194-\$ or US-20120070619-\$ or US-20130075954-\$ or US-20100038268-\$ or US-20070077323-\$ or US-20070075460-\$ or US-20060127153-\$).did. or (US-8011912-\$ or US-8033811-\$ or US-7625198-\$ or US-8419996-\$ or US-5900207-\$ or US-8778380-\$ or US-7625200-\$ or US-6998087-\$ or US-8403658-\$ or US-	US-PGPUB; USPAT	OR	OFF	2017/03/22 14:54

		7621733-\$ or US-7585450-\$ or US-7520740-\$ or US-7813822-\$).did.				
S157	215,332	((cryptographic\$4 secur\$3 authentication authenticat\$3) same code)	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/22 14:59
S158	1	S156 and S157	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/22 15:00
S159	2,440	700/117-120.ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2017/03/22 15:08
S160	51	S157 and S159	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/22 15:10
S161	17	("6671572").URPN.	USPAT	OR	OFF	2017/03/22 15:42
S162	107,895	B29C\$ B33Y\$ B83Y\$ B41J02/045\$ B41J29/38\$	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/22 16:07
S163	2	"12841744"	US-PGPUB; USPAT; USOCR	OR	OFF	2017/05/26 17:25
S164	6	"14992127" "14296002" "6671572".pn. 2010/0005299	US-PGPUB; USPAT; USOCR	OR	ON	2017/07/17 09:59
S165	1	"20100005299"	US-PGPUB; USPAT; USOCR	OR	ON	2017/07/17 10:26
S166	35	"20110121476" "20060127153" "7520740".pn.	US-PGPUB; USPAT; USOCR	OR	OFF	2017/07/17 10:30
S167	85	"2011/0121476" "2006/0127153" "7520740".pn.	US-PGPUB; USPAT; USOCR	OR	OFF	2017/07/17 10:30
S168	4,697	B29C64\$ B33Y\$	US-PGPUB; USPAT; USOCR	OR	ON	2017/12/28 02:59
S169	5,159	unauthorized with material	US-PGPUB; USPAT; USOCR	OR	ON	2017/12/28 03:00
S170	6	S168 and S169	US-PGPUB; USPAT; USOCR	OR	ON	2017/12/28 03:00
S171	1	"8286236".pn.	US-PGPUB; USPAT; USOCR	OR	OFF	2017/12/28 03:06

S172	14	2010/0140550 2013/0300101	US-PGPUB; USPAT; USOCR	OR	OFF	2017/12/28 03:12
S173	2	"20100140550" "20130300101"	US-PGPUB; USPAT; USOCR	OR	OFF	2017/12/28 03:13
S174	3	"14064974"	US-PGPUB; USPAT; USOCR	OR	OFF	2017/12/28 10:02
S175	3	"14016269"	US-PGPUB; USPAT; USOCR	OR	OFF	2018/03/25 16:12
S176	2	"14992127"	US-PGPUB; USPAT; USOCR	OR	ON	2019/04/01 14:17
S177	121,786	29Cb64\$ B33Y\$	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2019/10/07 19:44
S178	36,666	(material data) with tag with (sensor reading)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2019/10/07 19:45
S179	11,452	S178 same control\$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2019/10/07 19:49
S180	16	S177 and S179	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2019/10/07 19:49
S181	3	"14992127"	US-PGPUB; USPAT; USOCR	OR	OFF	2019/10/07 19:57
S182	13	("9676145").URPN.	USPAT	OR	OFF	2019/10/09 13:29

10/1/2020 10:45:40 AM

C:\Users\tnguyen34\Documents\EAST\Workspaces\14064974-14992127 - material tag sensor - RFID - bar code - QR code.wsp

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No.: 16/796,122
Filing Date: February 20, 2020
In re: DOUGLAS, Ariel, et al.
Art Unit: 1743
Examiner: NGUYEN, Thukhanh T.
Conf. No.: 1760

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 on October 7, 2020:

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

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

Remarks begin on page 7 of this paper.

Request for Extension of Time

The applicant requests a two-month extension of time from January 7, 2021 until March 8, 2021 (the first business day following Sunday, March 7, 2021) for responding to the outstanding Office Action. The corresponding fee of \$640.00 as specified by 37 C.F.R. § 1.17(a)(2) accompanies this request.

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 method, comprising:
reading data from a tag included on a supply of a build material using a tag sensor in communication with a controller of a three-dimensional printer, the data including at least one property of the build material;
determining an operational parameter of a fabrication process using the three-dimensional printer based upon the data, the operational parameter including at least one of a build platform temperature, a build volume temperature, an infill requirement, a rafting requirement, a support structure requirement, and a cooling requirement; performing a diagnostic test to determine whether the operational parameter is suitable for the three-dimensional printer; and
when the operational parameter is suitable for the three-dimensional printer according to the diagnostic test, controlling operation of the three-dimensional printer during the fabrication process with the controller according to the operational parameter to fabricate an object with the three-dimensional printer.
2. (Original) The method of claim 1, wherein the tag includes at least one of a radio frequency identification (RFID) tag, an optically-identifiable tag, a magnetically-identifiable tag, and a mechanical feature of the supply.
3. (Original) The method of claim 1, wherein the tag sensor includes at least one of a radio frequency identification (RFID) reader, an optical scanner, a magnetic reader, and a contact point sensor.
4. (Original) The method of claim 1, wherein the data includes at least one of a material identification number, a build material type, a build material diameter, an extruder temperature requirement, a build material melting temperature, a build material color, a build material color lot number, a cost per unit of build material, a build material

density, a build material tensile strength, a build material viscosity, a build material recycle code, and a build material expiration date.

5. (Original) The method of claim 1, wherein the supply includes at least one of a cartridge, a spool, a filament, a number of pellets, and a liquid.
6. (Original) The method of claim 1, wherein the tag includes a radio frequency identification (RFID) tag, and the RFID tag is at least one of a passive RFID tag and an active RFID tag.
7. (Original) The method of claim 1, wherein the tag includes an optically-identifiable tag, and the optically-identifiable tag is at least one of bar code and quick read (QR) code.
8. (Original) The method of claim 1, wherein the tag includes a magnetically-identifiable tag, and the magnetically-identifiable tag is a magnetic swipe strip.
9. (Original) The method of claim 1, wherein the tag includes a mechanical feature of the supply, and the mechanical feature includes a plurality of recesses or protrusions encoding information about the build material.
10. (Canceled)
11. (Original) The method of claim 1, wherein the operational parameter is based upon a build material identification number contained in the data.
12. (Original) The method of claim 1, wherein the operational parameter further includes at least one of an extruder temperature and a feed rate.
13. (Currently amended) A system, comprising:
a three-dimensional printer;
a coupling adapted to receive a supply of a build material;

a tag sensor communicatively associated with the three-dimensional printer, the tag sensor configured to read data from a data tag associated with the supply of the build material, the data including at least one property of the build material;

a processor configured to determine an operational parameter of a fabrication process using the three-dimensional printer based upon the data and to perform a diagnostic test to determine whether the operational parameter is suitable for the three-dimensional printer, the operational parameter including at least one of a build platform temperature, a build volume temperature, an infill requirement, a rafting requirement, a support structure requirement, and a cooling requirement; and

a controller for the three-dimensional printer, the controller configured to, when the operational parameter is suitable for the three-dimensional printer according to the diagnostic test, control operation of the three-dimensional printer during the fabrication process according to the operational parameter to fabricate an object with the three-dimensional printer.

14. (Original) The system of claim 13, further comprising a container holding the supply of the build material, wherein the container is configured to connect to the coupling, and wherein the container includes the data tag.
15. (Original) The system of claim 14, wherein the container includes at least one of a cartridge and a spool.
16. (Original) The system of claim 13, wherein the build material includes at least one of a filament, a number of pellets, and a liquid.
17. (Original) The system of claim 13, wherein the processor is included on a remote network resource.
18. (Original) The system of claim 13, wherein the processor is included on one or more of the controller and the three-dimensional printer.

19. (Original) The system of claim 13, wherein the tag sensor includes at least one of a radio frequency identification (RFID) reader, an optical scanner, a magnetic reader, and a contact point sensor.
20. (Currently amended) A method, comprising:
reading first data from a tag included on a supply of a build material using a tag sensor associated with a three-dimensional printer, the first data related to the build material;
retrieving second data from a data store, the second data including additional data related to the build material;
combining the first data and the second data;
determining an operational parameter to configure the three-dimensional printer for a fabrication process using the build material based upon the combination of the first data and the second data; [[and]]
performing a diagnostic test to determine whether the operational parameter is suitable for the three-dimensional printer; and
when the operational parameter is suitable for the three-dimensional printer according to the diagnostic test, controlling operation of the three-dimensional printer during the fabrication process according to the operational parameter to fabricate an object with the three-dimensional printer.
21. (New) The method of claim 1, wherein data from the tag includes ordering information for replacement of the build material.

Remarks

Status of the Claims

Claims 1, 13, and 20 are amended. Claim 10 is canceled. Claim 21 is added as new. Claims 1–9 and 11–21 are presented for examination, with claims 1, 13, and 20 being independent.

The claim amendments find support in at least ¶¶ [0067] and [0077] of the as-filed Specification. No new matter is added.

Double Patenting

Claims 1–20 stand rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1–20 of U.S. Patent No. 10,569,466, claims 1–15 of U.S. Patent No. 10,093,061, and claims 1–9 of U.S. Patent No. 9,233,504. The applicant acknowledges this rejection, and will consider a terminal disclaimer to address this rejection if appropriate after all other rejections to the claims have been resolved.

Claim Rejections – 35 U.S.C. § 102

Independent claim 1 is rejected under 35 U.S.C. § 102 as being unpatentable over U.S. Pat. No. 8,658,250 to Batchelder, et al. (“*Batchelder*”). This rejection is traversed for at least the following reasons.

The applicant has devised a technique for using tagged build material where “[a] three-dimensional printer can read the information from the tag and determine how to use the build material during fabrication of a three-dimensional object.”¹ Specifically, the applicant’s claimed technique uses a tag sensor of a three-dimensional printer to read data from a tag on a supply of build material “to determine properties of the build material [] to further determine operational parameters for a fabrication process using the build material.”² Moreover, to be sure that the operational parameter is compatible with the three-dimensional printer:

[T]he determination of operational parameters may include preliminary diagnostic tests such as whether the diameter of the build material, size of a build material pellet, build material fluid viscosity, or the like is appropriate for the

¹ As-filed Specification (hereinafter “Specification”), Abstract.

² Specification, ¶ [0064].

three-dimensional printer 306. Additional diagnostic test may be performed such as whether the correct build material 312 is provided on the supply 302, whether the correct color or color lot build material 312 is on the supply, or any other appropriate preliminary diagnostic build material test used to determine, as a threshold matter, whether a desired fabrication can be performed with the supply 302.³

The applicant has amended claim 1 to clarify this inventive concept, which does not appear to be anticipated by the cited art.

Batchelder is directed to a “[a] consumable material and sensor assembly for use in an additive manufacturing system, the consumable material comprising an exterior surface having encoded markings that are configured to be read by the sensor assembly . .

. .”⁴ In *Batchelder*:

Information retained in the encoded markings may then be transmitted to controller 32 over communication lines 38 and 42, thereby allowing controller 32 to use the received information to assist in building 3D model 28 and/or support structure 30. For example, controller 32 may modify the extrusion parameters transmitted to extrusion head 18, allowing the thermal properties and/or the feed rates of extrusion head 18 to be adjusted based on the received information.⁵

To be sure, *Batchelder* appears to contemplate reading encoded markings on build material for modifying extrusion parameters. However, the Office has not shown that *Batchelder* includes a teaching of “performing a diagnostic test to determine whether the operational parameter is suitable for the three-dimensional printer,” as presently claimed. In fact, the word “test” appears to be completely missing from the *Batchelder* disclosure.

For the foregoing reasons, independent claim 1 is believed to be patentable over the cited art. Independent claims 13 and 20 are believed to be patentable over the cited art for similar reasons. The remaining claims depend from an allowable base claim and are likewise believed to be in condition for allowance. The applicant respectfully requests reconsideration and withdrawal of the outstanding claim rejections under 35 U.S.C. § 102.

³ Specification, ¶ [0069].

⁴ *Batchelder*, Abstract.

⁵ *Batchelder*, col. 6, ll. 13–20.

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 attorney.

Respectfully submitted,
STRATEGIC PATENTS, P.C.

/Thomas J. Bassolino/
Thomas J. Bassolino
Reg. No. 65,946
Tel.: (646) 238-1234

March 8, 2021

Electronic Patent Application Fee Transmittal				
Application Number:		16796122		
Filing Date:		20-Feb-2020		
Title of Invention:		TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING		
First Named Inventor/Applicant Name:		Ariel Douglas		
Filer:		Thomas John Bassolino/Paula Ng		
Attorney Docket Number:		MBOT-0049-P04		
Filed as Large Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				
Extension-of-Time:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension - 2 months with \$0 paid	1252	1	640	640
Miscellaneous:				
Total in USD (\$)				640

Electronic Acknowledgement Receipt	
EFS ID:	42116650
Application Number:	16796122
International Application Number:	
Confirmation Number:	1760
Title of Invention:	TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING
First Named Inventor/Applicant Name:	Ariel Douglas
Customer Number:	43520
Filer:	Thomas John Bassolino/Paula Ng
Filer Authorized By:	Thomas John Bassolino
Attorney Docket Number:	MBOT-0049-P04
Receipt Date:	08-MAR-2021
Filing Date:	20-FEB-2020
Time Stamp:	15:23:31
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$ 640
RAM confirmation Number	E202138F23494123
Deposit Account	504262
Authorized User	Paula Ng
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.16 (National application filing, search, and examination fees) 37 CFR 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-0049-P04_20210308_OAResponse.pdf	170156	yes	9
			ca3fa83763bd0b75b5505bb2d091a5336b66215b		
	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	
	Claims		3	6	
	Applicant Arguments/Remarks Made in an Amendment		7	9	
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30728	no	2
			73c996a940d23bc3eeaa3d18beec01b1096b07d4		
Warnings:					
Information:					
Total Files Size (in bytes):			200884		

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.

PATENT APPLICATION FEE DETERMINATION RECORD Substitute for Form PTO-875				Application or Docket Number 16/796,122		Filing Date 02/20/2020		☐ 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), (l), 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 \$100 =						
INDEPENDENT CLAIMS (37 CFR 1.16(h))		minus 3 =	*		x \$460 =						
☐ 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		820					
APPLICATION AS AMENDED - PART II											
		(Column 1)	(Column 2)		(Column 3)						
AMENDMENT	03/08/2021	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 \$100 =	0				
	Independent (37 CFR 1.16(h))	* 3	Minus	*** 3	= 0	x \$480 =	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					
AMENDMENT		(Column 1)	(Column 2)		(Column 3)						
		CLAIMS REMAINING AFTER AMENDMENT		HIGHEST NUMBER PREVIOUSLY PAID FOR	PRESENT EXTRA	RATE (\$)	ADDITIONAL FEE (\$)				
	Total (37 CFR 1.16(i))	*	Minus	**	=	x \$0 =					
	Independent (37 CFR 1.16(h))	*	Minus	***	=	x \$0 =					
	☐ 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.		LIE									
** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 20, enter "20".		/TERESA J JACKSON WOODRUFF/									
*** If the "Highest Number Previously Paid For" IN THIS SPACE is less than 3, enter "3".											
The "Highest Number Previously Paid For" (Total or Independent) is the highest number found in the appropriate box in column 1.											

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

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



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/796,122	02/20/2020	Ariel Douglas	MBOT-0049-P04	1760
43520	7590	03/29/2021	EXAMINER	
STRATEGIC PATENTS P.C.			NGUYEN, THUKHANH T	
P.O. BOX 920629			ART UNIT	PAPER NUMBER
NEEDHAM, MA 02492			1743	
			NOTIFICATION DATE	DELIVERY MODE
			03/29/2021	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. 16/796,122	Applicant(s) Douglas et al.	
Examiner THU-KHANH T NGUYEN	Art Unit 1743	AIA (FITF) Status Yes

-- 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 03/08/2021.
☐ 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) 1-9 and 11-21 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) 1-9 and 11-21 is/are rejected.

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

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

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

Application Papers

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

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

Priority under 35 U.S.C. § 119

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

Certified copies:

a) ☐ All b) ☐ Some** c) ☐ None of the:

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

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

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

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

Attachment(s)

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

2) ☐ Information Disclosure Statement(s) (PTO/SB/08a and/or PTO/SB/08b)
Paper No(s)/Mail Date ____.

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

4) ☐ Other: ____.

DETAILED ACTION

Notice of Pre-AIA or AIA Status

1. The present application, filed on or after March 16, 2013, is being examined under the first inventor to file provisions of the AIA.

Double Patenting

2. The non statutory 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 time wise 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 conflicting claims 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); *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 nonstatutory double patenting provided the reference application or patent either is shown to be commonly owned with the examined application, or claims an invention made as a result of activities undertaken within the

scope of a joint research agreement. See MPEP § 717.02 for applications subject to examination under the first inventor to file provisions of the AIA as explained in MPEP § 2159. See MPEP § 2146 *et seq.* for applications not subject to examination under the first inventor to file provisions of the AIA. A terminal disclaimer must be signed in compliance with 37 CFR 1.321(b).

The USPTO Internet website contains terminal disclaimer forms which may be used. Please visit www.uspto.gov/patent/patents-forms. The filing date of the application in which the form is filed determines what form (e.g., PTO/SB/25, PTO/SB/26, PTO/AIA/25, or PTO/AIA/26) 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 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 claims 1-20 of U.S. Patent No. 10,569,466; claims 1-15 of U.S. Patent No. 10,093,061 and claims 1-9 of U.S. Patent No. 9,233,504. Although the claims at issue are not identical, they are not patentably distinct from each other because they are essentially overlapping.

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

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

4. Any inquiry concerning this communication or earlier communications from the examiner should be directed to THU-KHANH T. NGUYEN whose telephone number is (571)272-1136. The examiner can normally be reached on 7:30-4:30.

Examiner interviews are available via telephone, in-person, and video conferencing using a USPTO supplied web-based collaboration tool. To schedule an interview, applicant is encouraged to use the USPTO Automated Interview Request (AIR) at <http://www.uspto.gov/interviewpractice>.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Joseph S. 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 <https://ppair-my.uspto.gov/pair/PrivatePair>. 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

Application/Control Number: 16/796,122
Art Unit: 1743

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the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/THU KHANH T NGUYEN/
Examiner, Art Unit 1743

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

<i>Search Notes</i> 	Application/Control No. 16/796,122	Applicant(s)/Patent Under Reexamination Douglas et al.
	Examiner THU-KHANH T NGUYEN	Art Unit 1743

CPC - Searched*		
Symbol	Date	Examiner
B29C64/209,40,205,393,118; B33Y 10/00	03/24/2021	TN

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
Inventor search	10/01/2020	TN
Checked parent applications 16/153,224; 14/992127; 14/064974	10/01/2020	TN

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner

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EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
L1	3	"14064974" and ((perform\$3 control controller controlling processor) with (dignostic test) with (parameter operational temperature pressure))	US-PGPUB; USPAT; USOCR	OR	ON	2021/03/24 00:21
L2	7	"14064974" and ((diagnostic test))	US-PGPUB; USPAT; USOCR	OR	ON	2021/03/24 00:23
S1	1,959	101/483.ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 16:00
S2	2,702	(movable moving sliding slidable slid\$3 mov\$3) with (extrusion extruder) with head	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 16:01
S3	0	S1 and S2	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 16:01
S4	267,807	"425"/\$.ccls. "264"/\$.ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 16:02
S5	1,437	S2 and S4	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 16:02
S6	557	700/118.ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 16:10
S7	3	S2 and S6	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 16:10
S8	123	("5216616").URPN.	USPAT	OR	ON	2015/02/21 16:15
S9	80	S4 and S8	USPAT	OR	ON	2015/02/21 16:16
S10	11	S2 and S9	USPAT	OR	ON	2015/02/21 16:16
S11	1,670	(movable moving sliding slidable slid\$3 mov\$3) with (extrusion extruder) with nozzle	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 16:18
S12	949	S4 and S11	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 16:19

S13	1	S6 and S12	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 16:19
S14	12	("20020165304" "20030232176" "20040238999" "20040241386" "20080099953" "20120211919" "5738817" "5764521" "6129872" "6797220" "7387757" "8192664").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 16:41
S15	1	("2012/0211919").URPN.	USPAT	OR	ON	2015/02/21 16:41
S16	88	("6129872").URPN.	USPAT	OR	ON	2015/02/21 16:45
S17	0	("8747097").URPN.	USPAT	OR	ON	2015/02/21 16:48
S18	65	("20020195746" "20030200308" "20040010801" "20040030741" "20040136574" "20040162629" "20040175450" "20040203872" "20040207662" "20040232601" "20050066279" "20050234577" "20060041443" "20060077413" "20060095152" "20060111807" "20060127153" "20060192315" "20070024895" "20070061393" "20070088640" "20070124436" "20070172112" "20070265727" "20080018018" "20080228434" "20080269939" "20080309665" "20090164379" "20090287332" "20100131584" "20110029591" "20110126236" "20110137578" "20120046779" "20120059503" "20120059504" "20120092724" "20120105903" "20120113457" "20120113473" "20120280415" "20120287259" "20120287459" "20120287470" "20120287472" "20120287473" "4097566" "4575330" "5192559" "5637175" "5730817" "5738817" "6129872" "6193923" "6195205" "6490496" "6529627" "6841116" "7168935" "7958236" "8226395" "8282380" "8286236" "8425218").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 16:48
S19	49	"6719551"	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 17:06
S20	0	S7 and S19	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 17:07

S21	26	S4 and S19	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 17:07
S22	127	("5738817").URPN.	USPAT	OR	ON	2015/02/21 20:05
S23	14	"MakerBot Industries"	USPAT	OR	ON	2015/02/21 20:30
S24	51	"MakerBot Industries"	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 20:30
S25	267,807	"425"/\$.ccls. "264"/\$.ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 20:31
S26	25	S24 and S25	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 20:54
S27	1,670	(movable moving sliding slid\$3 mov\$3) with (extrusion extruder) with nozzle	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 21:24
S28	3	S24 and S27	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/21 21:25
S29	3,664	425/113,122,131.1,133.1.ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/22 09:03
S30	64,090	(movable moving slid\$3) with (nozzle head) with (housing chamber sleeve)	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/22 09:09
S31	100	S29 and S30	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/22 09:09
S32	14	("5571326").URPN.	USPAT	OR	ON	2015/02/22 10:31
S33	15	("20010030475" "20030023239" "20040045122" "20040107532" "20050110182" "20050172872" "20070071907" "20070132134" "3807882" "4262034" "4850717" "5443662" "6171280" "6273463" "7157032").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/23 01:46
S34	7	("2007/0132134").URPN.	USPAT	OR	ON	2015/02/23 02:23
S35	3,008	filament with nozzle	USPAT	OR	ON	2015/02/23 09:28
S36	594	S35 same (extrusion extruding extrude)	USPAT	OR	ON	2015/02/23 09:28

S37	154,652	"425"/\$.ccls. "264"/\$.ccls.	USPAT	OR	ON	2015/02/23 09:28
S38	270	S36 and S37	USPAT	OR	ON	2015/02/23 09:29
S39	3,590	(head nozzle) same (extrusion extruding extrude) same (movable moving slidable sliding adjust\$3)	USPAT	OR	ON	2015/02/23 09:30
S40	4,576	(head nozzle) same (extrusion extruding extrude extruder) same (movable moving slidable sliding adjust\$3)	USPAT	OR	ON	2015/02/23 09:30
S41	67	S38 and S40	USPAT	OR	ON	2015/02/23 09:31
S42	3	"8220725"	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/23 09:50
S43	3	("4969602" "5169071" "6210141").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/23 09:58
S44	1	"20130209600"	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/23 10:59
S45	0	("2013/0209600").URPN.	USPAT	OR	ON	2015/02/23 11:00
S46	5	"8419996"	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/23 11:02
S47	77	("20040004653" "20050173838" "20050280678" "20060077224" "20060134328" "20070228590" "20070228592" "20080036834" "20080169585" "20090035405" "20090263582" "20090273122" "20090274540" "20100021580" "20100096072" "20100096485" "20100096489" "20100100224" "20100283172" "20110074065" "20110076495" "20110076496" "20110117268" "20110121476" "20120018924" "20120068378" "20120070523" "4749347" "4937593" "5121329" "5303141" "5312224" "5340433" "5426722" "5503785" "5653925" "5738817" "5764521" "5866058" "5939008" "5968561" "5975688" "6004124" "6022207" "6028410" "6054077" "6067480" "6070107" "6085957" "6129872" "6137508" "6165406" "6227643"	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/23 11:08

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S48	9	US-8663533-\$.DID. OR US-8647102- \$.DID. OR US-8287959-\$.DID. OR US- 7896209-\$.DID. OR US-7897074-\$.DID. OR US-7625200-\$.DID. OR US-7625198- \$.DID. OR US-6749414-\$.DID. OR US- 6238613-\$.DID.	US-PGPUB; USPAT; USOCR; FPRS; JPO	OR	ON	2015/02/23 11:26
S49	17	("7625198").URPN.	USPAT	OR	ON	2015/02/23 12:07
S50	17	("7625198").URPN.	USPAT	OR	ON	2015/02/23 12:18
S51	35	("20020149137" "20020182241" "20030170285" "20040143358" "20050253308" "20060156978" "20060160250" "20070182799" "20080001997" "20080062214" "20080068416" "20080084450" "5121329" "5126529" "5134569" "5204055" "5260009" "5312224" "5900207" "6030199" "6036777" "6153034" "6224893" "6251340" "6658314" "6773713" "6850334" "6905738" "6986739" "7168935" "7195475" "7220112" "7220115" "7306323" "7322674").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/23 12:18
S52	70	("20050173838" "20070228590" "20070228592" "20080036834" "20080169585" "20090035405" "20090263582" "20090273122" "20090274540" "20100021580" "20100096072" "20100096485" "20100096489" "20100100224" "20100283172" "20110074065" "20110076495" "20110076496" "20110117268" "20110121476" "20120018924" "20120068378" "20120070523" "4749347" "5121329" "5303141" "5312224" "5340433" "5426722" "5503785" "5653925" "5738817" "5764521" "5866058" "5939008" "5968561" "5975688" "6004124" "6022207" "6028410" "6054077" "6067480" "6070107" "6085957" "6129872" "6165406"	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/23 17:27

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S53	1	"13914072"	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/24 17:36
S54	1	"14016269"	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/24 17:43
S55	2	"14064974" "14065516"	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/24 17:44
S56	1	"14580711"	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/24 17:46
S57	0	"14288893"	US-PGPUB; USPAT; USOCR	OR	ON	2015/02/24 17:48
S58	14	makerbot near industries	USPAT	OR	ON	2015/02/27 15:57
S59	22	"12858622"	US-PGPUB; USPAT; USOCR	OR	ON	2015/03/03 17:04
S60	17	("7625198").URPN.	USPAT	OR	ON	2015/03/08 01:14
S61	1	"8419996".pn.	US-PGPUB; USPAT; USOCR	OR	ON	2015/03/08 04:16
S62	0	"7625200".pn. and magnet\$3	US-PGPUB; USPAT; USOCR	OR	ON	2015/03/08 06:17
S63	1	"7625200".pn.	US-PGPUB; USPAT; USOCR	OR	ON	2015/03/08 06:17
S64	1	"20130209600"	US-PGPUB; USPAT; USOCR	OR	ON	2015/03/08 11:35
S65	9	US-8663533-\$.DID. OR US-8647102- \$.DID. OR US-8287959-\$.DID. OR US- 7896209-\$.DID. OR US-7897074-\$.DID. OR US-7625200-\$.DID. OR US-7625198-	US-PGPUB; USPAT; USOCR; FPRS; JPO	OR	ON	2015/03/08 11:36

		\$.DID. OR US-6749414-\$.DID. OR US-6238613-\$.DID.				
S66	293	print\$3 with (head extrusion) with filament	US-PGPUB; USPAT; USOCR; FPRS; JPO	OR	ON	2015/03/09 00:57
S67	59	S66 same ((feed\$3 drive driving) with filament)	US-PGPUB; USPAT; USOCR; FPRS; JPO	OR	ON	2015/03/09 00:58
S68	3	S66 same ((piston cylinder) with (feed\$3 drive driving) with filament)	US-PGPUB; USPAT; USOCR; FPRS; JPO	OR	ON	2015/03/09 01:02
S69	3	S66 same ((piston cylinder) with (feed\$3 drive driving) with (filament material strand))	US-PGPUB; USPAT; USOCR; FPRS; JPO	OR	ON	2015/03/09 01:03
S70	25,278	print\$3 with (head extrusion) with (filament strand material)	US-PGPUB; USPAT; USOCR; FPRS; JPO	OR	ON	2015/03/09 01:04
S71	69	S70 same (piston cylinder punch plunger ram) same (extrusion extruder extruding)	US-PGPUB; USPAT; USOCR; FPRS; JPO	OR	ON	2015/03/09 01:04
S72	9	US-8663533-\$.DID. OR US-8647102-\$.DID. OR US-8287959-\$.DID. OR US-7896209-\$.DID. OR US-7897074-\$.DID. OR US-7625200-\$.DID. OR US-7625198-\$.DID. OR US-6749414-\$.DID. OR US-6238613-\$.DID.	US-PGPUB; USPAT; USOCR; FPRS; JPO	OR	ON	2015/04/03 12:27
S73	77	("20040004653" "20050173838" "20050280678" "20060077224" "20060134328" "20070228590" "20070228592" "20080036834" "20080169585" "20090035405" "20090263582" "20090273122" "20090274540" "20100021580" "20100096072" "20100096485" "20100096489" "20100100224" "20100283172" "20110074065" "20110076495" "20110076496" "20110117268" "20110121476" "20120018924" "20120068378" "20120070523" "4749347" "4937593" "5121329" "5303141" "5312224" "5340433" "5426722" "5503785" "5653925" "5738817" "5764521"	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/03 12:33

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S74	302	("5121329").URPN.	USPAT	OR	ON	2015/04/03 12:34
S75	45	(second near3 filament) and (S72 S73 S74)	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/03 13:25
S76	30	("6998087").URPN.	USPAT	OR	ON	2015/04/03 13:32
S77	3	(second near3 filaments!) and (S72 S73 S74)	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/03 13:34
S78	3	(second near3 filaments!) and (S72 S73 S74 S76)	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/03 13:35
S79	0	(mix near3 filaments!) and (S72 S73 S74 S76)	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/03 16:11
S80	18	("7625198").URPN.	USPAT	OR	ON	2015/04/03 16:12
S81	93	("6129872").URPN.	USPAT	OR	ON	2015/04/03 16:12
S82	49	"6719551"	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/03 16:12
S83	268,729	"425"/\$.ccls. "264"/\$.ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/03 16:13
S84	352	(mix\$3 near3 filaments!) and (S80 S81 S82 S83)	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/03 16:14
S85	54,165	(extrusion extrud\$3) with (nozzle tip head)	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/03 16:15

S86	32	(mix\$3 near3 filaments!) same S85	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/03 16:15
S87	18	S84 and S86	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/03 16:16
S88	41	"6749414"	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/03 17:50
S89	0	(mix\$3 near3 filaments!) and S88	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/03 17:52
S90	29	(mix\$3 near3 filaments!) same (tip nozzle) same (extrud\$3 extrusion)	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/03 17:53
S91	4	(mix\$3 near3 filaments!) same (tip nozzle) same (print\$4 (three near dimension\$4))	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/03 18:13
S92	4	(mix\$3 near3 filaments!) same (tip nozzle) same (print\$4 (three near dimension\$4))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2015/04/03 18:14
S93	45	(mix\$3 near3 filaments!) same (print\$4 (three near dimension\$4))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2015/04/03 18:15
S94	3,587	((heat\$3 melt\$3 mix\$3) near3 (strands! filaments!)) same (nozzle inject\$3 head)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2015/04/04 01:11
S95	386	B29C\$ and S94	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2015/04/04 01:32
S96	30	("6998087").URPN.	USPAT	OR	ON	2015/04/04 03:55
S97	77	("20040004653" "20050173838" "20050280678" "20060077224" "20060134328" "20070228590" "20070228592" "20080036834"	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/04 03:56

		"20080169585" "20090035405" "20090263582" "20090273122" "20090274540" "20100021580" "20100096072" "20100096485" "20100096489" "20100100224" "20100283172" "20110074065" "20110076495" "20110076496" "20110117268" "20110121476" "20120018924" "20120068378" "20120070523" "4479347" "4937593" "5121329" "5303141" "5312224" "5340433" "5426722" "5503785" "5653925" "5738817" "5764521" "5866058" "5939008" "5968561" "5975688" "6004124" "6022207" "6028410" "6054077" "6067480" "6070107" "6085957" "6129872" "6137508" "6165406" "6227643" "6228923" "6250735" "6547995" "6629011" "6645412" "6685866" "6722872" "6749414" "6776602" "6790403" "6814907" "6840609" "6866807" "6869559" "6923634" "6998087" "7122246" "7169337" "7172715" "7297304" "7314591" "7384255" "7604470" "7625200").PN.				
S98	2	("612872" "6165406" "5121329").pn.	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/04 15:04
S99	3	("6129872" "6165406" "5121329").pn.	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/04 15:04
S100	1	("6129872" "6165406" "5121329").pn. and camera	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/04 18:22
S101	545	("6129872" "6165406" "5121329")	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/04 18:23
S102	207,088	camera with control\$4	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/04 18:24
S103	13	S101 and S102	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/04 18:24
S104	3,649	material same tag same sensor	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/05 10:45
S105	12	(US-20090309247-\$ or US- 20140120194-\$ or US-20120070619-	US-PGPUB; USPAT	OR	ON	2015/04/05 10:47

		\$.did. or (US-8011912-\$ or US-8033811-\$ or US-7625198-\$ or US-8419996-\$ or US-5900207-\$ or US-8778380-\$ or US-7625200-\$ or US-6998087-\$ or US-8403658-\$).did.				
S106	0	S104 and S105	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/05 10:47
S107	12	(US-20090309247-\$ or US-20140120194-\$ or US-20120070619-\$).did. or (US-8011912-\$ or US-8033811-\$ or US-7625198-\$ or US-8419996-\$ or US-5900207-\$ or US-8778380-\$ or US-7625200-\$ or US-6998087-\$ or US-8403658-\$)	US-PGPUB; USPAT	OR	ON	2015/04/05 10:48
S108	208	"20090309247" "20140120194" "20120070619" "8011912" "8033811" "7625198" "8419996" "5900207" "8778380" "7625200" "6998087" "8403658"	US-PGPUB; USPAT	OR	ON	2015/04/05 10:49
S109	0	S104 and S108	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/05 10:50
S110	33,255	'tag same sensor	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/05 10:51
S111	33,255	tag same sensor	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/05 10:51
S112	3,649	S104 and S111	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/05 10:51
S113	0	S108 and S111	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/05 10:51
S114	268,729	"425"/\$.ccls. "264"/\$.ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/05 10:56
S115	36	S104 and S114	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/05 10:57
S116	69,898	(RFID QR magnetic\$4) with tag	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/05 11:00
S117	41,956	(sensor reader encod\$4) same S116	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/05 11:00

S118	108	S114 and S117	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/05 11:01
S119	5	US-8286236-\$.DID. OR US-8222908- \$.DID. OR US-8157202-\$.DID. OR US- 7996101-\$.DID. OR US-6505926-\$.DID.	US-PGPUB; USPAT; USOCR; FPRS; JPO	OR	ON	2015/04/05 11:26
S120	1	"14064974"	US-PGPUB; USPAT; USOCR	OR	ON	2015/04/05 11:50
S121	19	(US-20090309247-\$ or US- 20140120194-\$ or US-20120070619-\$ or US-20130075954-\$ or US- 20100038268-\$ or US-20070077323-\$ or US-20070075460-\$).did. or (US- 8011912-\$ or US-8033811-\$ or US- 7625198-\$ or US-8419996-\$ or US- 5900207-\$ or US-8778380-\$ or US- 7625200-\$ or US-6998087-\$ or US- 8403658-\$ or US-7621733-\$ or US- 7585450-\$ or US-7520740-\$).did.	US-PGPUB; USPAT	OR	ON	2015/07/17 06:23
S122	24,858	control\$3 with (sensor reader) with material	US-PGPUB; USPAT; USOCR	OR	ON	2015/07/17 06:24
S123	8	S121 and S122	US-PGPUB; USPAT; USOCR	OR	ON	2015/07/17 06:24
S124	3	"14064974"	US-PGPUB; USPAT; USOCR	OR	OFF	2016/11/09 07:03
S125	1	"20110121476"	US-PGPUB; USPAT; USOCR	OR	OFF	2016/11/09 07:21
S126	14	2006/0127153	US-PGPUB; USPAT; USOCR	OR	OFF	2016/11/09 12:56
S127	22	"20060127153"	US-PGPUB; USPAT; USOCR	OR	OFF	2016/11/09 13:03
S128	20	("20010028916" "20030026896" "20040207124" "20050104241" "20060127153" "20060263705" "20070179656" "20090020901" "20090304952" "6259962" "6569373" "6658314" "6850334" "7052263" "7183335" "7195472" "7209797" "7225045" "7300619" "7500846").PN.	US-PGPUB; USPAT; USOCR	OR	OFF	2016/11/09 14:56

S129	14	("2006/0127153").URPN.	USPAT	OR	OFF	2016/11/09 14:57
S130	1	"7520740".pn. and optical\$4	US-PGPUB; USPAT; USOCR	OR	ON	2016/11/11 12:59
S131	1	"7520740".pn. and magnet\$3	US-PGPUB; USPAT; USOCR	OR	ON	2016/11/11 13:01
S132	0	"7520740".pn. and remote	US-PGPUB; USPAT; USOCR	OR	ON	2016/11/11 13:17
S133	0	"7520740".pn. and remot\$3	US-PGPUB; USPAT; USOCR	OR	ON	2016/11/11 13:17
S134	20	(US-20090309247-\$ or US-20140120194-\$ or US-20120070619-\$ or US-20130075954-\$ or US-20100038268-\$ or US-20070077323-\$ or US-20070075460-\$ or US-20060127153-\$).did. or (US-8011912-\$ or US-8033811-\$ or US-7625198-\$ or US-8419996-\$ or US-5900207-\$ or US-8778380-\$ or US-7625200-\$ or US-6998087-\$ or US-8403658-\$ or US-7621733-\$ or US-7585450-\$ or US-7520740-\$).did.	US-PGPUB; USPAT	OR	OFF	2017/03/17 12:32
S135	1,662	cryptographical\$3 with (authentic authenticat\$3 code)	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/17 12:33
S136	0	S135 same material same (tag sensor)	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/17 12:33
S137	54	S135 same (tag sensor)	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/17 12:34
S138	0	S134 and S137	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/17 12:34
S139	99,939	B29C\$ B33Y\$	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/17 12:38
S140	1,920	cryptographical\$3 with (authentic authenticat\$3 code tag sensor)	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/17 12:39
S141	0	S139 and S140	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/17 12:42

S142	705	cryptographical\$3 with secur\$3 with (authentic authenticaut\$3 code tag sensor)	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/17 12:42
S143	17,481	(molding injection jet printer) same material same (tag sensor)	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/17 12:46
S144	3	S142 and S143	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/17 12:47
S145	1,359	(cryptographical\$3 with secur\$3) same (authentic authenticaut\$3 code tag sensor)	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/17 12:49
S146	9,224	cryptographical\$3 with (authentic authenticaut\$3 code tag sensor secur\$3)	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/17 12:50
S147	0	S139 and S146	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/17 12:50
S148	8,296	cryptographical\$3 with (secur\$3)	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/17 12:51
S149	1,359	S148 same (authentic authenticaut\$3 code tag sensor)	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/17 12:52
S150	67,868	(3D three-dimensional) same (print\$3 lithograph\$3 stereolithography sintering)	US-PGPUB; USPAT; USOCR	OR	ON	2017/03/17 12:53
S151	19	S149 and S150	US-PGPUB; USPAT; USOCR	OR	ON	2017/03/17 12:54
S152	84,254	700/\$.cccls.	US-PGPUB; USPAT; USOCR	OR	ON	2017/03/17 14:28
S153	2	S151 and S152	US-PGPUB; USPAT; USOCR	OR	ON	2017/03/17 14:28
S154	164	"7136710"	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/17 14:38
S155	0	S139 and S154	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/17 14:39
S156	21	(US-20090309247-\$ or US-20140120194-\$ or US-20120070619-\$ or US-20130075954-\$ or US-20100038268-\$ or US-20070077323-\$ or US-20070075460-\$ or US-	US-PGPUB; USPAT	OR	OFF	2017/03/22 14:54

		20060127153-\$).did. or (US-8011912-\$ or US-8033811-\$ or US-7625198-\$ or US-8419996-\$ or US-5900207-\$ or US-8778380-\$ or US-7625200-\$ or US-6998087-\$ or US-8403658-\$ or US-7621733-\$ or US-7585450-\$ or US-7520740-\$ or US-7813822-\$).did.				
S157	215,332	((cryptographic\$4 secur\$3 authentication authenticat\$3) same code)	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/22 14:59
S158	1	S156 and S157	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/22 15:00
S159	2,440	700/117-120.ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2017/03/22 15:08
S160	51	S157 and S159	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/22 15:10
S161	17	("6671572").URPN.	USPAT	OR	OFF	2017/03/22 15:42
S162	107,895	B29C\$ B33Y\$ B83Y\$ B41J02/045\$ B41J29/38\$	US-PGPUB; USPAT; USOCR	OR	OFF	2017/03/22 16:07
S163	2	"12841744"	US-PGPUB; USPAT; USOCR	OR	OFF	2017/05/26 17:25
S164	6	"14992127" "14296002" "6671572".pn. 2010/0005299	US-PGPUB; USPAT; USOCR	OR	ON	2017/07/17 09:59
S165	1	"20100005299"	US-PGPUB; USPAT; USOCR	OR	ON	2017/07/17 10:26
S166	35	"20110121476" "20060127153" "7520740".pn.	US-PGPUB; USPAT; USOCR	OR	OFF	2017/07/17 10:30
S167	85	"2011/0121476" "2006/0127153" "7520740".pn.	US-PGPUB; USPAT; USOCR	OR	OFF	2017/07/17 10:30
S168	4,697	B29C64\$ B33Y\$	US-PGPUB; USPAT; USOCR	OR	ON	2017/12/28 02:59
S169	5,159	unauthorized with material	US-PGPUB; USPAT; USOCR	OR	ON	2017/12/28 03:00

S170	6	S168 and S169	US-PGPUB; USPAT; USOCR	OR	ON	2017/12/28 03:00
S171	1	"8286236".pn.	US-PGPUB; USPAT; USOCR	OR	OFF	2017/12/28 03:06
S172	14	2010/0140550 2013/0300101	US-PGPUB; USPAT; USOCR	OR	OFF	2017/12/28 03:12
S173	2	"20100140550" "20130300101"	US-PGPUB; USPAT; USOCR	OR	OFF	2017/12/28 03:13
S174	3	"14064974"	US-PGPUB; USPAT; USOCR	OR	OFF	2017/12/28 10:02
S175	3	"14016269"	US-PGPUB; USPAT; USOCR	OR	OFF	2018/03/25 16:12
S176	2	"14992127"	US-PGPUB; USPAT; USOCR	OR	ON	2019/04/01 14:17
S177	121,786	29Cb64\$ B33Y\$	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2019/10/07 19:44
S178	36,666	(material data) with tag with (sensor reading)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2019/10/07 19:45
S179	11,452	S178 same control\$4	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2019/10/07 19:49
S180	16	S177 and S179	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2019/10/07 19:49
S181	3	"14992127"	US-PGPUB; USPAT; USOCR	OR	OFF	2019/10/07 19:57

S182	13	("9676145").URPN.	USPAT	OR	OFF	2019/10/09 13:29
S183	7	"14064974"	US-PGPUB; USPAT; USOCR	OR	ON	2020/10/01 08:24
S184	301,546	((cryptographic\$4 secur\$3 authentication authenticat\$3) same code)	US-PGPUB; USPAT; USOCR	OR	OFF	2020/10/01 09:00
S185	17,173	B29C64\$ B33Y\$	US-PGPUB; USPAT; USOCR	OR	OFF	2020/10/01 09:01
S186	40,619	(material data) with tag with (sensor reading)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2020/10/01 09:02
S187	12	S184 and S185 and S186	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2020/10/01 09:07
S188	20,440	B29C64/386,393.cpc.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2020/10/01 09:12
S189	16,635	S186 same (control controlling processor processing)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2020/10/01 09:14
S190	15	S188 and S189	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2020/10/01 09:14
S191	8	S190 not S183	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2020/10/01 09:14

S192	325,306	(material data platform build temperature volume infill rafting support\$3 heat\$2 cool\$3) with (tag RFID optical magnetical\$3) with (sensor reading thermocouple)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2020/10/01 09:16
S193	124,839	S192 same (control controlling processor processing)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2020/10/01 09:18
S194	334	S188 and S193 not S190	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2020/10/01 09:20
S195	134,141	B33Y\$	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2020/10/01 09:21
S196	293	S194 and S195	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2020/10/01 09:21
S197	280	S194 and S195	US-PGPUB; USPAT; USOCR	OR	ON	2020/10/01 09:21
S198	185	(makerbot near Industries) and ((optical tag) same sensor)	US-PGPUB; USPAT; USOCR	OR	ON	2020/10/01 09:24
S199	94	S195 and S198	US-PGPUB; USPAT; USOCR	OR	ON	2020/10/01 09:25
S200	2,109	(S195 S188) and ((optical tag) same sensor)	US-PGPUB; USPAT; USOCR	OR	ON	2020/10/01 09:25
S201	929	S192 and S200	US-PGPUB; USPAT; USOCR	OR	ON	2020/10/01 09:26
S202	517	S193 and S201	US-PGPUB; USPAT; USOCR	OR	ON	2020/10/01 09:26

S203	0	("9561626").URPN.	USPAT	OR	ON	2020/10/01 11:30
S204	1	"16796122" and (processor dignostic parameter operational)	US-PGPUB; USPAT; USOCR	OR	ON	2021/03/23 20:49
S205	1,104	(B29C64\$ B33Y\$) and ((dignostic test) with (parameter operational temperature pressure))	US-PGPUB; USPAT; USOCR	OR	ON	2021/03/23 21:02
S206	226	(B29C64\$ B33Y\$) and ((perform\$3 control controller controlling processor) with (dignostic test) with (parameter operational temperature pressure))	US-PGPUB; USPAT; USOCR	OR	ON	2021/03/23 21:04

3/24/2021 12:41:59 AM

C:\Users\tnguyen34\Documents\EAST\Workspaces\3-D printing\MakerBot\16796122 - 14064974-
14992127 - material tag sensor - RFID - bar code - QR code.wsp

Doc Code: DIST.E.FILE Document Description: Electronic Terminal Disclaimer - Filed		PTO/SB/26 U.S. Patent and Trademark Office Department of Commerce
Electronic Petition Request	TERMINAL DISCLAIMER TO OBTAIN A DOUBLE PATENTING REJECTION OVER A "PRIOR" PATENT	
Application Number	16796122	
Filing Date	20-Feb-2020	
First Named Inventor	Ariel Douglas	
Attorney Docket Number	MBOT-0049-P04	
Title of Invention	TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING	
☒ 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%	
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☒ 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.	
Applicant 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 <u>65946</u> ☐ A sole inventor ☐ A joint inventor; I certify that I am authorized to sign this submission on behalf of all of the inventors as evidenced by the power of attorney in the application ☐ A joint inventor; all of whom are signing this request	
Signature	/Thomas J Bassolino/
Name	Thomas J Bassolino

*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:		16796122		
Filing Date:		20-Feb-2020		
Title of Invention:		TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING		
First Named Inventor/Applicant Name:		Ariel Douglas		
Filer:		Thomas John Bassolino		
Attorney Docket Number:		MBOT-0049-P04		
Filed as Large Entity				
Filing Fees for Utility under 35 USC 111(a)				
Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Basic Filing:				
STATUTORY OR TERMINAL DISCLAIMER	1814	1	170	170
Pages:				
Claims:				
Miscellaneous-Filing:				
Petition:				
Patent-Appeals-and-Interference:				
Post-Allowance-and-Post-Issuance:				

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				170

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Document Description: Electronic Terminal Disclaimer – Approved

Application No.: 16796122

Filing Date: 20-Feb-2020

Applicant/Patent under Reexamination: Douglas

Electronic Terminal Disclaimer filed on May 27, 2021

☒ 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:	42837233
Application Number:	16796122
International Application Number:	
Confirmation Number:	1760
Title of Invention:	TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING
First Named Inventor/Applicant Name:	Ariel Douglas
Customer Number:	43520
Filer:	Thomas John Bassolino
Filer Authorized By:	
Attorney Docket Number:	MBOT-0049-P04
Receipt Date:	27-MAY-2021
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Time Stamp:	13:41:49
Application Type:	Utility under 35 USC 111(a)

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RAM confirmation Number	E20215QD41443055
Deposit Account	
Authorized User	
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows:	

File Listing:					
Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1	Terminal Disclaimer-Filed (Electronic)	eTerminal-Disclaimer.pdf	33817	no	2
			a1cb1acee8e8e519a32c6a4e391a96a8f862c12c		
Warnings:					
Information:					
2	Fee Worksheet (SB06)	fee-info.pdf	30275	no	2
			42f9b95e417a8c3a391912bfe94989321375a9c4		
Warnings:					
Information:					
Total Files Size (in bytes):			64092		
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.					

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No.: 16/796,122
Filing Date: February 20, 2020
In re: DOUGLAS, Ariel, et al.
Art Unit: 1743
Examiner: NGUYEN, Thukhanh T.
Conf. No.: 1760

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

RESPONSE AFTER FINAL

Dear Examiner:

Please enter and consider the following Response After Final under 37 C.F.R. § 1.116, which is responsive to the Final Office Action mailed on March 29, 2021.

A **Claim Listing** begins on page 2 of this paper.

Remarks begin on page 6 of this paper.

Claim Listing

The following listing of claims is provided for the Examiner's convenience. No amendments to the claims are presented herein.

1. (Previously presented) A method, comprising:
reading data from a tag included on a supply of a build material using a tag sensor in communication with a controller of a three-dimensional printer, the data including at least one property of the build material;
determining an operational parameter of a fabrication process using the three-dimensional printer based upon the data, the operational parameter including at least one of a build platform temperature, a build volume temperature, an infill requirement, a rafting requirement, a support structure requirement, and a cooling requirement;
performing a diagnostic test to determine whether the operational parameter is suitable for the three-dimensional printer; and
when the operational parameter is suitable for the three-dimensional printer according to the diagnostic test, controlling operation of the three-dimensional printer during the fabrication process with the controller according to the operational parameter to fabricate an object with the three-dimensional printer.
2. (Original) The method of claim 1, wherein the tag includes at least one of a radio frequency identification (RFID) tag, an optically-identifiable tag, a magnetically-identifiable tag, and a mechanical feature of the supply.
3. (Original) The method of claim 1, wherein the tag sensor includes at least one of a radio frequency identification (RFID) reader, an optical scanner, a magnetic reader, and a contact point sensor.
4. (Original) The method of claim 1, wherein the data includes at least one of a material identification number, a build material type, a build material diameter, an extruder temperature requirement, a build material melting temperature, a build material color, a build material color lot number, a cost per unit of build material, a build material

density, a build material tensile strength, a build material viscosity, a build material recycle code, and a build material expiration date.

5. (Original) The method of claim 1, wherein the supply includes at least one of a cartridge, a spool, a filament, a number of pellets, and a liquid.
6. (Original) The method of claim 1, wherein the tag includes a radio frequency identification (RFID) tag, and the RFID tag is at least one of a passive RFID tag and an active RFID tag.
7. (Original) The method of claim 1, wherein the tag includes an optically-identifiable tag, and the optically-identifiable tag is at least one of bar code and quick read (QR) code.
8. (Original) The method of claim 1, wherein the tag includes a magnetically-identifiable tag, and the magnetically-identifiable tag is a magnetic swipe strip.
9. (Original) The method of claim 1, wherein the tag includes a mechanical feature of the supply, and the mechanical feature includes a plurality of recesses or protrusions encoding information about the build material.
10. (Canceled)
11. (Original) The method of claim 1, wherein the operational parameter is based upon a build material identification number contained in the data.
12. (Original) The method of claim 1, wherein the operational parameter further includes at least one of an extruder temperature and a feed rate.
13. (Previously presented) A system, comprising:
 - a three-dimensional printer;
 - a coupling adapted to receive a supply of a build material;

a tag sensor communicatively associated with the three-dimensional printer, the tag sensor configured to read data from a data tag associated with the supply of the build material, the data including at least one property of the build material;

a processor configured to determine an operational parameter of a fabrication process using the three-dimensional printer based upon the data and to perform a diagnostic test to determine whether the operational parameter is suitable for the three-dimensional printer, the operational parameter including at least one of a build platform temperature, a build volume temperature, an infill requirement, a rafting requirement, a support structure requirement, and a cooling requirement; and

a controller for the three-dimensional printer, the controller configured to, when the operational parameter is suitable for the three-dimensional printer according to the diagnostic test, control operation of the three-dimensional printer during the fabrication process according to the operational parameter to fabricate an object with the three-dimensional printer.

14. (Original) The system of claim 13, further comprising a container holding the supply of the build material, wherein the container is configured to connect to the coupling, and wherein the container includes the data tag.
15. (Original) The system of claim 14, wherein the container includes at least one of a cartridge and a spool.
16. (Original) The system of claim 13, wherein the build material includes at least one of a filament, a number of pellets, and a liquid.
17. (Original) The system of claim 13, wherein the processor is included on a remote network resource.
18. (Original) The system of claim 13, wherein the processor is included on one or more of the controller and the three-dimensional printer.

19. (Original) The system of claim 13, wherein the tag sensor includes at least one of a radio frequency identification (RFID) reader, an optical scanner, a magnetic reader, and a contact point sensor.
20. (Previously presented) A method, comprising:
 reading first data from a tag included on a supply of a build material using a tag sensor associated with a three-dimensional printer, the first data related to the build material;
 retrieving second data from a data store, the second data including additional data related to the build material;
 combining the first data and the second data;
 determining an operational parameter to configure the three-dimensional printer for a fabrication process using the build material based upon the combination of the first data and the second data;
 performing a diagnostic test to determine whether the operational parameter is suitable for the three-dimensional printer; and
 when the operational parameter is suitable for the three-dimensional printer according to the diagnostic test, controlling operation of the three-dimensional printer during the fabrication process according to the operational parameter to fabricate an object with the three-dimensional printer.
21. (Previously presented) The method of claim 1, wherein data from the tag includes ordering information for replacement of the build material.

Remarks

Status of the Claims

Claims 1–9 and 11–21 are presented for examination, with claims 1, 13, and 20 being independent.

Double Patenting

Claims 1–20 are rejected on the ground of nonstatutory double patenting as being unpatentable over claims 1–20 of U.S. Patent No. 10,569,466, claims 1–15 of U.S. Patent No. 10,093,061, and claims 1–9 of U.S. Patent No. 9,233,504. Without conceding the propriety of this rejection, the applicant has filed a Terminal Disclaimer over U.S. Patent No. 10,569,466, U.S. Patent No. 10,093,061, and U.S. Patent No. 9,233,504 in order to advance prosecution of this application, and the Office approved the applicant's Terminal Disclaimer on May 27, 2021. The applicant requests reconsideration and withdrawal of the outstanding double patenting rejection based upon the applicant's terminal disclaimer. The applicant therefore further respectfully requests reconsideration of the claims and allowance of same.

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 attorney.

Respectfully submitted,
STRATEGIC PATENTS, P.C.

/Thomas J. Bassolino/
Thomas J. Bassolino
Reg. No. 65,946
Tel.: (646) 238-1234

May 27, 2021

Electronic Acknowledgement Receipt	
EFS ID:	42838913
Application Number:	16796122
International Application Number:	
Confirmation Number:	1760
Title of Invention:	TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING
First Named Inventor/Applicant Name:	Ariel Douglas
Customer Number:	43520
Filer:	Thomas John Bassolino/Paula Ng
Filer Authorized By:	Thomas John Bassolino
Attorney Docket Number:	MBOT-0049-P04
Receipt Date:	27-MAY-2021
Filing Date:	20-FEB-2020
Time Stamp:	15:01:31
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		MBOT-0049-P04_20210527_RAF.pdf	124163	yes	7
			399d573ca99958bc83aafcd71474cb6bb924fa19		

Multipart Description/PDF files in .zip description			
Document Description	Start	End	
Response After Final Action	1	1	
Claims	2	5	
Applicant Arguments/Remarks Made in an Amendment	6	7	
Warnings:			
Information:			
Total Files Size (in bytes):		124163	
This Acknowledgement Receipt evidences receipt on the noted date by the USPTO of the indicated documents, characterized by the applicant, and including page counts, where applicable. It serves as evidence of receipt similar to a Post Card, as described in MPEP 503. <u>New Applications Under 35 U.S.C. 111</u> If a new application is being filed and the application includes the necessary components for a filing date (see 37 CFR 1.53(b)-(d) and MPEP 506), a Filing Receipt (37 CFR 1.54) will be issued in due course and the date shown on this Acknowledgement Receipt will establish the filing date of the application. <u>National Stage of an International Application under 35 U.S.C. 371</u> If a timely submission to enter the national stage of an international application is compliant with the conditions of 35 U.S.C. 371 and other applicable requirements a Form PCT/DO/EO/903 indicating acceptance of the application as a national stage submission under 35 U.S.C. 371 will be issued in addition to the Filing Receipt, in due course. <u>New International Application Filed with the USPTO as a Receiving Office</u> If a new international application is being filed and the international application includes the necessary components for an international filing date (see PCT Article 11 and MPEP 1810), a Notification of the International Application Number and of the International Filing Date (Form PCT/RO/105) will be issued in due course, subject to prescriptions concerning national security, and the date shown on this Acknowledgement Receipt will establish the international filing date of the application.			



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NOTICE OF ALLOWANCE AND FEE(S) DUE

43520 7590 07/02/2021
STRATEGIC PATENTS P.C.
P.O. BOX 920629
NEEDHAM, MA 02492

EXAMINER

NGUYEN, THUKHANH T

ART UNIT

PAPER NUMBER

1743

DATE MAILED: 07/02/2021

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/796,122	02/20/2020	Ariel Douglas	MBOT-0049-P04	1760

TITLE OF INVENTION: TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1200	\$0.00	\$0.00	\$1200	10/04/2021

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: Maintenance fees are due in utility patents issuing on applications filed on or after Dec. 12, 1980. It is patentee's responsibility to ensure timely payment of maintenance fees when due. More information is available at www.uspto.gov/PatentMaintenanceFees.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (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 07/02/2021
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 transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/796,122	02/20/2020	Ariel Douglas	MBOT-0049-P04	1760

TITLE OF INVENTION: TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1200	\$0.00	\$0.00	\$1200	10/04/2021

EXAMINER	ART UNIT	CLASS-SUBCLASS
NGUYEN, THUKHANH T	1743	264-040600

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 03-09 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 must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). 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. Fees submitted: ☐ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies _____

4b. Method of Payment: (Please first reapply any previously paid fee shown above)

☐ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)

☐ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. _____

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. _____



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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/796,122	02/20/2020	Ariel Douglas	MBOT-0049-P04	1760
43520	7590	07/02/2021	EXAMINER	
STRATEGIC PATENTS P.C.			NGUYEN, THUKHANH T	
P.O. BOX 920629			ART UNIT	
NEEDHAM, MA 02492			PAPER NUMBER	
			1743	
DATE MAILED: 07/02/2021				

Determination of Patent Term Adjustment under 35 U.S.C. 154 (b) (Applications filed on or after May 29, 2000)

The Office has discontinued providing a Patent Term Adjustment (PTA) calculation with the Notice of Allowance.

Section 1(h)(2) of the AIA Technical Corrections Act amended 35 U.S.C. 154(b)(3)(B)(i) to eliminate the requirement that the Office provide a patent term adjustment determination with the notice of allowance. See Revisions to Patent Term Adjustment, 78 Fed. Reg. 19416, 19417 (Apr. 1, 2013). Therefore, the Office is no longer providing an initial patent term adjustment determination with the notice of allowance. The Office will continue to provide a patent term adjustment determination with the Issue Notification Letter that is mailed to applicant approximately three weeks prior to the issue date of the patent, and will include the patent term adjustment on the patent. Any request for reconsideration of the patent term adjustment determination (or reinstatement of patent term adjustment) should follow the process outlined in 37 CFR 1.705.

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 30 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. 16/796,122	Applicant(s) Douglas et al.	
	Examiner THU-KHANH T NGUYEN	Art Unit 1743	AIA (FITF) Status Yes

-- 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 the TD filed 05/27/2021.
☐ 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 1-9 and 11-21 . As a result of the allowed claim(s), you may be eligible to benefit from the **Patent Prosecution Highway** program at a participating intellectual property office for the corresponding application. For more information , please see http://www.uspto.gov/patents/init_events/pph/index.jsp or send an inquiry to **PPHfeedback@uspto.gov**.

4. ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
Certified copies:
a) ☐ All b) ☐ Some *c) ☐ None of the:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this national stage application from the International Bureau (PCT Rule 17.2(a)).
* Certified copies not received: _____.

Applicant has THREE MONTHS FROM THE "MAILING DATE" of this communication to file a reply complying with the requirements noted below. Failure to timely comply will result in ABANDONMENT of this application.
THIS THREE-MONTH PERIOD IS NOT EXTENDABLE.

5. ☐ CORRECTED DRAWINGS (as "replacement sheets") must be submitted.
☐ including changes required by the attached Examiner's Amendment / Comment or in the Office action of Paper No./Mail Date _____.
Identifying indicia such as the application number (see 37 CFR 1.84(c)) should be written on the drawings in the front (not the back) of each sheet. Replacement sheet(s) should be labeled as such in the header according to 37 CFR 1.121(d).

6. ☐ DEPOSIT OF and/or INFORMATION about the deposit of BIOLOGICAL MATERIAL must be submitted. Note the attached Examiner's comment regarding REQUIREMENT FOR THE DEPOSIT OF BIOLOGICAL MATERIAL.

Attachment(s)

1. ☐ Notice of References Cited (PTO-892)	5. ☐ Examiner's Amendment/Comment
2. ☐ Information Disclosure Statements (PTO/SB/08), Paper No./Mail Date _____.	6. ☐ Examiner's Statement of Reasons for Allowance
3. ☐ Examiner's Comment Regarding Requirement for Deposit of Biological Material _____.	7. ☐ Other _____.
4. ☐ Interview Summary (PTO-413), Paper No./Mail Date _____.	

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

<i>Search Notes</i> 	Application/Control No. 16/796,122	Applicant(s)/Patent Under Reexamination Douglas et al.
	Examiner THU-KHANH T NGUYEN	Art Unit 1743

CPC - Searched*		
Symbol	Date	Examiner
B29C64/209,40,205,393,118; B33Y 10/00	05/28/2021	TN

CPC Combination Sets - Searched*		
Symbol	Date	Examiner

US Classification - Searched*			
Class	Subclass	Date	Examiner

* See search history printout included with this form or the SEARCH NOTES box below to determine the scope of the search.

Search Notes		
Search Notes	Date	Examiner
Inventor search	05/28/2021	TN
Checked parent applications 16/153,224; 14/992127; 14/064974	05/28/2021	TN

Interference Search			
US Class/CPC Symbol	US Subclass/CPC Group	Date	Examiner
	B29C64/209,40,205,393,118; B33Y 10/00	05/28/2021	TN

--	--

Issue Classification 	Application/Control No. 16/796,122	Applicant(s)/Patent Under Reexamination Douglas et al.	
	Examiner THU-KHANH T NGUYEN	Art Unit 1743	

CPC						
Symbol					Type	Version
B29C	/	48	/	154	F	2019-02-01
B29C	/	64	/	209	I	2017-08-01
B29C	/	64	/	205	I	2017-08-01
B29C	/	48	/	92	I	2019-02-01
B29C	/	64	/	40	I	2017-08-01
B29C	/	64	/	118	I	2017-08-01
B29C	/	64	/	386	I	2017-08-01
B29C	/	64	/	106	I	2017-08-01
B33Y	/	30	/	00	I	2014-12-01
B33Y	/	50	/	02	I	2014-12-01
B33Y	/	80	/	00	A	2014-12-01
B29C	/	48	/	02	A	2019-02-01
B29C	/	48	/	265	A	2019-02-01
B29C	/	48	/	266	A	2019-02-01
B29C	/	2948	/	9258	A	2019-02-01
B29C	/	2948	/	92704	A	2019-02-01
B33Y	/	50	/	00	A	2014-12-01
B33Y	/	10	/	00	A	2014-12-01
B33Y	/	40	/	00	A	2014-12-01
B33Y	/	70	/	00	A	2014-12-01
B29K	/	2101	/	12	A	2013-01-01
B29K	/	2105	/	0067	A	2013-01-01

CPC Combination Sets				
Symbol	Type	Set	Ranking	Version
/				

/THU KHANH T NGUYEN/ Examiner, Art Unit 1743 (Assistant Examiner)	30 May 2021 (Date)	Total Claims Allowed: 20	
/JOSEPH S DEL SOLE/ Supervisory Patent Examiner, Art Unit 1743 (Primary Examiner)	01 June 2021 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 1

Issue Classification 	Application/Control No. 16/796,122	Applicant(s)/Patent Under Reexamination Douglas et al.	
	Examiner THU-KHANH T NGUYEN	Art Unit 1743	

INTERNATIONAL CLASSIFICATION			
CLAIMED			
B29C		67	00

NON-CLAIMED			

US ORIGINAL CLASSIFICATION	
CLASS	SUBCLASS

CROSS REFERENCES(S)						
CLASS	SUBCLASS (ONE SUBCLASS PER BLOCK)					

/THU KHANH T NGUYEN/ Examiner, Art Unit 1743 (Assistant Examiner)	30 May 2021 (Date)	Total Claims Allowed: 20	
/JOSEPH S DEL SOLE/ Supervisory Patent Examiner, Art Unit 1743 (Primary Examiner)	01 June 2021 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 1

Issue Classification 	Application/Control No. 16/796,122	Applicant(s)/Patent Under Reexamination Douglas et al.
	Examiner THU-KHANH T NGUYEN	Art Unit 1743

☒ Claims renumbered in the same order as presented by applicant ☐ CPA ☐ T.D. ☐ R.1.47															
CLAIMS															
Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original	Final	Original
1	1	10	11	19	20										
2	2	11	12	20	21										
3	3	12	13												
4	4	13	14												
5	5	14	15												
6	6	15	16												
7	7	16	17												
8	8	17	18												
9	9	18	19												

/THU KHANH T NGUYEN/ Examiner, Art Unit 1743 (Assistant Examiner)	30 May 2021 (Date)	Total Claims Allowed: 20	
/JOSEPH S DEL SOLE/ Supervisory Patent Examiner, Art Unit 1743 (Primary Examiner)	01 June 2021 (Date)	O.G. Print Claim(s) 1	O.G. Print Figure 1

Bibliographic Data

Application No: 16/796,122

Foreign Priority claimed: ☐ Yes ☒ No

35 USC 119 (a-d) conditions met: ☐ Yes ☒ No ☐ Met After Allowance

Verified and Acknowledged: /THU KHANH T NGUYEN/

Examiner's Signature

Initials

Title:

TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL
PRINTING

FILING or 371(c) DATE	CLASS	GROUP ART UNIT	ATTORNEY DOCKET NO.
02/20/2020	264	1743	MBOT-0049-P04
RULE			

APPLICANTS

MakerBot Industries, LLC, Brooklyn, NY,

INVENTORS

Ariel Douglas, Brooklyn, NY, UNITED STATES

Robert J. Steiner, Brooklyn, NY, UNITED STATES

Aric Lynn Jennings, Brooklyn, NY, UNITED STATES

William B. Buel, Sunnyvale, CA, UNITED STATES

Anthony D. Moschella, Brooklyn, NY, UNITED STATES

CONTINUING DATA

This application is a CON of 16153224 10/05/2018 PAT 10569466

16153224 is a CON of 14992127 01/11/2016 PAT 10093061

14992127 is a CON of 14064974 10/28/2013 PAT 9233504

14064974 has PRO of 61719874 10/29/2012

FOREIGN APPLICATIONS

IF REQUIRED, FOREIGN LICENSE GRANTED**

03/06/2020

STATE OR COUNTRY

UNITED STATES

ADDRESS

STRATEGIC PATENTS P.C.

P.O. BOX 920629

NEEDHAM, MA 02492

UNITED STATES

FILING FEE RECEIVED

\$1,720

EAST Search History

EAST Search History (Prior Art)

Ref #	Hits	Search Query	DBs	Default Operator	Plurals	Time Stamp
S1	1	"16629122"	US-PGPUB; USPAT; USOCR	OR	ON	2021/05/28 10:42
S2	1	S1 and (nozzle closure pin cooling seal\$3 bush guide ring spring leakage expansion)	US-PGPUB; USPAT; USOCR	OR	ON	2021/05/28 10:42
S3	6	("20030143298" "20040185135" "20080187617" "5022846" "6599116" "7753676").PN.	US-PGPUB; USPAT	OR	ON	2021/05/28 10:53
S4	4	S3 and (nozzle same pin cooling same seal\$3 same (spring leakage expansion))	US-PGPUB; USPAT; USOCR	OR	ON	2021/05/28 10:56
S5	1	("2008/0187617").URPN.	USPAT	OR	ON	2021/05/28 12:03
S6	1	11/670459	US-PGPUB; USPAT; USOCR	OR	ON	2021/05/28 12:05
S7	14	("6599116").URPN.	USPAT	OR	ON	2021/05/28 12:08
S8	823	(inject\$3 with (nozzle pin valve)) same (cooling with (ring plate platen conduit channel)) same (runner distribution distribut\$3)	US-PGPUB; USPAT; USOCR	OR	ON	2021/05/28 14:34
S9	280,221	B29C43\$ 425/\$.ccls. 264/\$.ccls.	US-PGPUB; USPAT; USOCR	OR	ON	2021/05/28 14:34
S10	298	S8 and S9	US-PGPUB; USPAT; USOCR	OR	ON	2021/05/28 14:35
S11	227	(inject\$3 with (nozzle pin valve)) same ((cooling coolant cool) with (ring plate platen) with (conduit channel groove)) same (runner distribution distribut\$3)	US-PGPUB; USPAT; USOCR	OR	ON	2021/05/28 14:35
S12	101	S9 and S11	US-PGPUB; USPAT; USOCR	OR	ON	2021/05/28 14:36
S13	12	(valve with pin with (cooling cool)) same ((cooling coolant cool) with (ring plate platen) with (conduit	US-PGPUB; USPAT; USOCR	OR	ON	2021/05/28 14:42

		channel groove)) same (runner distribution distribut\$3) same nozzle				
S14	2	("2002/0114860").URPN.	USPAT	OR	ON	2021/05/28 14:45
S15	4	"205416236"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2021/05/28 14:49
S16	0	"Heat conduction mold insert of needle guide pin bushing"	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2021/05/29 14:54
S17	998	(Heat\$3 with conduct\$3 with (guide bushing) with (pin needle))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2021/05/29 14:56
S18	578,082	B29C45\$	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2021/05/29 14:57
S19	42	S17 and S18	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2021/05/29 14:57
S20	823	(inject\$3 with (nozzle pin valve)) same (cooling with (ring plate platen conduit channel)) same (runner distribution distribut\$3)	US-PGPUB; USPAT; USOCR	OR	ON	2021/05/29 15:10
S21	1	"7497681".pn. and (S17 S20)	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2021/05/29 15:10
S22	0	"7497681".pn. and (S17 S20)	US-PGPUB; USPAT; USOCR	OR	ON	2021/05/29 15:12
S23	2	"20060251759"	US-PGPUB; USPAT; USOCR	OR	ON	2021/05/29 15:13
S24	0	("7497681").URPN.	USPAT	OR	ON	2021/05/29 15:21

S25	3	("4286941" "5090890" "6832909").PN.	US-PGPUB; USPAT; USOCR	OR	ON	2021/05/29 15:21
S26	46	("4286941").URPN.	USPAT	OR	ON	2021/05/29 15:24
S27	63	(S20 S25 S26) and ((cooling with ring) same (inject\$3 runner) same (plate platen support\$3))	US-PGPUB; USPAT; USOCR	OR	ON	2021/05/29 15:26
S28	993,315	B29C45\$ 425/\$.ccls. 264/\$.ccls.	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2021/05/29 15:27
S29	17	S27 and S28	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2021/05/29 15:28
S30	5	("2010/0183763").URPN.	USPAT	OR	ON	2021/05/29 15:33
S31	645	(manifold runner) with (cooling) with (valve gate) with (ring plate platen)	US-PGPUB; USPAT; USOCR	OR	ON	2021/05/29 15:40
S32	124	S28 and S31	US-PGPUB; USPAT; USOCR	OR	ON	2021/05/29 15:41
S33	973,768	((guide bushing) with (pin needle valve gate))	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2021/05/29 15:41
S34	57	S32 and S33	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2021/05/29 15:41
S35	27	S34 and runner	US-PGPUB; USPAT; USOCR; FPRS; EPO; JPO; DERWENT	OR	ON	2021/05/29 15:51
S36	1	"16629122"	US-PGPUB; USPAT; USOCR	OR	ON	2021/05/29 17:05
S37	4	"13461081" "20120231109"	US-PGPUB; USPAT; USOCR	OR	ON	2021/05/29 17:59

S38	25	"6555044".pn. "655044"	US-PGPUB; USPAT; USOCR	OR	ON	2021/05/29 18:07
S39	18	"6555044".pn. "6555044"	US-PGPUB; USPAT; USOCR	OR	ON	2021/05/29 18:07

5/30/2021 2:02:17 PM

C:\Users\tnguyen34\Documents\EAST\Workspaces\Injection molding\16629122 - valve pin cooling ring
with a seal against the backplate of the hot runner.wsp

OK TO ENTER: /TN/

EFS-Web
USSN 16/796,122

PATENTS
MBOT-0049-P04

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No.: 16/796,122
Filing Date: February 20, 2020
In re: DOUGLAS, Ariel, et al.
Art Unit: 1743
Examiner: NGUYEN, Thukhanh T.
Conf. No.: 1760

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

RESPONSE AFTER FINAL

Dear Examiner:

Please enter and consider the following Response After Final under 37 C.F.R. § 1.116, which is responsive to the Final Office Action mailed on March 29, 2021.

A **Claim Listing** begins on page 2 of this paper.

Remarks begin on page 6 of this paper.



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 4480
Alexandria, Virginia 22313-4480
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16 796,122	02/20/2020	Ariel Douglas	MBOT-0049-P04	1760
43520 7590 07/14/2021 STRATEGIC PATENTS P.C. P.O. BOX 920629 NEEDHAM, MA 02492			EXAMINER NGUYEN, THUKHANH T	
			ART UNIT 1743	PAPER NUMBER
			NOTIFICATION DATE 07/14/2021	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



UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
www.uspto.gov

Application No. : 16796122
Applicant : Douglas
Filing Date : 02/20/2020
Date Mailed : 07/14/2021

NOTICE TO FILE CORRECTED APPLICATION PAPERS

Notice of Allowance Mailed

This application has been accorded an Allowance Date and is being prepared for issuance. The application, however, is incomplete for the reasons below.

Applicant is given two (2) months from the mail date of this Notice within which to respond. This time period for reply is extendable under 37 CFR 1.136(a) for only TWO additional MONTHS.

The informalities requiring correction are indicated in the attachment(s). If the informality pertains to the abstract, specification (including claims) or drawings, the informality must be corrected with an amendment in compliance with 37 CFR 1.121 (or, if the application is a reissue application, 37 CFR 1.173). Such an amendment may be filed after payment of the issue fee if limited to correction of informalities noted herein. See Waiver of 37 CFR 1.312 for Documents Required by the Office of Patent Publication, 1280 Off. Gaz. Patent Office 918 (March 23, 2004). In addition, if the informality is not corrected until after payment of the issue fee, for purposes of 35 U.S.C. 154(b)(1)(iv), "all outstanding requirements" will be considered to have been satisfied when the informality has been corrected. A failure to respond within the above-identified time period will result in the application being ABANDONED.

See attachment(s).

*A copy of this notice **MUST** be returned with the reply. Please address response to
"Mail Stop Issue Fee, Commissioner for Patents,
P.O. Box 1450, Alexandria, VA 22313-1450".*

/Chris Harmon/
Publication Branch
Office of Data Management
(571) 272-4200

IDENTIFICATION OF DRAWING DEFICIENCIES

- ☐ There is a hole or the image thereof within the illustration. FIG(s)
- ☐ The illustration is penetrated or traversed by a solid or broken line that is not intended to be part of the drawing, such as a dark line caused by a flaw in the copying process. FIG(s)
- ☐ An ink stamp or the image thereof obscures part of the illustration. FIG(s)
- ☐ The drawing is marred by black smudges, obliterations, or fax/copier marks (for example, speckles or dots in a substantial portion of the drawing). FIG(s)
- ☐ Figure numbers are duplicated or missing. FIG(s)
- ☐ Drawing sheet or figure is missing. FIG(s)
- ☐ Numbers, letters, or reference characters in the drawing have been crossed out or are illegibly handwritten. FIG(s)
- ☒ The character of the lines, numbers, and letters is poor. FIG(s) 3
- ☐ The drawing's background shows that the original drawing was made on graph paper or other paper with a pattern or decoration. FIG(s)
- ☐ The FIG. number label is placed in a location that causes the drawing to be read upside down. FIG(s)
- ☐ Data, a reference number, or part of the drawing is truncated or missing, or a lead line has no reference number. FIG(s)
- ☐ The drawing and/or the FIG. label contain(s) foreign language. FIG(s)
- ☐ This utility application contains a photograph of a view that is capable of being illustrated as a line drawing. FIG(s)
- ☐ A petition under 37 CFR 1.84(a)(2) to accept color drawings has been granted, but the brief description of the drawings in the specification does not contain (or has not been amended to contain) the paragraph required by 37 CFR 1.84(a)(2)(iii).
- ☐ This reissue application contains added and/or amended drawings that are not labeled as "New" or "Amended" or "Canceled" as required by 37 CFR 1.173(b)(3). FIG(s)
- ☐ This Design reissue application contains a drawing that is labeled as "Canceled" but is not surrounded by brackets, or a drawing that is surrounded by brackets but is not labeled as "Canceled." See 37 CFR 1.173(b)(3). FIG(s)
- ☐ OTHER:
- ☐ COMMENTS:

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Serial No.: 16/796,122
Filing Date: February 20, 2020
In re: DOUGLAS, Ariel, et al.
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Examiner: NGUYEN, Thukhanh T.
Conf. No.: 1760

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

AMENDMENT IN RESPONSE TO
NOTICE TO FILE CORRECTED APPLICATION PAPERS

Dear Sir/Madam:

In response to the Notice to File Corrected Application Papers mailed on July 14, 2021, the applicant provides the following Amendment:

An **Amendment to the Drawings** begins on page 2 of this paper.

Remarks begin on page 3 of this paper.



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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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16 796,122	02/20/2020	Ariel Douglas	MBOT-0049-P04	1760
43520 7590 07/14/2021 STRATEGIC PATENTS P.C. P.O. BOX 920629 NEEDHAM, MA 02492			EXAMINER NGUYEN, THUKHANH T	
			ART UNIT 1743	PAPER NUMBER
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patents@stratpat.com



UNITED STATES PATENT AND TRADEMARK OFFICE

Commissioner for Patents
United States Patent and Trademark Office
P.O. Box 1450
Alexandria, VA 22313-1450
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Application No. : 16796122
Applicant : Douglas
Filing Date : 02/20/2020
Date Mailed : 07/14/2021

NOTICE TO FILE CORRECTED APPLICATION PAPERS

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See attachment(s).

*A copy of this notice **MUST** be returned with the reply. Please address response to
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P.O. Box 1450, Alexandria, VA 22313-1450".*

/Chris Harmon/
Publication Branch
Office of Data Management
(571) 272-4200

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- ☐ The illustration is penetrated or traversed by a solid or broken line that is not intended to be part of the drawing, such as a dark line caused by a flaw in the copying process. FIG(s)
- ☐ An ink stamp or the image thereof obscures part of the illustration. FIG(s)
- ☐ The drawing is marred by black smudges, obliterations, or fax/copier marks (for example, speckles or dots in a substantial portion of the drawing). FIG(s)
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- ☐ This reissue application contains added and/or amended drawings that are not labeled as "New" or "Amended" or "Canceled" as required by 37 CFR 1.173(b)(3). FIG(s)
- ☐ This Design reissue application contains a drawing that is labeled as "Canceled" but is not surrounded by brackets, or a drawing that is surrounded by brackets but is not labeled as "Canceled." See 37 CFR 1.173(b)(3). FIG(s)
- ☐ OTHER:
- ☐ COMMENTS:

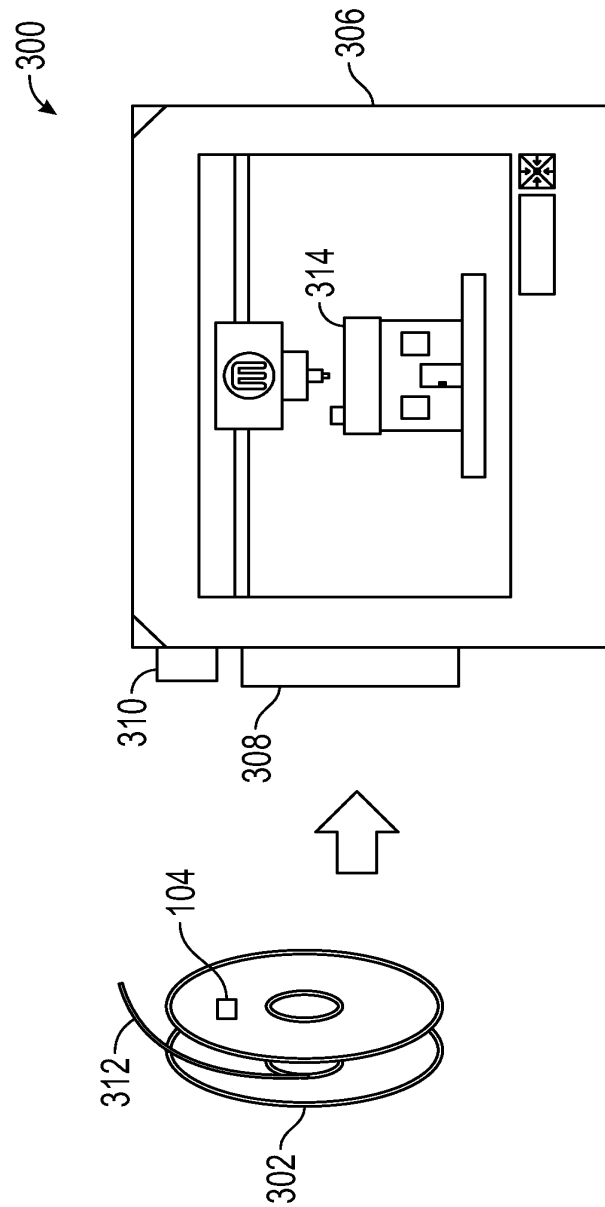


FIG. 3

Electronic Acknowledgement Receipt	
EFS ID:	43387605
Application Number:	16796122
International Application Number:	
Confirmation Number:	1760
Title of Invention:	TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING
First Named Inventor/Applicant Name:	Ariel Douglas
Customer Number:	43520
Filer:	Thomas John Bassolino/Paula Ng
Filer Authorized By:	Thomas John Bassolino
Attorney Docket Number:	MBOT-0049-P04
Receipt Date:	30-JUL-2021
Filing Date:	20-FEB-2020
Time Stamp:	11:38:39
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	no
------------------------	----

File Listing:

Document Number	Document Description	File Name	File Size(Bytes)/ Message Digest	Multi Part /.zip	Pages (if appl.)
1		MBOT-0049-P04_20210730_Amendment_NoticeToCorrect.pdf	110945	yes	3
			7829c156e11412aaead2da379bbafa2f69e d902d		

Multipart Description/PDF files in .zip description					
Document Description			Start	End	
Miscellaneous Incoming Letter			1	1	
Drawings-only black and white line drawings			2	2	
Applicant Arguments/Remarks Made in an Amendment			3	3	
Warnings:					
Information:					
2	Miscellaneous Incoming Letter	MBOT-0049-P04_20210730_NoticeToCorrect.pdf	109654 296a403b664a5f3d268a8b274e5f5d389664efc4	no	3
Warnings:					
Information:					
3	Drawings-only black and white line drawings	MBOT-0049-P04_20210730_ReplacementDrawing.pdf	17042 6ed4a93680e0abdaf24391ec1a365c056c50e486	no	1
Warnings:					
Information:					
Total Files Size (in bytes):			237641		
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.					

Amendment to the Drawings

The attached drawing sheet replaces the originally-filed drawing sheet containing Fig. 3.

Attachment: Replacement Sheet (1)

Remarks

The Notice to File Corrected Application Papers indicates that the application is incomplete because of the following alleged drawing deficiencies in Fig. 3: “[t]he character of the lines, numbers, and letters is poor.”¹ In response, the applicant submits herewith a Replacement Sheet containing Fig. 3 that addresses the Office’s concerns. No new matter is added.

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. If there are any further questions concerning this paper, the Office is encouraged to contact the undersigned.

Respectfully submitted,
STRATEGIC PATENTS, P.C.
/Thomas J. Bassolino/

Thomas J. Bassolino
Reg. No. 65,946
Tel.: (646) 238-1234

July 30, 2021

¹ Notice to File Corrected Application Papers mailed on July 14, 2021, p. 3.

PART B - FEE(S) TRANSMITTAL

Complete and send this form, together with applicable fee(s), by mail or fax, or via EFS-Web.

By mail, send to: Mail Stop ISSUE FEE
Commissioner for Patents
P.O. Box 1450
Alexandria, Virginia 22313-1450

By fax, send to: (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 07/02/2021
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 transmitted to the USPTO via EFS-Web or by facsimile to (571) 273-2885, on the date below.

(Typed or printed name)
(Signature)
(Date)

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/796,122	02/20/2020	Ariel Douglas	MBOT-0049-P04	1760

TITLE OF INVENTION: TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING

APPLN. TYPE	ENTITY STATUS	ISSUE FEE DUE	PUBLICATION FEE DUE	PREV. PAID ISSUE FEE	TOTAL FEE(S) DUE	DATE DUE
nonprovisional	UNDISCOUNTED	\$1200	\$0.00	\$0.00	\$1200	10/04/2021

EXAMINER	ART UNIT	CLASS-SUBCLASS
NGUYEN, THUKHANH T	1743	264-040600

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 03-09 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 must have been previously recorded, or filed for recordation, as set forth in 37 CFR 3.11 and 37 CFR 3.81(a). Completion of this form is NOT a substitute for filing an assignment.

(A) NAME OF ASSIGNEE

MakerBot Industries, LLC

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

Brooklyn, NY

Please check the appropriate assignee category or categories (will not be printed on the patent): ☐ Individual ☒ Corporation or other private group entity ☐ Government4a. Fees submitted: ☒ Issue Fee ☐ Publication Fee (if required) ☐ Advance Order - # of Copies

4b. Method of Payment: (Please first reapply any previously paid fee shown above)

☒ Electronic Payment via EFS-Web ☐ Enclosed check ☐ Non-electronic payment by credit card (Attach form PTO-2038)☒ The Director is hereby authorized to charge the required fee(s), any deficiency, or credit any overpayment to Deposit Account No. 50-4262**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 /Thomas J. Bassolino/

Date October 1, 2021

Typed or printed name Thomas J. Bassolino

Registration No. 65,946

Electronic Patent Application Fee Transmittal				
Application Number:		16796122		
Filing Date:		20-Feb-2020		
Title of Invention:		TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING		
First Named Inventor/Applicant Name:		Ariel Douglas		
Filer:		Thomas John Bassolino/Paula Ng		
Attorney Docket Number:		MBOT-0049-P04		
Filed as Large Entity				
Filing Fees for Utility under 35 USC 111(a)				
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	1200	1200

Description	Fee Code	Quantity	Amount	Sub-Total in USD(\$)
Extension-of-Time:				
Miscellaneous:				
Total in USD (\$)				1200

Electronic Acknowledgement Receipt	
EFS ID:	43923451
Application Number:	16796122
International Application Number:	
Confirmation Number:	1760
Title of Invention:	TAGGED BUILD MATERIAL FOR THREE-DIMENSIONAL PRINTING
First Named Inventor/Applicant Name:	Ariel Douglas
Customer Number:	43520
Filer:	Thomas John Bassolino/Paula Ng
Filer Authorized By:	Thomas John Bassolino
Attorney Docket Number:	MBOT-0049-P04
Receipt Date:	01-OCT-2021
Filing Date:	20-FEB-2020
Time Stamp:	10:12:51
Application Type:	Utility under 35 USC 111(a)

Payment information:

Submitted with Payment	yes
Payment Type	CARD
Payment was successfully received in RAM	\$1200
RAM confirmation Number	E202101A13092475
Deposit Account	504262
Authorized User	Paula Ng
The Director of the USPTO is hereby authorized to charge indicated fees and credit any overpayment as follows: 37 CFR 1.16 (National application filing, search, and examination fees) 37 CFR 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-0049-P04_20211001_IssueFeeTransmittal.pdf	102476	no	1
			ba8899da9169c22f86484c5dfd0c49e1b273f1d0		

Warnings:**Information:**

2	Fee Worksheet (SB06)	fee-info.pdf	37753	no	2
			63910376f73975add2ae08be9362a320543c8c5b		

Warnings:**Information:**

Total Files Size (in bytes):	140229
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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

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New International Application Filed with the USPTO as a Receiving Office

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www.uspto.gov

APPLICATION NO.	ISSUE DATE	PATENT NO.	ATTORNEY DOCKET NO.	CONFIRMATION NO.
16/796,122	11/09/2021	11167464	MBOT-0049-P04	1760
43520	7590	10/20/2021		
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 Patents Stakeholder Experience (OPSE), Stakeholder Support Division (SSD) at (571)-272-4200.

INVENTOR(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional inventors):

Ariel Douglas, Brooklyn, NY;
Robert J. Steiner, Brooklyn, NY;
Aric Lynn Jennings, Brooklyn, NY;
William B. Buel, Sunnyvale, CA;
Anthony D. Moschella, Brooklyn, NY;

APPLICANT(s) (Please see PAIR WEB site <http://pair.uspto.gov> for additional applicants):

MakerBot Industries, LLC, 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.